

# **Entering the ,community of minds' in Germany and Korea**

**– a cross-cultural investigation of developing ,internal state language',  
theory of mind, and emotion concepts between 3 and 6 years**

vorgelegt von

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## Zusammenfassung der Dissertation

Wie lernen Kinder zwischen dem dritten und sechsten Lebensjahr die Welt der Psyche zu begreifen? In welchen Schritten entwickeln sie die Fähigkeit, innere Zustände wie Wünsche, Gefühle und Gedanken von sich und anderen sowohl sprachlich als auch konzeptuell zu repräsentieren? Welche Rolle spielen Kultur und Muttersprache dabei?

Diesen Fragen bin ich in einer kulturvergleichenden empirischen Studie in deutschen und südkoreanischen Kindergärten nachgegangen. Das Ziel war, eine umfangreiche, mit multiplen Methoden gesammelte Datenmenge zu einem deskriptiven Bild der sprachlichen und konzeptuellen Entwicklung des Bereichs der ‚Psyche‘ zu verdichten. Die erzielte deskriptive Basis sollte darüber hinaus als Grundlage für Hypothesen zu kulturellen Einflüssen und der Rolle der Sprache dienen. So wurde vorwiegend explorativ, aber auch hypothesentestend vorgegangen und es wurden neben quantitativen auch qualitative Auswertungen der Daten vorgenommen, wo sie für das Ziel sinnvoll erschienen.

Der Prozess, dessen Beschreibung im Mittelpunkt der Arbeit steht, lässt sich am besten an Hand eines Ausdrucks der Entwicklungspsychologin Katherine Nelson als ‚*Entering the community of minds*‘ begreifen – also das schrittweise Eintreten und Mitglied werden in einer Gemeinschaft, die (a) Konzepte davon teilt, welche inneren Zustände die mentale Welt von Personen ausmachen, die (b) sprachliche Mittel konventionalisiert hat, um auf diese inneren Zustände zu verweisen, sowie (c) Normen und Werte, die Richtlinien geben für Ausdruck, Interpretation und Verhalten im sozialen Miteinander.

Es wird davon ausgegangen, dass die soziale Interaktion mit der Umgebung nicht nur der Kontext ist, in welchem ein Kind sprachliche und kognitive Kompetenzen erwirbt, sondern gelingende Interaktionen auch gleichzeitig das Ziel der Entwicklung darstellen – jeder Schritt erhöht die Möglichkeiten des Austauschs und der aktiven sozialen Teilnahme, als auch die, die eigenen Interessen sozial wirksam auszudrücken und durchzusetzen.

Zwei verschiedene ‚*communities of minds*‘ – Deutschland und Korea – wurden für die Studie ausgewählt. Sie unterscheiden sich kulturpsychologisch in ihren independenten versus interdependenten Personenkonzepten und Erziehungszielen, in zentralen Konzepten von Gefühlen und ihren Ausdrucksregeln, sowie in sprachtypologischen Eigenschaften.

Insgesamt wurden Daten von 126 Kindern – 64 deutschen, 62 koreanischen – in drei deutschen und vier koreanischen Kindergärten erhoben. Die Maße zur ‚*internal state language*‘ (ISL) umfassten einen ausführlichen Elternfragebogen zum Wortschatz innerer Zustände in verschiedenen semantischen Bereichen und zur Produktion von Komplementsatzkonstruktionen mit mentalen Verben, sowie die Erzählung einer wortlosen Bildergeschichte mit sozio-emotionaler Thematik durch die Kinder. Zur Erfassung des konzeptuellen Verständnisses innerer Zustände wurde eine Batterie von ‚*theory of mind*‘-Tests durchgeführt und ein strukturiertes Interview zum Emotionsverständnis.

Die Auswertungen umfassen zu jedem Erhebungsmaß jeweils eine detaillierte deskriptive Beschreibung der Entwicklung von deutschen und koreanischen Kindern über drei Altersgruppen, sowie einen Vergleich beider Sprachen und Kulturen. Hinzu kommt eine abschließende Analyse der Zusammenhänge und des Beitrags von Aspekten der *internal state language* zur Entwicklung der *theory of mind* und des Emotionsverständnisses.

Die Studie ist einzigartig in ihrer Erforschung der Zusammenhänge von Spracherwerb und konzeptueller Entwicklung im Bereich der ‚Psyche‘ in einem sprach- und kulturvergleichenden Design. Zudem wurden Perspektiven, Konzepte und Methoden verschiedener Fachgebiete – Lexikon- und Grammatikerwerb, *theory of mind*-Forschung, emotionale Entwicklung, kulturvergleichende Psychologie – fruchtbar verbunden.

Der ausführliche deskriptive Teil liefert neue Daten, die so bislang nicht für das Deutsche oder Koreanische vorhanden waren. Der kulturvergleichende Teil zeichnet sich dadurch aus, dass Konzepte independenter und interdependenten sozialer Orientierung erstmals auf die Erforschung der kognitiven Kindesentwicklung angewandt werden. Die Untersuchung der Zusammenhänge des Spracherwerbs und der konzeptuellen Entwicklung fokussiert nicht nur auf eine einzige Relation, wie viele Studien des Bereichs, sondern exploriert die Bezüge verschiedener Aspekte der Sprache und Kognition innerer Zustände.

Zusammenfassend ist ein komplexes, differenziertes Bild der sprachlichen und konzeptuellen Entwicklung des Bereichs der ‚Psyche‘ im Vorschulalter entstanden.

Die hauptsächlichen sprachlichen und kognitiven Entwicklungsschritte und die Reihenfolge, in der sie durchlaufen werden, stimmen zwischen deutschen und koreanischen Kindern weitgehend überein. Sie weisen anscheinend auf universelle Entwicklungstendenzen zunehmender Abstraktion und Komplexität hin, die sich sowohl auf die Entwicklung von

sprachlichen Bedeutungen und Konstruktionen, als auch auf die Zunahme von repräsentationalen und Verarbeitungsfähigkeiten in der Kognition beziehen.

So beginnt der Erwerb eines Lexikons innerer Zustände mit Wörtern, die sich auf körperliche Zustände und Sinneseindrücke, sowie auf konkret beobachtbare Korrelate von Emotionen wie Gesichtsausdrücke und soziale Handlungen beziehen. Hinzu kommen erste zentrale Wörter für Wünsche und Absichten, Bewertungen, Fähigkeiten und einige Basisemotionen. Diese Bereiche verzeichnen dann einen Zuwachs an weiteren produktiven Wörtern um den vierten Geburtstag herum. Zur selben Zeit tauchen die ersten Ausdrücke für mentale Zustände, Realität und Evidentialität auf, deren Zahl und Gebrauch im kommenden Jahr rapide ansteigt. Mit vier bis fünf Jahren erwerben Kinder zusätzlich den Gebrauch von Komplementsatzkonstruktionen mit mentalen Verben wie *wissen* und *denken*, nachdem sie solche Konstruktionen bereits produktiv mit den Verben *wollen* und *sagen* benutzen.

In den Analysen von Äußerungen der Kinder, welche die Mütter in die Elternfragebögen eingetragen hatten, ließ sich zeigen, dass die frühen Gebrauchsweisen von mentalen und epistemischen Ausdrücken, die Konstruktionen mit *wissen* und *denken* einbezogen, vorwiegend mit diskurspragmatischen Funktionen einhergehen und sich erst allmählich ein Erwerb der semantischen Bedeutung der Wörter einstellt. Sogar die Bedeutungen der basalen Emotionswörter waren noch im Begriff vollkommen ausdifferenziert und voneinander abgegrenzt zu werden, was sich in Überlappungen der wortbasierten Konzepte von negativen Emotionen im Emotionsverständnisinterview zeigte.

Für die Entwicklung der *theory of mind* und des Emotionsverständnisses konnten mithilfe von Guttman-Skalen robuste Erwerbssequenzen einzelner Fähigkeiten ermittelt werden, die für beide Kulturen gültig sind und unabhängig von individuellen Erwerbszeitpunkten Bestand haben.

Im Bereich *theory of mind* lösen Kinder zuerst Aufgaben, in denen sie einfache Zuschreibungen von Emotionen aufgrund von erfüllten und unerfüllten Wünschen machen müssen; darauf folgt das Bestehen klassischer Tests von Wissenszugang und falschen Annahmen; schließlich gelingt das Zuschreiben von Emotionen unter gleichzeitiger Berücksichtigung von Wünschen und falschen Annahmen. Die Entwicklung verzeichnet folglich eine zunehmende Abstraktheit von Konzepten sowie eine steigende Kapazität in der simultanen Verarbeitung verschiedener und widersprüchlicher Repräsentationen.

Das Emotionsverständnis der Kinder verläuft von pragmatisch-interaktiven Fähigkeiten hin zu Reflexionsfähigkeiten, die zunehmend flexibler werden. Zuerst können sie beantworten, ob sie die Ausdrücke von positiven und negativen Emotionen gegenüber Eltern oder Freunden zeigen, oder vor ihnen verbergen wollen; dann berichten sie emotionale und Handlungsreaktionen auf die Emotionen eines Freundes oder einer Freundin; schließlich können sie sowohl Ursachen für ihre eigenen Emotionen als auch Gründe für ihre Ausdrucks- und Reaktionsstrategien benennen; als letztes entwickeln sie die Fähigkeit, Strategien der Selbstregulation zu beschreiben.

Im Zeitraum zwischen 4 und 6 Jahren scheint eine schrittweise verlaufende Verknüpfung von sprachlichen und konzeptuellen Bedeutungen und Repräsentationsschemata stattzufinden.

Einerseits wird dies nahegelegt durch die Parallelität sprachlicher und kognitiver Entwicklungsschritte, die gemeinsam zu einer neuen Stufe kontextunabhängiger und flexibler Repräsentationsfähigkeiten führen—in Bedeutungen und Gebrauch von Wörtern und Konstruktionen sowie den Fähigkeiten, Perspektiven zu übernehmen, zu kombinieren, kontrastieren und zu verfolgen, und den Reflexionsfähigkeiten emotionaler Erlebnisse.

Außerdem konnte in Regressionsanalysen gezeigt werden, dass bestimmte Aspekte der *internal state language* einen hilfreichen Beitrag zum Verständnis innerer Zustände leisten – über das Alter und generelle Sprachfähigkeiten hinaus.

Sprachübergreifend ist ein positiver Einfluss des Erwerbs und Gebrauchs von Ausdrücken innerer Zustände in komplexen Konstruktionen sichtbar geworden, die mehrere Repräsentationen, wie einen inneren Zustand mit seinem Inhalt (in Komplementsatzkonstruktionen) oder in kausalen oder kontrastiven Bezügen zu Handlungen, Ereignissen oder inneren Zustände weiterer Personen, miteinander in Relation setzen.

So leistete der Gebrauch von Komplementsatzkonstruktionen mit Verben innerer Zustände in beiden Sprachen Varianzaufklärung für das Emotionsverständnis, der Gebrauch von Prädikaten innerer Zustände in kausalen und kontrastiven Bezügen für das Emotionsverständnis koreanischer Kinder und die *theory of mind* deutscher Kinder.

Sprachspezifische Einflüsse der *internal state language* zeigen sich für die Leistungen in den *theory of mind*-Aufgaben. Während für deutsche Kinder die genannte Gebrauchshäufigkeit von Ausdrücken innerer Zustände in kausalen und kontrastiven Zusammenhängen sowie das Vokabular im Bereich ‚Kognition und Epistemizität‘ einen positiven Beitrag zum Abschneiden in den *theory of mind*-Tests leistete, waren für die *theory of mind*-Leistungen koreanischer Kinder überhaupt keine Zusammenhänge mit der ISL unabhängig von Alter und

allgemeinem Sprachstand signifikant. Gleichzeitig bestanden koreanische Kinder die *theory of mind*-Tests erst bis zu ein Jahr später als deutsche Kinder.

Nach genauer Untersuchung der Spracherwerbsdaten und den sprachlichen Voraussetzungen der *theory of mind*-Aufgaben scheint es, dass deutsche Kinder früher in der Lage sind, die in klassischen *theory of mind*-Tests abgefragten mentalen Zuschreibungen zu machen, da ihnen anscheinend der Erwerb sprachlicher Konstruktionen mit *wissen* und *denken*, den zentralen Ausdrücken der Testfragen, dabei Hilfestellung für die nötigen Repräsentationen leistet.

Koreanische Kinder haben diese sprachliche Repräsentationshilfe offenbar nicht zur Verfügung, da die entsprechenden Verben im Koreanischen in einer größeren Variation verschiedener Konstruktionen verwendet werden, die auch semantisch unterschiedliche Färbungen mentaler Vorgänge und epistemischer Sicherheit ausdrücken. Somit scheint es im Koreanischen schwieriger, ein eindeutiges sprachliches Schema mit konzeptuellen Schemata von WISSEN und GLAUBEN zu verbinden und im Test gemeinsam abzurufen.

Kulturelle Unterschiede zeigen sich darüber hinaus in den qualitativ-inhaltlichen Foki von Konzeptualisierungen und Versprachlichungen – also in der Aufmerksamkeitslenkung und dem *construal* mentaler Zustände in bestimmten Situationen, und zwar über alle Erhebungsmaße. Diese lassen sich in Bezug auf einen globalen Einfluss der spezifischen Ausprägungen unabhängiger und interdependenter sozialer Orientierungen, Werte, und Erziehungsmuster in Deutschland und Korea interpretieren.

Koreanische Kinder erwerben früher Wörter für soziale Emotionen und Beziehungen als deutsche Kinder und benutzen diese häufiger beim Erzählen der sozio-emotionalen Bildergeschichte. Ihre Versprachlichungen der abgebildeten Situationen fokussieren auf soziale Relationen und Konstellationen, wohingegen deutsche Kinder bei denselben Bildern häufiger die Emotionen einzelner Figuren versprachlichen, also den Standpunkt des Individuums einnehmen.

Ähnliche Unterschiede fanden sich in den Antworten der Kinder im Emotionsinterview. Im Vergleich gaben koreanische Kinder mehr sozial-orientierte, deutsche Kinder mehr selbst-bezogene Ursachen für ihre Emotionen an. Ebenso waren koreanische Kinder früher motiviert, ihre negativen Emotionen vor anderen zu verstecken, und nannten mehr sozial-orientierte Begründungen dafür. Diese wandelten sich von primär normfokussierten Erklärungen zu verstärkt sozial-instrumentalen Reflexionen. Als Reaktionen auf die negativen Emotionen eines Freundes oder einer Freundin benannten sie fast ausschließlich empathisch-prosoziale Empfindungen und Strategien. Häufig beschrieben sie proaktive Kommunikationsversuche als Regulationsversuche für eigenen und fremden Ärger.

Deutsche Kinder orientierten ihre Angaben von Ursachen, Ausdrucks- und Handlungsstrategien häufiger an ihren eigenen, subjektiven Evaluationen. Sie beschrieben häufig, eine Erzieherin zu Hilfe zu holen, um eigene oder fremde negative Emotionen zu regulieren. In Reaktion auf die negativen Emotionen eines Freundes gab ein Drittel der deutschen Kinder an, sich von Freund oder Freundin in diesem Fall zurückzuziehen und einfach eine andere Aktivität oder andere Spielgefährten zu suchen.

Insgesamt sind die Erzählungen und Interviewantworten koreanischer Kinder vorwiegend an Bildung und Erhalt harmonischer Beziehungen, die deutscher Kinder an subjektiven Einschätzungen und Empfindungen orientiert.

In der Gesamtschau zeigt sich, dass deutsche und koreanische Kinder ähnliche Entwicklungsschritte in der Struktur und Natur ihrer kognitiven Fähigkeiten und Konzepte durchmachen, die genauen Zeitpunkte dieser Schritte und die Inhalte ihrer Repräsentationen jedoch von sprachlichen und kulturellen Spezifika beeinflusst werden.

Am Ende erwerben alle Kinder über die Vorschuljahre ein repräsentationales Verständnis innerer Zustände und damit verbundene reflexive Fähigkeiten. Doch sind die Kontexte, Inhalte und Ziele dieser Entwicklung geprägt und geleitet von ihrer jeweiligen ‚*community of minds*‘ – mit ihren spezifischen Personenkonzepten, sprachlichen Mitteln, und Normen – und den konkreten Interaktionserfahrungen und Diskursen, an denen sie in dieser teilhaben.

Aus der Arbeit ergeben sich wichtige Implikationen für die berührten Forschungsfelder. Erstens zeigt sich, dass die Erforschung kognitiver Entwicklung unabhängig von Kultur und Sprache nicht möglich ist, da beide bedeutsame Einflüsse auf die konzeptuelle Entwicklung haben, und daher nur kultur- und sprachvergleichende Studien ein tieferes Verständnis tatsächlicher konzeptueller Inhalte und universeller Aspekte der konkreten Entwicklungsverläufe ermöglichen.

Aus den Untersuchungen zum Erwerb der *internal state language* sowie aus den unterschiedlichen Korrelationsmustern mit *theory of mind* für deutsche und koreanische Kinder wird deutlich, dass einerseits genauere Untersuchungen der Funktionen und Bedeutungen des Lexikons und der Satzkonstruktionen innerer Zustände im Sprachvergleich vonnöten sind, die Unterscheidung und Zusammenspiel diskurspragmatischer und mental-referentieller Gebräuche in der Erwachsenensprache beleuchten. Andererseits muss der Bedeutungserwerb bei Kindern und das Verhältnis von Pragmatik und Semantik in Produktion und Verständnis tiefer, vorzugsweise längsschnittlich, erforscht werden.

Bezüglich des Verständnisses innerer Zustände ergibt sich, dass es wichtig ist, die Fähigkeiten kognitiver Perspektivübernahme, die in klassischen *theory of mind*-Tests untersucht werden, von Empathie und sozial-orientierten Handlungskompetenzen zu unterscheiden—und folglich feinere Differenzierungen des *theory of mind*-Begriffs auszuarbeiten, welche auch für die aktuellen Diskussionen zur vorsprachlichen *theory of mind* fruchtbar wären.

Aus dieser Einsicht und den sprachspezifischen Einflüssen der *internal state language* auf *theory of mind* ergibt sich zudem die Forderung einer spezifischeren und linguistisch informierten Untersuchung der sprachlichen Anforderungen klassischer *theory of mind*-Tests und der sprachvergleichenden längsschnittlichen Erforschung von Zusammenhängen und Sequenzen des Bedeutungserwerbs spezifischer mentaler Ausdrücke und des Bestehens spezifischer *theory of mind*-Testfragen.

## Glossing conventions

To keep the numerous child language examples given as easily readable as possible, grammatical and functional glosses were reduced to a minimum and replaced by literal word-by-word translations into English, where possible.

For German, only the person markings on inflected verbs are actually glossed. All other material is literally translated to English in the original word order.

Korean examples are presented in the Yale System of Romanization. For Korean, usual glosses were used as needed. For example, postpositions marking case were glossed as such, while postpositions that correspond to usual prepositions in English were translated. Also translated were typical verb extensions in serial verb constructions, e.g., *-cwu-* in *sa-cwu-ta* as ‘give’ (i.e., ‘buy-give-DCL’), or *-o-* in *sa-o-ta* as ‘come’ (i.e., ‘buy-come-DCL’). Most functional glosses for Korean examples were needed for verbal suffixes and sentence enders. Abbreviations of the glosses used for examples of children’s utterances are given below.

### *References for glossing*

Choi, J. B. (2007). *A Corpus-Based Discourse Analysis of Korean Discourse Markers. An Analysis of Spoken and Written Use*. PhD dissertation, University of California, Los Angeles.

Sohn, H.-M. (1999). *The Korean Language*. Cambridge: Cambridge University Press.

### Abbreviations

1s...3p	Person and number — e.g., 2s = second person singular
ACC	Accusative
ATTR	Attributive
CAUS	Causal <i>-se</i> or <i>-nikka</i>
CINT	Commissive/Intentive <i>-(u)lkey</i> — indicates the speaker’s commissive intention to do sth. in the future
CIRCUM	Circumstantial <i>-(nu)ntey</i> — indicates background circumstances with either causal or contrastive connotation
CN	Change-of-state <i>-ci-</i>
COMM	Committal <i>-ci</i> — indicates that the speaker commits himself to the truth of the proposition or expects the hearer to commit to it
COMP	Complementizer <i>-ko</i>
COND	Conditional <i>-myen</i>
CONN	Connective <i>-ko</i>
CONNV	Connective <i>-e/-a</i> in serial verb constructions

DAT	Dative
DCL	Declarative sentence-type suffix
DCRS	Deductive reasoning <i>-keyss-</i>
DINT	Desire/Intentive <i>-(u)llay</i> or <i>-lye(ko)</i> — indicates the desire of the subject to perform an action
DIS	Disjunctive <i>-(nu)n!-(u)l + ci</i> — indicates two possibilities (‘whether or not’)
DIS.COMP	Disjunctive complementizer <i>-ci</i>
EXPL	Explanatory <i>-ketun</i>
HEARSAY	Hearsay evidential <i>-tay</i>
IMP	Imperative
IMPFV	Imperfective <i>-(nu)n-</i> — indicates imperfective aspect, expressing non-past time reference and concurrent experience
LOC	Locative
NECS	Necessitative <i>-ya</i> — indicates necessity or obligatoriness
NIMP	Negative imperative <i>-cima</i>
NOM	Nominative, subject marker
OBVS	Obvious <i>-canha</i> — indicates that what is said is either obvious or shared knowledge of both speaker and hearer
OR	Disjunctive <i>-kena</i> — indicates interchangeability of two states of affairs (‘or’)
PAST	Past tense
PL	Plural
POL	Polite suffix
PREC	Precedence <i>-se</i> — indicates that the situation described precedes the following one either temporally or logically
PROP	Propositive sentence-type suffix
Q	Interrogative sentence-type suffix
SUPERL	Superlative
“TEXT”	Unglossable item — mostly particles with various discourse functions; connotations are freely translated or explained in the translation line
TOC	Topic-contrast particle; topic marker

# 1 Introduction

## **Entering the 'community of minds'**

In their first years of life, children all over the world are not only faced with the task to learn about their physical environment, but also to learn about and interact with the social environment that surrounds them, including the acquisition of culturally shared concepts about people and relationships and of the conventions of joint activities and communicative exchanges.

This learning process can aptly be described by the term 'entering the community of minds', which was coined by developmental psychologist Katherine Nelson, and which nicely captures three characteristics of that learning process: it is cultural, meaning it is dependent on the specific cultural environment and conventions of the community the child is raised in; it is social, i.e., it takes place in interactions with caregivers and other members of the group and has fluency and efficiency of just such interactions as its aim; and it is a development over time, requiring several steps and accomplishments, which eventually lead to a new stage – namely, being a full member of the community, which opens up new perspectives and possibilities for perceiving and acting in the world.

The steps children have to take to 'enter the community of minds' include linguistic as well as cognitive achievements. On the language side, for example, they have to build up a vocabulary for the denotation and communication of internal states, like wishes, thoughts and feelings. They further have to acquire the functional and structural linguistic constructions and devices in which these words can be embedded in discourse, and to learn how to use these words and structures in conversational interactions, e.g. while narrating a story to someone.

On the cognitive side, children have to build concepts and representations of persons and the minds that direct surface actions, e.g., understand how intentions and beliefs explain or predict what someone does. They further need concepts for the specific internal and mental states persons can have, for example, emotions like being happy or sad. These concepts become more sophisticated over time, gradually integrating knowledge about, for example, antecedents leading to a certain state, consequences or actions resulting from it, strategies for expression or communication, how to recognize it in another person or, possibly, individual strategies of reacting to the other in that case.

The empirical study reported in this book attempts to capture as much as possible of these developments and to achieve a descriptive account of the overall process, pointing out the major steps children take with their typical onset age, sequence, and dynamics.

This description was pursued for two different ‘communities of minds’ – Germany and Korea, which can be distinguished on a cultural psychological scale along their independent and interdependent concepts of persons, their child-rearing aims and values, in their central concepts of emotions and emotional display rules, as well as in language typological characteristics.

The comparison was done to explore the scope and depth of influences of culture and target language on the process. Commonalities between children growing up in two such different socio-cultural and linguistic settings, on the other hand, would point to possible universals of the linguistic and cognitive development in the domain of the mind.

The years between 3 and 6 seem to mark the most important phase in the process of ‘entering the community of minds’ and were chosen as temporal focus of the present study. The time period between 3 and 6 years is an important period in linguistic as well as cognitive development, as a whole set of new abilities emerge during that time. Complex syntax and new words with abstract meanings are acquired on the language side, discourse and narrative competence come into play, as does autobiographical memory. They all require and develop alongside what is often called meta-cognition or ‘theory of mind’, namely the ability to represent mental and psychological states of self and others and to use them for inferences and planning of action and speech.

Linguistic and cognitive development interact in many ways: Being aware of what the other knows, or being able to anticipate his emotional reactions, is helpful in deciding what information to share in a dialogue or narrative and how to package it most effectively. Being aware of one’s own mental states, on the other hand, sets the basis for an autobiographical self and, for example, the ability to use cognitive regulation strategies for emotions and planning actions.

Words for internal states, on the other hand, provide labels to distinguish different states for representation and communication. In addition, complex linguistic constructions provide the resources to package and represent mental states with their relations to reality, actions, or internal states of others.

From these few considerations we already see how deeply intertwined linguistic and conceptual development are in the mental domain. The question is, how far language is helpful, or even required for the representation, distinction, and processing of own and others' mental states. The abstractness and intangibility of mental state concepts would favor a dominant role of language. In a first step, it is the main medium through which the child gains access to the conceptualizations of the surrounding community, and, in a second step, it might then serve as an anchor for representations and provide material and building blocks for concept construction.

The third topic of the present study was, therefore, to explore the role of language – and internal state language in particular – for the developing understanding of internal states between 3 and 6 years.

### **The present approach and its aims**

Different strands of research have been working on some of the aspects that are involved in the integrated process of 'entering the community of minds' as it has been described in the previous paragraph.

Investigations of the acquisition of a lexicon for internal states in the toddler years, narrative development at the end of preschool and early school years, theory of mind research using false-belief-tasks, experimental studies relating theory of mind to competence with sentential complements or to general vocabulary, and studies in emotional competence or face recognition, for example, represent some of the most important of these research strands.

Many of them involve different groups of scholars with their specific approaches, methodologies, and theoretical aims and discussions.

Here, a first attempt has been made to tie these strands together into a coherent picture of development in the mental domain in the preschool years, combining measures and methods of different research fields and investigating one large sample of children, making it possible to analyze a variety of aspects simultaneously and in relation to each other.

In obtaining a collection of different linguistic and conceptual measures for a large cross-sectional sample in two different cultures, an extensive base of data could be gathered from which *a) a first comprehensive description of linguistic and conceptual development in the domain of the mind* was possible, and *b) commonalities and cultural differences* as well as *c) relationships between different linguistic and conceptual skills* could be tracked.

The approach taken is explorative in the sense that its focus was on developmental description and the data-grounded formulation of more comprehensive hypotheses about the roles of culture and language in conceptual development. The aim was not to test a few detailed hypotheses about specific aspects of German or Korean development or specific relationships of internal state language and the conceptual measures taken – although expectations were clearly formulated (see Chapter 3.1).

A quantitative and cross-sectional design with comparably large sample size was chosen to get a “bird’s eye view” that would simultaneously capture different aspects of the development of internal state language and internal state understanding, and by focusing on means and proportions across age groups, crystallize general steps and sequences of development beyond individual and cultural differences. These were complemented by closer assessments of qualitative differences between age groups and the two cultural samples.

This methodology resulted in a large descriptive base of steps and stages German and Korean children go through between 3 and 6 years to acquire and use linguistic means to express internal states and to conceptualize and reason about internal states like emotions and beliefs, comprising:

- *Common sequences* of linguistic and/or conceptual achievements
- *Ranges of individual differences* in the skills observed
- *Differences* between German and Korean children *that point to language- or culture specific influences* on development of certain words, constructions, concepts, or their use in specific tasks or situations
- *Connections between different skills* visible in correlations or stable sequences.

### **Overview of the dissertation**

The empirical study conducted and its results build the core part of this thesis.

Chapters 2.1–2.3 function as theoretical introduction, briefly summarizing relevant concepts, prior results, and open questions in the different research fields I am touching with my work.

Chapter 2.1 lays out prominent work and discussions on the scope and nature of differences between languages and cultures in their conceptualization and linguistic expression of mind and emotion. It also introduces the developing child in its cultural and social context, citing evidence from different fields that stresses the importance and influence of early socio-cultural interaction on children’s socialization of language, affect, and cognition.

Chapter 2.2 then sets the focus on the acquisition of an internal state language (ISL), providing a summary of research focusing on the lexicon and semantic categories, mental verbs and complementation, and ISL in language use.

Previous research about children's acquisition of a conceptual understanding of internal states, focusing on theory of mind and emotion concepts, is summarized in Chapter 2.3. The chapter also includes findings on relations between language and theory of mind as well as emotional development.

As a bridge to the main part of the thesis, Chapters 2.1–2.3 also briefly introduce what is known about German and Korean conceptualization and language of internal states, child-rearing and socialization, and on the development of theory of mind and emotion understanding in the two cultures.

Chapter 3.1 summarizes the design of the study and formulates the questions and hypotheses explored and tested in the empirical study. Details of the methodology are laid out in Chapter 3.2.

The results of the study are presented in Chapters 4.1–3.

Chapter 4.1 contains the developmental description and comparison of German and Korean ISL acquisition, in particular, of internal state (IS) words, IS verbs with complement clauses on different levels of complexity, and of the use of both of these in the narration of a socio-emotional picture story. The description and cultural comparison of developing theory of mind and emotion understanding are laid out in Chapter 4.2. Chapter 4.3, finally, holds the regression analyses of the relationships between internal state language and internal state understanding.

The findings are discussed in a broader view of related research in Chapters 5.1–5.3. At first, the commonalities found in German and Korean development of internal state language and understanding are discussed in Chapter 5.1. Chapter 5.2 holds a summary and discussion of the relationships of internal state language and theory of mind and emotion understanding. In Chapter 5.3, the discussion then turns to a review of the differences found between German and Korean children and the influence of culture on development.

The thesis concludes with a 'Conclusion & Outlook' on future research and implications for the field.

## 2.1 Entering the 'community of minds' I: The socio-cultural context of development

Despite children being active explorers, motivated learners, and growing by constructing their own concepts and representations of the world, all development takes place in a social and cultural environment and in meaningful interactions with close persons. Although many scholars often seem to disregard this fact in the study of cognitive development, it is important to take the socio-cultural context of development into account as it does not only provide the input for what the child seeks to make sense of and eventually processes and stores as content of her representations, but also constitutes the “destination” of her development – in the sense that all learning has just the competence of acting and interacting in a particular socio-cultural environment as its aim.

As a first step to tackling the question how children in the preschool years come to learn about and understand the mind—and mental states like feelings, desires, thoughts, knowledge, or beliefs—the first part of the chapter will therefore very briefly address cultural differences in conceptualizing the realm of the psyche and in structuring it with linguistic labels.

The second part will then be concerned with children’s cultural socialization and the role of interactions with caregivers and others for children’s linguistic and cognitive development.

### **Mind and emotion in different languages and cultures**

Conceptions of the mind or mental states usually have the function to make sense of human behavior, which means we ascribe mental states to other people as explanations for why they do what they do. Such ascriptions have been said to be part of a ‘folk psychology’, something like an everyday lay theory of the mind. In a widely discussed article, Lillard (1998) summarized evidence from anthropological research on the great variance in conceptions of the mind in different cultures, which stand in contrast to the typical belief-desire psychology endorsed in the West. Many such contrasts concern the boundaries of the concept for the psyche, encompassing or separating between parts and functions of mind, soul, and body. Others concern the extent to which mental states are referred to and seen as accountable for behavior.

Wide cultural differences have also been found in anthropological and psychological research on emotions, reporting and discussing, among many other aspects, the existence of culture-

specific emotions or the “hypo-“ or “hypercognition” of otherwise shared basic emotions (Lutz & White 1986, Mesquita & Frijda 1992).

A larger classification that has been made between the psychologies of different cultures is that between independent and interdependent person and self-concepts, which are taken to be the basis of wide-ranging psychological differences in cognition, emotion, and motivation (Markus & Kitayama 1991). The origins of this distinction in cross-cultural psychology come from comparisons of East Asia and the West, and have been repeatedly addressed and confirmed for these specific cultures. Varnum et al. (2010), in a review of about one decade of empirical research on cultural differences in cognition, interpret their origin to lie in different patterns of social orientation, which is an alternative view to that of contrasting self-concepts. Table 2.1.01 provides a copy of their summary of characteristics of independent and interdependent orientations in different psychological domains.

These social orientations and psychological distinctions for the larger Western and East Asian cultures should accordingly also hold for the particular cultures of Germany and Korea.

Table 2.1.01 *Independent versus interdependent social orientation patterns*

Domain	Independent social orientation	Interdependent social orientation
Values & beliefs	Individualism Autonomy	Collectivism Harmony
Self	Independent self-construal Personal social identity Self as bounded	Interdependent self-construal Relational social identity Self as overlapping with close others
Emotions	Higher propensity of socially disengaging emotions Happiness as a disengaging emotion	Higher propensity of socially engaging emotions Happiness as an engaging emotion
Motivation	Individual achievement Self-enhancement Ego-inflation	Achievement for in-group Self-criticism Self-other interconnection

*Source:* Reproduced from Table 2, p. 10. Varnum, M. E. W., Grossmann, I., Kitayama, S., & Nisbett, R. E. (2010). The origin of cultural differences in cognition: the social orientation hypothesis. *Current Directions in Psychological Science*, 19, 9–13.

In addition, some Korean scholars have attempted to formulate an ‘indigenous psychology’ for the Korean people, called *Shimjeng* psychology (lit. ‘affection of heart’) (Choi & Kim 2002, Choi, Han, & Kim 2007). Key concepts in this psychology, but also in Korean public discourse, are *Jeng*—the feeling of intersubjective relationship, *Han*—an emotional residue of tragic life events that invokes empathy and shared lamentation, which in turn foster *Jeng* again, and “we-ness”—encompassing conceptions of the relationships and groups one belongs to, which are activated in respective interactive contexts.

Concerning the language of mind and emotion in cross-cultural perspective, the most extensive studies in this domain have been done by Wierzbicka and colleagues (Wierzbicka 1999, Harkins & Wierzbicka 2001, Goddard 2006).

They found lexical items for the meanings of WANT, FEEL, SAY, KNOW, and THINK in all languages they studied, proposing that these are universal semantic primitives (Wierzbicka 1996, 1999). At the same time, they emphasize the cultural specificity of concepts expressed in words for mind and emotions, attempting to formulate, by means of semantic primitives, the ‘cultural scripts’ that are expressed in their uses.

Wierzbicka (1999) describes the interrelations of language, culture, and emotions like this:

“Emotion words” such as *anger* reflect, and pass on, certain cultural models; and these models, in turn, reflect and pass on values, preoccupations, and frames of reference of the society (or speech community) within which they have evolved. They reflect its “habits of the heart” (Bellah et al. 1985) and the concomitant “habits of the mind”. ... Naturally it is not only the lexicon which provides clues to the “emotional universe of a culture”. Grammar does too, as do phraseology, discourse structure, gestures, intonation, interjections, swear-words, forms of address, culture-specific facial expressions and bodily postures, gestures, and so on. ... We also need to study different cultures’ “cultural scripts”, which implicitly (and sometimes explicitly) tell people what to feel, and what not to feel, and what to say and do, or not say and do, when they feel something. (pp. 32–34)

In view of the grammar of emotions, she looks at the constructions, in which emotional meanings are packaged cross-linguistically, emphasizing how these express different construals of experience. English, for example, predominantly uses adjectives and quasi-participles (*happy, surprised*), which present emotions as states.

German also uses predominantly adjectives, but also some predicate nouns (*Angst haben* (‘have fear’)) and reflexive verbs (*sich ärgern* (‘get angry’), *sich schämen* (‘be ashamed’)).

In Korean, all emotion predicates come as verbs, which can be distinguished between stative verbs (*sulphuta* (‘sad’)), active verbs (*nollata* (‘be/get surprised’)), and such that are combinations of Sino-Korean nouns and auxiliary *-hata* (*kekcenghata* (‘worry’)).

A few peculiarities in the Korean grammar of mind and emotion pertain to the reluctance to directly express another’s feelings and thoughts. The topic particle, for example, can, when combined with an internal state predicate, only be used with a first person subject. Moreover, many stative verbs of internal state have an alternate verb form to be used with persons other than the self. The verb *sulphuta* (‘sad’) would, for example, be replaced by *sulphe-ha-ta*, which extends the stem with *ha-* (‘do’). Literally taken, Koreans would not dare to say that someone else “is” sad, but that he or she “does” sad, foregrounding and interpreting the person’s actions and expressions.

## Cultural socialization of language, affect, and cognition

All cultural groups foster particular characteristics that are deemed advantageous or essential to their members, and all cultural groups stint other characteristics as inappropriate or detrimental to adequate functioning within the group. Cross-cultural studies show that culture shapes parenting by providing models of childrearing that include which parenting cognitions and practices are acceptable, normative, or optimal vis-à-vis when and how to care for children and what traits in children are desirable and to be encouraged or undesirable and to be discouraged. (Bornstein & Lansford 2009: 259)

By means of culturally shaped child-rearing beliefs and practices, the motivational and emotional values and beliefs of a specific social orientation of a community are passed on to children. This process takes place in the affective communicative exchanges of mothers and infants, then in the interactions, emotional and norm-related talk in the family, and later in the context of preschools and kindergartens.

In the same interactional contexts, children are socialized in language, affect, and cognition both at the same time and in mutual relations (Schieffelin & Ochs 1986, Clancy 1999, Nelson 1996). Cultural differences in interactive exchanges of children and their mothers have, for example, been described for American and Chinese mother-child reminiscing of emotional events (Fivush & Wang 2005, Wang & Fivush 2005). Burdelski and Mitsuhashi (2010) describe in detail the processes of affect socialization in a Japanese preschool.

While such close studies of talk and practices for German and Korean socialization-through-language are missing, general differences in educational styles and norms of both cultures are laid out in Mo (2006). In most respects, these pertain to contrasts in values and norms of independence and interdependence. In addition, stronger hierarchical and control-based relationships between Korean children and their mothers and teachers are described, which are related to the Confucianist tradition, which has had a strong influence on Korean culture. Questionnaire studies with Korean mothers concerning their socialization goals for social skills moreover show that they emphasize helping and sharing behaviors as desirable and endorse modeling rather than direct teaching as socialization strategy (Park & Cheah 2005).

In view of the extensive research that has accrued on cultural variation in the conceptualization and linguistic structuring of the domains of mind and emotion as well as in the practices of child-rearing and the implicit and explicit instruction of children in conventionalized language, norms, and concepts, it is mandatory that any meaningful investigation of children's developing understanding of the psychological realm takes the socio-cultural context into account. The present study attempts to fill a gap by providing comparative data of two languages and cultures in a single study, and by shifting the focus of

what has been studied in the external socialization practices of different cultures to the corresponding internal representations and skills in children's cognitive development.

## 2.2 Entering the 'community of minds' II: Acquisition of an internal state language (ISL)

The following chapter gives a short overview of research on the development of internal state language (ISL), with a focus on the acquisition of a lexicon for internal states of different semantic categories, on the acquisition of mental verbs and complement clause constructions, and on children's use of ISL in everyday discourse.

### **Acquiring a lexicon for internal states**

Children's developing internal state (IS) lexicon was first the primary topic of an investigation in 1982 by Bretherton and Beeghly, where ISL was of interest as a window on toddlers' emerging "explicit theory of mind" (Bretherton & Beeghly 1982). Bretherton and Beeghly used parent reports to study the productive internal state words of toddlers at 28 months of age, and interviewed the mothers of these children about their child's use of IS words with reference to self and others, and with 'decontextualization' – meaning negations, questions, or past or future tense markings that show the child's use of a word beyond the immediate situational context. The parent report measure Bretherton and Beeghly used was a checklist of 78 words they had identified in a previous study as being used by young children (Bretherton et al. 1981). Mothers checked those items that their child was already producing and, for each, entered an actual utterance made by their child using the respective term. The items were grouped into six semantic categories:

- Perception (sight, hearing, taste, smell, skin senses incl. touch, pain, temperature)
- Physiology (hunger, thirst, states of consciousness)
- Positive & negative affect (joy, surprise, love, kindness, distress, disgust, anger, fear)
- Volition & ability (desire, need, ability to do sth. difficult)
- Cognition (knowledge, memory, uncertainty, dreaming, reality vs. pretending)
- Moral judgment & obligation (moral conformity or transgression, permission and obligation)

Combining the findings of their 1981 and 1982 studies, the authors conclude that ISL starts to emerge late in the 2<sup>nd</sup> year and makes a rapid spurt during the 3<sup>rd</sup> year. This picture is complemented by the finding of Beeghly et al. (1986) that the references to internal states in

mothers' speech to their children increases during the 2<sup>nd</sup> year, possibly contributing to the onset in children's vocabulary, and is frequent and stable during the 3<sup>rd</sup> year, when the child's IS vocabulary is expanding.

In the development of the different semantic categories, Bretherton and Beeghly (1982) find an advantage for the groups of volition, physiology, and perception, of which individual children produced the highest percentages of the listed words (64–69%); in comparison, means of 44–46% of the words for affect and moral judgment and obligation were produced by the children, while they were only producing 29% in mean of the listed cognition words. The same differences between the semantic categories held for the use of terms with different referents (self and other) and in 'decontextualization'. A noteworthy observation of their study was, moreover, the huge range of individual differences found in the ISL of the toddlers.

Most studies on the IS lexicon after Bretherton and Beeghly (1982) have also had toddlers in their second and third year of life as their subjects, describing the earliest emergence of IS word production and the development of words of different semantic sub-domains and their comparative frequencies.

Toth-Sadjadi (1993), for example, studied the production of IS words of linguistically precocious toddlers and compared them to the findings of Bretherton and Beeghly (1982). She concluded from her findings that the dominance of terms for volition and ability found for 28-month-olds is the result of a strong increase of such terms, especially *want* and *can*, in the months before. Kauschke and Klann-Delius (1997), in a longitudinal study of German children's productions in laboratory observations with their mothers, describe a development for younger toddlers from the primary use of terms for physiology and perceptions to a high increase in use of terms for volition and ability.

Bartsch and Wellman (1995) studied data from the CHILDES archive, focusing on expressions for desires and mental states, and found substantial changes in children's productions from these two categories between age 2 and 5, which they interpreted as a shift from a desire psychology to a belief-desire reasoning.

A later study by Tardif & Wellman (2000) on desire and belief term uses of Mandarin- and Cantonese-speaking children further corroborated the hypothesis of Wellman and colleagues that young children's desire verb uses consistently precede their belief verb uses.

In summary, the major finding that all of the mentioned studies have in common is that children start from denoting physical and perceptual states during their second year, add

desires and a few basic emotion words during their third year, and don't use genuinely cognitive or mental terms before their third birthday or even later.

Where further research is still missing, is on the detailed developmental sequences of IS vocabulary in the affective and moral categories, especially in cross-linguistic comparison, as their developmental patterning and trajectory might be more prone to cultural and/or linguistic differences than the physiology–desire–cognition sequence. Moreover, the further developments of the whole range of semantic categories after age 3 is still largely unknown, as most research focuses on single domains like mental state terms (i.e. cognition words) or emotion words only.

### **Mental verbs and complements**

As reported in the studies on the IS lexicon, words for mental states and cognition are among the last ones emerging in children's IS vocabulary. This is often attributed to their lack of any perceptual correlates or of clear corresponding situational or behavioral scripts, which makes it hard for children to grasp their meaning from the discourse contexts in which they appear and, in consequence, to make use of them (Papafragou et al. 2007).

A special focus in developmental research on internal state language has been laid on the acquisition of mental verbs, their meaning, and the syntactic constructions in which they appear, in particular, the fact that they can govern an embedded complement clause.

The first mental verbs have been reported to appear in English-speaking children's productive language around 2 ½ years of age (Bretherton & Beeghly 1982, Shatz et al. 1983, Diessel 2004), the first and most frequent being *know*, *think*, *forget*, and *remember*.

Yet, early uses are often constrained to very specific contexts, and serve primarily conversational functions rather than the reference to mental state (Shatz et al. 1983, Bartsch & Wellman 1995). The uses of cognition terms in the 28-month-old sample of Bretherton and Beeghly (1982) were also quite restricted. *Know*, for example, which was reported to be produced by 66% of the children, was almost exclusively used in the formula "don't know"; other items, like *real*, were used in very specific contexts only, in this case, for monsters.

Bartsch & Wellman (1995), in their comprehensive study of longitudinal CHILDES data, also note that pragmatic and conversational uses of mental verbs precede "genuine" ones. They find the first utterances of genuine reference to mental state for both *know* and *think* with 3 years and then increasing over age. Moreover, children's uses of the terms in contrastive

sentences further supports the interpretation that these examples display at least a preliminary grasp of mental concepts before age 4 that gets fostered thereafter.

Comprehension experiments testing children's ability to differentiate the meanings of *know*, *think*, and *sure* or *guess* have shown that English-speaking children are not able to make such differentiations before age 4 or 5 (Moore et al. 1989, Moore & Davidge 1989, Johnson & Maratsos 1977). The ability to differentiate the meanings of mental state verbs for different degrees of certainty at age four and later, therefore, directly matches in time with the period proposed for children's development of a theory of mind and their ability to pass false-belief tasks (see Chapter 2.3).

In view of the evidence, the early production of mental state predicates, seems to follow what has been called "use before meaning", i.e., the phenomenon for words denoting abstract concepts like time or mental state to be produced before they are actually comprehended in the adult sense (Nelson 1996, Astington & Peskin 2004). On this account, children start out with a concrete and context-bound "private" representation of the term's meaning, which through repeated use, reactions and elaborations of the caregiver on the child's productions, as well as through repeated encounters of its uses by others in different contexts, becomes gradually aligned with the "shared" meaning conventionalized in the linguistic community. This process is supposed to be stepwise and take many months, or years, especially, when the words are not very frequent.

The description of "use before meaning", although matching well with the data on mental verb acquisition, has not received much attention in research on lexicon acquisition or in the psychological attempts to "read" children's conceptual understanding from their language use. The present study, therefore, tries to include this perspective in the study of children's uses of mental verbs and other words of cognition and evidentiality and in their changes over age.

Besides these empirical and theoretical accounts on children's production and meaning acquisition of mental verbs, other research in language acquisition has set its focus on the syntax around mental verbs, especially their occurrence as matrix verbs of embedded complement clauses.

They have been of interest, because they pose a new challenge in the acquisition of complex syntax, but also, and even more prominently, in relation with the development of a theory of mind (see Chapter 2.3).

This is because complement clause constructions are an important linguistic resource for the expression of internal states in a complex structure that contains both the representation of the

experiencer and type of internal state (in the form of the matrix clause) and the representation of the propositional content of the internal state (in the embedded clause). Like this, two representations are held and presented simultaneously, in a combined structure.

In this construction, the matrix clause containing the mental predicate and the embedded clause containing the content proposition can have a different truth value. For example, the sentence

Peter thinks [that Sarah's car is red]

can be true even if the proposition in the complement clause is false, e.g. the car is green.

Language acquisition research on the development of complement clause constructions in English has shown that children acquire this structure first with a few highly frequent verbs, before they are able to generalize it to uses with other verbs (Bloom et al. 1989, Kidd et al. 2006, Kidd 2006).

The most comprehensive description of English-speaking children's developing production of complement clauses with mental verbs has been published by Diessel (2004). In thorough analyses of data from the CHILDES archive, he found that their structural and semantic properties undergo a great change over the preschool years. At first, the majority of children's matrix clauses can better be interpreted as formulaic markers on the complement clauses, which are the 'true' main clauses of the construction, since the formulaic matrix clause can easily be omitted without altering the meaning of the utterance. Only around age 4, assertive uses start emerging, in which the matrix clause is assigned its own profile, which is integral to the meaning of the utterance as a complex construction relating two states of affairs.

Comparable research on the acquisition of complement clause constructions in other languages is still lacking. Besides providing new data on the acquisition of complement clauses with 'know' and 'think' in German and Korean, the present analyses and discussion also view the acquisition of structures and verb meanings in their interrelationships.

### **Children's use of ISL**

Studies of toddlers' and preschoolers' conversations and talk in the family suggest that young children already engage in a variety of interactions accompanied by talk about emotions and feeling states, where they use and practice their first emotion words, and many other predications and evaluators with affective connotations (Dunn 1987, Wellman et al. 1995).

Mental state words, on the other hand, account only for very small proportions of young children's productions in everyday interactions (Bartsch & Wellman 1995).

Because children's ISL productions are often hard to interpret in terms of the conceptual representation children employ when using such words, researchers have often focused on uses in causal or contrastive relations, which allow a clear judgment of the child using the respective term with reference to a mental state, instead of relating it only to overt situations and expressions in the case of emotion terms, or of merely using it with conversational functions in the case of mental state terms (Wellman et al. 1995, Bartsch & Wellman 1995). However, these "clear" uses are only a smaller proportion of children's overall uses of internal state words. To become able to understand what children really understand about the internal states denoted by the words they are using, their language and concepts need to be assessed concurrently and analyzed in their mutual relationships, which is one of the aims of the present study.

### 2.3 Entering the 'community of minds' III: Development of a conceptual understanding of internal states (ISU)

The third part of children's 'entering a community of minds' to look at is the development of a conceptual understanding of internal states. This includes the development of concepts of persons and the minds behind actions, of understanding how mental states relate to what people do, how mental states of different people can differ concerning the same state of affairs, and the understanding of specific kinds of mental states like desires, intentions, emotions, knowledge, or beliefs. Two fields of research are of particular interest for the present study — the prominent field of children's acquisition of a 'theory of mind' (ToM), and research concerning the development of concepts and an understanding of emotions in preschoolers. In addition, what is known about the interaction of each of these two developments with language is briefly summarized.

#### **Theory of mind (ToM) research**

Research on children's 'theory of mind' (ToM) has become a prominent field in developmental psychology since the naming of and first studies on this concept in the 1980's (Premack & Woodruff 1978, Wimmer & Perner 1983, Perner, Leekam & Wimmer 1987).

From early on, two aspects of this research were especially influential: first, the development of experimental tasks focusing on children's understanding of false beliefs, second, the robust

finding across the majority of studies that the age of 4 marks the crucial time point when children begin to pass these tasks, which they consistently fail even a few months before.

In the first format of classical false-belief tasks, children watch a little story acted out with dolls or other toys, in which one character puts a desired item in one location, leaves the scene, and a second character switches the location of the item in his/her absence. When the character returns to the scene, children have to predict where s/he will search for the item. Older children aged 4 and above rightly respond that the character will search in the location where he left the item, whereas younger children usually respond that s/he will search in the actual location, which is only known to the child, and thus fail to show the ability to take the character's perspective. Further formats of false-belief tasks use deceptive containers, i.e., a familiar container of sweets or everyday utensils that contains unexpected items like pencils in a chocolate box or similar. In these tasks, children are asked about their own beliefs about the content of the container before they had opened it and/or about what someone else will think is in the container when only seen from outside. The third classical format concerns the appearance–reality distinction, and uses deceptive objects that, e.g., look like a rock, but are really a sponge, asking the same types of questions that assess the child's understanding of her own and others' false beliefs when first encountering the object.

Theoretical discussions in the field centered around whether the final acquisition of ToM is due to a 'theory' that children develop about minds, analogous to scientific theories, (the 'theory-theory'; Gopnik & Wellman 1994), belongs to a separate, domain-specific mind-reading module (the ToMM; Leslie 1988), or is an understanding reached by projecting their own internal states upon others (the simulation theory; Harris 1992). Against the former two conceptions and with some overlap with Harris's view, Katherine Nelson put forth her understanding of children "entering a community of minds" (Nelson et al. 2003, Nelson 2005) that has been mentioned in the introduction.

Although theoretical explanations of 'theory of mind' usually describe it as encompassing the understanding of other internal states like desires and emotions, understanding of these was studied less widely, and often in different research contexts, so that the term 'theory of mind' became almost synonymous to 'false-belief understanding'.

The account that children before their 4<sup>th</sup> birthday lack the ability of mental perspective taking has been challenged by many scholars who tried to introduce variations into the false-belief tasks that reduce their difficulty and help children succeed on these tasks at younger ages. Such variations included, e.g., presenting the task in form of a picture book narrative which is

repeated and trained before posing the test question (Lewis et al. 1994), involving children in a game of actively deceiving someone (Chandler et al. 1989), or including more indexical references in the story and test questions (Abu-Akel & Bailey 2001).

However, in a meta-analysis in (2001), Wellman and colleagues could collect evidence that the age of 4 plus minus a few months does in fact mark an important development or turning point in children's understanding of others' beliefs.

More recently, a new line of studies with nonverbal methodologies of assessing attention and/or expectations towards false-belief related behavior, could show such competencies in 2-year-old toddlers and also infants of only 15–18 months of age (Clements & Perner 1994, Onishi & Baillargeon 2005, Scott & Baillargeon 2009). These results have raised the questions about the onset and nature of children's theory of mind in general, and false-belief understanding in particular, anew, and the debate is still hot (Low & Wang 2011, de Bruin et al. 2011, Zawidzki 2011, Baillargeon et al. 2010).

#### *Theory of mind development in cross-cultural comparison*

Besides the relationship of ToM performance with the specific format of its assessment, of special interest for the present study is what is known about theory of mind development and children's performance on false-belief tasks in other cultures, especially those with other folk psychologies than the Western one.

Most of the studies by Perner and colleagues have been conducted in German with children from Austria. As these laid the ground for the research field and matched with the results from English-speaking children, children from Germany should be expected to follow the same development. Indeed, Kristen et al. (2006) have recently replicated a scaling study of Wellman and Liu (2004) of different ToM tasks with German children and found similar results.

Outside the English-speaking world, ToM has frequently been tested with Chinese children. Liu et al. (2008), in their meta-analysis of theory of mind development in Chinese children, compared the results of studies with children from mainland China and Hong Kong with such from the US and Canada. They found that, while children in all cultures developed from below-chance to above-chance performance, the timetables in which they made this transition differed considerably, with Canadian children surpassing chance level at 38 months, US and mainland Chinese children almost simultaneously in the middle, and Hong Kong children only at 64 months.

Korean children were tested on theory of mind in a study by Oh and Lewis (2008) on relationships of false-belief understanding and inhibitory control. In the first experiment reported, no difference was found in false-belief performance between 3- and 4-year-old Korean children, contrary to Western children that show the typical increase around age 4; in the second experiment, that included a greater age range, Korean children first performed above chance at 4.5-years old, at the same time as the concurrently tested English children.

Of studies published in Korean journals, Ghim (2004) found that Korean 3-year-olds performed below, 4-year-olds at, and 5-year-olds above chance in a false-belief task about unexpected contents and a related false-belief emotion question. Similar results were obtained for a battery of different false-belief tasks in Shin (2005) and for theory-of-mind compound scores in Park et al. (2008).

Callaghan et al. (2005) report data from 5 cultures (Canada, India, Peru, Samoa, and Thailand) using an active-deception type false-belief task. Children in all 5 countries show clear improvements with age and above-chance performance after the 5<sup>th</sup> birthday. Yet, the authors' conclusion that the onset of theory of mind develops in synchrony is not supported. They made, for example, no statistical comparisons between the single cultures, and from their summarizing line chart one can see that while Indian children are 50% correct from approximately 48 months, Samoan children do not reach this level before 60 months of age.

The conclusion by Liu et al. (2008) that theory of mind develops along different timetables in different locales, influenced by a yet unknown bundle of sociocultural and linguistic factors, seems more plausible in this view.

Few studies have been conducted on theory of mind in children from non-Western cultural groups of low modernization that have no literacy or a minimal amount of schooling in a colonial language (Avis & Harris 1991, Vinden 1996, 1999) – with differing results. While the first study by Avis and Harris (1991) with Baka children in Cameroon suggested that ascriptions of desire and beliefs to predict actions and emotions are possibly universals, since the 5-year-old children of the hunter-gatherer society they studied showed a similar performance to Western children, the cultural groups studied by Vinden performed quite differently. Schooled children of the Mofu in Cameroon and Tolai children of Papua New Guinea performed above chance from about 7 years of age both on false belief questions about where someone will look and where someone thinks that an item is; non-schooled Mofu children and children of the Tainae in Papua New Guinea correctly answered the 'look'-question from around age 8, but not the 'think'-question; and none of the groups seemed to reach consistent performance on questions where an emotion has to be predicted from a false

belief (Vinden 1999). Junín Quechua children aged 4–8 showed a clear understanding of the appearance–reality distinction, but had extreme difficulty with false belief and did not improve over age (Vinden 1996).

Taken together, it seems that the timetable of ToM performance is to some degree culture specific. The present study explores the extent of cultural differences in timing and sequence of performance on different ToM test questions further and discusses possible reasons for the patterns found.

### **Theory of mind (ToM) and language in development**

A major theme and puzzle in research on children’s theory of mind is its strong and most probably causal connection to language, as it has been corroborated by longitudinal studies (Astington & Jenkins 1999, Ruffman et al. 2003).

An issue that has not been solved up to the present moment is what aspects of language are accountable for the crucial contribution to the development of a theory of mind, although many studies have tried to probe these, comparing, for example, general measures of language development with measures of syntax or semantics (Ruffman et al. 2003). A meta-analysis of Milligan et al. (2007) could, on the one hand, confirm that moderate to strong relationships of language and theory of mind persist over different measures and studies. However, the strongest links in their analysis were seen between general language competence and theory of mind, which again leaves the question open about how exactly this contribution might look like.

Specific accounts have discussed the role of mental verb semantics; of the syntax of sentential complementation; or of communicative discourse and exchanges in which children learn about differing perspectives. The details of the perspectives and arguments put forth by the proponents of these differing accounts are summarized in the volume of Astington and Baird (2005), which grew out of a seminal conference on the topic.

In a training study with German children, positive influences of both representation-shifting discourse and complementation syntax have been found with theory of mind (Lohmann & Tomasello 2003). These results show that language–ToM relationships exist also for German-speaking children. Moreover, they suggest that a combination of factors, rather than a single one might account for the contributions of language to ToM cognition.

Although many new studies are recently being published on the topic, especially from a variety of other European or non-European languages (Cheung et al. 2009, Ornaghi et al. 2011, Rakhlin et al. 2011, Ng et al. 2010), the evidence stays controversial and a detailed

cross-linguistic review of the findings is still lacking. Moreover, most of the mentioned studies pick out a single factor of language and do not discuss the linguistic peculiarities and the nature of possible relationships in sufficient detail.

In the present study, a detailed assessment of language acquisition precedes and informs the exploration of relationships between different specific aspects of language and children's performance in theory of mind tasks.

### **Emotion concept development**

When asking about how children acquire an understanding of psychological states of themselves and others, this not only entails the understanding of belief or knowledge states, but also the development of concepts of specific emotions that people can have, along with the scripts of causes, expressions, and behaviors that relate to these. Although a few studies exist that combine assessments of theory of mind and emotion understanding, the latter has mostly been studied in a separate field of investigation.

Research on children's emotion development has been concerned with a variety of different aspects of emotional understanding and skills, but often focusing only on one element at a time (Pons et al. 2004).

Important topics studied with children in the preschool years are the recognition of facial expressions of emotions and the understanding of situational causes of emotions. Most often, research focused on the basic emotions happiness, sadness, anger, and fear; sometimes surprise has been studied as well.

One task that is frequently used tests children's ability to recognize and name emotions from facial expressions presented in pictures (Cutting & Dunn 1999, Denham 1986, Dunn et al. 1991). This ability seems to begin between age 3 and 4.

Another frequent assessment for preschoolers' emotion understanding involves the prediction of emotions of protagonists in short story vignettes or depicted scenes from the situational context (Cutting & Dunn 1999, Denham 1986, Borke 1971). This understanding seems to emerge around the same age as facial recognition.

Other studies have used interview techniques to tap different aspects of children's emotional experience and understanding simultaneously (Cassidy et al. 1992, Stein et al. 1993, 2000), including their strategies of expression, reaction, or regulation. These methodologies have the advantage that they allow a more comprehensive look on children's developing emotion concepts than the focus on pre-selected single skills.

Development and skills of emotion understanding of German children in the preschool years are similar to those of English-speaking children (Janke 2002).

As for Korean children, a study by Park (2004) addressed 3- to 6-year-olds' ability to infer emotions from short story vignettes of dyadic communications and of such involving three persons. Children showed understanding skills that further increased with age, and older children began mastering the tasks about three persons' discourse and relationships. Since this task format is quite different from those used in the Western studies, which are aimed at internal basic emotions, no preliminary comparisons can be made at this point.

The social dimension of emotions, which is often disregarded in the existent research on emotion understanding in children, and also on emotion in adults, seems, in view of the cultural difference, for example, between independent and interdependent social orientations and person concepts, to be a promising topic for cross-cultural developmental assessment and has been included as an additional focus in the present study.

### **Language and emotional development**

In their study on the developing IS lexicon, Bretherton and Beeghly (1982) had also included a measure of children's ability to identify facial expressions of basic emotions in their investigation of the early IS lexicon. They found a positive correlation between the productive internal state vocabulary of 2-year-olds and their ability to select the facial expression matching an emotion label.

Similar relationships have been found between general language skills and emotion understanding across different components for preschool and school-age children (Pons et al. 2003).

Further studies have found influences of children's engagement in discourse and communication about emotions and mental states with their mothers, in the family, or among peers on their developing emotion understanding (Hughes & Dunn 1998, Taumoepeau & Ruffman 2008).

Although these findings suggest a developmental interaction of language acquisition and children's emotional understanding, as with theory of mind, the exact details of this relationship are yet to be understood.

In the present study, the same variables of language that are explored in their relationships with theory of mind are analyzed in their connections to children's emotion understanding.

### 3.1 Study outline, questions, and hypotheses

#### Outline of the empirical study

The study was designed in such a way as to allow the quantitative and qualitative description and exploration of a large base of data on children's productive internal state language (ISL) and developing understanding of internal states over the age period from 3 to 6 years in comparison of two different cultures.

Major research questions to address were:

- In which steps do children between 3 and 6 years of age develop a linguistic repertoire for the expression and communication of internal states?
- How do they develop a conceptual grasp of such states in self and others during the same period?
- Are there systematic cultural and linguistic commonalities or differences in development that would point to related universals or specific influences?
- Can the acquisition of internal state language be found to play a special role for the development of internal state concepts and understanding?  
May it be a 'mediator' of cultural or individual differences?

Germany and Korea were chosen as target cultures to conduct the study. For both languages/cultures such close developmental descriptions, especially for ISL, were missing and comparative data on two languages other than English would be an important new resource for the field. Moreover, this particular combination seemed a very fruitful and interesting ground for the exploration of linguistic and cultural differences and possible universals, (*a*) because the languages are from different families and have contrasting typological profiles—with German as an Indo-European, inflectional language with dominant SVO word order and Korean as an Altaic, agglutinating language with strict SOV word order, (*b*) show differences in ISL that were worth exploring (see Chapter 2.1), and (*c*) the cultures allowed a comparison of child development between an individualist/independent and a collectivist/interdependent culture of comparable degrees of economic development, thus avoiding difficulties in the interpretation of the results that would, for example, apply to comparisons of industrialized with hunter-gatherer societies.

A cross-sectional design with sample sizes of 60 children per language/culture was chosen to be able to assess differences between three age groups from 3 to 6 years from a high enough number of children per group to allow meaningful quantitative analyses.

Both ISL and understanding of internal states were to be investigated through multiple measures that would complement each other in the information provided on ISL and internal state understanding (see detailed descriptions in the method section in Chapter 3.2). For ISL, measures were obtained for children's lexicon for internal state terms comprising a list of different semantic subgroups, for syntactic constructions of IS verbs with sentential complements, and for the use of these resources in a picture book narration. Understanding of internal states was assessed in the form of children's theory of mind (ToM) and emotion concepts. It was deemed important to include also other methods besides the controversially discussed classical ToM tasks (see Chapter 2.3) and to cover emotional and social understanding in a greater breadth, in addition to the cognitive perspective taking measured by ToM tasks.

The resulting design of the study is summarized in Figure 3.1.01, showing the participant groups and measures to be compared together with the three research foci:

- A Development of internal state language (ISL), theory of mind and emotion concepts from 3 to 6 – comparing groups of 3-, 4- and 5-year-olds
- B Cultural and linguistic comparison of development of ISL and IS understanding between German and Korean children
- C Relationships between ISL (turquoise) and theory of mind and emotion concepts (light blue), i.e., between language and conceptual development, for the whole sample and for both cultures separately

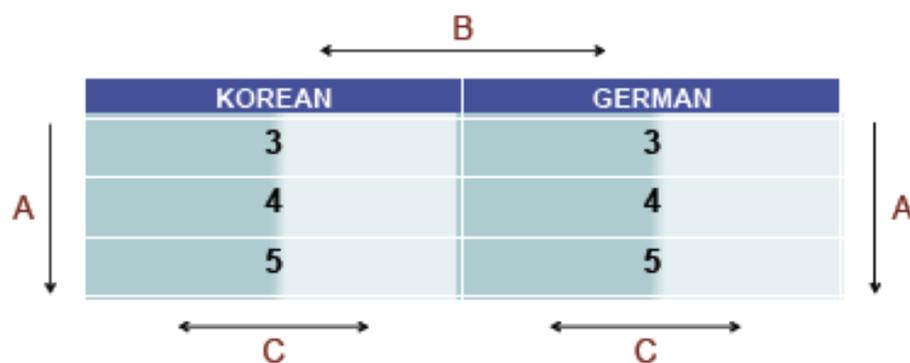


Fig. 3.1.01 Basic design and research foci of the empirical study

## Questions and hypotheses

In the following, the specific research questions and hypotheses for the single parts of investigation are described in more detail.

To be able to connect the results to prior findings and research on the topic, the first major focus to be set on analyses of ISL acquisition was on the developmental sequence and patterning of semantic categories of productive IS vocabulary. In addition to semantic categories used in prior studies (e.g., Bretherton & Beeghly 1982), new categories related to socio-emotional states and experiences were included (see Chapter 3.2 for a complete list and description).

Questions guiding the investigations were:

- How does IS vocabulary development go on after the third birthday, during the time period when a theory of mind is classically said to be acquired? What is the role of items from the categories COGNITION and REALITY & EVIDENTIALITY in the development of the IS lexicon in that age period?
- Can the acquisitional sequence PHYSIOLOGY < DESIRE < COGNITION vocabulary found by previous research be replicated for German and Korean children?
- What can we say about the development of other semantic groups, especially such related to emotional and socio-emotional experience (e.g., emotion, morality/obligation, or social emotions)? Is there also a common sequence to the lexicon acquisition of these groups?

It was hypothesized that the previously found developmental sequence from PHYSIOLOGY over DESIRE to COGNITION would also commonly be found in both languages.

It was further hypothesized that differences between German and Korean IS lexicon acquisition would be confined to the remaining groups – EMOTION, MORALITY & NORMS, SOCIAL FEELINGS & RELATIONSHIPS – which were thought to be more prone to cultural variation and influence.

The second analytical focus on ISL was on internal state verbs and the acquisition of sentential complement constructions with these. These constructions are not only of special importance as linguistic resource to express mental states together with their conceptual content, but also in their possible connection to the acquisition of theory of mind (ToM), which has been a controversial topic of discussion in the field (see Chapter 2.3).

Research questions here are:

- When and in which steps are IS verbs with complement clauses acquired? Is there an acquisitional sequence for complement clauses to appear with certain verbs before others?

- Does the use of mental verbs and complements shift from a primary use as discourse markers to more genuine reference to mental state supporting the hypothesis of “use before meaning”?
- What do children’s uses of mental verbs and complements show about their representation of the concepts denoted by terms such as THINK and KNOW?

It was hypothesized that acquisition would reflect differences in the semantics of these verbs and in the difficulty of understanding the mental concepts denoted, such that complement clauses would appear first with WANT and SAY, before being used with the more abstract mental verbs KNOW and THINK.

It was also expected to see more conversational uses of mental verbs and complements in younger children and an increase of mental reference with age in both German and Korean. No predictions could be made about possible differences between German and Korean acquisition, since research on these verbs and constructions is very rare for both languages.

As a third focus on ISL in acquisition, the frequency and patterning of children’s use of both lexical and structural means for IS expression was to be assessed in comparable samples of natural language. This was achieved by eliciting children’s narrations of a wordless picture book with socio-emotional story content.

Research questions concerned the quantity and frequency of ISL compared to descriptive language of external states and affairs, of lexical items of the different semantic groups, and of IS verbs with complement clauses.

It was hypothesized that overall ISL use would increase with age, as would the use of words referring to cognitive states and processes, reality and evidentiality, and of mental verbs and embedded complement clauses.

This trend should be visible both for German and Korean children.

As for productive vocabulary, differences between German and Korean were expected in the relative frequencies of ISL from different semantic categories, especially in the “culturally sensitive” categories of EMOTION, MORALITY & NORMS, and SOCIAL FEELINGS & RELATIONSHIPS.

To investigate children’s developing internal state understanding, two central concepts were concentrated on.

The first concept of interest was children’s development of a theory of mind (ToM), as studied in the respective research tradition.

- Can the classically reported age of mastering false-belief tasks be substantiated for German and Korean children as well?
- In a battery of different ToM measures —including desire-(belief-)emotion, knowledge/ignorance, and different false-belief tasks— is there a common sequence of passing the tests?  
If so, what is the sequence of acquiring understanding and perspective taking skills for different mental states?

It was assumed that less “cognitive” and less complex tasks, i.e. the test questions around desires and emotion reactions, would be easier and thus passed at an earlier age than questions about knowledge/ignorance, which in turn would be passed earlier than more complex belief-focused tasks requiring the child to hold two different representations of a situation simultaneously in mind to be able to make a correct judgment.

This order of acquisition was expected for both German and Korean children.

Cultural differences, if any, were expected only for the rate of acquisition, as differences in the timecourse of theory of mind development have been reported for different cultures and countries (see Chapter 2.3).

The second focus was set on children’s emotion concepts. This additional measure and perspective was included to complement the assessment of internal state understanding of classical ToM tasks, focusing on children’s understanding of their own socio-emotional experiences.

Investigations concerned understanding of the basic emotions HAPPINESS, SADNESS, and ANGER, comprising different conceptual accomplishments like recognition and labeling of facial expressions as well as recall and naming of situational causes and reaction, expression, and regulation strategies, testing understanding related to both emotions of the self and of significant others like family members or friends. These were assessed through a structured Emotion Understanding Interview (EUI).

In addition, qualitative analyses were conducted concerning the social and self-related references of children in their description of emotional experiences.

Research questions here were the following:

- In what trajectory do children’s emotion concepts develop between 3 and 6 years?
- Is there a sequence visible for the understanding of single emotions?
- Which aspects of emotion understanding, or parts of the global concepts assessed, are acquired first and which others build up on these?

- Do children’s social references in their emotional descriptions and understanding change over age? Do they show cultural differences?

No detailed predictions that would be substantiated by literature from the field, as published when the design of my study was decided upon, were possible for the sequential development of the aspects of emotional understanding that were in focus here. On grounds of the cultural descriptions in Chapter 2.1, it was expected that Korean children would provide more relationship- or other-oriented answers in the interview and to refer more often to social causes of emotions.

Concerning relationships to be explored between linguistic and psychological variables, i.e. ISL and understanding of internal states, the following questions guided the investigations made:

- How strong are the relationships found between measures of productive ISL —quantity of overall IS vocabulary, productive vocabulary of specific semantic groups, productivity of IS verbs with complement clauses, or frequency of ISL use in the narrative— and those of internal state understanding?
- Can any concrete ISL measure predict or add to the explanation of variance in theory of mind and/or emotion understanding?

Positive correlations with theory of mind (ToM) and emotion understanding were expected for all general ISL measures.

The lexicon for the semantic groups COGNITION and REALITY & EVIDENTIALITY and mental verbs with complement clauses were expected to explain substantial variance in ToM.

Similarly, quantity of productive vocabulary and usage frequency of words from the categories EMOTION, MORALITY & NORMS, and SOCIAL FEELINGS & RELATIONSHIPS were hypothesized to contribute to variance resolution in emotion understanding.

## 3.2 Methods

### 3.2.1 Participants

A total of 126 children – 64 German, 62 Korean – participated in the study. Children were recruited from and tested in kindergartens and daycare centers in Berlin, Germany, and in the cities of Danyang and Punggi in South Korea. German participants came from three different institutions; in Korea, children from four different institutions participated.

The German sample consisted of 30 girls and 34 boys, ranging in age from 3;3 to 5;10 (mean age = 4;6). Korean subjects were 28 girls and 34 boys, with an age range from 3;4 to 6;3 (mean age = 4;9). For the analyses, the children of each language background were divided into three age groups of similar size and comparable mean age, along the following boundaries: 3-year-olds (3;2 to 4;1), 4-year-olds (4;2 to 5;1), and 5-year-olds (5;2 to 6;3). Table 3.2.01 shows the composition of the age groups for both languages in terms of numbers and gender of participating children.

Table 3.2.01 *Overview of the study sample: Numbers, mean age and gender composition for German and Korean children in 3 age groups*

Group	Age range	German children		Korean children	
		N =	Mean age	N =	Mean age
3-years	3;2–4;1	23 (13 girls, 10 boys)	3;8	19 (8 girls, 11 boys)	3;8
4-years	4;2–5;1	20 (11 girls, 9 boys)	4;6	23 (11 girls, 12 boys)	4;8
5-years	5;2–6;3	21 (6 girls, 15 boys)	5;6	20 (9 girls, 11 boys)	5;9
total	3;2–6;3	64 (30 girls, 34 boys)	4;6	62 (28 girls, 34 boys)	4;9

The gender distribution was fairly equal for all groups except the German 5-year-olds, where only about 30% of the participating children were girls.

Table 3.2.02 summarizes the information on the linguistic and family background of the participating children obtained through a general background questionnaire filled by children's parents.

All Korean children, who took part in the study, were monolingual. Of the German participants, 13 children had some passive knowledge of a second language, but were raised speaking German at home and used it as only or primary language.

Table 3.2.02 Summary of linguistic, family, and institutional background of participating children

German		Korean	
<b>Linguistic background</b>			
<i>Number of children speaking/understanding a second language<sup>a</sup></i>			
Bilingual children	13 (20.3%)	Bilingual children	0 (0.0%)
<b>Family background</b>			
<i>Sibling status</i>			
Younger sibling	16 (25.0%)	Younger sibling	27 (43.5%)
Only child	33 (51.6%)	Only child	12 (19.4%)
Eldest sibling	15 (23.4%)	Eldest sibling	21 (33.9%)
<i>Family composition</i>			
Mother & father	55 (85.9%)	Mother & father	48 (77.4%)
Mother only	7 (10.9%)	Other <sup>b</sup>	4 (6.4%)
Mother & stepfather	2 (3.1%)	No information	10 (16.1%)
<i>Parents' educational background</i>			
<i>Middle/high school</i>		<i>Middle/high school</i>	
Mothers	59.4%	Mothers	43.5%
Fathers	57.8%	Fathers	48.4%
<i>College/university</i>		<i>College/university</i>	
Mothers	40.6%	Mothers	50.0%
Fathers	40.6%	Fathers	46.8%
<b>Kindergarten</b>			
<i>Number of participating children per institution</i>			
Kindergarten A	28 (43.8%)	<i>Elinicip A</i>	12 (19.4%)
Kindergarten B	13 (20.3%)	<i>Elinicip B</i>	11 (17.7%)
Kindergarten C	23 (35.9%)	<i>Elinicip C</i>	11 (17.7%)
		<i>Yuchiwen D</i>	28 (45.2%)
<i>Hours per week spent in kindergarten</i>			
Mean hrs / week	36.75	Mean hrs / week	34.97
Range	(23–50)	Range	(24–45)

*Note.* a Bilingual children were only included in the study, if German was the child's dominant language and the primary language spoken at home with both parents and siblings, and if knowledge of the second language was classified as minimal and predominantly passive. Such passive knowledge was reported for the following second languages: Arabic, Bosnian, Catalan, Croatian, French, Kurdish, Macedonian, Portuguese, Russian, Slovenian, Spanish, Turkish.

b Each of the 4 children subsumed under 'other' in the Korean sample were single examples of the following family compositions: mother only, father and stepmother, grandparents, foster parents.

While 52% of the German children were only children, 78% of the Korean children had one or more siblings.

Most children in the study lived in a family with mother and father. 11% of the German children in the sample lived alone with their mother, without a father or stepfather present at home. 16% of Korean caregivers did not answer the respective questionnaire item.

Educational backgrounds of German and Korean parents were similar, with over 90% of both mothers and fathers having high school or college diplomas. The slightly higher percentage of college-educated parents in the Korean sample reflects differences in institutional organization of vocational education in the two countries. Many Korean parents completed a vocational training at the college level of the kind that would be provided by institutions like vocational schools in Germany, where universities focus on academic training only, increasing the number of Korean responses in the ‘college diploma’ category.

Although educational backgrounds of German and Korean parents were comparable, it must be mentioned that there still were differences in children’s environment that may lead to developmental differences that cannot be attributed to macro-cultural differences alone. German children in the study sample all came from Berlin, the German capital, thus growing up in a highly urbanized, modern and multicultural environment. The Korean children who participated, on the other hand, live in much smaller towns in more rural provinces of South Korea, and may have behaved differently from children growing up in Seoul, for example.

Concerning the institutional environment in which children in the study sample were being educated and socialized in, differences exist in the educational goals and structures of the participating preschools. The German kindergartens who participated, functioning mainly as day care centers, offer mostly free play time for children, with educators chiefly supervising children and organizing the temporal structure of play activities. Some educational classes are offered in addition to shared songs, readings, or crafting done in small groups, but these are optional and most children did not take part in more than one of these extra classes.

Korean preschools, in comparison, focus more on educational activities preparing children for formal schooling. Of the four institutions, where the Korean sample was recruited, three were so called *erinicip*, contributing a total of 34 children to the sample, the remaining one, from which 28 children participated, was a *yuchiwen*. This distinction entails different types of preschool education in Korea, with *yuchiwen* emphasizing early formal education in half-day and full-day classes, and *erinicip* providing a mixture of such educational activities and free play time and offering full-day care.

Children in both countries spent a similar amount of time in their respective preschool.

### 3.2.2 General procedure

The general procedure of how the study was administrated is described below. This procedure was the same for data collections in Germany and Korea.

In a first step, kindergartens were contacted, who would be willing to participate in the study and able to provide a room, where testing with the children could take place during their usual hours of classes or free play in the kindergarten.

Through the principal and teachers of the kindergartens, parents whose children were between 3 and 6 years of age, were contacted and given written information about the study, its intent, content and procedures. Interested parents gave their written consent to let their child participate in the study and to fill out the parent report and questionnaires.

One week prior to the begin of the testing sessions with children in each kindergarten, parents were given a questionnaire on their child's previous development, linguistic and family background together with the Internal State Language (ISL) Checklist, a parent report measure for children's internal state lexicon and related grammatical constructions. The two questionnaires were collected by kindergarten teachers one week later, upon the start of the testing sessions.

Children were tested individually in a quiet room of the respective kindergarten or day care center, and completed five different tasks.

As a measure for general language development, the PPVT-R, a measure of receptive vocabulary, was used. A wordless picture book with socio-emotional story content served as elicitation tool for children's internal state language (ISL) in a narrative context. In addition, children completed a battery of theory of mind (ToM) tests, grouped into two separate tasks, and an Emotional Understanding Interview (EUI).

For each child, the tasks were presented in randomized order over two separate sessions on consecutive testing days.

### 3.2.3 Instruments

#### 3.2.3.1 General Language

##### **Peabody Picture Vocabulary Test (PPVT)**

Both Korean and German children were tested on a general measure of receptive vocabulary, the PPVT-R (Dunn & Dunn 1981, Kim et al. 1995).

This served two purposes. First, children who scored below their respective age norm could be excluded from the sample. Second, since different versions of the PPVT have often been used as a measure of general language in correlational studies with theory of mind (ToM) (see Milligan 2007 for a comprehensive list of ToM studies using PPVT versions as language measures), it should also serve as a possible predictor of children's ToM score to be compared with the predictive force of the specific measures of internal state language to be taken.

The PPVT was originally developed as a cross-culturally appropriate assessment tool, using black-and-white drawings depicting people in a culturally unbiased way.

It was also chosen, because a Korean version of the PPVT-R including age norms was accessible (Kim et al. 1995). Unfortunately, no German version of the PPVT for preschool children is available, except for fractions of the original US item lists normed for children with disabilities (TBGB: Bondy et al. 1975) or a shortened test version of the PPVT III for adults above age fourteen (Bulheller & Häcker 2003). But since no comparable test could be found that would have both a German and Korean version with norm data for the age groups under study, the PPVT still seemed the best choice for the present purposes, given the availability of Korean norm data, the cross-culturally appropriate picture material, and its wide use in previous studies on theory of mind.

In the PPVT-R, children are tested for receptive vocabulary by being asked to point to the right referent of a word out of a set of four pictures. The total list comprises 112 items, including 65 nouns, 25 verbs, 20 adjectives and 2 relational expressions.

For use with the German children, the test items of the Korean PPVT-R were translated into German. They were both back translated by a Korean native speaker and, where possible, compared with the translations from English made by the available German PPVT fractions and short version mentioned above.

Testing and analyses for both language groups were conducted along the instructions of the original test manual in Kim et al. (1995).

For all Korean children, the results were inside or above the normal range. Thus, none of the children had to be excluded from the sample.

Comparably, all German children except one girl scored inside or above the Korean norm range and were reported as typically developing by their mothers. The data of this girl, which according to her mother had also previously been diagnosed with language development problems, were excluded from analyses reducing the German sample to the 64 children reported in the sample description.

PPVT data were normally distributed for both German and Korean children, and showed strong correlations with age, as expected. This made sure PPVT scores would be an appropriate variable to test the explanatory power of internal state language for theory of mind against.

### 3.2.3.2 Internal State Language

#### **ISL Checklist**

Parents received the Internal State Language (ISL) Checklist, a parent report measure that was constructed for this study to assess children's productive internal state lexicon and their use of related grammatical constructions. The ISL Checklist contains detailed instructions for parents how to observe and report their child's spontaneous linguistic productions. They were given one week of time to observe their child's language and to fill out the ISL Checklist before returning it together with the background questionnaire. This was done to give parents enough time to gain a general awareness of their child's language use and to observe uses of IS words or constructions that might either not be as frequent as other vocabulary items, or that might not be as present in a language users' awareness —as certain function words, adverbs or particles for example, which have more of a pragmatic function than semantic content.

#### **Part I: IS Word Checklist**

The first part of the ISL Checklist is called the IS Word Checklist, which asks about the productive IS words of the child. Its main purpose was to get a realistic estimate of children's productive internal state vocabulary, and to be able to track differences in the pattern of semantic IS categories in children's IS lexicons over age.

Although parent reports have sometimes raised criticism concerning the credibility of parent's judgments or observations of their children's behavior, it has been shown that they are a valid and reliable source of information in child language research (Bates et al. 1988, Dale et al. 1989). Moreover, for less frequent words and constructions, which cannot easily be "caught" in short samples of natural language, parent reports are a helpful tool to get at a child's competence.

Here, preschoolers' range of productive internal state vocabulary and the quantitative patterning of productive items from different semantic subcategories were of interest,

requiring an observation of a child's language in a variety of different contexts, which can only be accomplished by the primary caregiver who shares these contexts with the child.

#### *Construction and composition of the IS Word Checklist*

The ISL-Checklist was uniquely developed for this study, as there was no suitable instrument available to reflect the quantity and patterning of internal state vocabulary over different semantic categories after the third birthday – neither for Korean nor German, and not even in English. All checklists that had been used in other studies (see Chapter 2.2) were constructed for the use with toddlers, and Ridgeway et al.'s list (1985) did not seem appropriate, since it had been constructed from dictionaries only and contained only emotion adjectives, many of which are quite sophisticated or peculiar to English and not easily translated.

The list of 78 internal state items that Bretherton and Beeghly used in their study (Bretherton & Beeghly 1982) for toddlers between their second and third year served as a model and starting point to build an instrument to be used for 3- to 6-year-olds.

At first, a total of 236 internal state terms were collected from different sources on English, German, or Korean child language as well as from lists of emotion words of these languages available in dictionaries and literature on the emotion lexicon (e.g., Kim 1978).

Child language sources for the collection included the Bretherton and Beeghly list, the original transcripts of the data used by Kauschke and Klann-Delius (1997), German and Korean child language data from the CHILDES database (MacWhinney 2000), field notes obtained through a one month period of observations in a university kindergarten in Berlin, and data from pilot studies conducted with 3- and 5-year olds in two university kindergartens. Items from sources on adult language were assessed for their probability of appearance in preschoolers' language as judged by native speakers and in- or excluded accordingly.

The German and Korean items collected were then translated and back translated by native speakers to complement the lists for both languages. Focus for the translations was to find pairs of words that cover a similar semantic field or function, while both items should be words probably used by preschoolers. As a result, both words of a pair might be different parts of speech in the respective language or, as is natural for translations, have slightly different connotations. In addition, lists of both languages include some language-specific items without a "good translation" in their counterpart.

Items were assigned to different semantic categories, as described below, and achieving balanced quantities of words in the respective categories were a further aim of the selection process.

### *Collection of utterance examples*

To collect a small database of natural utterances, in which children use the items on the IS Word Checklist in each language, parents were also asked to provide examples of utterances of their child together with the words they checked as productive. These were helpful to get a sense of the linguistic and situational contexts in which children employ the words and of the typical structures and meanings in and for which they are put to use.

With over 200 items on the lists handed out to the mothers, it was, however, not possible to ask for example utterances for every single item they marked, as was done in the Bretherton and Beeghly (1982) study. To lower the burden for mothers in filling the checklist, two blank lines were simply added below the sub-list of each semantic group, where they could write down actual utterances produced by their child with some of the items marked in this sub-list that they found good representations or typical examples of “how their child speaks”.

These example utterances provided by mothers were collected into a small database for each language, from which, in the analyses, usage examples are drawn and described that illustrate typical constructions and age related differences in children’s use of the IS items investigated.

### *Adjustments on the final list*

The original list included many items expressing the same concepts, but with alternating part-of-speech (e.g., *Hunger*, N, ‘hunger’ and *hungrig*, A, ‘hungry’ in German), or, in other cases, items that were very close in their meanings and may be used with the same function by children and caregivers in typical contexts or interactional scripts (e.g., German *aufpassen*, V, ‘be careful, alert’ vs. *vorsichtig*, A, ‘careful’).

As the completed checklists could be analyzed, items that were redundant were excluded from analyses by choosing to retain only the more frequently reported word of two similar items.

Moreover, items that by looking at the parents’ examples were revealed as ambiguous or misunderstandable were also excluded —e.g., *rot werden* (‘become red (in the face)’ – as a sign of embarrassment), which was frequently represented in examples such as *Ich bin ganz rot. Ich glaube ich hab Fieber* (‘I am totally red. I think I’ve got a fever.’)

### *Semantic categories*

The final list, as it was used in the analyses, consists of 168 items from 12 different semantic groups or categories. 135 of the items were “good translations”; the remaining words asked for were specific to the German or Korean list. Table 3.2.03 shows the 12 categories with total numbers of items in each sub-list and a few exemplary items for German and Korean.

The semantic categories chosen were for one part drawn from previous studies on ISL in toddlers such as that of Bretherton and Beeghly (1982). However, some finer distinctions of categories were introduced, and new categories that would tap the social dimensions of interpersonal feelings and relationships were added.

As Bretherton and Beeghly have noted (1982: 907), the assignment of single items to semantic categories is not always straightforward and can never represent absolute distinctions, as some items can be sorted into two or more different categories, depending on which aspect of their meaning or function is foregrounded. The same limitation applies to the present study. Here, semantic categories are viewed as domains of meaning in a broad sense, such that the words listed in a category represent items that are typically employed in situational and interactional scripts belonging to this particular domain of experiences.

The IS Word Checklist contains items from the categories BODY STATES and PERCEPTION & SENSES, which had in previous studies with toddlers been shown to belong to the first internal state words acquired. The categories EMOTION EXPRESSION and SOCIAL BEHAVIOR were included as separate groups, because they represent the concrete observational counterparts of emotions and social feelings and were expected to precede the latter in the development of an IS lexicon.

Two further groups are DESIRE & EVALUATION and ABILITY & SUCCESS, which are both important parts of the child's inner life in interaction with her environment, and often entail a wealth of positive and negative emotions.

The internal state words of the category EMOTION are subdivided into three groups listing besides positive and negative emotion words general/neutral vocabulary that is used to refer to affect or emotion but needs further linguistic material to specify the valence of the affective state, or terms for general arousal and surprise.

MORALITY & NORMS are also a crucial part of a child's inner life as well as frequent topics of interpersonal communications and interactions, and may also bring about social feelings and self-reflective emotions. The category SOCIAL FEELINGS & RELATIONSHIPS holds 'transitive' emotions like 'love', 'like', and 'hate', and social or self-reflective emotions like 'ashamed', 'proud', or 'jealous'. This list also includes some items that refer to interpersonal behaviors which, in contrast to the simple observable actions of the category SOCIAL BEHAVIOR, have no clear time boundaries, can differ in the concrete actions performed, are part of more complex interactional scripts, are related to interpersonal attitudes, or can be realized as speech acts, e.g., 'care for someone', 'pick on someone', 'scold someone', 'promise'.

Table 3.2.03 *The 12 semantic categories of the IS Word Checklist with examples*

Semantic category	N of items	German example items	Korean example items
<b>BODY STATES</b>	<b>(14)</b>	müde, A, 'tired' Hunger, N, 'hunger'	phikonhata, V, 'tired' pay kophuta, V, 'hungry'
<b>PERCEPTION &amp; SENSES</b>	<b>(12)</b>	sehen, V, 'see' schmecken, V, 'taste'	pota, V, 'see' mas, N, 'taste'
<b>EMOTION EXPRESSION</b>	<b>(4)</b>	weinen, V, 'cry' lachen, V, 'laugh'	wulta, V, 'cry' wusta, V, 'laugh'
<b>SOCIAL BEHAVIOR</b>	<b>(8)</b>	Kuss, N, 'kiss' hauen, V, 'hit'	ppoppo hata, V, 'kiss' ttaylita, V, 'hit'
<b>DESIRE &amp; EVALUATION</b>	<b>(18)</b>	wollen, V, 'want' mögen, V, 'like' schön, A, 'pretty'	hako siphta, V, 'want (to do)' cohahata, V, 'like' yeypputa, V, 'pretty'
<b>ABILITY &amp; SUCCESS</b>	<b>(14)</b>	können, V, 'can' anstrengend, A, 'exhausting'	hal swu issta, V, 'can' himtulta, V, 'exhausting'
<b>EMOTION</b>	<b>(24)</b>		
<b>general / neutral</b>	<b>(6)</b>	geht [gut/schlecht], V [A], 'feel [good/bad]' überrascht, Part, 'surprised'	kipun i [cohta/napputa], N [V], 'feel [good/bad]' nollata, V, 'surprise'
<b>positive</b>	<b>(6)</b>	Spaß, N, 'fun' fröhlich, A, 'happy, cheerful'	caymi issta, V, 'fun' kipputa, V, 'happy, joyful'
<b>negative</b>	<b>(12)</b>	Angst, N, 'fear, anxiety' traurig, A, 'sad' wütend, A, 'angry'	musepta, V, 'afraid' sulphuta, V, 'sad' hwa nata, V, 'angry'
<b>MORALITY &amp; NORMS</b>	<b>(18)</b>	böse, A, 'bad' müssen, V, 'must, have to' brav, A, 'well-behaved'	napputa, V, 'bad' hayya hanta, V, 'must, have to' chak hata, V, 'well-behaved, virtuous'
<b>SOCIAL FEELINGS &amp; RELATIONSHIPS</b>	<b>(20)</b>	lieben, V, 'love' vermissen, V, 'miss' sich schämen, V, 'ashamed, embarrassed'	salanghata, V, 'love' poko siphta, V, 'miss' changphihata, V, 'ashamed, embarrassed'
<b>COMMUNICATION &amp; DISCOURSE</b>	<b>(10)</b>	sagen, V, 'say' erzählen, V, 'tell, narrate' fragen, V, 'ask'	malhata, V, 'speak, say' yaykihata, V, 'tell, narrate' mutta, V, 'ask'
<b>COGNITION</b>	<b>(10)</b>	wissen, V, 'know' vergessen, V, 'forget' denken, V, 'think'	alta, V, 'know' icepelita, V, 'forget' sayngkak, N, 'think, thought'
<b>REALITY &amp; EVIDENTIALITY</b>	<b>(16)</b>	lügen, V, 'lie' scheinen, V, 'seem' echt, A/Adv, 'real, really' so tun als ob, V, 'pretend'	kecismal hata, V, 'lie' kathta, V, 'seem to' cincca, N/Adv, 'real, really' chek hata, V, 'pretend to'

Words for speech, verbal interactions, and meaning and explanation, are asked about in the category COMMUNICATION & DISCOURSE. Cognitive states and processes are the content of the group COGNITION. Finally, items specific to reality, appearance, certainty, or deception, which are related to concepts of ignorance or false belief as they are tested in theory of mind tasks, were sorted into a separate semantic category titled REALITY & EVIDENTIALITY.

As all categories described strongly relate to a child's emotional and mental life, it was therefore seen as important to include all the selected semantic subfields or classes into the checklist and the analyses of ISL in narrative and to explore their emergence and use in children's verbalizations. Nevertheless, a special focus is set on EMOTION, SOCIAL FEELINGS & RELATIONSHIPS, and COGNITION and REALITY & EVIDENTIALITY, which are the categories most directly related to emotion understanding and theory of mind.

#### *Further limitations of the parent report data*

Although parents received detailed instructions for filling the checklist and had ample chance to address uncertainties or questions to the researcher or kindergarten teachers, who were also trained to be able to explain all study procedures to participating parents, the re-collected checklists showed some diversity as to the amount of items checked within any one age group, and as to the quantity and detail of the example utterances provided.

For German, 91% of the mothers provided example sentences produced by their children, 837 utterances in total. For Korean, 84% of the mothers contributed a total of 965 example utterances to the database.

Only three checklists from the Korean sample and one checklist from the German sample raised the concern that the parents might have misunderstood the instructions: for these children, who were all 4;11 to 6;1 years old, extremely few items in the list were checked and basic words like 'see', 'good', 'pretty' were unchecked, that have long been reported to be present in > 90% of children before the 3<sup>rd</sup> birthday (Bretherton & Beeghly 1982). Moreover, all of these children showed normal or good age-equivalent language development in the PPVT as well as fluent production and expressivity during their test sessions with the experimenter.

The checklist data of these children was handled for the analyses such that unchecked items were treated as missing values, but checked items were included as valid entries. Like this, it was possible to use the information given by the checked items to get a picture of the productive words of the respective age groups, but to avoid underrepresentation of the production of basic IS words in the older age groups.

## Part II: IS-Verb Complementation Report

The second part of the ISL Checklist handed out to parents was made up of the IS-Verb Complementation Report.

This measure examined children's productive use of four specified IS verbs with complement clause constructions on different levels of syntactic complexity.

Complement syntax with IS verbs, and mental verbs in particular, was of interest, because it has been previously studied in its relationship with theory of mind, leading to different hypotheses about a possible facilitating role of complementation syntax for the development of representational skills needed for passing ToM tasks (see Chapter 2.3).

The four IS verbs included were WANT, SAY, KNOW, and THINK\*.

KNOW and THINK were selected as two of the most frequent and important mental verbs which are also part of Wierzbicka's (1996) proposed list of semantic primes lexically present in all languages. Their acquisition was moreover of interest, because they are also part of the classical false belief tasks used in the ToM test battery.

WANT and SAY, on the other hand, have been said to precede the acquisition of KNOW and THINK with complement clauses and to serve as models for these words for the production of complex sentences with complementizer and embedded clause (Perner et al. 2003, de Villiers & de Villiers 2000). They were included in the checklist and analyses to see whether this sequential acquisition of the four verbs, and especially their productivity with embedded complement clauses, would be visible for both languages.

The four verbs were analyzed in their production on three levels of syntactic complexity:

- (a) as single verbs of a simple sentence,
- (b) with a complement clause that is realized as coordinated second main clause, and
- (c) as matrix verb of a complex sentence with an embedded complement clause marked by a complementizer.

It was hypothesized that this would be the sequence in which children would gain productive competence with the verbs and the constructions they occur in, as it had similarly been observed by Diessel (2004) for the acquisition of complement clauses in English.

Example sentences for the four IS verbs on the three levels for German and Korean are given in Table 3.2.04.

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\* Here, and in the analyses, these verbs are written in capital letters to indicate their status as categories, which are realized by different verbs and constructions in the two languages.

In both the German and Korean version of the IS-Verb complementation report, some constructions of WANT defined as level 1–3 did not fully match the parallel constructions of the other three IS verbs on the respective levels, as can be seen from the examples in Table 3.2.04. Nevertheless, the constructions assigned to levels 1–3 for WANT show increasing complexity that is similar to that of the constructions for the other verbs on the respective levels. Because of this, WANT constructions are analyzed for the developmental description of IS verbs with complement clauses in Chapter 4.1.2, but were left out of the IS complementation score that was used for relational analyses with theory of mind and emotion understanding in Chapter 4.3.

In German, complement clauses on level 3 are generally introduced by the complementizer *dass*, and the verb of the embedded clause is moved to clause-final position. In Korean, embedded complement clauses, retaining SOV word order, are inserted between the matrix clause subject and verb; with SAY and THINK, they are usually marked by the complementizer *-ko*, with KNOW, complementation is typically done with the nominalizer *-(nu)n/l kes*.

The IS-Verb Complementation Report was attached to the IS Word Checklist and handed out to the parents and collected back in the same procedure described above.

On the report form, the four IS verbs were presented together with exemplar utterances for all three complementation levels. Parents were instructed for each verb to check the box(es) next to the sentence types which their child already produces.

In addition, for each IS verb and complementation level, a blank line was present, on which parents were asked to write down one or two actual utterances of their child with the respective construction. As was the procedure with example utterances for the use of IS words from the IS Word Checklist, the parent examples entered on the IS-Verb Complementation Report were collected into a small database, which was used to explore and track similarities and differences in children's actual uses of the constructions over age and between German and Korean. Again, these examples were very informative and provided insights into children's language use on a qualitative level, but could not be used for quantitative assessment of usage, because utterance examples were reported by irregular numbers of parents between the age and language groups. The major focus of the qualitative assessments was on the typical meanings for which the IS verbs were used in specific constructions, the frequencies of conversational versus "genuine" uses of the mental verbs, and changes in these over age.

Table 3.2.04 Examples for complement clause constructions with WANT, SAY, KNOW and THINK on three complexity levels for German and Korean

German			Korean		
Verb	Level of usage	Example sentence	Verb	Level of usage	Example sentence
WANT	1 single verb	Ich will mehr. I want.1s more ,I want more.'	WANT	1 single verb suffix	Te mek-ullay. More eat-DINT ,I wanna eat more.'
	2 NP VP	Ich will Kuchen essen. I want.1s cake eat ,I want to eat cake.'		2 converbal conx	Khayikhu mek-ko siphe. Cake eat-COMP want ,I want to eat cake.'
	3 embedded CC	Ich will, dass Mama Kuchen backt. I want.1s that Mom cake bake.3s ,I want that Mom bakes cake.'		3 subordinate cl conx	Emma ka khayikhu sa-ss-umyen coh-keyssta. Mom NOM cake buy-PAST-COND be.likable-DCRS.DCL ,I'd like that Mom would buy cake.'
SAY	1 single verb	Papa hat es gesagt. Dad have.3s it said ,Dad said it.'	SAY	1 single verb	Appa ka malhay-sse. Dad NOM speak-PAST ,Dad said (this/something).'
	2 juxtaposed CC	Papa hat gesagt es regnet. Dad have.3s said it rain.3s ,Dad said it's raining.'		2 juxtaposed CC	Pi ka o-l ke ya. Appa ka malhay-sse. (/ hay-sse.) Rain NOM come-ATTR thing be.DCL Dad NOM speak-PAST (/say-PAST) ,Dad said it's going to rain.'
	3 embedded CC	Papa hat gesagt, dass es regnet. Dad have.3s said that it rain.3s ,Dad said that it's raining.'		3 embedded CC	Appa ka pi ka o-nta-ko malhay-sse. (/ hay-sse.) Dad NOM rain NOM come-DCL-COMP speak-PAST (/say-PAST) ,Dad said that it's raining.'
KNOW	1 single verb	Ich weiß. I know.1s ,I know.'	KNOW	1 single verb	Al-a. Ø know-DCL ,I know.'
	2 juxtaposed CC	Ich weiß Oma kommt morgen. I know.1s Grandma come.3s tomorrow ,I know Grandma will come tomorrow.'		2 juxtaposed CC	Na-n al-a. Nayil halmeni ka o-l ke ya. I-TOC know-DCL Tomorrow Grandma NOM come-ATTR thing be.DCL ,I know Grandma is going to come tomorrow.'
	3 embedded CC	Ich weiß, dass Oma morgen kommt. I know.1s that Grandma tomorrow come.3s ,I know that Grandma will come tomorrow.'		3 embedded CC	Nayil halmeni ka o-nun kes al-a. Tomorrow Grandma NOM come-IMPV.ATTR thing Ø know-DCL ,I know that Grandma is going to come tomorrow.'
THINK	1 single verb	Mama denkt. Mom think.3s ,Mom is thinking.'	THINK	1 single verb	Emma ka sayngkak hay. Mom NOM think.DCL ,Mom is thinking.'
	2 juxtaposed CC	Mama denkt meine Hose ist zu groß. Mom think.3s my pants is too big ,Mom thinks my pants are too big.'		2 juxtaposed CC	Nay paci nemu khe emma ka sayngkak hay. I pants too big.DCL Mom NOM think.DCL 'Mom thinks my pants are too big.'
	3 embedded CC	Mama denkt, dass meine Hose zu groß ist. Mom think.3s that my pants too big is ,Mom thinks that my pants are too big.'		3 embedded CC	Emma ka nay paci nemu khu-ta-ko sayngkak hay. Mom NOM I pants too big-DCL-COMP think.DCL 'Mom thinks that my pants are too big.'

### **IS Picture Book Narration**

To be able to assess children's use of IS language, in addition to their overall productive vocabulary and its semantic patterning as it is measured by the ISL checklist, a wordless picture book was used as an elicitation tool for children's narrations on a socio-emotional topic.

This method was chosen, because it is a means to obtain natural language samples of each child in a highly comparable context. This comparability of topics and content of naturalistic language samples is not possible to achieve in the same extent with recordings in the child's home, which would also have been hard to obtain for such a great number of children in two countries.

#### *Creation of the picture book tool*

The story chosen was a picture book by Elizabeth Shaw (1963) about a timid rabbit who is afraid of almost everything and gets ostracized by his friends. When a fox comes to the rabbit village and catches a baby rabbit, he overcomes his fear to save the baby, and in the happy end is rewarded with praise and acceptance from the other rabbits.

This specific picture book was selected, because its plot focuses on a highly socio-emotional theme and involves a variety of different internal states and emotions as well as social situations.

To be used as elicitation tool in the study, a wordless and shortened version of the original book was created. This version, consisting of 21 pictures/pages in total, was constructed to be understandable from the pictures without any accompanying story or explanations, which was tested and confirmed in pilot studies with 3- and 5-year-olds.

A further advantage of the book was that its theme and content as well as the depiction of animals as main characters were well suited to be used in both the German and Korean cultural context.

Exemplary pictures of important scenes of the story are displayed in Figure 3.2.01.

#### *Procedure and instructions*

In the beginning, children were told by the experimenter that they were going to look at a story in a picture book together. The book was shown to them and the main character, who was depicted on the cover, was introduced by pointing to him saying "Look, this is 'little fraidy-rabbit' who the story is about". They were then asked whether they would like to look at the picture book together and to tell the experimenter "what happens in the story" to assure their consent and attention.

Narrations proceeded picture by picture with the turn of each page. The wording “What happens in the story?” (German: *Was passiert in der Geschichte?*; Korean: *Iyaki ka ettehkey kyeysook toy-ci?*) was also consistently used as a prompt during pauses in children’s narration, because it is most “neutral” in that it does not constrain the child’s answer in terms of the event type to narrate or the parts of speech or syntactic constructions to use, as would be the case with more concrete wordings like “What does he do?”, “How is he?”, “What is this?” or similar formulations. An alternative prompt that was allowed was “And then?” while turning the page or “And here?” after turning the page while looking at the picture.

### *Transcription and coding*

Children’s narrations were transcribed from video following the conventions from Berman and Slobin (1994: 657–664) with a few minor changes. Their transcription procedure served as model for the present study, because they had a similar focus on the cross-linguistic comparison of children’s verbalization and linguistic packaging of events presented in a picture book, and had chosen and tailored the transcription units and conventions accordingly. The basic unit of analysis in this format is the clause, which is defined as any unified predicate expressing a single situation, and can take the form of a finite or non-finite verb or of a predicate adjective. Analyses are based on codable clauses only, leaving out comments on the task or utterances that are unrelated to the story. False starts, repairs, and uninterpretable strings are also left uncoded.

The transcriptions were made in standard orthography for German and in the Yale conventions for Romanization for Korean, which is the system used by most linguists.

Each clause was coded for use of internal state language (ISL), and each token of an internal state word or construction received a code for the semantic category – out of the 12 groups defined for the IS Word Checklist – it belonged to. Some clauses contained more than one IS word token. Moreover, IS verbs or other IS predicates that appeared with a coordinated or embedded complement clause, were tagged as such.

In addition, IS clauses were coded for whether they expressed a causal or contrastive relation between the internal state mentioned and other states, actions or events in the story. Use of ISL in such constructions, as in the previous studies mentioned in Chapter 2.2, was taken to indicate a deeper understanding of the meanings of the IS terms used and of the psychological level of the story plot.

As the length of children’s narrations in terms of total clauses produced differed between individual children and over age, analyses of ISL use were based on proportions per total clauses (see Chapter 4.1.3).

*Missing data*

In the German study sample, the narrations of 21 children were excluded from the analyses. The reason was that these children, belonging to two of three different groups from a larger kindergarten who had participated, had already been familiar with the original picture book from which our story was created, which had been read to them by kindergarten teachers and talked about in the group shortly before the study was administered. Because of this, many narrations of these children did not show their own verbalizations of the events in the pictures, but were often attempts to recall the original wordings of the book from memory. As this would have distorted the picture of children's spontaneous ISL productions, these data were excluded. In addition, two 3-year-old children did not produce any utterances related to the picture story. Data from the narrative were therefore available from 41 German children – thereof 18 3-year-olds, 10 4-year-olds, and 13 5-year-olds.

Of the Korean sample, 4 of the 3-year-old children and one 6-year-old girl stayed silent while looking through the picture book or reacted to prompts only by uttering single words like 'rabbit' or 'rabbits'. Korean narrative data were therefore available from 57 children in total.



Fig. 3.2.01 Exemplary scenes of the wordless picture story used for assessing children's ISL use in narration

### 3.2.3.3 Internal State Understanding

#### Theory of Mind (ToM) test battery

To assess children's developing theory of mind, a battery of classical tests was administered. These were selected and test questions adapted so as to cover mentalizing skills for knowledge, belief, and emotion – each with at least one variation to test for possible influences of task type on children's performance.

Included in the battery were the classical 'unexpected content task' ('Smarties task') of Perner, Leekam, and Wimmer (1987), the 'change-of-location task' ('Maxi task') of Wimmer and Perner (1983), both standard false-belief tests, and the 'desire-(false-)belief-emotion tasks' developed by Harris et al. (1989).

The 'unexpected content task', which had a slightly different format in which the experimenter interacted with the child, was separately presented. All other tasks were presented as story vignettes of animal characters using play figures and small props, combined into one block of small stories. Both the 'unexpected content task' and the animal stories were randomized with the EUI, PPVT, and picture book narration for individual children and split over two testing sessions.

The tasks with their vignettes, test and control questions are presented in Tables 3.2.05a/b. All test questions were assigned labels for easier reference in the analysis section.

The tasks conforming to classical false belief tests are presented in Table 3.2.05a. Each child completed an 'unexpected content task' (task 1) with one test question about the child's own (FB SELF), another about his friends' false belief (FB OTHER), and a justification question (*Justification* FB OTHER). Two 'change-of-location tasks' (tasks 2 & 3) were presented, the first without, the second with the „pull of the real“ (Carpenter et al. 2002). This means that in the task variant “without pull of the real” the target object was not present in another location, but totally disappeared from the scene, and it has been proposed to be easier for children to pass this task, as they are not “pulled” toward naming the “real”, i.e., current, location, but are more likely to focus on the story character's perspective. Both 'change-of-location tasks' included an 'action' (FB DO) as well as a 'thought' version (FB THINK location) of the false-belief test question and a question about the character's knowledge-ignorance (KI location).

The tasks adapted from Harris et al. (1989) are summarized in Table 3.2.05b. The ‘(dis)like-belief-emotion task’ (task 4) involved two test questions about an emotional reaction requiring inference from information about a character’s likes (Like-Belief EMO) and dislikes (Dislike-Belief EMO). Finally, each child completed two ‘desire-false belief-emotion tasks’ (tasks 5 & 6) (Des FB EMO), one of which allowed the child to answer correctly by simulating her own mental states (food was exchanged with stones – undesirable for both child and story character), while the other did not offer this possibility (chewing gum was

Table 3.2.05a Overview of theory of mind (ToM) test battery: classical false-belief tasks

Task 1 Unexpected content (false belief)		
The child is shown a container of a familiar candy brand (Smarties in Germany/Ppeppero in Korea). [1] Then it is asked to open it and look inside, and it finds crayons in the container. [2–6]		
No.	Q-Type / Label	Question
1	<i>Control</i>	Do you know this? What is it?
2	<i>Control</i>	Look. What is this?
3	Test: FB SELF	Before you opened the box, what did you think was inside?
4	<i>Control</i>	And what is really inside?
5	Test: FB OTHER	Now let’s imagine you take the box back to your friends. You don’t open it, just show it to them. What will they think is inside?
6	Test: <i>Justification</i> FB OTHER	Why will they think that?
Task 2 Change of location (false belief) without “pull of the real”		
<u>Vignette</u> : Monkey M. <sup>a</sup> brings a cake home from school and puts it into a round box. While she is outside, her brother M. takes the cake out of the box and eats it. Then M. returns... [1–5]		
No.	Q-Type / Label	Question
1	Test: FB DO w/o pull of real	Where will M. first look for her cake?
2	<i>Control</i>	Where did she put it in?
3	<i>Control</i>	Where is the cake now?
4	Test: KI location	Does M. know where the cake is?
5	Test: FB THINK loc w/o pull of real	Where does M. think that the cake is?
Task 3 Change of location (false belief)		
<u>Vignette</u> : Monkey M., preparing to go out to play, takes off her beautiful ring so it won’t get dirty and puts it into a square box. While she is away, her brother M. takes the ring out and puts it into a round box instead. Then M. returns... [1–5]		
No.	Q-Type / Label	Question
1	Test: FB DO	Where will M. first look for her ring?
2	<i>Control</i>	Where did she put it in?
3	<i>Control</i>	Where is the ring now?
4	Test: KI location	Does M. know where the ring is?
5	Test: FB THINK location	Where does M. think that the ring is?

<sup>a</sup> The animals were given names that were familiar/appropriate in the respective language.

exchanged with chocolate – desirable for the child, but not so for the animal in the story), and the child had to take the character’s perspective to make the appropriate judgment.

Table 3.2.05b *Overview of theory of mind (ToM) test battery: desire-(false) belief-emotion tasks*

Task 4 (Dis)like–belief–emotion		
<i>Vignette:</i> Bear B., a heavy eater, likes honey the most, but dislikes potatoes. [1–2] On his way home he finds a food box and is extremely curious about what food he found. [3–5] Opening the box, he finds it empty. [6]		
No.	Q-Type / Label	Question
1	<i>Control</i>	What does B. like?
2	<i>Control</i>	What does he dislike?
3	Test: Like-Belief EMO <sup>b</sup>	What if B. thinks there is honey inside. Will he be happy or sad?
4	Test: Dislike-Belief EMO <sup>b</sup>	What if B. thinks there are potatoes inside. Will he be happy or sad?
5	<i>Control</i>	Does B. already know what is inside?
6	Test: Simple EMO	And now, is B. happy or sad?
Task 5 Desire–false belief–emotion with simulation possibility		
<i>Vignette:</i> Elephant E. loves peanuts and has a big peanut can. While she is having her nap, monkey M. exchanges the peanuts in her can with stones. E. wakes up and is very hungry, craving for peanuts and approaching the can. [1–6] After opening, she finds stones in the can. [7]		
No.	Q-Type / Label	Question
1	Test: Des FB EMO	Before E. opens the can, is she now happy or sad?
2	Test: <i>Justification</i> Des FB EMO	Why?
3	<i>Control</i>	What does E. like?
4	Test: KI content I	Does she know what is inside the can?
5	Test: FB THINK content I	What does E. think is inside the can?
6	<i>Control</i>	And what is really inside now?
7	Test: Des EMO	Is E. now happy or sad?
Task 6 Desire–false belief–emotion without simulation possibility		
<i>Vignette:</i> Tiger T. loves chewing gum and has a big box of gum. While he is having his nap, monkey M. exchanges the gums in his box with chocolate candy. T. wakes up and wants to have one of his chewing gums. He approaches the box ... [1–5] After opening, he finds chocolate in the box. [6–7]		
No.	Q-Type / Label	Question
1	Test: Des FB EMO	Before T. opens the box, is he now happy or sad?
2	<i>Control</i>	What does E. like?
3	Test: KI content II	Does he know what is inside the box?
4	Test: FB THINK content II	What does T. think is inside the box?
5	<i>Control</i>	And what is really inside now?
6	Test: Des EMO	Is T. now happy or sad?
7	Test: <i>Justification</i> Des EMO	Why?

<sup>b</sup> Order of the Like-Belief EMO and Dislike-Belief EMO questions in Task 4 was counterbalanced such that half the children of each age group began with question 3, the other half with question 4.

#### *Scoring and analyses*

The vignettes and scoring procedure in the present study differed from classical use of the tasks in that more test questions were included to tap children's understanding and perspective-taking abilities not only for false belief or emotions resulting of those, but of the mental states of emotion, knowledge and belief in general.

In the original versions, each task contains only one relevant test question (e.g., false-belief or desire-false belief-emotion) and a few control questions ensuring that the child has understood the story. The child then receives one point for passing the task if all control questions and the test question are answered correctly.

Here, some test questions were added to the task vignettes about simple emotional reactions (Simple EMO, Des EMO), and additional knowledge–ignorance questions. As a result, not the tasks are the units for scoring and analyses, but the single test questions – and the understanding of the specific mental concepts they entail. All test questions were thus scored with one point for understanding of the specific mental state if they were answered correctly and the relevant control questions were passed.

Each test question was scored with one point; in total, children could obtain a ToM score between 0–22 points.

#### *Language versions*

The task vignettes and questions were formulated in a German and a Korean version. A back-translation procedure and pilot tests ensured their equivalence and compatibility.

The wordings used for the test questions in German and Korean are given in Table 3.2.06.

#### *Two variables for Korean children*

Due to an unintended mix-up of testing material with the Korean experimenter, the first 26 children tested during the data collection in Korea, did receive a version of the ToM test battery that lacked the KI questions of the 'change-of-location' and the 'desire-false-belief-emotion tasks'. Two separate variables for theory of mind scores were therefore computed, one 'including KI questions' (n = 36), another 'excluding KI questions' (n = 62), to be used concurrently in the analyses. The maximum ToM score excluding KI questions was 18, respectively. By repeating all analyses with both variables, information of the whole Korean data sample could still be included, but also checked against the second variable to avoid errors or distortions in the results that might result from the absence of information on knowledge–ignorance.

Table 3.2.06 *German and Korean versions of the ToM test questions*

Q-Type / Label	German	Korean
<b>FB SELF</b>	Bevor du die Dose aufgemacht hast, was hast du gedacht, was da drin ist?	Sangca lul yele poki cen ey mues i tule isstako sayngkak haysse?
<b>FB OTHER</b>	... Was denken die anderen dann, was da drin ist?	... Chinkwutul i mues i tule isstako sayngkak halkka?
<b>FB DO</b>	Wo schaut denn M. jetzt zuerst nach dem Kuchen/Ring?	M. nun ceyil mence enu sangca lul yele polkkayo?
<b>KI location</b>	Weiß M., wo der Kuchen/Ring ist?	M. nun kheyik/panci i/ka eti ey (tule) issnunci alko isseyo?
<b>FB THINK location</b>	Was denkt M., wo der Kuchen/Ring ist?	M. nun kheyik/panci i/ka eti ey (tule) isstako sayngkak haciyo?
<b>(Dis)like–Belief EMO</b>	Wenn B. denkt, da ist/sind Honig/Kartoffeln drin, ist er dann froh oder traurig?	Kkwul i /kamca ka tule isstako sayngkak hamyen, B. kipun nun kippulkkayo? – sulphulkkayo?
<b>Simple EMO, Des EMO</b>	Ist B./E./T. jetzt froh oder traurig?	Cikum B./E./T. kipun un ettehkeysseyo? Kippulkkayo – sulphulkkayo?
<b>KI content</b>	Weiß E./T., was da jetzt drin ist?	E./T. nun cikum mues i tule issnunci alko isseyo?
<b>FB THINK content</b>	Was denkt E./T., was da drin ist?	E./T. nun mues i tule isstako sayngkak haciyo?
<b>Des FB EMO</b>	Bevor E./T. die Dose aufmacht, ist sie/er da froh oder traurig?	Sangca lul yelki cen ey E./T. kipun un ettehlkkayo? Kippulkkayo – sulphulkkayo?

### Emotion Understanding Interview (EUI)

To assess German and Korean children's developing concepts of basic emotions with a measure that complements the classical theory of mind tasks and offers an alternative perspective and methodology, a structured and scorable Emotion Understanding Interview (EUI) was employed. The original EUI was introduced by Cassidy (Cassidy et al. 1992) and has been successfully used with preschool children in other studies as well (Shipman et al. 2000, Shipman & Zeman 2001). For the present purposes, an adaptation of the original measure was made, reducing the length of the interview and focusing on questions that are cross-culturally comparable and applicable.

This measure was chosen because it assesses a wide range of aspects of children's emotion understanding, covering different parts of an enriched emotion concept including besides expressions and situational causes conscious strategies for expressing and regulating own emotions and of reacting to emotions expressed by a close person, like a friend. This was a clear advantage over the more frequently employed tests of emotion understanding assessing

only recognition of facial expressions or the ability to match situations displayed in pictures to an emotion label or a “smiley” symbol, as the interview provides a clearer view on the personal representations of the child related to behavior and experiences in its social environment. This had the additional advantage that the importance of social causes and relationships in children’s representations of basic emotions and related behavioral and regulatory strategies could be tracked over age and compared between the two cultures.

The version of the EUI employed in the present study assessed children’s understanding of three basic emotions: HAPPY, SAD and ANGRY. For each emotion, a total of nine questions were posed. The sequence of emotions and questions was the same for all children, starting with the emotion HAPPY followed by SAD and then ANGRY, and, for each emotion, beginning with a facial recognition task of an emotional expression displayed in a picture, from which a transition was then made to the child’s own experiences with the emotion displayed.

The interview questions, together with qualitative response categories employed in the analyses, are given in Table 3.2.07.

Changes to the original version by Cassidy et al. (1992) were that the emotion fear was left out in order to avoid overburdening children with too long questioning about negative feelings and experiences. Fear in this respect was the emotion of least interest to the present purposes, as it was assumed that sadness and anger were more strongly related to interpersonal experiences. The second change was that questions about parents’ emotions and children’s reactions to them were left out. This was done mainly to reduce the length of the overall interview, reducing questions about reactions to others’ emotions to those about friends and peers, which additionally avoided possible incomparabilities between the cultures due to the strong norms that apply to Korean children’s behavior towards their parents.

Reductions resulted in a 3 x 3 scheme of question types, as seen in Table 3.2.07, with three questions tapping children’s basic concepts (face recognition, general and concrete causes), three questions about strategies to cope with own emotions (sharing or masking the expression and self regulation), and three final questions about strategies to cope with or react to the emotions of a close peer (empathic/emotional reaction, action reaction). Questions 5 and 9 were justification questions assessing the reasons for the chosen strategy.

The final version of the interview was translated into German and Korean, back translated by native speakers, and tested and adjusted in pilot studies in the two countries before being used in the main study.

### *Scoring*

Answers to each question were scored 0, 0.5, or 1 – according to the scoring manual attached in the Appendix (in German language).

Generally, clear and complete answers to a question that expressed understanding of the conceptual aspect addressed were given 1 point. If prompts were needed or overlaps between answers to different questions appeared that were indicative of partial understanding, these answers were scored with 0.5 points. No answers or answers that were clearly not related to the emotion in questions were given no points.

The scoring procedure differed to that of Cassidy and others in the respect that all answers reflecting understanding of the concept were given a point. The original procedure had defined “right” and “wrong” answers such that if a child, for example, replied to hide her emotion from parents in question 4, or to react unempathically in question 7, she was given no point and marked as showing no “understanding” in Cassidy’s scheme. To my view, this is a flawed procedure, since the child’s answer simply expresses a different strategy of coping with emotions in a social setting that might well express understanding and even be adaptive. To overcome this deficit, scoring was done as described above and an additional analysis of the qualitative content of children’s answers was made to compare specific types of strategies of coping with own or others’ emotions (e.g., sharing and masking emotional displays; empathic or dissociated reactions to others’ negative emotions) in their emergence and change over age as well as in differences between the two cultures.

### *Qualitative coding and analyses*

For qualitative analyses of children’s answers, answer types were defined for 8 of the 9 questions of the EUI, that were of interest for the present study (Table 3.2.07). These were coded and their proportions were tracked over the three age groups to detect changes and trends in development over the preschool years for both the German and Korean sample.

A first, linguistic interest concerned the labels produced by children in the facial recognition task of emotional expressions. The labels used in children’s responses fell into three categories. Besides genuine emotion words, markers of valence were often used, which were also taken as appropriate answers to the question “How does this child feel?” Some children did not refer to the child’s emotion, but verbalized the expression only (e. g., ‘it laughs’). This was coded as a third response category to see if expression responses would decrease with age in favor of true emotion labels, and scored with a half point.

For all three questions tapping the children's basic concepts – face recognition & labeling, general and concrete causes – it was also coded, whether errors or confluations appeared, for example, in providing a SADNESS label for a happy face or describing a fear situation as a cause for SADNESS, to be able to detect systematicity in the kinds of confluations and their changes over age.

All other codes concerned the social strategies and orientation of interaction expressed by children's answers, which were of special interest for the cultural comparison.

For the general and concrete causes given it was differentiated whether the cause expressed an orientation to 'self', meaning own goals and desired objects (often food and sweets), liked activities, events or else, or was related to an internal experience, or whether the cause expressed a 'social' orientation. 'Social orientation' was further categorized into 'type I – other-oriented', where an other person's behavior or attitude, or the relationship with that person was mentioned as cause, and 'type II – group-oriented', expressing positive or negative feelings as caused by experiences or status in the peer group, including issues of morality, or a self-reflective viewpoint.

For the questions about strategy of expression, it was further coded whether children responded to 'share' or 'mask' their emotion with/before their parents and/or peers. The justifications named for the expression strategy received one of four codes. The main point of reference given as reason for the chosen behavior could either be the 'self', expressing an own wish or goal, an 'other/relationship', showing concern for the other's behavioral or emotional reaction to one's expression, the 'group', where one's expressive behavior could have positive or negative consequences, e.g., on one's popularity or status, or finally 'norm', when referring to a rule or moral reasons demanding the respective behavior.

Children's reactions to the emotion of a friend were of interest with respect to their strategies of coping with negative emotions of a close peer. Children's responses for both their emotional reaction and action reaction were coded for whether they are 'empathic', 'prosocial' or instead 'dissociated', 'dissociating'. This resulted in four possible reaction types, the major two of which were the 'prosocial' and 'dissociated' type showing parallel reactions in feeling and behavior. The two minor types possible were labeled as 'independent', reaction with prosocial behavior although being emotionally unaffected by the other's emotion, and as 'mirroring/aggressive' type, who would be emotionally affected by the other and mirror his/her distress, but react with avoidance or aggression. Justifications for action reactions were equally coded for their main point of reference to 'self', 'other/relationship', 'group', or 'norm'.

Table 3.2.07 *Scheme of the Emotion Understanding Interview (EUI) with qualitative response codes*

No.	Question	Categories for qualitative coding
<b>BASIC CONCEPT</b>		
<b>FACE RECOGNITION &amp; LABELING</b>		
1	[child is shown a picture of a child with <i>happy/sad/angry</i> facial expression] Look at this child... What do you think, how is this child feeling at the moment?	valence marker ('good', 'bad') emotion label ('happy', 'sad') expression term ('smiles', 'cries')
<b>GENERAL CAUSE</b>		
2	["bridge": And you? Are you sometimes <i>happy/sad/angry</i> , too?] What makes you <i>h/s/a</i> ? When are you <i>h/s/a</i> ?	self oriented – goals and desires, internal experience socially oriented I other-oriented – other person, relationship II group-oriented – self in group, status and belonging
<b>CONCRETE CAUSE</b>		
3	Can you tell me something, when you felt <i>h/s/a</i> at the kindergarten? What happened?	
(for all Questions 1 to 3)		<i>Errors / Conflations:</i> Emo of interview topic → conflated Emo e.g. happiness → sadness (label) sadness → pain (general cause) sadness → anger (concrete cause)
<b>STRATEGIES FOR OWN EMOTION</b>		
<b>SHOW/HIDE EXPRESSION</b>		
5	And when you're <i>h/s/a</i> , do you show others your <i>h/s/a</i> face? Do you show it to your mom? ... to your dad? ... to the other kids at the kindergarten?	sharing [ + mom/dad/peers ] masking [ + mom/dad/peers ]
6	<u>Justification</u> Why? Why do you _____?	Main point of reference: self group other/relationship norm
<b>SELF REGULATION</b>		
4	[...after Question 3 / Concrete Cause:] What did you do, when _____(repeat cause), and you were so <i>h/s/a</i> ?	
<b>STRATEGIES FOR OTHER'S EMOTION</b>		
<b>EMOTION REACTION TO FRIEND'S EMOTION</b>		
7	["bridge": Who is your (best) friend here at the kindergarten? ... Now let's say (friend) is <i>h/s/a</i> ...] How do you feel if (friend) is <i>h/s/a</i> ?	Reaction type: feeling — empathic, mirroring / dissociated action — prosocial / dissociating 'prosocial type': empathic emo + prosocial act 'independent type': dissociated emo + prosocial act 'mirroring/aggressive type': mirrg. emo + dissoc. act 'dissociated type': dissociating emo + dissociated act
<b>ACTION REACTION TO FRIEND'S EMOTION</b>		
8	What do you do if (friend) is <i>h/s/a</i> ?	
9	<u>Justification</u> Why would you do that?	Main point of reference: self group other/relationship norm

#### *Inter-coder reliability*

Thirty percent of the interviews of each culture sample were additionally scored and qualitatively coded by a second coder, who was proficient with both German and Korean and blind with respect to age and social/developmental background of the children as well as to the specific research questions and hypotheses of the analyses.

For the emotion understanding scores, intercoder agreement was 92%; for the qualitative response type codes it reached 98%. Disagreements on scores/codes were resolved through discussion.

#### 3.2.4 Analyses

##### 3.2.4.1 Statistical tests used

For each of the measures taken, analyses of developments over age were first done separately for German and Korean samples. Where assumptions were met by the data, analyses of variance (ANOVAs) were conducted to test differences between 3-, 4-, and 5-year-old children. In a second step, comparisons between the two cultures were made by use of *t*-tests or chi-square tests.

The main part of analyses, nevertheless, consists of descriptive summaries of the data in graphs and tables and qualitative descriptions, especially for the language data and examples. Relationships between different measures of internal state language and theory of mind and emotion understanding were assessed through hierarchical multiple regression analyses.

##### 3.2.4.2 Use of Guttman scalogram analyses

For some of the measures —IS verbs with complement clauses, theory of mind, and emotion understanding— Guttman scale analyses were conducted to test for stable sequences of acquiring specific skills (Guttman 1944, 1950).

In this procedure, scales of items are defined of sequentially developing components, such that if someone shows competence with a higher ranked component, that person is also competent with each lower ranked component. Like this, a table of predicted patterns is constructed as in Table 3.2.08, with ‘+’ indicating mastery of a component and ‘-’ not showing mastery of the component, while numbers 1–5 define the patterns predicted by the model.

Table 3.2.08 *Example of a Guttman scale of acquisitional patterns predicted for four components*

Components	Predicted patterns				
	1	2	3	4	5
Component A	–	+	+	+	+
Component B	–	–	+	+	+
Component C	–	–	–	+	+
Component D	–	–	–	–	+

For each participant, then, their pattern of competence with the defined components is assessed and seen whether it conforms to a pattern predicted by the scale or not. Out of the total data of a sample, indexes can be computed that show the reproducibility and consistency of the Guttman scale defined (Green 1956). Excellent values speaking to the validity and robustness of the scale according to Green (1956) are coefficients of reproducibility of  $> .90$  and indices of consistency of  $> .50$ . Consistency, in this analysis, means that the items are scalable and the reproducibility of the model is not attributable to chance.

The advantage of this methodology is that it can show robust sequences in the acquisition of single skills. Children can be assigned scale scores of the rank of their pattern of passing different items, reflecting their stage of acquisition and making it possible to compare children according to their scale rank score regardless of their age, as it is not affected by high variance and interindividual differences inside the age groups to be compared. This makes it a powerful tool in developmental research and a fruitful complement to the usual comparisons of means between age groups.

### 3.2.4.3 Note on gender differences

For all quantitative measures of the study, before conducting further analyses, gender differences were assessed separately for German and Korean samples with two-tailed  $t$ -tests.

In the German data, only for the PPVT a gender difference appeared with boys performing better than girls in the receptive vocabulary task,  $t(62) = -2.526, p < .05$ .

In the Korean data, a small advantage of girls over boys was seen in the total emotion understanding scores, that did not reach statistical significance,  $t(56) = 1.885, p < .10$ .

All other measures did not show any significant differences.

On these grounds, gender was not further included in the comparative analyses of the study.

## 4.1 The acquisition of an Internal State Language (ISL) in German and Korean

### 4.1.1 Acquisition of IS words over semantic categories

#### 4.1.1.1 German acquisition of an IS lexicon

##### Overall internal state (IS) vocabulary

The parent reports collected through the IS-Word Checklist provided information about children's productive internal state vocabulary from a list of 168 items.

The total internal state vocabulary of German children as measured by this list shows a significant overall increase with age,  $F(2,60) = 14.884, p < .001$ .

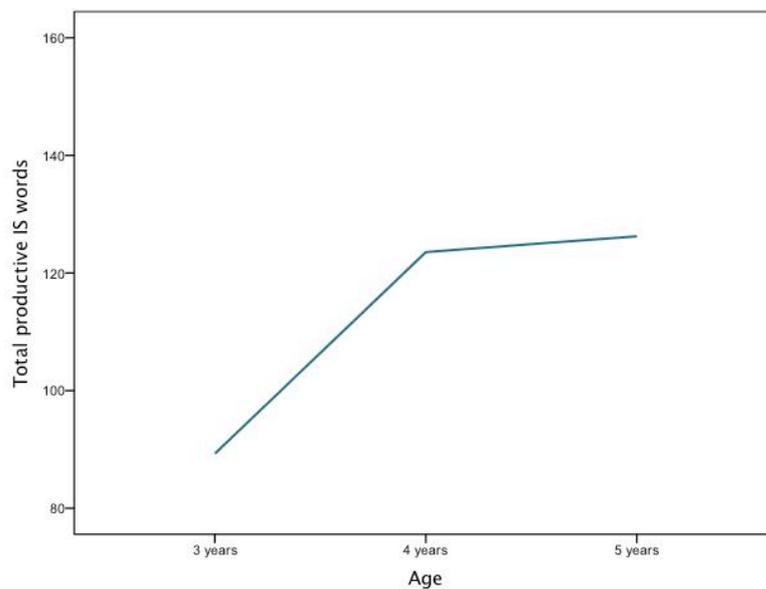


Fig. 4.1.01 German children's development of total productive IS vocabulary from the IS-Word Checklist

A post-hoc Tukey test performed on the group means reveals significant differences in the size of children's IS vocabulary between 3-year-olds and each of the older groups, but no difference between 4- and 5-year-olds (see also Fig. 4.1.01).

There thus seems to be a major leap in IS word acquisition of German children around the 4<sup>th</sup> birthday, suggesting that this age period might be of particular importance for the acquisition of internal state language (ISL) in general.

Whether the observed lack in IS vocabulary increase from 4 to 5 reflects a real slow-down or shift of emphasis in development of the IS lexicon, or whether it is attributable to the selection of items that were used for the checklist, cannot be known at this moment, but should be an issue of further studies.

### Quantitative acquisition pattern of semantic categories of the IS lexicon

Turning to the patterning seen in the acquisition of IS words by comparing items from different semantic categories, the next question was whether the overall increase observed in children's IS vocabulary was attributable to vocabulary growth in all or only in certain categories, and if so, which categories showed the highest additions of new items with age.

Table 4.1.01 summarizes the mean proportions of acquired words for the 12 semantic categories included in the checklist across the three age groups, assigning ranks to them to illustrate changes in quantitative representation and patterning of semantic categories between the age groups. Proportions are used, because semantic categories were represented by unequal numbers of items in the checklist. Readers should also keep in mind that these proportions can only be informative of the acquisition status of the items asked for, which had to be a selection of words for each category and not necessarily give a true representation of the category as a whole for each language. Moreover, these percentages do not show us how frequently children make use of the words of each category in everyday conversation.

Table 4.1.01 *German children's mean proportions of productive IS vocabulary in 12 semantic categories over age*

Semantic category	3 years		4 years		5 years		Total	
	Rank	Mean prop.	Rank	Mean prop.	Rank	Mean prop.	Rank	Mean prop.
<b>Body states</b>	1	.81	1	.92	2	.90	<b>1</b>	<b>.88</b>
<b>Perception &amp; senses</b>	2	.75	2	.90	3	.86	<b>3</b>	<b>.84</b>
<b>Emotion expression</b>	4	.65	6	.80	7	.74	<b>5</b>	<b>.73</b>
<b>Social behavior</b>	3	.73	3	.90	1	.91	<b>2</b>	<b>.85</b>
<b>Desire &amp; evaluation</b>	5	.63	5	.80	4	.83	<b>4</b>	<b>.75</b>
<b>Ability &amp; success</b>	6	.56	4	.81	5	.79	<b>6</b>	<b>.72</b>
<b>Emotion</b>	7	.49	8	.67	11	.67	<b>8</b>	<b>.61</b>
<b>Morality &amp; norms</b>	9	.44	12	.61	10	.68	<b>10</b>	<b>.58</b>
<b>Social feelings &amp; relationships</b>	10	.39	11	.63	12	.64	<b>11</b>	<b>.55</b>
<b>Communication &amp; discourse</b>	8	.47	7	.74	6	.79	<b>7</b>	<b>.67</b>
<b>Cognition</b>	11	.37	9	.66	8	.72	<b>9</b>	<b>.58</b>
<b>Reality &amp; evidentiality</b>	12	.34	10	.63	9	.68	<b>12</b>	<b>.55</b>

Figure 4.1.02 visually displays the mean proportions of productive items for the 12 semantic categories in separate bar charts for each age group. In the charts for 4- and 5-year-olds, the bars of the previous age group are still displayed next to the current ones to illustrate

quantitative increases in vocabulary for each semantic category between the age groups. The sequence of the bars is ordered from left to right according to the rank of each category as assigned in Table 4.1.01.

In Figure 4.3 we can see that around .75 each of the items of the categories BODY STATES, PERCEPTION & SENSES, and SOCIAL BEHAVIOR are already productive at 3 years.

Next in rank are words for EMOTION EXPRESSION (.65) and DESIRE & EVALUATION (.62), followed by ABILITY & SUCCESS (.56).

For all other semantic categories, less than .50 of the questionnaire items are productive with 3 years. Of the words grouped under EMOTION, .49 have already been acquired by the German 3-year-olds. Right after EMOTION come words for COMMUNICATION & DISCOURSE (.47), before MORALITY & NORMS (.44) and SOCIAL FEELINGS & RELATIONSHIPS (.39). Last in rank are words of the categories COGNITION (.37) and REALITY & EVIDENTIALITY (.34).

In the German 4-year-olds, an astonishing increase in IS vocabulary is visible over all semantic categories. Children of this age group have between .11 and .29 more productive words in each category than the 3-year-olds.

Pairwise comparisons reveal a significant ( $p < .05$ , one-tailed test) increase for all semantic categories except EMOTION EXPRESSION\*.

For some categories, this increase leads to a promotion in rank of the respective category in comparison of the 12 semantic groups.

Especially high quantities of new items are acquired in the categories COGNITION and REALITY & EVIDENTIALITY (both +.29), COMMUNICATION & DISCOURSE (+.27), ABILITY & SUCCESS (+.25), and SOCIAL FEELINGS & RELATIONSHIPS (+.24). Lowest increases are observed in the categories BODY STATES (+.11), PERCEPTION & SENSES and EMOTION EXPRESSION (+.15 each), which were already represented with high numbers of active vocabulary in the German 3-year-olds.

Looking at the quantities of productive vocabulary per IS category in German 5-year-olds, almost no difference to the lexicon of 4-year-olds is observable. Only the semantic groups of DESIRE & EVALUATION, MORALITY & NORMS, COMMUNICATION & DISCOURSE, COGNITION, and REALITY & EVIDENTIALITY show minimal increases in mean vocabulary proportions (+.03 to +.07), which are not statistically significant in pairwise comparison.

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\* EMOTION EXPRESSION is a special case as the category only consists of four items that could be identified and included in the checklist as words possibly used by preschoolers.

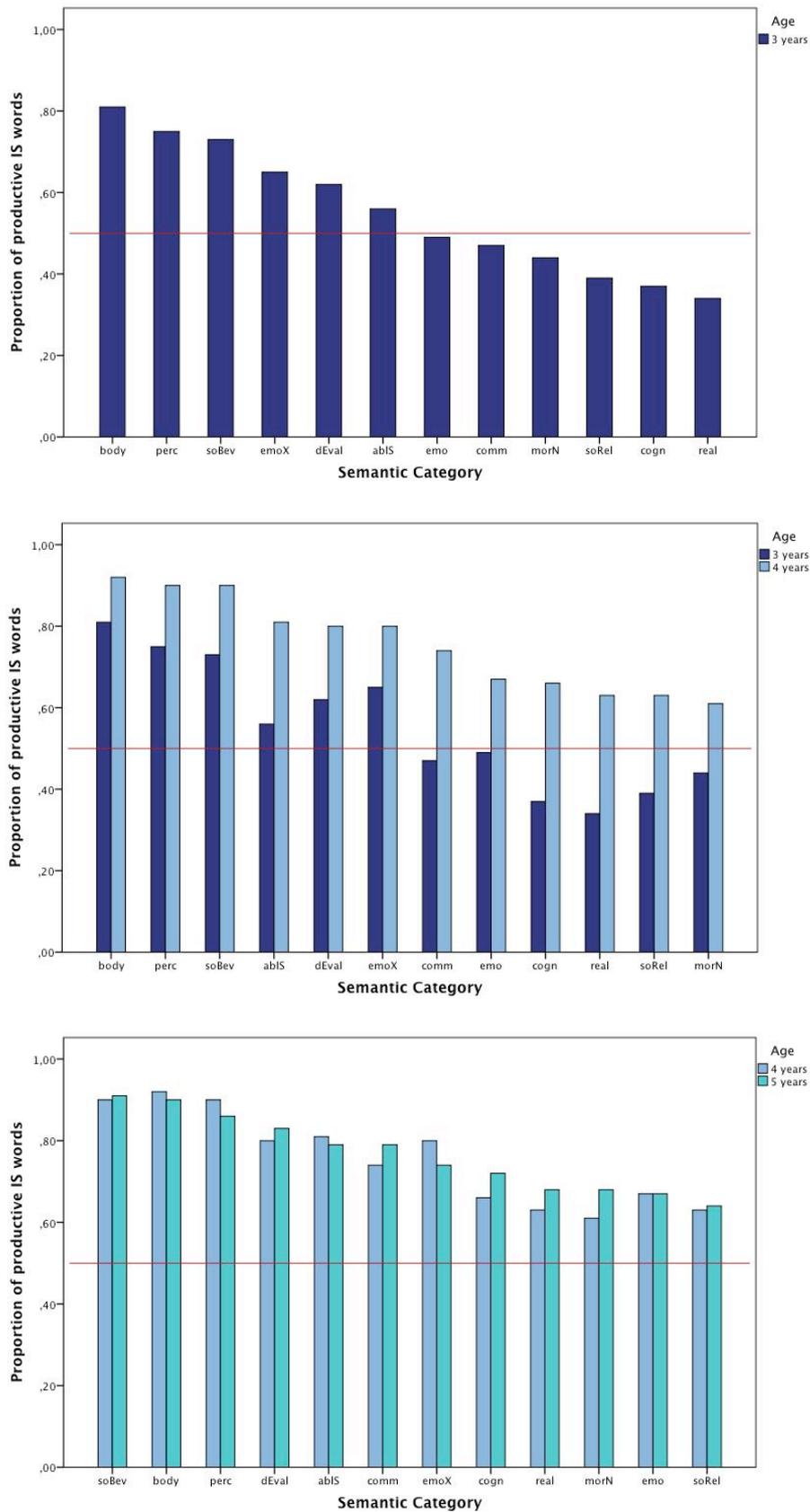


Fig. 4.1.02 German children's development of IS vocabulary in 12 semantic categories from 3 to 5

*Note.* body = body states, perc = perception, emoX = emotion expression, soBev = social behavior, dEval = desire & evaluation, abIS = ability & success, emo = emotion, morN = morality & norms, soRel = social feelings & relationships, comm = communication & discourse, cogn = cognition, real = reality & eventuality.

### Sequence of acquisition and usage examples of IS words in the 12 semantic categories

For all single items contained in the IS-Word Checklist percentages were calculated of children per age group who were already producing each specific term.

In a next step, these percentages were tagged for whether the item is ‘active’ or ‘established’ in that age group, which would be the case if the percentage of children already producing it is greater than 75%, whether it is ‘emerging’ or exhibiting an ‘onset’ of acquisition for the age group as shown by a percentage between 50% and 75% of children using the term, or whether it was just visible in ‘single occurrences’, i.e., uses by a minority of children of the respective group, as shown by percentages below 50%.

The checklist items were then grouped into lists for each semantic group, representing the active and emerging IS vocabulary over the three age groups.

The items in the lists are ordered by ranks obtained through adding the percentage of their production in the whole sample with that of the 3-year-olds, thus combining information of age of acquisition of a word with the overall quantity of children producing it. ‘Emerging’ vocabulary for any age group is highlighted in a light color, ‘active’ vocabulary is highlighted in a dark shade. Like this, the sequence and rate of acquisition of the items in each semantic category can easily be visually tracked and compared.

#### *Body states*

Table 4.1.02 *Acquisitional pattern of German IS vocabulary in the category BODY STATES*

Body states							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	schlafen	V <sub>i</sub>	sleep	100.0	100.0	100.0	100.0
2	kalt	A	cold	100.0	100.0	100.0	100.0
3	heiß	A	hot	95.7	100.0	100.0	98.4
4	müde	A	tired	95.7	100.0	100.0	98.4
5	Durst*	N	thirst	95.7	100.0	90.5	95.3
6	Hunger	N	hunger	95.7	100.0	90.0	95.2
7	wach	A	awake	95.7	100.0	85.7	93.8
8	krank	A	sick	91.3	100.0	95.2	95.3
9	weh tun	V <sub>i,t</sub>	hurt	91.3	85.0	81.0	85.9
10	kitzeln	V <sub>i,t</sub>	tickle	82.6	90.0	100.0	90.5
11	ausruhen	V <sub>refl</sub>	rest	73.9	90.0	90.0	84.1
12	verletzt	Part	wounded, injured	47.8	80.0	80.0	68.3
13	Schluckauf	N	hiccup	43.5	90.0	85.0	71.4
14	schwindelig	A	dizzy	30.4	55.0	70.0	50.8

\* language-specific item

German 3-year-olds readily talk about a range of body states, the words of which are productively used by 90–100% of the children of this age group. 10 of the 14 items in this list are already active at that age, denoting basic states of sleeping and waking, hunger and thirst, temperature, sickness and pain. Words for more complex concepts, which might also be a little less frequent in children’s everyday experience – being injured, having a hiccup, being dizzy – then reach common productivity in the 4-year-olds.

### *Perception & Senses*

Table 4.1.03 *Acquisitional pattern of German IS vocabulary in the category PERCEPTION & SENSES*

Perception & senses							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	schmecken	V <sub>i,t</sub>	taste	100.0	100.0	100.0	100.0
2	riechen	V <sub>i,t</sub>	smell	100.0	100.0	95.2	98.4
3	hören	V <sub>t</sub>	hear	95.7	100.0	100.0	98.4
4	sehen	V <sub>t</sub>	see	95.7	100.0	95.2	96.9
5	versteckt*	A	hidden	91.3	100.0	100.0	96.9
6	zeigen	V <sub>t</sub>	point, show	87.0	95.0	100.0	93.7
7	suchen	V <sub>t</sub>	search	87.0	90.0	95.2	90.6
8	vorsichtig	A	careful	73.9	100.0	85.0	85.7
9	gleich	A	same	69.6	90.0	85.0	81.0
10	anders	A	different	60.9	90.0	75.0	74.6
11	anfühlen	V <sub>refl</sub>	feel, touch	21.7	65.0	55.0	46.0
12	ähnlich	A	similar	13.0	45.0	50.0	43.9

\* language-specific item

Of the 12 items asked about in the category PERCEPTION & SENSES 7 are highly productive already with 3 years – the senses taste, smell, hear, and see as well as hiding, searching, and pointing to or showing something, which are obviously very common experiences for young children. The word for expressing sensations through touching and feeling something *anfühlen* is emerging only in the 4- and 5-year-olds. This might be, because it is a much less frequent topic of conversation than the other senses. The highly productive *schmecken* and *riechen* are regularly used during cooking and meal times, thus belonging to a recurring scripted experience or event scheme – as can be seen from 20 of 26 parent examples for these words being used in exactly that context. Another difficulty with *anfühlen*, in addition to being a reflexive verb, is that it cannot stand alone, but provides a constructional slot to be filled by an adjective like *gut* (‘good’), *rau* (‘rough’), *weich* (‘soft’) and the like, whereas *schmecken* and *riechen* may be used on their own as in the examples:

- (1) *Das schmeckt.* (4;1)  
 This **is** *tasty*. lit. This **tastes**.  
*Was riecht da?* (3;4)  
 lit. What **smells** there? [asking for the source of a smell]

These patterns might indicate that experiential frequency and salience, salience and frequency in the input, and constructional complexity are important factors accounting for the age of acquisition of a word.

An interesting semantic field, namely perceptual comparison, which might be a relevant precursor for the appearance/reality distinction, i.e., to look alike but be different, is covered by the terms *gleich* ('same'), *anders* ('different'), and *ähnlich* ('similar').

While both *gleich* and *anders* are emerging with 3 years and fully productive with 4 years, *ähnlich* does not emerge in German children's IS vocabulary before age 5.

### *Emotion expression*

Table 4.1.04 *Acquisitional pattern of German IS vocabulary in the category EMOTION EXPRESSION*

Emotion expression							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	lachen	V <sub>i</sub>	laugh	91.3	100.0	100.0	96.8
2	weinen	V <sub>i</sub>	cry	91.3	100.0	100.0	96.8
3	Tränen	N <sub>pl</sub>	tears	39.1	70.0	60.0	55.6
4	lächeln*	V <sub>i</sub>	smile	39.1	50.0	35.0	41.3

\* language-specific item

Laughing and crying are common concepts for German 3-year-olds and the words *lachen* and *weinen* are productively and frequently used, as can be seen from the numerous parent examples provided for these items (together 52 examples).

Somewhat unexpectedly, the words *Tränen* ('tears') and *lächeln* ('smile') do not emerge before age 4 and stay at low percentages of productivity through age 5. More should be known about the frequency of these words in adult language and everyday discourse to be able to explain this observation.

### *Social Behavior*

Concerning the domain of social actions and interaction, German children at 3 years are productive with words for playing, kissing, hitting, and doing things together, paralleling their frequent experience of these events. Words for 'visit' and 'present', which denote more

formal or scripted types of social interaction, are emerging with 3 years and reach full productivity at 4 years.

Table 4.1.05 *Acquisitional pattern of German IS vocabulary in the category SOCIAL BEHAVIOR*

Social Behavior							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	spielen	V <sub>i</sub>	play	100.0	100.0	95.0	98.4
2	Kuss	N	kiss	87.0	100.0	95.0	93.7
4	hauen	V <sub>t</sub>	hit	87.0	95.0	95.0	92.1
3	zusammen	Adv	together	91.3	85.0	81.0	85.9
6	Geschenk	N	present, gift	73.9	95.0	100.0	88.9
5	besuchen*	V <sub>t</sub>	visit	69.6	100.0	100.0	88.9
7	kämpfen	V <sub>i</sub>	fight	39.1	75.0	90.0	66.7
8	in den Arm nehmen	V <sub>t</sub>	hug	39.1	70.0	75.0	60.3

\* language-specific item

Equally unexpected as the comparably low productivity of items ‘tears’ and ‘smile’ in the EMOTION EXPRESSION category is the late acquisition of the expressions *kämpfen* (‘fight’) and *in den Arm nehmen* (‘hug’) with 4 years. As with the former items, no conclusions can be drawn from this result without related knowledge about the frequency of those expressions in everyday colloquial German and the language addressed to young children in particular.

### *Desire & Evaluation*

A remarkable increase in vocabulary of the category DESIRE & EVALUATION seems to take place for German children between 3 and 4 years, visible in a mean difference of .17 of productive words from the category as exemplified in the checklist.

Active vocabulary at 3 years includes the basic verbs ‘want’, ‘like’, and ‘need’, which seem to designate something like core concepts of this domain. In contrast, the word *Wunsch* (‘wish’) emerges with 4 years and reaches productivity with 5 years; and the production of ‘hope’, although increasing with age, remains in the status of single occurrences throughout the sample.

*Wollen* accounts for the most utterance examples provided by German parents (60 examples) and covers an enormous variety of contexts and uses. It is combined with simple objects, stating first person desires (2a) or inquiring about second person ones (2b), with activities in form of infinitive complements, expressing the child’s dislike with a negation (2c) or a proposal in form of a question with first person plural (2d); finally, *wollen* is also combined with sentential complements (2e) (see also Chapter 4.1.2).

- (2) a. *Ich will Schokolade.* (3;4)  
**I want** chocolate.
- b. *Willst du auch eine Apfelschorle?* (4;2)  
**Do you also want** an ‘Apfelschorle’ [apple juice with soda] ?
- c. *Ich will noch gar nicht ins Bett gehen.* (3;5)  
**I don’t want** to go to bed **yet**.
- d. *Wollen wir die Geschichte lesen?* (4;4)  
**Should we** read the story?
- c. *Immer nur du willst dass ich lieb bin.* (5;2)  
**You are the only one who always wants** me to be nice.

*Brauchen* also appeared in a high number of examples (29 utterances). While some uses with second or third persons were also reported for this verb, most examples used the first person constructional frame *Ich brauch(e)\_\_\_*, and one third of the usage examples came from the context of crafting or painting with children requesting utensils needed for their activity.

- (3) *Ich brauch mal eine Schere.* (3;10)  
**I need** some scissors **for one time**.
- Papa, ich brauch den Kleber.* (5;4)  
Dad, **I need** the glue.

Table 4.1.06 *Acquisitional pattern of German IS vocabulary in the category DESIRE & EVALUATION*

Desire & Evaluation							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	wollen	V <sub>i,t</sub>	want	95.7	95.0	90.5	93.8
2	lustig	A	funny	87.0	85.0	100.0	90.6
3	mögen (mag)	V <sub>t</sub>	like	91.3	85.0	90.0	88.9
4	brauchen	V <sub>t</sub>	need	82.6	90.0	95.2	89.1
5	schön	A	pretty	78.3	100.0	90.5	89.1
6	gut	A	good	78.3	90.0	95.2	87.5
7	Lieblings-	[N-]	favorite	78.3	100.0	81.0	85.9
8	schade	A	it's a pity	65.2	90.0	80.0	77.8
9	lieber	A <sub>comp</sub>	prefer	60.9	80.0	95.2	78.1
10	süß	A	cute	60.9	75.0	90.5	75.0
11	cool*	A	cool	56.5	80.0	95.2	76.6
12	gefallen	V <sub>i</sub>	like, appeal	47.8	85.0	80.0	69.8
13	schlimm	A	severe, upsetting	47.8	75.0	75.0	65.1
14	allerbeste/r	A <sub>superl</sub>	best	47.8	60.0	70.0	58.7
15	gern haben*	V <sub>t</sub>	like, be fond of	47.8	60.0	60.0	55.6
16	Wunsch	N	wish	39.1	70.0	75.0	60.3
17	besser	A <sub>comp</sub>	better	34.8	75.0	85.0	63.5
18	hoffen	V <sub>i,t</sub>	hope	17.4	45.0	40.0	33.3

\* language-specific item

Besides *mögen* ('like'), two other verbs of liking were asked for in the German IS word checklist: *gefallen* ('like, appeal') and *gern haben* ('like, be fond of'). Both are produced by 48% of the 3-year-olds; *gefallen* then reaches common productivity for 4- and 5-year-olds, whereas *gern haben* stays at 60% of report of use for the older groups. That *mögen* is acquired first and probably used most frequently for liking, as it accounts for 11 example utterances provided by parents compared to only 2 each for the other two terms, may be due to its semantic flexibility and structural simplicity. It can be used for objects, persons, and actions in a simple transitive construction, whereas *gefallen* in its simplest use requires the experiencer to be marked with dative case and *gern haben* as particle verb requires its object to be placed in an intermediate position between verb and particle.

Another aspect of this semantic group were terms for comparisons. Here, *Lieblings-* ('most liked, favorite'), which is combined with category nouns to state one's preferences, is the first one acquired and already highly productive with 3 years.

- (4) *Das ist mein Lieblingsessen.* (3;4)  
**That is my favorite food.**
- Das ist meine Lieblingsfarbe.* (4;9)  
**That is my favorite color.**

The comparative *lieber* emerges with 3 and becomes productive with 4 years. *Besser*, which in German is mostly used to refer to a supposed objectively better quality, whereas *lieber* clearly expresses a subjective preference, is produced only by a few 3-year-olds, but becomes as well commonly productive in the older groups. *Allerbeste(r)* ('best (of all)') is used by about 50% to 70% of the children from 3 to 5, often in a formulaic construction used to refer to one's best friend:

- (5) *Lena H. ist meine allerbeste Freundin.* (4;0)  
**Lena H. is my best friend.**
- Justin ist mein allerbesten Freund!* (5;2)  
**Justin is my best friend.**

Three evaluative adjectives – *lustig* ('funny'), *schön* ('pretty'), and *gut* ('good') – are also among the terms highly productive with 3 years. Emerging at this age group and commonly used with 4 years are *süß* ('cute') and *cool* ('cool').

*Schade* ('it's a pity') and *schlimm* ('severe, upsetting'), the two negative evaluators included, which are usually used for events or situations, start with 65% and 48% at 3 years and become productive with 4 years.

While the usage examples of younger children show these evaluators mostly in solid frames like in (6a), older children make use of them in more flexible constructions (6b).

- (6) a. *Das ist aber lustig.* **That is ABER funny.** (4;1)  
*Das ist aber cool.* **That is ABER cool.** (4;3)  
*Das ist aber schade.* **That is ABER a pity.** (3;9)
- b. *Du siehst lustig aus.* **You look funny.** (4;8)  
*Die Hose sieht aber cool aus.* **The pants look ABER cool.** (5;8)  
*Schade, dass Papi nicht kommen kann.* **It's a pity that** Daddy can't come. (5;8)

### Ability & Success

Table 4.1.07 *Acquisitional pattern of German IS vocabulary in the category ABILITY & SUCCESS*

Ability & Success							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	können	V, Aux	can, be able	95.7	95.0	85.7	92.2
2	nicht können	V, Aux	cannot do	91.3	100.0	90.5	93.8
3	schwer*	A	hard	82.6	100.0	90.0	90.5
4	leicht*	A	easy	65.2	90.0	95.2	82.8
5	selbst / selber	Pron	by oneself, on one's own	65.2	90.0	90.5	81.3
6	lernen	V <sub>i,t</sub>	learn	60.9	95.0	85.7	79.7
7	anstrengend	A	exhausting	56.5	65.0	85.0	68.3
8	versuchen	V <sub>t</sub>	try	47.8	90.0	90.0	74.6
9	schaffen	V <sub>t</sub>	accomplish, succeed	56.5	75.0	65.0	65.1
10	einfach	A	simple, easy	47.8	75.0	85.0	68.3
11	schwierig	A	difficult	43.5	75.0	66.7	60.9
12	gut sein in (etw.)	[A Cop PP}	be good at (sth.)	21.7	70.0	65.0	50.8
13	üben	V <sub>i,t</sub>	practice	17.4	75.0	71.4	53.1
14	fleißig	A	hard-working	26.1	45.0	40.0	36.5

\* language-specific item

In the semantic group of ABILITY & SUCCESS only three items are used by more than 75% of the 3-year-olds, which are *können* ('can, be able'), *nicht können* ('cannot do'), and *schwer* ('hard').

German 3-year-olds also begin to express the easiness of doing something (*leicht*), emphasize their ability to do something on their own (*selbst/selber*), talk about learning (*lernen*) and accomplishing (*schaffen*) things and how exhausting (*anstrengend*) they are.

All these words reach common productivity in the 4-year-old group, together with a list of other items that had still been below 50% for the 3-year-olds. These include trying to do something (*versuchen*), 'simple' (*einfach*) and 'difficult' (*schwierig*), and 'practice' (*üben*).

This acquisition pattern shows a similarly large "jump" in active vocabulary from 3 to 4 as did the one for the semantic category DESIRE & EVALUATION.

4- and 5-year-olds also start talking about doing well in something (*gut sein in (etw.)*). The single item produced only by a few children throughout is *fleißig* ('hard-working'), which probably is not yet part of the frequent experiential scripts of preschoolers.

While the usage examples for this category were too few to detect any meaningful acquisitional pattern, some examples of the highly productive items of ABILITY & SUCCESS are displayed in (7).

- (7) a. *Ich kann schon gut mit dem Messer schneiden, oder?* (3;10)  
I can already cut well with the knife, can't I?
- b. *Ich kann das nicht. Das ist so schwer.* (3;10)  
I cannot do that. It's so hard.
- c. *Das ist doch ganz leicht.* (3;5)  
That is DOCH totally easy.
- d. *Ich will das selber machen.* (3;7)  
I want to do this on my own.
- e. *Ausmalen ist so anstrengend.* (4;8)  
Coloring is so exhausting.
- f. *Wir können es ja mal versuchen.* (4;3)  
We can simply try it.

### Emotion

With 3 years, German children in the present sample are actively producing the construction *geht* \_\_\_ adding a valence marker like *gut/schlecht* ('well'/'bad') to talk about a current mood or feeling. Whereas most example utterances provided were about the child's own internal state, as in (8a), uses of the construction are also reported for the inquiry about the general well-being of another (8b).

- (8) a. *Mir geht's nicht gut.* (3;9)  
I don't feel well.
- b. *Wie geht es dir?* (4;10)  
How do you feel? or How are you doing?

All other general or neutral emotion terms asked about in the IS Word Checklist, like 'mood' (*Laune*), 'heart' (*Herz*), or 'excited' (*aufgeregt*), do not appear in German children's shared productive vocabulary before age 4.

Interestingly, most examples provided for these terms came from 3-year-olds.

- (9) *Teddy hat schlechte Laune.* (3;10)  
Teddy is in a bad mood.
- (10) *Mein Herz sagt, ich will jetzt ein Eis.* (3;3)  
My heart says, I want ice-cream now.
- (11) *Ich bin aufgeregt, weil die Oma kommt.* (3;10)  
I am excited, because grandma is going to come.

Table 4.1.08 *Acquisitional pattern of German IS vocabulary in the category EMOTION*

Emotion							
general / neutral							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	geht gut / schlecht	[V <sub>imp</sub> A]	feel good / bad	78.3	95.0	90.0	87.3
2	Laune*	N	mood	30.4	65.0	70.0	54.0
3	Herz	N	heart	34.8	55.0	60.0	49.2
4	föhlen	V <sub>refl</sub>	feel	21.7	75.0	45.0	46.0
5	aufgeregt	A	excited	21.7	50.0	55.0	41.3
6	überrascht	Part	surprised	17.4	30.0	50.0	31.7
positive							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	Spaß	N	fun	87.0	95.0	90.5	90.6
2	freuen	V <sub>refl</sub>	happy, pleased	73.9	90.0	90.5	84.4
3	fröhlich	A	happy, cheerful	43.5	75.0	50.0	55.6
4	glücklich	A	happy, contented	43.5	65.0	60.0	55.6
5	froh*	A	happy, glad	43.5	50.0	50.0	47.6
6	wohl föhlen	[V <sub>refl</sub> Adv]	feel comfortable	17.4	30.0	40.0	28.6
negative							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	Angst	N	fear, anxiety	95.7	100.0	95.2	96.9
2	traurig	A	sad	87.0	95.0	90.5	90.6
3	böse*	A	angry, mad	82.6	90.0	85.7	85.9
4	erschrecken*	V <sub>refl</sub>	frightened, terrified	78.3	75.0	85.7	79.7
5	eklig	A	disgusting	73.9	80.0	95.2	82.8
6	langweilig	A	bored	65.2	95.0	95.2	84.4
7	sauer*	A	angry ( <i>lit.</i> sour)	60.9	95.0	90.0	81.0
8	wütend	A	angry	39.1	80.0	85.0	66.7
9	auf die Nerven gehen	[V <sub>i</sub> PP]	annoying	30.4	40.0	60.0	42.9
10	Sorgen machen	[N V <sub>t</sub> ] <sub>refl</sub>	worry	21.7	40.0	35.0	31.7
11	fürchten	V <sub>t,refl</sub>	fear	13.0	45.0	40.0	31.7
12	betrübt*	A	sorrowful	8.7	5.0	5.0	6.3

\* language-specific item

The verb *föhlen* ('feel') shows an unusual pattern of production over the age groups, as it is reported for 75% of the 4-year-olds, but only for 45% of the 5-year-olds. Additionally, no usage examples were provided by parents for this term, making it hard to guess any reason for the pattern observed.

The adjective *überrascht*, which refers to surprise, does not emerge before age 5 and is also not part of any example utterances provided by German parents.

Of the positive emotion terms, the only word German children commonly produce at age 3 is *Spaß* ('fun'), as in:

- (12) *Das hat mir Spaß gemacht.* (3;3)  
That was **fun** (for me).

Of the four items expressing states of happiness, only the verb *freuen* is used by 74% of the 3-year-olds and over 90% of the 4- and 5-year-olds. The adjectives *fröhlich*, *glücklich* and *froh* all start with a production percentage of 44% in the 3-year-olds and rise to 50%–60% in the 5-year-old group, thus not reaching common productivity before age 6. Instead of one adjective for 'happy' being dominant in young children's vocabulary, it seems that individual differences in which term is acquired first and predominantly used by a single child are the cause for this pattern. The only usage examples that were given for these terms are displayed in (13).

- (13) a. *Ich freue mich aufs Tanzen.* (3;10)  
**I'm looking forward to** dancing.
- b. *Freust du dich?* (4;2)  
**Are you happy?**
- c. *Ich bin glücklich.* (3;3)  
I am **happy**.
- d. *Weil ich spiele, bin ich fröhlich.* (5;1)  
Because I am playing, I am **happy**.

In the negative emotion vocabulary of German 3-year-olds, contrary to the acquisitional pattern of words for happiness, there is always one term commonly productive and dominating as expressive means for each of the basic emotions fear, sadness, and anger.

To talk about fear, German children use the noun *Angst* ('fear'), which is reported for over 95% in all age groups. Parent's examples show how *Angst* is used in a variety of discourse contexts, e.g., inquiring about whether someone shares a feeling (14a), talking about causes of fear (14b), bodily reactions of fear (14c), or comforting a younger sibling (14d).

- (14) a. *Ich habe Angst. Hast du auch Angst?* (3;3)  
I am afraid. **Are you afraid, too?**
- b. *Wenn es dunkel ist, habe ich Angst.* (3;5)  
**When** it is dark, **I am afraid**.
- c. *Da hab ich vor Angst gezittert.* (4;10)  
Then I **shivered of fear**.
- d. *Joshua, du brauchst keine Angst haben, ich pass auf dich auf.* (5;2)  
Joshua, **you don't have to be afraid**, I'll take care of you.

The semantically related verb *fürchten* ('fear') instead is produced only by single children throughout the sample. No examples were provided for its use. The reason is probably that

*fürchten* is representative of a more lofty speech style or register, which nevertheless appears in books and stories for children, but might not be transferred into everyday colloquial speech. To refer to feelings of sadness, the word *traurig* ('sad') is already highly productive in 3-year-olds. It accounts also for a high number of usage examples (14 utterances) given for the EMOTION category, covering a range of functional contexts. Young children use *traurig* not only to express their own sadness – often in combination with intensifying adverbs and particles, as in (15a–d).

- (15) a. *Ich bin **traurig**.* (3;8)  
I am **sad**.
- b. ***Jetzt** bin ich **traurig**.* (4;1)  
**Now** I am **sad**.
- c. ***Jetzt** bin ich **echt traurig!*** (5;7)  
**Now** I am **really sad!**
- d. ***Das** macht mich **schrecklich traurig**.* (4;7)  
That makes me **terribly sad**.

They also empathically inquire about another's feeling (16a), refer to the sadness of a third person (16b, 16c), and to crying as emotional expression resulting from sadness (16d).

- (16) a. ***Bist du traurig?*** (3;5)  
**Are you sad?**
- b. ***Mama ist traurig.*** (3;4)  
Mom **is sad**.
- c. ***Meine Puppe ist traurig!*** (4;4)  
My doll **is sad!**
- d. ***Wenn ich traurig bin, dann weine ich.*** (3;6)  
When I am **sad**, (then) I **cry**.

One 3-year-old girl asked her mother not to look at her, because she is sad:

- (17) ***Mama nicht gucken, Sophie ist traurig.*** (3;3)  
Mom don't look, Sophie [=the girl's name] is **sad**.

For the basic emotion of anger, German 3-year-olds predominantly use the term *böse* ('bad, mad'). Originally, *böse* is used for 'bad' in a moral sense, but for young children it often fills the function of 'angry'.

*Sauer*, literally meaning 'sour', and *wütend* are the other two adjectives for 'angry' and are the items that adults use to refer to anger rather than *böse*. *Sauer* is already emerging in the 3-year-olds (61%), *wütend* only produced by 39%, but both rise to common productivity in the 4-year-old group. Uses comprise both first person expression of emotion – with different combinations of intensifiers – (18a, 18b) and inquiry about second person emotion (18c). In one usage example of a 5-year-old, the emotion of a third person is referred to (18d).

(18) a.	<i>Ich bin jetzt sauer!</i>	I am <b>now angry!</b>	(4;8)
	<i>Jetzt bin ich echt sauer.</i>	<b>Now I am angry for real.</b>	(4;1)
	<i>Ich bin jetzt ganz sauer.</i>	I am <b>now totally angry.</b>	(4;2)
	<i>Ich bin jetzt so richtig sauer.</i>	I am <b>now so truly angry.</b>	(4;3)
b.	<i>Ich bin wütend.</i>	I am <b>angry.</b>	(5;9)
	<i>Ich bin so wütend.</i>	I am <b>so angry.</b>	(4;7)
	<i>Jetzt bin ich wirklich wütend!</i>	<b>Now I am really angry!</b>	(3;7)
c.	<i>Bist du sauer, Mama?</i>	<b>Are you angry, Mom?</b>	(4;3)
	<i>Bist du jetzt wütend?</i>	<b>Are you angry now?</b>	(4;10)
d.	<i>Mama ist sauer!</i>	<b>Mom is angry!</b>	(5;8)

A further negative emotion term that is already active in German 3-year-olds is *erschrecken* ('frightened, terrified'), which refers to a terrified or shocked surprise. In many of the example utterances provided it is used to refer to the action of playing a trick on someone or surprising them to give them a shock, as in (19a), but it is also used to express the child's own shock about something (19b).

(19) a.	<i>Ich hab dich erschreckt.</i>	I have <b>terrified you.</b>	(3;4)
	<i>Ich wollte euch doch erschrecken.</i>	But I <b>wanted to frighten you.</b>	(4;10)
	<i>Komm wir erschrecken Papa.</i>	<b>Come on, let's spook Dad.</b>	(5;9)
b.	<i>Ich erschrecke mich.</i>	<b>I get terrified.</b>	(4;10)
	<i>Jetzt hab ich mich aber erschreckt.</i>	Now <b>I got ABER terrified.</b>	(3;4)

Emerging with 3 years and actively used by most of the children with 4 years are expressions for disgust and boredom.

*Ekelig* ('disgusting'), which is not used like the other emotion adjectives as a predicate of an experiencer but refers to the disgusting quality of an object, was the emotion term, for which parents noted the most usage examples (18 utterances) – followed by *traurig* ('sad') (14 examples) and *langweilig* ('bored') (13 examples). Besides simple exclamations of disgust, an impressive number of these show the use of *eklig* in relation to food. For 4- and 5-year-olds further examples were given for expression of disgust about a second person, about what a sibling does, or about a past experience.

(20) a.	<i>Iiiih, eklig.</i>	Iiiih, <b>disgusting.</b>	(3;4)
	<i>Das ist eklig.</i>	That is <b>disgusting.</b>	(3;6)
	<i>Ih, das ist ja eklig.</i>	Ih, that is <b>JA disgusting.</b>	(3;10)
	<i>Das ist aber eklig.</i>	That is <b>ABER disgusting.</b>	(4;6)
b.	<i>Das Essen schmeckt eklig.</i>	The food tastes <b>disgusting.</b>	(4;0)
	<i>Das schmeckt mir nicht. Das ist eklig. Ist dir das nicht eklig?</i>	This doesn't taste good. This is <b>disgusting.</b> Isn't it <b>disgusting</b> for you, too?	(4;3)
	<i>Das Essen ist eklig, Mama.</i>	The food is <b>disgusting, Mom.</b>	(5;2)
	<i>Das Mittag schmeckt eklig.</i>	Lunch tastes <b>disgusting.</b>	(5;8)

- c. *Du bist eklig.* **You are disgusting.** (5;8)  
 d. *Stimmts, das was Deliah macht ist eklig.* What Deliah does is **disgusting**, right? (4;2)  
 e. *Der Hundehaufen war voll eklig.* The dog turd **was totally disgusting.** (5;10)

In all of its numerous usage examples, *langweilig* ('bored') is used in the simple expressive construction:

- (21) *Mir ist (so) langweilig.*  
**I feel (so) bored.**

In the 5-year-old group, the construction *auf die Nerven gehen* ('to go on one's nerves') is emerging with a production percentage of 60%. The construction is used to talk about people that are being experienced as annoying (22a), or, as in the second example from a young 3-year-old, for annoying characteristics of an object (22b).

- (22) a. *Leo geht mir auf die Nerven.* (5;9)  
**Leo is going on my nerves.**  
 b. *Das Geräusch von der Waschmaschine geht mir auf die Nerven.* (3;5)  
**The sound of the washing mashine is going on my nerves.**

Staying at the level of a few single children producing the term is the expression *Sorgen machen* ('worry'). In the only two examples provided it is not used to express worries of the self, but in the context of comforting someone (23).

- (23) *Mach dir keine Sorgen, Mama!* (5;7)  
**Don't worry, Mom!**  
*Musst du dir keine Sorgen machen, Bobby (teddy bear).* (5;9)  
**You don't have to worry, Bobby (child's teddy bear).**

### *Morality & Norms*

German 3-year-olds readily use *bitte* ('please'), *danke* ('thank you') and *Entschuldigung* ('sorry') where required in social routines.

They use the moral term *böse* ('bad') to complain about the bad behavior of a third person, usually a sibling or peer (24).

- (24) *Mama, Jenni war böse!* (5;4)  
**Mom, Jenni was bad!**  
*Lara war böse zu mir.* (4;4)  
**Lara was bad to me.**

Of the other negative moral terms asked about in the checklist, *frech* ('naughty') suddenly rises from 44% to 85% in the 4-year-old group, showing high productivity in the older children. First person (25a) as well as third person uses (25b) appear in the examples.

Table 4.1.09 *Acquisitional pattern of German IS vocabulary in the category MORALITY & NORMS*

Morality & Norms							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	bitte*	social word	please	100.0	95.0	100.0	98.4
2	danke	social word	thank you	100.0	95.0	100.0	98.4
3	Entschuldigung	social word	sorry	82.6	95.0	100.0	92.2
4	böse	A	bad	82.6	85.0	100.0	89.1
5	dürfen	V, Aux	may, be allowed to	82.6	95.0	85.0	87.3
6	müssen	V, Aux	must, have to	60.9	95.0	85.0	79.4
7	sollen*	V, Aux	should	60.9	90.0	90.0	79.4
8	frech*	A	naughty	43.5	85.0	85.0	69.8
9	verboten	A	forbidden, prohibited	43.5	80.0	90.0	69.8
10	man*	Pron	one (impersonal)	52.2	65.0	65.0	60.3
11	erlaubt*	Part	allowed, permitted	30.4	65.0	75.0	55.6
12	brav	A	well-behaved	21.7	35.0	55.0	36.5
13	arm	A	poor	8.7	45.0	50.0	36.5
14	vernünftig	A	rational, sensible	13.0	20.0	35.0	22.2
15	Regel*	N	rule	8.7	25.0	45.0	25.4
16	unartig*	A	misbehaving	4.3	15.0	25.0	14.3
17	berühmt	A	famous, celebrated	0.0	5.0	30.0	11.1
18	beliebt	A	popular	0.0	5.0	15.0	6.3

\* language-specific item

- (25) a. *Ich bin nicht frech.* (4;2)  
I am not naughty.
- b. *Sheyla ist ja frech.* (4;9)  
Sheyla is JA naughty.

The adjective *unartig* ('misbehaving'), which is usually used by adults to refer to the misbehavior of young children, is reflected in the production of a few single children only.

The opposite term *brav* ('well-behaved') (26), is rarely used by younger children in the sample, but reaches 50% productivity in the German 5-year-olds. It must be noted that besides the two terms used in the checklist other expressions exist and may be used by some children that cover the same functions, e.g., *ungezogen* ('misbehaving') or *artig* ('well-behaved').

- (26) *Ich war den ganzen Tag brav.* (4;3)  
I was well-behaved the whole day.

*Dürfen* ('may, be allowed to'), which is active from age 3, and *müssen* ('must, have to') and *sollen* ('should'), both emerging with age 3 and becoming active with age 4, are modal verbs that in the literal sense are used to talk about obligations, rules, and permission. As most

modals, they can also be used in an epistemic sense, but in children's utterance examples only deontic uses were observed.

In the parents' examples, uses of *dürfen* span many contexts from asking for their desired behavior in a simple frame with an infinitive complement (27a) or the negotiation of permissions (27b) over emphasizing an existing norm or rule (27c, 27e) to their own formulation of permission or rejection for another's action (27d).

- (27) a. *Darf ich das aufmachen?* (3;4)  
**May I** open this?  
*Darf ich auch was Süßes?* (4;1)  
**May I also** (have) some candy?  
*Darf ich das Foto zerknicken?* (4;4)  
**May I** fold the picture?  
*Darf ich bei euch im Schlafzimmer schlafen?* (5;2)  
**May I** sleep with you in the bedroom?  
*Darf ich dich kitzeln?* (5;8)  
**May I** tickle you?
- b. *Bei Mami darf ich das.* (3;4)  
**Mommy allows me** (to do) that. lit. **With Mommy, I'm allowed** that.  
*Warum darf ich das nicht?* (3;6)  
**Why am I not allowed** (to do) that?  
*Das darf man aber!* (3;7)  
**But one is allowed** (to do) that!
- c. *Das darf man nicht.* (3;3)  
**That is not allowed.** lit. **One is not allowed** that.  
*Das darf man gar nicht.* (3;9)  
**That is not allowed at all.**  
*Die dürfen das nicht.* (4;1)  
**They are not allowed** (to do) that.  
*Das darf man aber nicht!* (5;10)  
**But that is not allowed!**
- d. *Du darfst meine Puppe nicht haben.* (4;4)  
**You may not** have my doll.
- e. *Im Museum darf man nichts anfassen.* (4;7)  
**In the museum one is not allowed** to touch anything.  
*Man darf das Messer nicht in den Mund nehmen.* (4;10)  
**One is not allowed** to put the knife in the mouth.  
*Man darf nicht lügen, muss immer die Wahrheit sagen.* (5;2)  
**One is not allowed** to lie, **must always** tell the truth.

Whereas younger children in examples (27c) invoke rules in a seemingly expressive act of outrage about someone's behavior in the here and now using the simple demonstrative *das* ('that'), older children explicitly verbalize what it is that one should not do in the form of a general rule (27e).

In both examples (27c) and (27e), where general norms or rules are referred to, German children use the impersonal pronoun *man* ('one'), which is reported for 50% to 65% of the children in all three age groups.

*Müssen* ('must, have to') is the major linguistic means to talk about obligations and children use it quite widely, be it to express a necessity (28a), inquire about an obligation of another (28b) or reminding them of one (28c), or to complain about an order (28d).

- (28) a. *Papa, du musst dich immer rasieren!* (3;7)  
Dad, **you always have to** shave!
- b. *Musst du arbeiten, Mama?* (3;10)  
**Do you have to** work, Mom?
- c. *Wir müssen noch einkaufen.* (4;10)  
**We still have to** go shopping. [for groceries]
- d. *Immer muß ich den Tisch decken!* (5;3)  
**It's always me who has to** set the table!

Besides these uses, *müssen* as modal verb is also part of many example utterances that were originally provided to exemplify the use of other terms in the list, accounting for the third highest number of example utterances (40 examples) in the database after *wollen* ('want') and *können* ('can').

Similarly to *müssen*, *sollen* expresses obligation, and although the uses of both verbs overlap in many cases, the obligation expressed by *müssen* is more like an impersonal necessity, whereas *sollen* clearly expresses an imperative put by one person on another. This is visible in the many examples, where children use the frame *Du sollst* \_\_\_ in a directive to someone.

- (29) *Du sollst mir die Schuhe zu machen.* (3;3)  
**You should** tie me my shoes.
- Du sollst sofort ...* (3;3)  
**You should ... right now**
- Du sollst nicht sprechen!* (3;3)  
**You should not** speak!
- Du sollst mit mir spielen.* (4;8)  
**You should** play with me.

Directives with *sollen* can also be given indirectly as in (30) (asking the hearer to report to the third person who is subject of the clause).

- (30) *Wenn Mama nach hause kommt soll sie mir noch einen Kuß geben.* (4;9)  
When Mom comes home **she should** give me a kiss.

A further use of *sollen* in an indirect or implicit directive is in the form of an impersonal complaint about a state of affairs that indicates the state one desires (31).

- (31) *Das (Essen) soll warm sein (nicht heiß)!* (3;7)  
**That** (food) **should be** warm (not hot)!

Older children then begin to use *sollen* with reference to directives made to them by others, in (32) in the past tense and in a contrastive with the child's own wish.

- (32) *Ich sollte ein Hund sein und wollte lieber eine Katze sein.* (5;4)  
**I should** be a dog, **but rather wanted** to be a cat.

The formula *Soll ich\_\_\_?* ('Should I\_\_\_?') in (33) is used discursively to get someone's approval or agreement for a planned action.

- (33) *Soll ich Mama mal fragen?* (4;8)  
**Should I** ask Mom for one time?

The subjunctive form *sollte* in (34) is used for a moral inference in reflection of one's own prior behavior.

- (34) *Ich sollte mich entschuldigen.* (4;10)  
**I should** apologize.

Words for 'forbidden' and 'allowed' – the participles *verboten* and *erlaubt* – both appear in children's common productive vocabulary at age 4, *verboten* already highly productive with 80%, *erlaubt* with 65%, rising to 75% at age 5.

As with *dürfen*, younger children predominantly refer to a given situation with demonstrative *das* (35a); older children then start explicitly verbalizing the content of the prohibition (35b).

- (35) a. *Sie hat uns das verboten.* (4;1)  
 She **prohibited** that. lit. She **has** us that **forbidden**.  
*Deliah, das ist verboten.* (4;2)  
 Deliah, that **is forbidden**.  
 b. *Mami hat verboten auf's Dach zu klettern.* (5;8)  
 Mommy **has forbidden** to climb on the roof.

An interesting example from a 3-year-old girl verbalizes both an explicit prohibition and the hypothesized consequence of breaking it using the anger term *sauer* with the intensifying prefix *stink-* (lit. 'smell, stink') (36).

- (36) *An die Häuser schreiben ist verboten. Da wird die Polizei stinksauer.* (3;5)  
 Writing on the houses **is forbidden**. The police **will be raging mad then**.

For *erlaubt*, only one example utterance was provided, in which the child is telling on a sibling (37).

- (37) *Das hast du Jenni nicht erlaubt!* (5;4)  
**You didn't allow** Jenni (to do) this!

Although the child utterances seen so far have already shown German children's frequent reference to and verbalization of rules, the noun *Regel* ('rule') does not reach 50% of production in the age period studied. The single example provided for the word by a 5-year-old shows an act of negotiating a rule by disagreeing with it (38).

- (38) *Mama, ich finde das eine doofe Regel!* (5;2)  
 Mom, I think this is a **silly rule!**

*Arm* ('poor') emerges as common vocabulary in the 5-year-old group and is used as a moral term expressing compassion (39), e.g., when comforting someone.

- (39) *Armer Fuchs, ist doch nicht so schlimm.* (3;5)  
**Poor** fox, look it's not that bad.
- Der arme Eisbär* (5;10)  
 The **poor** polar bear

The words *beliebt* ('popular') and *berühmt* ('famous'), that were included as terms for social status and conventions, very rarely appear in children's IS vocabularies and no usage examples were provided for them.

### *Social feelings & Relationships*

Table 4.1.10 *Acquisitional pattern of German IS vocabulary in the category SOCIAL FEELINGS & RELATIONSHIPS*

Social feelings & Relationships							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	Freund sein*	[N Cop]	be friends with	87.0	95.0	95.2	92.2
2	schimpfen	V <sub>i</sub>	scold	73.9	90.0	81.0	81.3
3	(jd.) ärgern*	V <sub>t</sub>	pick on (so.)	73.9	80.0	85.0	79.4
4	lieben	V <sub>t</sub>	love (so.)	69.6	100.0	90.5	85.9
5	mögen (jd.)	V <sub>t</sub>	like (so.)	69.6	75.0	80.0	74.6
6	gewinnen	V <sub>i</sub>	win	56.5	100.0	90.0	81.0
7	lieb sein zu (jd.)*	[A Cop PP]	be nice to (so.)	60.9	80.0	80.0	73.0
8	beste/r Freund/in*	[A <sub>superf</sub> N]	best friend	52.2	90.0	85.7	81.0
9	streiten*	V <sub>i</sub>	quarrel	52.2	85.0	80.0	71.4
10	versprechen	V <sub>t</sub>	promise	47.8	95.0	85.0	74.6
11	vermissen	V <sub>t</sub>	miss	47.8	75.0	80.0	66.7
12	um (jd.) kümmern*	V <sub>refl</sub>	care for (so.)	26.1	50.0	60.0	44.4
13	hassen (jd.)	V <sub>t</sub>	hate (so.)	13.0	40.0	55.0	34.9
14	beleidigt	Part	offended	17.4	40.0	30.0	28.6
15	sich gut verstehen*	[V <sub>refl</sub> A]	get along well	8.7	35.0	40.0	27.0
16	stolz	A	proud	8.7	30.0	40.0	25.4
17	verzeihen	V <sub>i,t</sub>	forgive	8.7	35.0	30.0	23.8
18	sich schämen	V <sub>refl</sub>	ashamed, embarrassed	4.3	30.0	40.0	23.8
19	schmollen	V <sub>i</sub>	sulk, be in a strop	8.7	15.0	30.0	17.5
20	eifersüchtig	A	jealous, envy	0.0	15.0	25.0	12.7

\* language-specific item

With 3 years, only one term from the list SOCIAL FEELINGS & RELATIONSHIPS is produced by over 75% of the German children: *Freund sein* ('be friends with'). It is also the item with the most parent examples in the category (7 utterances), while the whole list did not yield many example utterances.

Friendship seems to be an important concept for German preschoolers, designating a relationship that is not imposed by circumstances (as many important relationships in the Korean context, for example), but created – and also quit – by intention and mutual agreement (40).

- (40) a. *Wollen wir Freunde sein?* (4;3)  
**Should we be friends? lit. Do we want to be friends?**
- b. *Du bist nicht mehr mein Freund.* (3;8)  
 You are **not my friend anymore.**
- Ich bin nicht mehr dein Freund.* (4;2)  
 I am **not your friend anymore.**

Connected with friendship are norms of behavior like not doing harm to each other, to which children also refer explicitly (41a) or implicitly (41b) in their utterance examples.

- (41) a. *Mehmet ist mein allerbesten Freund. Ich bin immer lieb zu ihm.* (5;2)  
 Mehmet is my **very best friend**. I am **always nice to him**.
- b. *Ich bin doch dein Freund.* (3;5)  
**But I am your friend.** [...so you shouldn't do this to me.]

Usage of the term *besten Freund* also emerges at age 3 and becomes highly productive with 4 years. *Sich gut verstehen*, a reciprocal requiring a plural subject that expresses the quality of getting along well or having a lot in common, is used by single children only and not part of any utterance examples, probably due to its relative structural complexity, less frequent use in the input, and a more abstract and mature concept of relationship that is entailed.

The 'transitive' social emotions *lieben* ('love') and *mögen* ('like') also emerge at age 3 and become quickly productive at age 4, but their opposite *hassen* ('hate') is only reported to emerge with 5 years. Likewise, no examples were given for *hassen*. *Lieben* was mostly reported in uses related to relatives. Examples for *mögen* cover uses with second (42c) and third person objects (42a,b,d), negation (42c,d), and in combination with intensifiers (42b) or a causal expression (42d).

- (42) a. *Ich mag den Lukas.* (3;3)  
 I **like** Lukas.
- b. *Ich mag Moritz so doll!* (3;7)  
 I **like** Moritz **so madly!**
- c. *Ich mag dich nicht.* (4;10)  
 I **don't like** you.

- d. *Agit mag ich nicht, der beißt.* (3;3)  
I **don't like** Agit, he bites.

While the examples from younger children all referred to interpersonal feelings, one utterance from a 5-year-old child shows the use of *mögen* in the context of the peer group and talk about status and liking, contrasting judgments of “the girls” versus “the boys” (43).

- (43) *Wir mögen sie, aber die Jungs mögen sie nicht.* (5;10)  
We **like** her, but the boys **don't like** her.

Of the items expressing interpersonal behavioral attitudes or speech acts, the predicates for scolding, picking on someone, and being nice to someone are all productive for 61–74% of the German 3-year-olds and rise to 80–90% at age 4. Some of the few examples provided for the use of these terms are displayed in (44), (45), and (41a). They also show combinations with different subjects, negation, or intensifiers.

- (44) a. *Mama, nicht schimpfen!* (3;5)  
Mom, **please don't scold!**
- b. *Katrin hat doll geschimpft.* (4;10)  
Katrin **scolded** (me) **madly**.
- c. *Ich muss mit der Puppe schimpfen.* (4;4)  
I **have to scold** the doll.
- (45) a. *X. hat mich geärgert.* (3;3)  
X. **has picked on** me.
- b. *Ich habe Alicia geärgert.* (4;6)  
I **picked on** Alicia.
- c. *Die ärgern mich immer.* (4;9)  
They **always pick on** me.

Moreover, ‘quarrel’ and ‘win’ also emerge with 3 years and become active with 4 years.

*Versprechen*, the verb for ‘promise’ rises from 48% to 95% production from 3 to 4. Children’s examples additionally show a variety of constructions as well as functional contexts in which the verb is used: reminding the hearer of a promise (46a), making a promise oneself (46b), or asking someone to give a promise (46c). For one 5-year-old child, a parent entered a popular saying as utterance example (46d).

- (46) a. *Du hast es mir versprochen.* (3;5)  
You **promised** it to me.
- b. *Ich verspreche es.* (4;2)  
I **promise** it.
- c. *Versprichst du mir, dass du aufhörst? (zu Bruder)* (4;2)  
**Will you promise** me **to stop** it? (to brother)
- d. *Versprochen ist versprochen und wird auch nicht gebrochen.* (5;1)  
A **promise** is a **promise** and should not be **broken**.

A similar acquisition pattern with a sudden rise to high productivity at age 4 is seen for *vermissen* ('miss') (47).

- (47) a. *Ich hab dich so vermisst!* (3;7)  
I missed you so!
- b. *Mama, hast du mich vermisst?.* (3;10)  
Mom, did you miss me?
- c. *Ich vermisse Lara.* (4;4)  
I miss Lara.

The verbal expression 'care for' (*kümmern um*) emerges in the older children's productive vocabulary. Both examples given for it by parents show its use in the frame *Ich muss*\_\_\_ ('I have to') indicating that one has to care for someone who cannot care for himself (48). The second example also uses a causal construction.

- (48) a. *Ich muss mich noch um den Teddy kümmern.* (3;10)  
I still have to care for the teddy bear.
- b. *Ich muss mich um dich kümmern, weil du krank bist, Mama.* (5;2)  
I have to care for you, because you are sick, Mom.

The remaining checklist items were all reported for single children only and did not appear in any utterance examples given. These are the words *beleidigt* ('offended'), *verzeihen* ('forgive'), and *schmollen* ('sulk'), which describe long-term emotional and behavioral attitudes to the other after being hurt in a relationship, and the items *stolz* ('proud'), *sich schämen* ('be ashamed'), and *eifersüchtig* ('jealous'), which refer to complex social or self-reflective emotions.

#### *Communication & Discourse*

German 3-year-olds actively use words for saying, narrating, and 'story' to talk about the communicative events they experience. They also begin to use terms for asking and speaking, which become commonly productive at 4 years.

Only produced by few children with 3 years but also commonly productive with 4 years is the term *erklären* ('explain').

In the 4-year-olds two new terms emerge. *Antworten* ('answer'), which becomes productive with 5 years, now complements asking and saying; *bedeuten* ('mean, signify') adds to *erklären* ('explain') to be used in contexts of instruction, teaching, or clarification of a speaker's meaning or intent.

Related to the last two terms is *nämlich* ('that is to say, the reason is that'), which emerges as an additional linguistic resource for explanations in the 5-year-olds.

Table 4.1.11 *Acquisitional pattern of German IS vocabulary in the category COMMUNICATION & DISCOURSE*

Communication & Discourse							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	sagen	V <sub>i,t</sub>	say	87.0	95.0	95.2	92.2
2	erzählen	V <sub>i,t</sub>	tell, narrate	82.6	100.0	100.0	93.8
3	Geschichte	N	story	78.3	90.0	95.2	87.5
4	fragen	V <sub>i,t</sub>	ask	69.6	90.0	95.0	84.1
5	sprechen*	V <sub>i</sub>	speak, talk	65.2	75.0	85.0	74.6
6	erklären	V <sub>t</sub>	explain	26.1	85.0	75.0	60.3
7	nämlich	Adv	that is to say, the reason is that	26.1	40.0	60.0	41.3
8	antworten	V <sub>i,t</sub>	answer	13.0	70.0	85.0	54.0
9	bedeuten	V <sub>t</sub>	mean, signify	17.4	55.0	65.0	44.4
10	nennen	V <sub>t</sub>	call, name	8.7	40.0	35.0	27.0

\* language-specific item

### Cognition

Table 4.1.12 *Acquisitional pattern of German IS vocabulary in the category COGNITION*

Cognition							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	vergessen	V <sub>t</sub>	forget	69.6	95.0	95.0	85.7
2	wissen	V <sub>i,t</sub>	know (knowledge of facts)	65.2	95.0	95.0	84.1
3	kennen*	V <sub>t</sub>	know (be familiar with)	60.9	90.0	90.5	79.7
4	verstehen	V <sub>i,t</sub>	understand	43.5	80.0	85.0	68.3
5	denken	V <sub>i,t</sub>	think	43.5	75.0	80.0	65.1
6	erinnern	V <sub>i,refl</sub>	remember	34.8	85.0	75.0	63.5
7	schlau	A	clever, smart	21.7	55.0	55.0	42.9
8	interessant	A	interesting	17.4	35.0	50.0	33.3
9	neugierig	A	curious, inquisitive	13.0	25.0	35.0	23.8
10	Plan	N	plan	4.3	25.0	60.0	28.6

\* language-specific item

Words of the category COGNITION, although a few basic terms are emerging in the 3-year-old group, do not become active vocabulary of German children before age 4. But then, suddenly, a whole list of cognition terms becomes highly productive, showing a clear “jump” in acquisition that is similar to observations in some of the other semantic IS categories already mentioned.

The three basic terms emerging with 3 years are *vergessen* ('forget'), *wissen* ('know'), which refers to factual knowledge, and *kennen* ('know'), which expresses familiarity with something. As already mentioned, these become common repertoire of the German 4-year-olds.

*Vergessen* appeared in most examples given in the formulaic form in (49a). In (49b) an object and location are expressed; (49c) and (49d) show questions using the verb with a second person subject, combined with simple *das* or with an infinitive complement.

- (49) a. *Das hab ich vergessen.* (3;9)  
**I forgot** that.
- b. *Ich hab mein Buch im Kindergarten vergessen.* (3;5)  
**I forgot** my book in the kindergarten.
- c. *Mama, hast du das vergessen?* (4;4)  
 Mom, **did you forget** that?
- d. *Hast du vergessen X zu kaufen?* (4;8)  
 Did you **forget to** buy X?

*Wissen* was reported in uses as discourse marker *weißt du* ('you know') functioning as attention getter (50a), in statements about the child's previous knowledge (50b), and in combination with a WH-complement (50c).

- (50) a. *Weißt du?* (3;5)  
**Do you know?**  
*Weißt du, ich bin weiter gefahren als du.* (5;4)  
 I drove farther than you, **you know**.
- b. *Das weiß ich.* (4;2)  
**I know** that.  
*Das weiß ich doch selber.* (4;6)  
**I know** that DOCH by myself.
- c. *Ich hab ein Gefühl, aber ich weiß nicht, was das für ein Gefühl ist.* (4;4)  
**I have a feeling**, but I **don't know what kind of** feeling it is.

*Kennen* also appeared in a *Das [V] ich* frame with optional intensifying extensions (51a), but was further reported with a lexical object and negation (51b) and in a question with second person subject (51c).

- (51) a. *Das kenn ich!* (3;3)  
**I know** that.  
*Das kenn ich auch.* (3;4)  
**I know** that, too.
- b. *Ich kenn das Lied nicht.* (3;4)  
**I don't know** the song.
- c. *Kennst du Gustav schon?* (3;10)  
**Do you know** Gustav already?

Three mental verbs appearing as active vocabulary in the 4-year-olds are *verstehen* ('understand'), *denken* ('think'), and *erinnern* ('remember'). In the IS Word Checklist, examples for *denken* were only given for two 3-year-olds who both produced the perfect form *gedenkt*, which is analogous to the regular verb paradigm, but incorrect for the irregular verb *denken* with perfect *gedacht*.

- (52) a. *Ich hab gerade an den Papa gedenkt.* (3;5)  
I just **thought of** Dad.
- b. *Das hab ich mir so gedenkt.* (3;7)  
**I just thought this up.**

Detailed analyses of 'know' and 'think' and of the constructions they appear in as assessed and reported in the IS-Verb Complementation Report are part of Chapter 4.1.2.

For *verstehen*, also only example utterances from two 3-year-olds were reported (53), in the form of questions to a second person, in (53b) with a WH-complement clause. In both utterances, *verstehen* is used in the context of communication and understanding of what someone said, and not in the cognitive sense of understanding a problem or learning something.

- (53) a. *Mama, verstehst du?* (3;4)  
Mom, **do you understand?**
- b. *Hast du verstanden, was ich gesagt habe?* (3;4)  
**Have you understood what I said?**

Besides the use of *erinnern* as a cognitive process (54a), it is also reported in uses as the action or speech act of reminding someone of something (54b).

- (54) a. *Ich erinnere mich nicht, ich hab's vergessen.* (3;10)  
I **don't remember**, I forgot it.  
*Ich kann mich nicht erinnern.* (4;3)  
I **can't remember**.
- b. *Ich erinnere dich, Mama.* (3;7)  
I (will) **remind you**, Mom.  
*Ich werde dich daran erinnern.* (4;0)  
I **will remind you of it**.

Of the remaining items asked about in the checklist, *schlau* ('clever, smart') is used by 55% of the 4- and 5-year-olds, *interessant* ('interesting') and *Plan* ('plan') emerge with 5 years, and *neugierig* ('curious, inquisitive') is finally used by 35% of the 5-year-olds, not reaching an apparent age of common acquisition during the period observed in the present sample.

The only examples given for *schlau* and *Plan* are presented in (55) and (56).

- (55) *Mama, bin ich schlau?* (4;2)  
 Mom, **am I smart?**
- Ich bin ganz schlau, ich kann nämlich...* (5;1)  
**I'm very smart**, I can...
- (56) *Mama, ich habe einen Plan, nämlich wir spielen jetzt...* (5;7)  
 Mom, **I've got a plan**, we play ... now.

### Reality & Evidentiality

Table 4.1.13 *Acquisitional pattern of German IS vocabulary in the category REALITY & EVIDENTIALITY*

Reality & Evidentiality							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	vielleicht	Adv	maybe, perhaps	73.9	90.0	85.7	82.8
2	glauben	V <sub>i,t</sub>	believe	60.9	85.0	75.0	73.0
3	wirklich	A, Adv	really	56.5	85.0	80.0	73.0
4	bestimmt	Adv	sure, most probably	56.5	70.0	65.0	63.5
5	falsch	A, Adv	wrong	47.8	85.0	80.0	69.8
6	lügen	V <sub>i</sub>	lie	39.1	75.0	100.0	70.3
7	stimmen	V <sub>i</sub>	be right	39.1	95.0	70.0	66.7
8	eigentlich	Adv	actually, originally	43.5	55.0	65.0	54.0
9	echt	A, Adv	real	26.1	75.0	90.0	61.9
10	raten	V <sub>i,t</sub>	guess	21.7	75.0	85.0	58.7
11	wahr*	A	true	17.4	70.0	60.0	47.6
12	sicher*	A, Adv	sure, certain	26.1	20.0	45.0	30.2
13	so tun als ob	[Adv V <sub>i</sub> Conj]	pretend ( <i>lit.</i> do as if)	17.4	45.0	45.0	34.9
14	Wahrheit*	N	truth	13.0	45.0	55.0	36.5
15	reinlegen*	V <sub>t</sub>	outsmart, deceive	4.3	20.0	50.0	23.8
16	scheinen	V <sub>i</sub>	seem	4.3	15.0	35.0	17.5

\* language-specific item

The acquisitional picture for the semantic category of REALITY & EVIDENTIALITY is quite similar to the one just observed for the category COGNITION.

None of the checklist items in that category is active in the German 3-year-olds, but a whole list of items becomes highly productive with 4 years, with only few additions of newly emerging terms in the 5-year-olds.

Basic terms emerging with three years are the mental verb *glauben* ('believe') and the epistemic adverbs *vielleicht* ('maybe'), *wirklich* ('really'), and *bestimmt* ('surely, most probably'). Whereas the aforementioned items climb over an 85% percentage of children producing the term with 4 years, *bestimmt* stays around 60–70% throughout the sample.

The verb *glauben* is reported for German children in first person uses only in the functions of ‘think’ in terms of agreement with a statement (57a), of ‘believe’ in terms of believing in the truth of a statement (57b), as qualifying marker *ich glaub* (57c), and as verb for an inference one is making, as in examples (57d) and (57e). While it is structurally more independent in (57d) and (57e) than in (57c), the main semantic content is still conveyed by the juxtaposed complement clause, as *ich glaube* can easily be omitted in both cases without altering the message.

- (57) a. *Ich glaube nicht.* (3;4)  
**I don’t think so.**
- b. *Das glaub ich nicht.* (5;8)  
**I don’t believe this.**
- c. *Ich glaub, ich muss gleich weinen.* (5;8)  
**I think I’m about to cry.**
- d. *Ich glaube, ich wachse – ich hatte heute Schluckauf!* (5;10)  
**I think I’m growing – I had a hiccup today!**
- e. *Mama, ich glaube bei Brennesseln haben die Menschen Pfeffer genommen und drauf gestreut, deswegen brennen sie.* (5;2)  
**Mom, I think, as for stinging nettles, people have taken pepper and strew it on them, that is why they burn.**

A stronger semantic content is conveyed with *glauben* in (58), where it means ‘believe’ in the sense of trust in the promise or committal of the child. *Wirklich* (‘real(ly)’) also appears in this utterance, used as an intensifier of the commissive intent.

- (58) *Ich bin auch wirklich artig. Du kannst mir glauben.* (4;3)  
**I’ll be AUCH really well-behaved. You can believe me.**

*Wirklich* also frequently appeared as intensifier with emotion terms like *wütend* (see above). Other utterance examples with *wirklich* are given in (59), all expressing committal to one’s statement and trying to convince the hearer.

- (59) a. *Das hab ich wirklich gemacht.* (3;4)  
**I really did that.**
- b. *Ich bin wirklich schon wach.* (3;5)  
**I am really awake already.**
- c. *Ich kann das wirklich.* (4;2)  
**I can really do it.**
- d. *Ich war es wirklich nicht!* (4;2)  
**It really wasn’t me!**

In older children’s examples it is also used to ask for the other’s committal or reassurance when in doubt (60).

- (60) *Meinst du wirklich?* (5;8)  
**Are you sure? lit. Do you mean really?**

Uses of *vielleicht* ('maybe'), which usually indicates an inference or uncertainty, are reported by German parents in comparably many examples (11 utterances). All of these have *vielleicht* in sentence initial position. The utterances of the youngest children show its use as a proposed solution to a question: to 'where is \_\_\_?' in (61a), to something like 'who put this here?' in (61b).

- (61) a. *Vielleicht ist die Mama draußen.* (3;3)  
**Maybe** Mom is outside.  
*Vielleicht ist der Tuchteddy im Bett.* (3;4)  
**Maybe** the teddy bear is in the bed.
- b. *Vielleicht hat das Papa weggelegt.* (4;2)  
**Maybe** Dad put this aside.

The child in (62) uses *vielleicht* as discursive introduction to a real proposal or wish to another.

- (62) *Vielleicht bringst du mir das mit?* (3;7)  
**Maybe** you bring that for me?

The utterances in (63) seem to be mixtures between a proposal/wish and guess about the future, interestingly all used for an expression of "going somewhere" with first person plural.

- (63) a. *Vielleicht gehen wir nachher in den Zoo.* (3;6)  
**Maybe we're going** to the zoo **later**.
- b. *Vielleicht gehen wir heute einkaufen.* (4;4)  
**Maybe we're going** shopping **today**.
- c. *Vielleicht fahren wir bald im Urlaub!* (5;4)  
**Maybe we're going to go** on vacation **soon!**

One 4-year-old child made the utterance in (64), which seems illogical, since the child should know and therefore cannot express uncertainty about whether she lied or not.

- (64) *Vielleicht hab ich gelogen.* (4;8)  
**Maybe** I lied.

Taken together, children's uses of *vielleicht* seem to cover only part of the abstract adult concept. They produce it in certain scripted situational contexts and functions, but not necessarily represent its full epistemic semantics.

*Bestimmt*, which expresses an epistemically certain inference, is both reported in sentence initial and middle position – in an inference or certain guess about the past (65c), present (65b), or future (65a, 65d).

- (65) a. *Bestimmt finden wir meinen Teddy wieder.* (3;3)  
 We will **surely** find my teddy bear again.
- b. *Der ist bestimmt schon da.* (3;4)  
 He is **most probably** there already.

- c. *Bestimmt hat er sich das ausgedacht.* (3;5)  
**Most probably** he thought this up.
- d. *Die Kinder machen das bestimmt kaputt.* (4;4)  
 The children will **surely** break this.

New active items with 4 years are words for ‘wrong’ (*falsch*), lying (*lügen*), being right (*stimmen*), ‘real(ly)’ (*echt*), and guessing (*raten*).

Most examples by German parents in this semantic category were provided for *lügen* (‘lie’) (21 utterances). These include statements of not having lied (66a) and accusals of having lied to the hearer (66b) or about a third person (66c), in variants in present or perfect tense.

- (66) a. *Ich lüg nicht.* (4;0)  
**I don’t lie.**  
*Ich lüg dich nicht an.* (4;10)  
**I don’t lie to you.**
- b. *Du lügst.* (4;1)  
**You’re lying.**
- c. *Basti hat mich angelügt.* (4;1)  
 Basti **has lied to me.**  
*Lara lügt.* (4;4)  
 Lara **lies.**  
*Ole hat gelogen.* (5;5)  
 Ole **lied.**

Some interesting examples show children’s references to norms (67a) or to the meaning of the word ‘lie’ (67b).

- (67) a. *Lügen darf man nicht.* (3;6)  
**One may not lie.**  
*Leo Lausemaus darf nicht lügen.* (4;0)  
 Leo Licemouse **may not lie.**  
*Man darf nicht lügen, muss immer die Wahrheit sagen.* (5;2)  
**One may not lie, must always tell the truth.**
- b. *Mama, ich weiß schon, was lügen heißt, wenn etwas nicht stimmt.* (4;4)  
 Mom, **I know already what lying means**, when something isn’t right.

Usage examples of *stimmen* (‘be right, true’) show the verb as a discourse marker in the contracted form *stimmts* (from *stimmt es*) requesting the hearer’s agreement (68a), or as full verb for disagreeing with another’s statement (68b), committing to one’s own statement (68c), or asking the other for such a committal (68d).

- (68) a. *Stimmts, da haben wir gelacht.* (4;2)  
 Then we laughed, **right?**  
*Der Junge da weint, Mama. Manchmal weine ich auch, stimmts?* (4;3)  
 The boy over there **is crying**, Mom. Sometimes I **cry**, too, **right?**

- b. *Das stimmt nicht.* (4;1)  
That is **not right/true.**  
*Das stimmt nicht, du lügst.* (3;3)  
That is **not true, you're lying.**
- c. *Das stimmt aber.* (4;0)  
But this is **true.**  
*Das stimmt, ganz ehrlich!* (3;7)  
That is **true, totally honestly!**  
*Das stimmt echt.* (5;5)  
That is **really true.**
- d. *Stimmt das wirklich?* (4;2)  
**Is that really true?**

*Echt* ('real(ly)'), which is almost equivalent to *wirklich*, is also reported in many uses as intensifier of an emotion term (see EMOTION section). Its usage examples further include uses as commissive (69). In addition, it is reported in three examples of 3-year-old children, where it actually refers to reality in some kind of appearance–reality distinction (70); in (70a) and (70b) as adjective attribute to a noun.

- (69) a. *Hab ich echt gemacht!* (5;8)  
I've **really** done (that)!
- b. *In echt.* (5;9)  
**Really.**
- (70) a. *Das ist doch kein echtes Pferd.* (3;5)  
**But that isn't a real horse.**
- b. *Gibt es echte Ritter?* (3;10)  
Do **real knights** exist?
- c. *Ist das echt oder im Buch?* (3;10)  
Is that **real** or **in the book?**

Another epistemic adverb – *eigentlich* ('actually, originally') – that had been at 44% in the 3-year-olds follows the pattern of *bestimmt* and stays at proportions of 55% and 65% in the older groups. In children's example utterances, *eigentlich* appears in sentence initial and middle position. It is reported in uses as a marker of contrast in connection with the child's wishes and likes (71a, b and e). In combination with the past tense *wollte* ('wanted') in the younger children's examples it expresses a stronger opposition, whereas it functions as a rather polite qualifier in the 5-year-old's example in (71e). It is also used as a discourse marker in questions (71c, 71d).

- (71) a. *Eigentlich wollt ich gerne Gummibärchen.* (3;7)  
**Originally, I wanted** gummi bears.
- b. *Ich wollte eigentlich noch spielen.* (3;10)  
**Originally, I still wanted** to play.

- c. *Warum ist das **eigentlich** so?* (4;1)  
**Why** is that **EIGENTLICH** like this? [implying: ... and not differently?]
- d. *Hast du **eigentlich**...?* (4;6)  
 Do you have **EIGENTLICH**...? [implying: I originally didn't think that you have that or haven't thought about asking you, but now...]
- e. ***Eigentlich** mag ich das nicht.* (5;8)  
**Actually**, I don't like this.
- f. *Mama, **eigentlich** stimmt das nicht, was Samuel gesagt hat...* (3;5)  
 Mom, **actually** it isn't true what Samuel said...

Additionally, the adjective *wahr* ('true') emerges at age 4, also staying at this productivity level in the 5-year-olds, where its corresponding noun *Wahrheit* ('truth') then emerges in common vocabulary. The only two utterances entered as examples for the use of *wahr* are presented in (72), the only one where *Wahrheit* appears was given in (67a).

- (72) a. *Das ist **gar nicht wahr**.* (4;7)  
 That is **not true at all**.
- b. *Das ist **echt wahr!*** (4;10)  
 That is **really true!**

The adverb *sicher* ('sure') expressing certainty is only used by few children in the sample and stays below 50% in all age groups. The only example is given in (73).

- (73) ***Ich bin mir sicher.*** (5;8)  
**I am sure.**

Two constructions for the verbalization of pretense and deception were part of this group of the checklist. The expression *so tun als ob* (lit. "do as if") is used by 45% of the 4- and 5-year-olds; *reinlegen* ('outsmart, deceive'), being at very low percentages in the younger groups, reaches 50% in the 5-year-olds. All three examples given for its use take the form *Ich hab dich reingelegt* ('Got ya!', lit. 'I deceived you'). Probably, this formula gets productive once children have the theory of mind abilities to play tricks on one another. While *so tun als ob* is mostly reported in the context of pretend play (74a), the child in (74b) draws an explicit contrast between 'pretend' and 'honest'.

- (74) a. ***Wir tun so, als ob** wir den Sandkuchen essen.* (4;2)  
**We do as if** we are eating the sandcake.  
***Ich tu so als ob** ich schlafe, und dann...* (5;1)  
**I'll pretend to** be asleep, and then...
- b. *Das **meine ich nicht ehrlich**, ich tu nur so.* (4;8)  
**I don't mean that honestly**, I'm **just pretending**.

Finally, the verb 'seem' (*scheinen*) is produced by very few of the children in the sample and thus does not seem to emerge in German children's IS vocabulary in the age period studied.

#### 4.1.1.2 Korean acquisition of an IS lexicon

##### Overall internal state (IS) vocabulary

The overall internal state vocabulary of Korean children increases significantly with age, as revealed by a one-way ANOVA over the three age groups,  $F(2,56) = 3.326, p < 0.05$ .

Looking at the line chart of Korean children's IS lexicon development in Figure 4.1.03 we see a high number of productive words at age 3 and a moderate increase with successive age groups, and a post-hoc performed Tukey test shows a significant difference only between 3- and 5-year-olds.

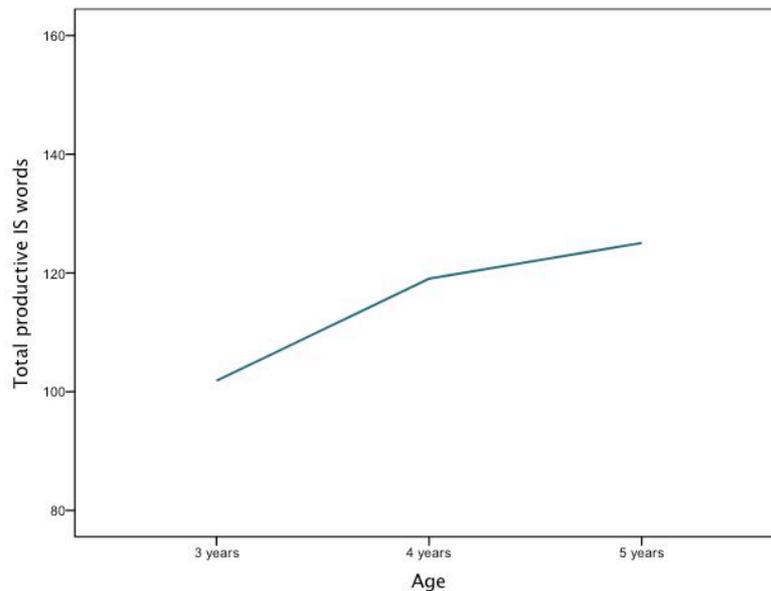


Fig. 4.1.03 Korean children's development of total productive IS vocabulary from the IS-Word Checklist

##### Quantitative acquisition pattern of semantic categories of the IS lexicon

For the Korean data it was also of special interest which of the 12 semantic categories would show increases in active vocabulary over the age groups and be responsible for the overall growth of Korean children's IS word lexicon.

Again, proportions of active vocabulary in the specific semantic categories of the IS-Word Checklist were tracked across the three age groups, summarized in Table 4.1.14 and visualized in Figure 4.1.04.

Table 4.1.14 *Korean children's mean proportions of productive IS vocabulary in 12 semantic categories over age*

Semantic category	3 years		4 years		5 years		Total	
	Rank	Mean prop.	Rank	Mean prop.	Rank	Mean prop.	Rank	Mean prop.
<b>Body states</b>	1	.88	1	.93	1	.94	<b>1</b>	<b>.92</b>
<b>Perception &amp; senses</b>	3	.86	2	.91	2	.91	<b>2</b>	<b>.89</b>
<b>Emotion expression</b>	4	.84	3	.89	4	.81	<b>4</b>	<b>.85</b>
<b>Social behavior</b>	2	.88	4	.87	3	.91	<b>3</b>	<b>.89</b>
<b>Desire &amp; evaluation</b>	6	.61	6	.73	6	.76	<b>6</b>	<b>.70</b>
<b>Ability &amp; success</b>	5	.63	5	.73	5	.78	<b>5</b>	<b>.71</b>
<b>Emotion</b>	9	.51	8	.65	9	.66	<b>8</b>	<b>.61</b>
<b>Morality &amp; norms</b>	8	.54	11	.59	11	.66	<b>9</b>	<b>.60</b>
<b>Social feelings &amp; relationships</b>	7	.54	7	.66	7	.71	<b>7</b>	<b>.64</b>
<b>Communication &amp; discourse</b>	11	.47	12	.59	12	.66	<b>12</b>	<b>.57</b>
<b>Cognition</b>	10	.49	10	.60	10	.66	<b>10</b>	<b>.58</b>
<b>Reality &amp; evidentiality</b>	12	.41	9	.62	8	.69	<b>11</b>	<b>.57</b>

At age 3, Korean children have an extremely well developed vocabulary in the categories BODY STATES (.88), SOCIAL BEHAVIOR (.88), PERCEPTION & SENSES (.86), and EMOTION EXPRESSION (.84), of which they have already acquired almost all items listed in the parent questionnaire. Next in rank are the groups of words for ABILITY & SUCCESS (.63) and DESIRE & EVALUATION (.61). Remarkably, already more than half of the listed words in the categories MORALITY & NORMS as well as SOCIAL FEELINGS & RELATIONSHIPS (.54 each) are productive at age 3 in the Korean sample. These are followed by the categories EMOTION (.51), COGNITION (.49), and COMMUNICATION & DISCOURSE (.47). As in the German 3-year-olds, the lowest mean proportion of words is acquired in the category REALITY & EVIDENTIALITY (.41). At age 4, minor to medium increases in the quantity of productive words (+.05 to +.14) are observed for all categories except SOCIAL BEHAVIOR, which stays at about the same proportion. Nevertheless, the performed pairwise comparisons do not show a statistical significance of these differences, due to high variance in individual word counts. The only significant increase (about +.21) in productive words is observed for the category REALITY & EVIDENTIALITY ( $p < .05$ , one-tailed test), which is at the same time promoted by three ranks in the quantitative comparison of semantic groups.

The Korean 5-year-olds do not show a significant difference to the 4-year-olds in quantity of active words in any of the 12 semantic categories. Increases in vocabulary are minor (+.01 to +.07), if any.

## 4 Results

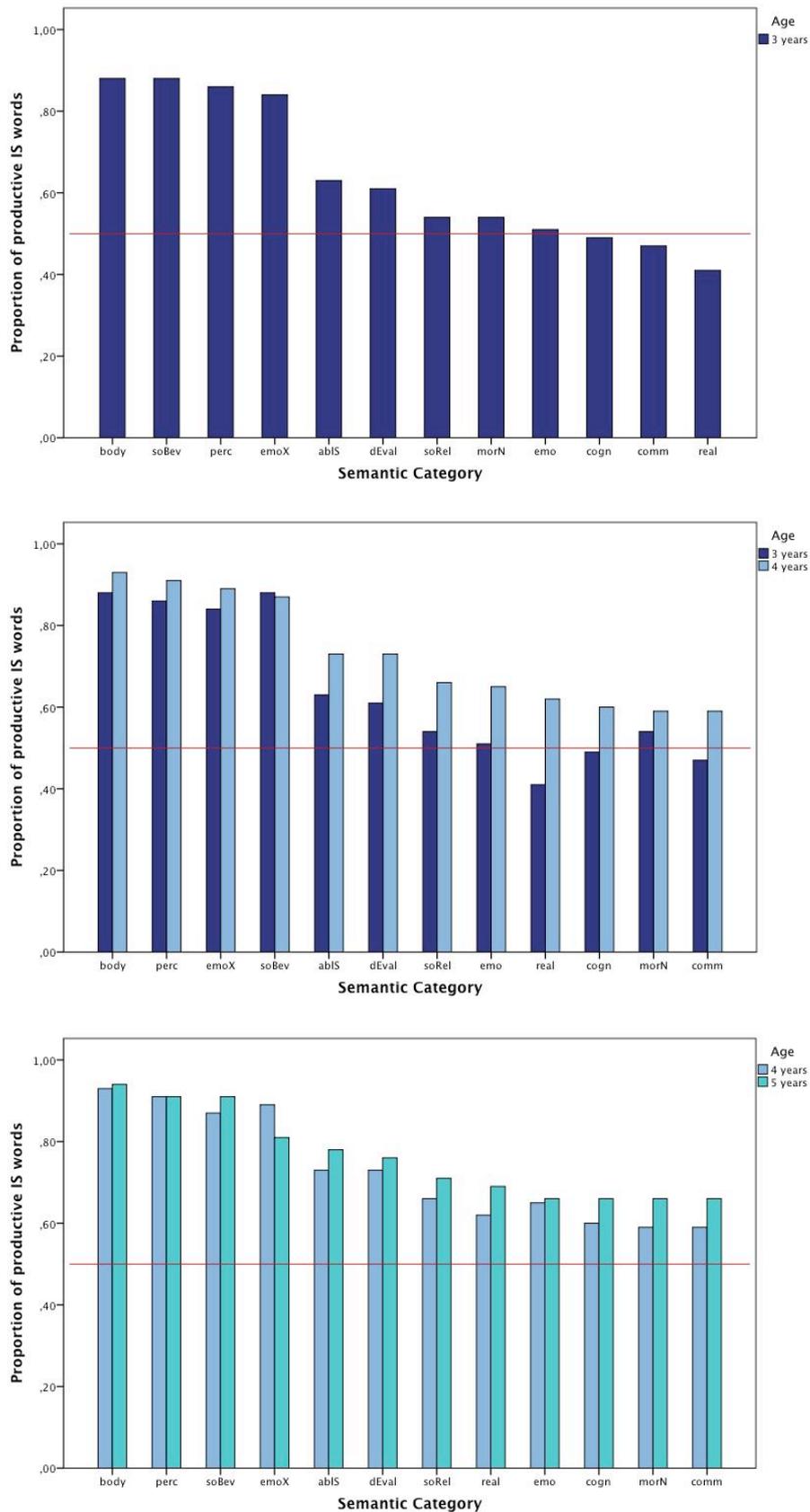


Fig. 4.1.04 Korean children's development of IS vocabulary in 12 semantic categories from 3 to 5

*Note.* body = body states, perc = perception, emoX = emotion expression, soBev = social behavior, dEval = desire & evaluation, ablS = ability & success, emo = emotion, morN = morality & norms, soRel = social feelings & relationships, comm = communication & discourse, cogn = cognition, real = reality & eventuality.

## Sequence of acquisition and usage examples of IS words in the 12 semantic categories

### Body states

Table 4.1.15 *Acquisitional pattern of Korean IS vocabulary in the category BODY STATES*

Body states							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	아프다 aphuta	V <sub>stat</sub>	hurt; sick	100.0	100.0	100.0	100.0
2	자다 cata	V <sub>act</sub>	sleep	100.0	100.0	100.0	100.0
3	배 고프다 pay kophuta	V <sub>stat</sub>	hunger	100.0	100.0	100.0	100.0
4	춡다 chwupta	V <sub>stat</sub>	cold	100.0	100.0	100.0	100.0
5	덥다 tepta	V <sub>stat</sub>	hot	94.7	100.0	100.0	98.3
6	다치다 tachita	V <sub>pass</sub>	wounded, injured	94.7	91.3	100.0	95.0
7	간지럽다 kancilepta	V <sub>stat</sub>	tickle	94.7	95.7	88.9	93.3
8	졸리다 collita*	V <sub>pass</sub>	sleepy, drowsy	94.7	86.4	94.4	91.5
9	잠 cam*	N	sleep	84.2	90.9	94.4	89.8
11	깨다 kkayta	V <sub>act</sub>	wake up, awake	78.9	86.4	94.4	86.4
10	딸국질 ttalkwukcil	N	hiccup	78.9	90.9	83.3	84.7
13	쉬다 swita	V <sub>act</sub>	rest	68.4	95.5	94.4	86.4
12	피곤하다 phikonhata	V <sub>stat</sub>	tired	68.4	95.5	88.9	84.7
14	어지럽다 ecilepta	V <sub>stat</sub>	dizzy	68.4	63.6	77.8	69.5

\* language-specific item

Korean 3-year-olds readily produce almost all items asked for in the category BODY STATES, with percentages of 80–100% of children using words for wake/sleep, hunger, temperature, pain, sickness, and injuries, as well as tickling and ‘hiccup’. Words for being tired and resting start with 68% and become highly productive with 4 years. That *phikonhata* (‘tired’) starts with an unexpectedly low percentage of children using the word may be, because *collita* (‘sleepy, drowsy’) is acquired earlier and covers the meaning of TIRE in children’s semantic systems before they acquire *phikonhata* and start distinguishing both terms.

*Ecilepta* (‘dizzy’) is also produced by 68% of the 3-year-olds and passes the 75% mark in the 5-year-old group.

### Perception & Senses

Korean children are productive users of words for all five senses with 3 years and also productively express the visibility of objects and acts of searching and finding with appropriate words at the same age. Interestingly, the semantically related verb *kalikhita* (‘point, show’) emerges only slowly with 4 and 5 years, leaving to ask whether the reasons for

these numbers could lie in low usage frequency of the term in adult talk to Korean children and whether the meaning of pointing and showing is usually expressed using other words not asked for in the current checklist.

Table 4.1.16 *Acquisitional pattern of Korean IS vocabulary in the category PERCEPTION & SENSES*

Perception & senses							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	똑같다 ttokkaththa	V <sub>stat</sub>	same	100.0	100.0	100.0	100.0
2	냄새 naymsay	N	smell	100.0	100.0	100.0	100.0
3	맛 mas	N	taste	94.7	100.0	100.0	98.3
4	조심하다 cosimhata	V <sub>act</sub>	careful	94.7	100.0	94.4	96.7
5	소리 soli	N	sound	94.7	95.5	100.0	96.6
6	다르다 taluta	V <sub>stat</sub>	different	94.7	90.9	88.9	91.5
7	만지다 mancita	V <sub>act</sub>	feel, touch	89.5	95.5	94.4	93.2
8	보다 pota	V <sub>act</sub>	see	89.5	95.5	94.4	93.2
9	찾다 chacta	V <sub>act</sub>	search, find	89.5	95.5	88.9	91.5
10	보이다 poita*	V <sub>pass</sub>	visible	89.5	77.3	72.2	79.7
11	비슷하다 pisushata	V <sub>stat</sub>	similar	63.2	95.5	94.7	85.0
12	가리키다 kalikhita	V <sub>act</sub>	point, show	36.8	52.2	61.1	50.0

\* language-specific item

*Cosim hata* ('careful') is also produced by over 90% of the children with 3 years, probably reflecting its frequent usage in parents' regulation and supervision of children's actions and activities.

A striking finding is the 100% productivity of the word *ttokkaththa* ('same') and comparably early acquisition of *taluta* ('different'), which is also active with 3 years, as well as *pisushata* ('similar'), which rises from 63% of children using the word at age 3 to common productivity with 4 years. In addition, Korean parents also provided many usage examples for these terms (24 examples in total).

#### *Emotion expression*

Table 4.1.17 *Acquisitional pattern of Korean IS vocabulary in the category EMOTION EXPRESSION*

Emotion expression							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	웃다 wusta	V <sub>act</sub>	laugh	100.0	100.0	94.7	98.4
2	울다 wulta	V <sub>act</sub>	cry	100.0	100.0	94.7	98.4
3	눈물 nwunmul	N	tears	100.0	91.3	100.0	96.7
4	째그리다 ccingkulita*	V <sub>act</sub>	(facial expr. of disgust)	36.8	63.6	33.3	45.8

\* language-specific item

All of the participating Korean 3-year-olds were already producing words for laughing, crying, and tears as basic vocabulary to verbalize facial expressions of emotions. A fourth item, *ccingkulita*, which describes the facial expression of disgust and was specific to the Korean checklist, is used by 46% of the participating children, not showing a clear developmental line or increase over the age groups.

### Social Behavior

Table 4.1.18 *Acquisitional pattern of Korean IS vocabulary in the category SOCIAL BEHAVIOR*

Social Behavior							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	뽀뽀하다 ppoppo hata	V <sub>act</sub>	kiss	100.0	100.0	100.0	100.0
2	놀다 nolta	V <sub>act</sub>	play	94.7	100.0	100.0	98.3
3	때리다 ttaylita	V <sub>act</sub>	hit	94.7	95.7	83.3	91.7
4	같이 kathi/함께 hamkkey	Adv	together	89.5	95.5	100.0	94.9
5	싸우다 ssawuta	V <sub>act</sub>	fight	94.7	77.3	83.3	84.7
6	선물 senmul	N	present, gift	78.9	90.9	100.0	89.8
7	안다 anta	V <sub>act</sub>	hug	89.5	63.6	77.8	76.3
8	데려다 주다 teylyeta cwuta*	V <sub>act</sub>	bring, accompany	63.2	72.7	83.3	72.9

\* language-specific item

In the category SOCIAL BEHAVIOR 7 of 8 items are fully productive at 3 years, covering behaviors like kissing, playing, hitting someone, fighting and hugging, as well as ‘together’ and ‘present, gift’. The expression *teylyeta cwuta* designating the accompaniment or “bringing” of someone, which is an important behavior of social relationship and politeness in Korea, emerges as productive item in 63% of the 3-year-olds and passes 75% in the 5-year-old group.

### Desire & Evaluation

With 3 years, Korean children are already highly productive with words to evaluate objects, events and people around them and to express their likes and preferences.

Evaluators like *yeypputa* (‘pretty’), *cohta* (‘good’), *mesissta* (‘stylish, chic’) are reported for almost all children in the sample, as are *ceyil cohahata* (‘like the most’) and *choyko* (‘best, supreme’). The high numbers of example utterances provided by Korean parents further support the impression that these words are of high importance for Korean children and produced rather frequently (14–16 examples each for *yeypputa*, *ceyil cohahata* and *choyko*.)

Table 4.1.19 *Acquisitional pattern of Korean IS vocabulary in the category DESIRE & EVALUATION*

Desire & Evaluation							
Rank	Item	PoS	English transl.	3 years	4 years	5 years	total
1	예쁘다 yepputa	V <sub>stat</sub>	pretty	100.0	100.0	100.0	100.0
2	하고 싶다 hako siphta	[V- V]	want (to do)	100.0	100.0	100.0	100.0
3	좋다 cohta	V <sub>stat</sub>	good	89.5	95.5	100.0	94.9
4	멋있다 mesissta*	V <sub>stat</sub>	stylish, chic	89.5	90.9	100.0	93.2
5	좋아하다 cohahata	V <sub>act</sub>	like	89.5	91.3	88.9	90.0
6	제일 좋아하다 ceuil cohahata	[V <sub>act</sub> ] <sub>superl</sub>	like the most	89.5	90.9	83.3	88.1
7	최고 choyko	N	best, supreme	84.2	95.7	88.9	90.0
8	귀엽다 kwiyepta	V <sub>stat</sub>	cute	73.7	87.0	100.0	86.7
9	웃기다 wuskita	V <sub>caus</sub>	funny	68.4	95.7	88.9	85.0
10	필요하다 philyohata	V <sub>stat</sub>	need	68.4	90.9	88.9	83.1
11	더 좋아하다 te cohahata	[V <sub>act</sub> ] <sub>comp</sub>	prefer	52.6	68.2	72.2	64.4
12	큰 일 났다 khun il nassta	[A N V <sub>past</sub> ]	severe, upsetting	52.6	59.1	61.1	57.6
13	마음에 들다 maum ey tulta	[PP V]	like, appeal	36.8	72.7	68.4	60.0
14	소원 sowen	N	wish	36.8	54.5	66.7	52.5
15	아깝다 akkapta	V <sub>stat</sub>	it's a pity	21.1	54.5	50.0	42.4
16	낫다 nasta	V <sub>stat</sub>	better	26.3	36.4	38.9	33.9
17	원하다 wenhata*	V <sub>act</sub>	want, desire	10.5	31.8	50.0	30.5
18	희망하다 huymanghata	V <sub>act</sub>	hope	0.0	9.1	16.7	8.5

\* language-specific item

*Yepputa* is reported frequently in relation to mom, other children, hairstyles or clothes. *Mesissta* appeared only in the formula *Na mesissci?* ('Ain't I handsome/stylish?') uttered by boys. In the examples provided, both *ceuil cohahata* and *choyko* were almost exclusively used for family members – mostly mom or dad, but also sibling or aunt.

The additional evaluators *kwiyepta* ('cute') and *wuskita* ('funny') start with about 70% at age 3 and reach common productivity at 4 years. Besides exclamations, they are reported in judgments about others (75a), questions about self (75b), and in indirect reports of others' judgments about self (75c).

- (75) a. *Sengmin i nemu kwiyepeyo.* (5;10)  
Sengmin is **just too cute**.
- Emma wuskita.* (4;9)  
Mom is **funny**.
- b. *Emma, na kwiyeewe?* (5;9)  
Mom, **am I cute?**
- Wuskici?* (3;9)  
**Isn't (this) funny?**
- c. *Wuli sensayngnim i na kwiyeptay.* (5;8)  
Our teacher **said I'm cute**.

Negative evaluators describing the appraisal of a situation or event – *khun il nassta* (‘severe, upsetting’) and *akkapta* (‘it’s a pity’) – emerge with 3 and 4 years, but stay below 75% in the older age groups.

To express comparative evaluations, about half of the 3-year-olds produce *te cohahata* (‘prefer, like more’) slowly rising to 72% in the 5-year-olds. The other term included in the checklist – *nasta* (‘better’) –, which expresses more of an objective advantage rather than subjective preference, is only produced by percentages of 26–39% from 3 to 5 years.

The verbs ‘want’ and ‘like’ are active vocabulary of Korean 3-year-olds. ‘Need’ is produced by 68% and reaches 90% in the 4-year-old group. Examples given come from contexts of painting and crafting, often with conditionals of the form \_\_\_*lyemyen* \_\_\_*philyohay* (‘if Ø want to do \_\_\_ need \_\_\_’), or when children ask their mom to buy them toys emphasizing that they “need” them. In the 4-year-olds, related terms like *maum ey tulta* (‘like, appeal’) and *sowen* (‘wish’) emerge in children’s productive IS words. *Wenhata*, which expresses the want or desire for something and thus serves a somewhat different function from the early productive *hako siphta*, which has an action as its intentional object and expresses wanting to do something, slowly reaches 50% productivity in the 5-year-olds. The Korean verb for ‘hope’ – *huymang hata* – is reported for only a few single children in the older groups.

### Ability & Success

Table 4.1.20 *Acquisitional pattern of Korean IS vocabulary in the category ABILITY & SUCCESS*

Ability & Success							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	힘들다 himtulta	V <sub>stat</sub>	exhausting	100.0	100.0	95.0	98.4
2	할 수 있다 hal swu issta	[V N V]	can, be able	100.0	95.5	94.4	96.6
3	혼자서 honcase	Adv	by oneself, on one's own	89.5	91.3	88.9	90.0
4	잘 하다 cal hata	[Adv V]	do well in ( <i>sth.</i> )	89.5	81.8	94.4	88.1
5	못 하다 mos hata	V <sub>neg</sub>	cannot do	89.5	82.6	77.8	83.3
6	할 줄 안다 hal cwul anta*	[V N V]	know how to do	73.7	81.8	88.9	81.4
7	어렵다 elyepa	V <sub>stat</sub>	hard, difficult	68.4	77.3	83.3	76.3
8	열심히 yelsimhi	Adv	hard-working	52.6	73.9	72.2	66.7
9	쉬다 swita	V <sub>stat</sub>	easy	47.4	77.3	77.8	67.8
10	배우다 paywuta	V <sub>act</sub>	learn	47.4	72.7	77.8	66.1
11	해 보다 hay pota	[V- V]	try	42.1	59.1	72.2	57.6
12	연습하다 yensuphata	V <sub>act</sub>	practice	36.8	54.5	66.7	52.5
13	스스로 susulo*	Adv	by oneself, independently	31.6	40.9	61.1	44.1
14	성공하다 sengkong hata	V <sub>act</sub>	succeed, accomplish	10.5	31.8	38.9	27.1

\* language-specific item

From the checklist items for ABILITY & SUCCESS 100% of the Korean 3-year-olds already use *hintulta* ('exhausting'), a frequently used term in everyday Korean in a variety of contexts.

Korean 3-year-olds are also highly productive with the constructions for being able to do something (*hal swu issta*), doing something well (*cal hata*), and being unable to do something (*mos hata*), where the negator *mos* ('not able to') contrasts with the other verb negator used in Korean *an* ('not, not willing to'). *Honcase* ('by oneself, on one's own') is also highly productive and appears on the checklists in 11 example utterances (more examples were given only for *paywuta* 'learn' with 13 utterances).

The construction *hal cwul anta* ('know how to do') is acquired by 73% of the 3-year-olds and becomes commonly productive with 4 years. Other items reaching productivity at age 4 are *elyepta* ('hard, difficult') and *swita* ('easy'), together with *yelsimhi* ('hard-working').

Items emerging at age 4 with rising proportions of production in the 5-year-olds are *paywuta* ('learn'), *hay pota* ('try'), and *yensuphata* ('practice').

The word *susulo*, which emerges at 5 years, expresses the concept of doing something independently and on one's own, thus contrasting with *honcase*, which already serves this semantic function in younger children, but has a broader meaning and can also be used for doing something alone, not necessarily stressing ability and independence.

*Sengkonghata* ('succeed, accomplish'), although rising from 11% to 39% of children using the word from 3 to 5, seems not to be a commonly used term in the age period studied.

Some typical child utterances provided for this semantic category are displayed in (76).

- (76) a. *Cen ey nun 4 sal iese mos hayssnuntey icey nun 5 sal iese him i seyci.* (3;6)\*  
**Before**, when (I) was 4, (I) **couldn't do** (it), **now** that (I'm) 5, (I'm) strong.
- b. *Honcase hal swu isse.* (3;9)  
 (I) **can do** (it) **on my own**.
- c. *Hintulese mos hakeysseyo. Towacwuseyyo.* (4;9)  
 (I) **cannot do** (this) **because** (it's) **exhausting**. **Please help** (me).
- d. *Cal haci?* (3;9)  
 (I'm) **doing well** (, ain't I)?
- e. *Yuchiwen eyse paywessnunteyyo.* (4;5)  
 (I) **learned** (this) at kindergarten.
- f. *Sensayngnim i wuntong yelsimhi hayya thunthunaycintay.* (3;9)  
 Teacher said you **only** become strong **if** you exercise **diligently**.  
*Kongpu lul yelsimhi hayya tway.* (5;10)  
 (You) **have to study hard**.

\* Koreans count their age starting with 1 year at birth and then referring to the current year irrespective of their birthday. Like this, a 3-year-old child can say to be 5 if it will turn 4 at the end of the year.

### Emotion

Korean children with 3 years readily use the construction *kipun i cohta/napputa* ('feel good/bad') to express the general valence of their mood or feeling. The example utterances that parents entered for the construction mostly show uses with a first person subject in combination with a clause expressing the cause for the emotion (77a). Further examples present its use with an intensifier (77b), or with a 'seem' construction (77c) expressing an inference the child is making about a third person's feeling from her facial expression.

- (77) a. *Emma, nan kipun i cohta. Waynyahamyen X ka nay kwutwu yeypputa kulaysse.* (4;6)  
 Mom, **I feel good**. The reason is that X said my shoes are pretty.  
*Emma ka teylile wase kipun coha.* (4;0)  
 (I) **feel good**, because Mom came to fetch me.
- b. *Cengmal kipun i nappayo.* (5;10)  
 (I) **feel really bad**.
- c. *Unsengi ka kipun i cohunka pwa, wuse.* (3;8)  
 Unseng **seems to feel good**, (she) is smiling.

Of the general nouns for 'heart', 'feeling', and 'emotion', only *maum* ('heart') visibly emerges in Korean children's vocabulary in the age period studied, starting with 58% at age 3 and passing 75% in the 5 year olds. Two examples were provided for its use: in the first, a child refers to his heart as a justification for an action or decision (78a), in the second, *maum* is combined with an expression of valence in a causal sentence (78b).

- (78) a. *Nay maum iya.* (3;5)  
 (That)'s **my heart**.
- b. *Emma ka an nola cwese maum i an coha.* (4;9)  
 (My) **heart is not good**, because Mom does not play with me.

*Nollata* ('surprised') is also emerging at age 3, but stays at production percentages of 61–68% in all age groups. It is often intensified with *kkamccak*, as in (79b); the obvious sentence ender *-canha* adds further stress to the exclamations in (79).

- (79) a. *Na nollasscanha.* (3;9)  
**I startled**.
- b. *Nwuna ttaym ey kkamccak nollasscanha.* (4;9)  
 Because of Sister (I) **suddenly startled**.

*Hungpwunhata*, a stative verb for 'excitement', is only reported for single older children. No usage examples were entered for the term.

Of the positive emotion words, only *caymi issta* ('fun') is highly productive with 3 years for Korean children and yielded by far the most example utterances given of all emotion words (16 examples).

Table 4.1.21 *Acquisitional pattern of Korean IS vocabulary in the category EMOTION*

Emotion							
general /neutral							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	기분이 좋다/나쁘다 kipun i cohta/napputa	[N V <sub>stat</sub> ]	feel good/bad	73.7	100.0	88.9	88.1
2	놀라다 nollata	V <sub>act</sub>	surprised	68.4	68.2	61.1	66.1
3	마음 maum	N	heart	57.9	72.7	77.8	69.5
4	느낌 nukkim*	N	feeling, sentiment	31.6	59.1	38.9	44.1
5	감정 kamceng	N	feeling, emotion	5.3	13.6	27.8	15.3
6	흥분하다 hungpwunhata	V <sub>stat</sub>	excited	0.0	9.1	22.2	10.2
positive							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	재미있다 caymi issta	V <sub>stat</sub>	fun	89.5	95.7	94.7	93.4
2	행복하다 hayngpokhata	V <sub>stat</sub>	happy, contented	52.6	59.1	77.8	62.7
3	기쁘다 kipputa	V <sub>stat</sub>	happy, joyful	42.1	81.8	72.2	66.1
4	즐겁다 culkepta*	V <sub>stat</sub>	happy, pleasant	42.1	77.3	77.8	66.1
5	반갑다 pankapta	V <sub>stat</sub>	happy, pleased	47.4	50.0	61.1	52.5
6	편하다 phyenhata	V <sub>stat</sub>	feel comfortable	42.1	63.6	66.7	57.6
negative							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	무섭다 musepta	V <sub>stat</sub>	afraid	100.0	95.7	88.9	95.0
2	심심하다 simsimhata	V <sub>stat</sub>	bored	94.7	100.0	88.9	95.0
3	화나다 hwa nata	[N V]	angry	89.5	91.3	94.4	91.7
4	슬프다 sulphuta	V <sub>stat</sub>	sad	78.9	82.6	66.7	76.7
5	속상하다 soksanghata*	V <sub>stat</sub>	hurt, disappointed	52.6	68.2	88.9	69.5
6	징그럽다 cingkulepta	V <sub>stat</sub>	disgusting	57.9	63.6	61.1	61.0
7	짜증나다 ccaccungnata	V <sub>stat</sub>	annoying, exasperating	42.1	77.3	77.8	66.1
8	귀찮다 kwichanhta*	V <sub>stat</sub>	annoying, bothersome	47.4	54.5	50.0	50.8
9	겁나다 kep nata	[N V]	fearful	36.8	50.0	55.6	47.5
10	걱정 kekceng	N	worry	31.6	59.1	55.6	49.2
11	답답하다 taptaphata*	V <sub>stat</sub>	suffocating, uneasy	26.3	31.8	44.4	33.9
12	악오르다 yak oluta*	[N V]	angry, offended	21.1	36.4	44.4	33.9

\* language-specific item

The term is both used as an attribute for an activity, event, or something else that ‘is fun’ (80a) and as a predicate meaning ‘have fun’ (80b).

(80) a. *I kayim cincca caymi isse.* (4;11)

This game **is real fun**.

*Thoyoil to elinicip kallay. Caymi isse.* (5;10)

(I) wanna go to kindergarten on Saturday, too. (It)’s **fun**.

- b. *Yeyhwani ka caymi issta pwayo.* (6;1)  
 Yeyhwan **seems to be having fun.**

Of the various predicates for states of happiness, *hayngpokhata* emerges at age 3, but does not reach common productivity before age 5. All other verbs start with 42–47% of production with 3 years, *kipputa* and *culkepta* rising above 77% with 4 years, whereas *pankapta* and *phyenhata* stay below 67% up to age 5. Almost no examples were entered for these words, the ones given are displayed in (81).

- (81) a. *Appa ka ilccik wase nola cwuni caymi issko hayngpokhay.* (5;4)  
 Because Dad came home early and plays with (me), (I) **have fun** and **feel happy.**
- b. *Nan nolle kase cengmal kippesse.* (5;10)  
 I **was really happy**, because (I) went to play.
- c. *Chinkwu lul mannani pankawesse.* (5;10)  
 (I) **was pleased**, cause (I) met (my) friend.

*Pankapta* typically belongs to the script of being pleased to meet someone (81c). In all three examples, as was the case for many utterances provided for the usage of the general emotion terms, causal constructions provide the semantic and structural frame for the emotion predicate. Moreover, the predicates in (81b–c) are combined with past tense markers

Three negative emotion terms are already highly productive in Korean 3-year-olds with 90–100%: the predicates for fear, boredom, and anger. These are followed in acquisition by words for sadness and disgust, which also emerge in Korean 3-year-olds' common vocabulary. For *musepta* ('afraid') and *hwa nata* ('angry'), Korean parents provided comparatively many child examples (13 utterances each), *simsimhata* ('bored') got 11 examples, and *soksanghata* ('hurt, disappointed') yielded 12 examples.

*Musepta*, as many of the emotion predicates, can both designate the state of being afraid or the property of being scary (for one). Children's utterances show both uses; in (82e) it is also produced as an attribute to a noun; the child in (82b) also uses the form *musewehata* concurrently with *musepta*. In the examples given, Korean children verbalize their fears together with causes and intentional objects (82b–f) or with action tendencies or bodily reactions resulting from it (82a, 82e, 82g). (82b) is an example of a contrastive construction; in (82f) the child expresses both his reasoning, his fear, which is caused by the thought, and an imperative for action, probably addressed to a sibling.

- (82) a. *Musewe, an pollay.* (3;5)  
 (It)'s **scary**. (I) don't wanna see (it).
- b. *Na cen ey mengmengi musewehayssnuntey icey nun an musepci.* (3;6)  
**Before, I was scared** of dogs, **now I am not scared.**

- c. *Nuktey ka musewe.* (3;8)  
The fox is/foxes are **scary**.
- d. *Musepta kkamkkam hayse.* (4;3)  
(I'm) **afraid**, cause it's dark.
- e. *Kkwum kkwuesse, musewun kkwum, kulayse nwunmul nasse.* (4;9)  
I had a dream, **a scary dream**, because of this I cried.
- f. *Pakwi ka olci molunikka mun tate, musewe.* (4;9)  
Cause (we) don't know whether bats are coming, shut the door, (I'm) **scared**.
- g. *Emma, musewe, na i ke an thallay.* (5;4)  
Mom, (I'm) **afraid**, I don't wanna ride this one.

Examples of expressions of anger using *hwa nata* are given in (83). Children use *cikum* ('now') and different sentence enders to stress their point, explanatory in (83a), obvious in (83b), and *-takol-takwu* (consisting of a declarative ending, complementizer and an omitted speech verb) literally meaning '(I'm) telling (you)' in (83c).

- (83) a. *Na cikum hwa nassketunyo.* (3;5)  
**I'm angry now.**
- b. *Kulem nan hwa nacanha.* (3;9)  
If Ø like this, **I get angry.**
- c. *Na cikum hwa nasstakwuyo.* (3;9)  
(I tell you) **I got angry** now.

The two utterance examples in (84) both show the construction from (83c) used by two sisters who participated in the study, of which the younger sister seems to have imitated and learned the expression from the older one.

- (84) *Yeycini hwa ka nasstako...* (6;1)  
(I tell you) Yeycin [= the child] **got angry.**
- Yeyweni hwa ka nasstako...* (3;4)  
(I tell you) Yeywen [= the child] **got angry.**

In (85), typical for Koreans, a child expresses his disappointment about someone not understanding his "heart".

- (85) *Nay maum to moluko, nan hwa nasse.* (4;7)  
Ø **not even knows my heart, so I got angry.**

Further uses were also reported, where another person than the child herself is subject of *hwa nata* (86a, 86b). In (86a, 86c), the action verb form *hwa nayta* is used instead of the stative *hwa nata*.

- (86) a. *Emma ka hwa lul an nayssumyen cohkeysse.* (4;3)  
**I'd wish that** (you) **wouldn't get angry** (at me), Mom.
- b. *Onul sensayngnim hanthey chinkwutul hwa nasse.* (3;9)  
Today (my) friends **were angry at** the teacher.  
[probably the child meant: ...teacher was angry at my friends]

- c. *Oppa ke cakku mancimyen hwa naynta.* (4;9)  
If (you) touch (your) brother's stuff all the time, (I) **get angry** (at you).

Similar to other emotion terms, the expression for boredom *simsimhata* is exclusively reported with a first person subject and most of the time combined with a cause (87).

- (87) a. *Emma, nwuna ka an nolacwese simsimhay.* (4;1)  
Mom, (I'm) **bored cause** Sister **doesn't play with** (me).  
b. *Cip ey man issunikkan simsimhata.* (5;0)  
(I'm) **bored**, because (I) only stay at home.  
c. *TV caymi epsko simsimhay.* (5;4)  
TV **is boring** and (I'm) **bored**.

An interesting pattern is visible with respect to the reported productivity with terms for sadness – *sulphuta* ('sad') and *soksanghata* ('hurt, disappointed'). While *sulphuta* is active and dominant in Korean 3-year-olds' vocabulary, when *soksanghata* becomes highly productive at age 5, fewer children are suddenly reported to use *sulphuta*, which falls to 67%. Moreover, *soksanghata* appeared in four times more example utterances than *sulphuta*. The utterance examples showed that children used the terms when talking about causes of emotional expressions, in a declarative about self or question about other (88a), or in a 'seem'-construction about a third person (88b). (88c) and (88d) exemplify the frequent causal utterances reported describing other people's behavior that caused the child's distress or hurt feelings. Some 5-year-old children's utterances made reference to a second or third person's feelings, asking whether they caused their sadness or inferring that they will be hurt (88e).

- (88) a. *Sulphese nwunmul i nayo.* (4;10)  
(I) **cry cause** (I'm) **sad**.  
*Emma sulphese wule?* (4;11)  
Do (you) **cry cause** (you're) **sad**, Mom?  
b. *Hyenga ka soksanghayse wuna pwa.* (3;6)  
Brother **seems to cry cause** (he) **feels hurt**.  
c. *(Chinkwu) ka an nolacwese sulphesse.* (4;7)  
(I) **was sad**, because (friend) did not play with (me).  
*Chinkwu ka nay kwutwu an yeypputay. Kulayse sulphese, soksanghay.* (4;0)  
(My) friend said my shoes aren't pretty. Because of this (I'm) **sad**, (I) **feel hurt**.  
d. *Hyenga ka ttaylyese soksanghay.* (3;9)  
(I) **feel hurt**, cause brother hit (me).  
*X ka na silhtay, emma, kasum i apha. Soksanghay.* (4;0)  
X said (he/she) hates me, Mom, (my) **heart is aching**. (I) **feel hurt**.  
*Emma ka soli cillese soksanghacanha.* (4;9)  
(I) **feel hurt**, because Mom yelled (at me).  
e. *Emma na ttaymuney soksanghay?* (5;10)  
Do (you) **feel hurt** because of me, Mom?  
*Emma soksanghakeyssta...* (6;1)  
Mom **is going to feel hurt**...

*Cinkulepta* ('disgusting') is predominantly reported with reference to insects or reptiles (89). One interesting utterance by one of the 5-year-old children shows the term in a contrastive sentence comparing the judgment or mental state of self versus that of a friend (89d).

- (89) a. *Pelley ka cingkuleweyo.* (4;3)  
The insect is/ Insects are **disgusting**.
- b. "*Paym naonun takhyu*" *poko paym emcheng cingkulepci?* (4;9)  
After watching "TV series title" **aren't** snakes **terribly disgusting?**
- c. *Emma, cilengi ka way cingkulewunteyyo?* (4;10)  
Mom, why are earthworms **disgusting?**
- d. *Emma, penteyki masissnuntey na nun hana to an cingkulewuntey* (6;2)  
*Hyencini enni nun cingkuleptayyo.*  
Mom, chrysalises are tasty and **for me not disgusting at all**, but  
Hyencin **said** (they're) **disgusting**.

Negative emotion words that emerge in the 4-year-old group are expressions for annoyance and "getting on one's nerves" (*ccaccungnata* and *kwichanhta*), fear (*kep nata*), and worries (*kekceng*). While *ccaccungnata* is productive in >75% of both 4- and 5-year-olds, the other terms stay at productivity percentages between 50–60%. Some examples for *ccaccungnata* are given in (90), all of which show complaints about another person's behavior.

- (90) a. *Emma nun way cakku cangnankam chiwulako hay, ccaccungna cwukkeysse.* (4;3)  
Mom, why (are you) telling (me) all the time to tidy up (my) toys,  
(I'm) **annoyed to death**.
- b. Child: *Na sensayngnim hanthey ccaccungnantako mal haycwe.* (5;8)  
Mom: *Way?* Child:  $\neg \perp$  *kathun ke sikhinikka!*  
Child: I **tell** the teacher **that (it's) annoying**. Mom: Why?  
Child: Cause he makes us do stuff like ABC [Korean characters]!
- c. *Tongsayng ttaymuney ccaccungna.* (5;10)  
(I'm) **annoyed** because of Younger Sibling.

For *kwichanhta* and *kep nata*, no example utterances were entered by Korean parents. The term *kekceng*, on the other hand, was reported in a variety of structural contexts: (91a) shows a third person inferential construction with a conditional; in (91b), combined with auxiliary *toyta* ('become'), *kekceng* is matrix predicate of a complement clause marked by *-ci* ('whether'); (91c) holds a first person predicate with obvious sentence ender; and (91d) a negative imperative. In addition, all examples show 'worry' in meanings of concern for another, not oneself.

- (91) a. *Emma, ppalli an kamyen halmeni ka kekceng hasikeyssta.* (4;7)  
Mom, if (we) don't go quickly Grandma **is going to be worried**.
- b. *Sungmini ka Imo ney cip eyse Imo mal cal tutko nolko issnunci kekceng tway.* (4;8)  
(I am) **worried whether** Sungmin listens well to Aunt while playing at her house.
- c. *Emma, aphucima, kekceng toycanha. Nay ka yak cwulkkey.* (4;9)  
Mom, don't get sick, (I) **get worried(, you know)**. I'll give (you some) medicine.

- d. *Sangyena kekceng hacima.* (5;3)  
**Don't worry**, Sangyen.

Not becoming productive in the age period studied, but being used by around one third of the children are the specific Korean expressions *taptaphata* and *yak oluta*, which are both metonymic expressions of bodily symptoms standing for emotions: suffocation for uneasiness and “medicine/tonic rising” for taking offense. Korean offers a wealth of similar expressions for all kinds of emotions belonging to specific scripts of causes and reactions, which could not be included in the present list. For *yak oluta*, one single usage example was provided in a causative form construction; as in many previous examples of different emotional predicates, the obvious sentence ender *-canha* is used to add further stress to the statement and call for the hearer’s acknowledgment (71).

- (92) *Nwuna ka cakku yak ollicanha.* (5;8)  
 Sister **offends** (me) **all the time**.

### Morality & Norms

Table 4.1.22 *Acquisitional pattern of Korean IS vocabulary in the category MORALITY & NORMS*

Morality & Norms							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	감사하다 kamsahata/ 고맙다 komapta	V <sub>stat</sub>	thank you	100.0	95.7	88.9	95.0
2	미안하다 mianhata	V <sub>stat</sub>	sorry	94.7	87.0	94.4	91.7
3	하면 안 돼 hamyen an tway	[V- V <sub>neg</sub> ]	forbidden, prohibited	94.7	90.9	88.9	91.5
4	해도 돼 hay to tway	[V- V]	allowed, permitted	94.7	86.4	94.4	91.5
5	잘못하다 calmos hata*	[N V]	do wrong, make a mistake	84.2	86.4	88.9	86.4
6	인사 insa*	N	salutation	78.9	81.8	83.3	81.4
7	나쁘다 napputa	V <sub>stat</sub>	bad	84.2	69.6	72.2	75.0
8	말을 안 듣다 mal ul an tutta*	[N V <sub>neg</sub> ]	not listen, misbehave	73.7	78.3	94.4	81.7
9	착하다 chakhata	V <sub>stat</sub>	well-behaved, virtuous	73.7	73.9	88.9	78.3
10	안 된다 an toynta*	V <sub>neg</sub>	not allowed	73.7	72.7	77.8	74.6
11	불쌍하다 pulssanghata	V <sub>stat</sub>	poor	42.1	63.6	83.3	62.7
12	개구장이 kaykwucangi*	N	naughty boy	31.6	54.5	61.1	49.2
13	해야 한다 hayya hanta	[V- V]	must, have to	26.3	47.8	61.1	45.0
14	인기 inki	N	popularity	10.5	18.2	38.9	22.0
15	유명하다 yumyenghata	V <sub>stat</sub>	famous, celebrated	5.3	13.6	22.2	13.6
16	유행이다 yuhayng ita*	[N Cop]	fashionable	5.3	13.6	16.7	11.9
17	올바르다 olpaluta*	V <sub>stat</sub>	right, upright	0.0	13.6	16.7	10.2
18	철 들다 chel tulta	[N V]	become sensible	0.0	13.6	11.1	8.5

\* language-specific item

At 3 years, Korean children are actively producing 7 items of the IS word list for MORALITY & NORMS. They readily use expressions for ‘thank you’ and ‘sorry’, and Korean parents entered many example utterances for these (31 utterances in total). Besides many simple statements given, three interesting examples are displayed in (93), showing uses in an embedded complement clause (93a), a brother teaching his younger sister to say ‘thank you’ (93b), and another trying to prevent being tattled on by apologizing to his sister (93c).

- (93) a. *Kulayse nay ka mianhatako sakwahaysse.* (3;10)  
Because of this, I **apologized (saying that)** (I’m) **sorry**.
- b. *Oppa ka pullok cwumyen “komaweyo” hayya tway. Alasse?.* (4;9)  
If (your) big brother gives (you) some Lego, (you) **have to say “thank you”**. Got it?
- c. *Huyswuya, mianhay. Emma hanthey ilucima.* (5;4)  
Huyswu, (I’m) **sorry**. Please don’t tattle to Mom.

The same common productivity is reported for expressions for ‘forbidden’ and ‘allowed’ — the constructions *hay to tway* (lit. ‘do also o.k.’) and *hamyen an tway* (lit. ‘if do not o.k.’), in which verbs are inserted in the sense of ‘may \_\_\_’ and ‘may not \_\_\_’. Both expressions are reported in quite many usage examples (18 and 10 utterances), most frequently in contexts where the child asks for permission to do something (94a–d), but also in a few cases in addressing a sibling, in (94e) to complain about his behavior.

- (94) a. *Hamyen an toyçi?* (3;9)  
**Is it forbidden to do** (that)?
- b. *Emma, nintheynto hay to tway, hamyen an tway?* (4;6)  
Mom, **may I play** Nintendo **or may I not**?
- c. *Emma, na i ke samyen an tway?* (4;0)  
Mom, **may I not buy** this? [meaning: **may I?**]
- d. *Pap mekko kwaca meke to tway?* (5;4)  
After eating rice, **may (I) eat some candy**?
- e. *Oppa i ken hamyen an tway.* (4;5)  
**It’s not o.k. if Brother does that.**

Another item highly productive from age 3 is *calmoshata* (‘make a mistake’), which is used in apologies, in (95) together with a committal not to do this again.

- (95) *Taum eyn an kulelkkeyyo. Calmoshaysseyo.* (4;9)  
From now on (I) will not (do something) like this. **(I) have made a mistake**.

*Insa*, which is produced by 79–83% in all three age groups, is an important key word for interpersonal behavior and communication in Korea, referring to an appropriate address or salutation, especially to elders. Children’s utterance examples show that *insa* is related to *chakhata* (‘well-behaved, virtuous’) (96c, 96e). They report parents when they have used the appropriate *insa* in order to receive praise (96a, b, e), and teach their younger siblings (96d).

- (96) a. *Insa haysse.* (3;9)  
**(I) made Insa.**
- b. *Emma, Choyeni ka halmeni hanthey komapsupnita hako insa haysse.* (4;3)  
 Mom, Choyen [=the child] **made Insa** to Grandma **saying “thank you”**.
- c. *Insa lul cal hayya, chakhan keci?* (4;6)  
 (One) **is only well-behaved if** (one) **does Insa well**(, right) ?
- d. *Ywunse, insa hayyaci: “tanye oseyyo”.* (4;9)  
 Ywunse, (you) **have to make Insa**: “Please go and come” [said when someone is leaving the house for a trip or errant]
- e. *Na akka cen ey halapeci kkey insa hayssta. Chakhaci?* (5;4)  
 Just a moment ago I **made Insa to Grandpa**. (I’m) **well-behaved**(, ain’t I)?

Three further items for moral judgments about someone’s behavior are produced by the majority of the Korean 3-year-olds. *Napputa* (‘bad’) starts with 84% and decreases to 72% productivity in the 5-year-olds, *mal ul an tutta* (‘not listen, misbehave’) rises from 74% to 94% over the three age groups. *Chakhata* (‘well-behaved, virtuous’), that was just mentioned in relation with *insa*, appeared in the most example utterances of these three terms (9 utterances), starting with 74% at age 3 and reaching common productivity with 89% at age 5. Examples are presented in (97), (98), and (99). While *napputa* was used to complain about another’s behavior (97), *mal ul an tutta* was reported in a committal (without the negation) (98a), complaints like (98b), and a general statement (98c). Besides the uses already given in (96c) and (96e), the utterances entered for *chakhata* comprised the child’s wanting praise from her parents for being so well-behaved (99a), but also judgments about others’ behavior, as in the two utterances in (99b).

- (97) *Nappuci.* (3;9)  
 (This) **is bad** (isn’t it).  
*Hwacangsil ey tulekassnunthey chinkwu ka mun ul yelesseyo. Chinkwu cham nappucyo.* (4;3)  
 As I had gone into the toilet (my) friend opened the door. (That) friend **is really bad** (isn’t he/she).
- (98) a. *Mal cal tululkkeyyo.* (3;5)  
 (I) **will listen well**.
- b. *Emma, Chaymini ka mal ul an tule.* (5;10)  
 Mom, Chaymin **doesn’t listen**.
- c. *Mal an tulumyen kaykwucangici?* (4;3)  
**If** (one) **doesn’t listen** (one) **is a naughty kid**(, right) ?
- (99) a. *Chakhaci.* (3;9)  
 (I’m) **well-behaved** (am I not).  
*Senguni ka ceyil chakhacyo.* (5;10)  
 Sengun [=the child] **is the most well-behaved** (isn’t she).

- b. *X i koylophyesse. An chakhaciyo.* (4;0)  
 X **tormented** (me). (He/she) **is not well-behaved** (is she/he).  
*X i na lang nolacwessta. Chakhaci.* (4;0)  
 X **played with me** [lit. ‘play-give to me’]. (He/she) **is well-behaved** (isn’t she/he).

The term *kaykwucangi*, referring to a child that misbehaves or plays tricks, was reported to emerge in Korean children’s vocabulary at age 4. It did only appear in the example in (98c). The second item emerging at age 4 is *pulssanghata* (‘poor, miserable’), which then becomes highly active in the Korean 5-year-olds and is reported in utterances expressing compassion for animals or story characters (100).

- (100) a. *Emma, phwul i (mulkoki) pulssanghata.* (3;9)  
 Mom, “pool” (the fish) **is/are pitiable**.  
 b. *Ce ai nemu pulssanghayyo.* (4;1)  
 That child **is just too pitiable**.  
 c. *Kangaci nun pulssanghay! Cip eyse ccochkye nako!* (4;7)  
 The puppy **is pitiable!** Being chased out of the house!

The construction *hayya hanta* ‘must, have to’ emerges with 61% production at 5 years and was only given one example seen in (101). Besides, it nevertheless appeared in many example utterances for other terms on the checklist, where it is used in conditionals, counterfactuals, or ‘only if’-constructions (e.g., (76f), (93b), (96c)).

- (101) *Kongpu hayya hay.* (5;3)  
 (I) **have to** study.

The last five terms of the list in Table 4.1.22—‘popularity’, ‘famous’, ‘fashionable’, ‘upright’, and ‘become sensible’—were only produced by single children in the sample, and were not exemplified by any child utterances. *Inki* (‘popularity’), nevertheless, increased to be produced by 39% of the Korean 5-year-olds.

### *Social feelings & Relationship*

The verbs for “transitive” emotions *cohadata* (‘like’) (102), *salanghata* (‘love’), *sillehata* (‘dislike’) and *mipta* (‘hate’) are already highly productive among Korean 3-year-olds. Also active in this early age group are the words *poko siphta* (‘miss’), *yaksok* (‘promise’), and *hon nata* (‘be scolded’), which seem to be important and frequent experiences for Korean children in interaction with their parents.

- (102) a. *Cohahay.* (3;9)  
 (I) **like** Ø.  
 b. *Emma nun way na pota Sunghen i man te cohahayyo?* (6;2)  
 Why does Mom **like** Sunghen **more than me?**

Table 4.1.23 *Acquisitional pattern of Korean IS vocabulary in the category SOCIAL FEELINGS & RELATIONSHIPS*

Social feelings & Relationships							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	좋아하다 cohahata	V <sub>act</sub>	like (so.)	100.0	100.0	100.0	100.0
2	보고 싶다 pokosiphta	[V- V]	miss	94.7	100.0	100.0	98.3
3	사랑한다 salanghanta	V <sub>act</sub>	love (so.)	94.7	95.5	100.0	96.7
4	싫어하다 silhehata*	V <sub>act</sub>	dislike (so.)	94.7	95.7	94.7	95.1
5	약속 yaksok	N	promise	89.5	95.5	88.9	91.5
6	훈 나다 hon nata	[N V]	be scolded	84.2	87.0	88.9	86.7
7	싫다 mipta	V <sub>stat</sub>	hate (so.)	78.9	65.2	83.3	75.0
8	이기다 ikita	V <sub>act</sub>	win	63.2	82.6	77.8	75.0
9	친하다 chinhata*	V <sub>stat</sub>	be close with (so.)	57.9	77.3	88.9	74.6
10	창피하다 changphihata	V <sub>stat</sub>	ashamed, embarrassed	52.6	86.4	77.8	72.9
11	용서하다 yongsehata	V <sub>act</sub>	forgive	57.9	59.1	72.2	62.7
12	빠치다 ppichita	V <sub>stat</sub>	become sulky	52.6	72.7	50.0	59.3
13	귀찮게 하다 kwichanhkey hata*	V <sub>caus</sub>	annoy	42.1	72.7	66.7	61.0
14	잘 해주다 cal haycwuta*	[Adv V]	be good to (so.)	42.1	50.0	72.2	54.2
15	자랑하다 calanghata	V <sub>stat</sub>	proud	36.8	63.6	72.2	57.6
16	사귀다 sakwita*	V <sub>act</sub>	make friends, hang out with	10.5	45.5	55.6	37.3
17	눈치 nwunchi*	N	Nunchi (tact, perceptiveness)	10.5	27.3	38.9	25.4
18	억울하다 ekwulhata	V <sub>stat</sub>	feel victimized, offended	10.5	18.2	44.4	23.7
19	질투하다 cilthwuhata	V <sub>stat</sub>	jealous, envy	5.3	22.7	22.2	16.9
20	정 ceng*	N	Jeng (feeling of relationship)	5.3	13.6	27.8	15.3

\* language-specific item

Frequently, *salanghata* was reported in the expression *Emma, appa salanghay* ('Mom, Dad, (I) love (you)'). Further examples included intensifiers (103a), a 'seem'-construction with a third person subject (103b), and two questions with committal marker *-ci* (103c, d) seeking the hearer's agreement.

- (103) a. *Appa, emma, nemu nemu salanghayyo.* (6;1)  
Dad, Mom, (I) **love** (you) **so so much**. (lit. **too much too much**)
- b. *Na lul nemu salanghana pwa, emma nun.* (4;10)  
Mom **seems to love me too much**.
- c. *Appa lang emma, Yunse, Yuchan i selo selo salanghaci?* (4;9)  
Dad and Mom, Yunse and Yuchan, (we all) **love each other** (, don't we)?
- d. *Sungmini hako nun hyengceynikka wulin selo salanghayyaci? Kulehci, emma?* (4;8)  
Cause Sungmin and (I) are brothers, **we have to love each other** – right, Mom?

Two examples for *silhehata* are displayed in (104). Again, when a third person is subject children often use a ‘seem’-construction to express the inferential nature of their interpretation (104b).

- (104) a. *Silhehay.* (3;9)  
(I) **dislike** Ø.  
b. *Chinkwutul i na lul silhehanun kes katha.* (5;5)  
(My) friends **seem to dislike me**.

Frequent examples with *mipta* had the simple form \_\_\_ *miwe* (‘(I) hate \_\_\_’); extensions on this clause type included intensifiers (105a), causals (105b), and conditionals (105c, d).

- (105) a. *Emma, X enni cincca miwe.* (4;6)  
Mom, (I) **really hate** Sister X.  
b. *Nay mulken mancyese X nun miwe.* (4;7)  
(I) **hate** X because (he/she) touched my stuff.  
c. *Emma elkwul ccingkulimyen miwe.* (3;9)  
(I) **hate if** (you) **make a wry face**, Mom.  
d. *Kulehkey malhamyen mipci.* (4;3)  
**If** (you) **talk like that** (that’s) **detestable** (, isn’t it).

Utterance examples for *poko siphta* (‘miss’) include references to a variety of family members or friends whom the children state to miss (106a). Such an expression can be combined with a propositive for an action as in (106b). Example (106c) shows a rhetorical question with committal ender in which the child wants someone to confirm that they missed her.

- (106) a. *Oppa poko siphta.* (3;4)  
(I) **miss** Brother.  
*Komo poko siphta.* (3;9)  
(I) **miss** Aunt.  
*Kayena poko siphesse.* (3;9)  
(I) **messed** Kayen.  
b. *Cwuuni hyeng poko siphe, cenhwa haypoca.* (4;7)  
(I) **miss** brother Cwuun, let’s try to call (him).  
c. *Poko siphessci?* (3;9)  
(You) **messed (me)** (, **didn’t you**)?

Talk about promises was represented in examples, where the child made a promise himself (107a), reminds someone of a promise (107b), asks someone to give a promise expressed with an embedded complement clause (107c), or enforces a norm of keeping promises (107d) either by reference to a rule or by an interpersonal pact of reciprocity.

- (107) a. *Yaksokhay.* (3;5)  
(I) **promise**.  
*Kkok kkok yaksokhay.* (3;9)  
(I) **surely surely promise**.

- b. *Emma na lang yaksokhan ke icci anhasseyo?* (4;7)  
Mom (you) **didn't forget what** (you) **promised me** (, did you)?
- c. *Taum ey sacwuntako yaksokhay.* (4;9)  
**Promise** (me) **that** (you'll) buy (it) later for (me).
- d. *Emma kkok yaksok cikhyeya tway.* (4;11)  
Mom (you) **have to keep a promise in any case.**
- Na to yaksok cikhil theynikka, emma to kkok yaksok cikhiseyyo.* (4;10)  
**Since I will also keep** (my) **promise, please do also keep** (your)  
**promise in any case, Mom.**

Examples for talk about scolding using hon nata are given in (108). One is a report about a first person experience (108b), the other an inference about the future consequence of what another person did (108a).

- (108) a. *An Huyswu icey khun il nassta. Emma hanthey hon nanteyyo.* (5;4)  
An Huyswu (**is**) **in severe trouble** now. (She'll) **be scolded by** (her) mom.
- b. *Na sensayngnim hanthey hon nasse.* (5;10)  
**I got scolded by** the teacher.

A further group of items is emerging in the common vocabulary of Korean children at age 3 being produced by 53–63% of the children. These include winning (*ikita*) (109), being close with someone (*chinhata*) (110), which become productive at age 4, and two possible reactions to being hurt by someone, namely, ‘forgive’ (*yongsehata*) (111) and ‘become sulky’ (*ppichita*) (112), which stay at production of 50–72% throughout.

- (109) *Wuli nwuka ikina han pen sihemhay poca ... Nay ka ikyesse.* (5;10)  
**Let's make a competition** and see **who wins... I won.**
- (110) *Na Pak Kenwu lang ceyil chinchay.* (4;9)  
**I'm closest with** Pak Kenwu.
- (111) a. *Nay ka mianhay hacaanha, yongsehaycweyaci.* (3;9)  
**I said sorry (didn't I)** (so) (you) **have to forgive me** (don't you).
- b. *Han pen man yongsehaycwe.* (5;3)  
**Forgive (me) just once.**
- c. *Huyswuya, Oppa ka yongsehaycwulkkey tasin kulecima.* (5;4)  
Huyswu, (your) big brother [=the child] **is going to forgive** (you)  
(but) don't do this again.
- (112) a. *Emma ka Ywunse lang man nolase ppicyesse! Cal ke ya.* (4;9)  
(I'm) **miffed** cause Mom only plays with Yunse! (I) will go to sleep.
- b. *Soyuni ka ppoppohacako hayse ppicyesse.* (5;8)  
Soyun **was miffed** cause (I) said let's kiss.

Noteworthy, the self-conscious emotion term *changphihata* (‘ashamed, embarrassed’) is equally already emerging at age 3 and rises above 80% production at age 4. Usage examples are given in (113), showing the term stressed in an exclamation with an obvious sentence

ender (113a), with a third person subject in a causal inference construction (113b), and as explanation for an imperative (113c).

- (113) a. *Changphihacanha!* (4;6)  
 (I'm) **embarrassed** / (This is) **embarrassing** (, don't you see)!
- b. *Tongsayng paci ey swihayse changphihakeyssta.* (4;7)  
 Younger Sibling **will be ashamed** cause (he/she) peed in (his/her) pants.
- c. *Changphihan ke ya, mun tata.* (4;9)  
 (I'm) **embarrassed**, shut the door.

At age 4, two terms for interpersonal behavior newly emerge – the negative *kwichanhkey hata* ('annoy someone') and the positive *cal haycwuta* ('be good to someone'). Utterance examples were only given for *kwichanhkey hata* (114).

- (114) a. *Cakku kwichanhkey hayyo.* (4;1)  
 Ø **annoys me all the time.**
- b. *Oppa kwichanhkey com hacima.* (4;5)  
**Please don't annoy** (me), Oppa [elder brother of a girl].

Also at age 4, a second self-reflective emotion term emerges with 64%, rising to 72% at age 5 – *calanghata* ('proud'). Two parent examples were provided for this predicate; in (115a) it is combined with a dative object and future tense, in (115b) it is matrix verb of an embedded complement clause with *-tako*.

- (115) a. *I ke nwuna hanthey calanghal ke ya.* (3;11)  
 Lit. I **will be proud** about this to Sister.
- b. *Senmul patasstako calanghanta.* (5;0)  
 Ø **is proud** (saying) **that** (he/she) got a present.

*Sakwita*, a further term in the domain of friendship meaning 'to become friends, to hang out with', finally emerges in Korean children's shared vocabulary at age 5. It can also mean making friends in a girlfriend-boyfriend kind of relationship, which is the usage context of the only example utterance given for it (116).

- (116) *Emma! Cang Hyeyeng hako Sin Sunghwun hako sakwinun ke kathay!* (5;8)  
 Mom! Cang Hyeyeng **and** Sin Sunghwun **seem to be seeing each other!**

Four items remained in the list of SOCIAL FEELINGS & RELATIONSHIPS that did not reach 50% productivity in the age period studied. These were the words for 'jealous' (*cilthwuhata*), feeling victimized or treated unfairly (*ekwulhata*), and two important key words of Korean relationships (*Jeng* 'feeling of relationship, connection') and interactional norms (*Nwunchi* 'tact, receptiveness'). No utterance examples were provided for these words.

*Jeng* and *Nwunchi* nevertheless belonged to the productive words of 15% and 25% of the full sample of Korean children (28% and 39% at age 5), which is quite impressive as they express highly abstract cultural concepts.

### Communication & Discourse

Table 4.1.24 *Acquisitional pattern of Korean IS vocabulary in the category COMMUNICATION & DISCOURSE*

Communication & Discourse							
Rank	Item	PoS	English transl.	3 years	4 years	5 years	total
1	말하다 malhata	V <sub>act</sub>	speak, say	84.2	72.7	88.9	81.4
2	얘기하다 yaykihata	V <sub>act</sub>	talk, narrate	73.7	86.4	77.8	79.7
3	이야기 iyaki	N	story	73.7	81.8	77.8	78.0
4	대답하다 taytaphata	V <sub>act</sub>	answer	57.9	77.3	88.9	74.6
5	왜냐하면 waynyahamyen	Conj	lit. if you ask why	57.9	72.7	78.9	70.0
6	부르다 puluta	V <sub>act</sub>	call, name	52.6	59.1	77.8	62.7
7	묻다 mutta	V <sub>act</sub>	ask	36.8	50.0	61.1	49.2
8	설명 selmyeng	N	explain	21.1	40.9	50.0	37.3
9	대화 tayhwa*	N	talk, dialogue	10.5	22.7	27.8	20.3
10	의미하다 uymihata/뜻하다 ttushata	V <sub>stat</sub>	mean, signify	5.3	27.3	27.8	20.3

\* language-specific item

While Korean 3-year-olds readily and frequently use the verb *malhata* to talk about acts of speaking, five other terms of COMMUNICATION & DISCOURSE asked for in the checklist are emerging at that age. Words for talking/narrating and ‘story’, already at 74% with 3 years, reach common productivity with 4 years, as does the verb ‘answer’, which started with a production proportion of 58% at age 3.

Somewhat unexpectedly, ‘ask’ (*mutta*) appears much later in children’s vocabulary than ‘answer’, emerging with 50% at age 4 and staying around 60% in the 5-year-olds. It might be that although questions are obviously frequently posed in everyday discourse, they are not explicitly referred to with the verb ‘ask’.

Of the items that are used in contexts of instruction, explanation or clarification the sentence connector *waynyahamyen* (lit. ‘if you ask why’), meaning ‘the reason is that’, and the verb *pwuluta* (‘call, name’) emerge early in the 3-year-old group, but do not reach common productivity before 5 years. *Selmyeng* (*hata*) (‘explain’) emerges with 5 years, and the compatible verbs *uymihata* and *ttushata* that are both used to talk about what something means or signifies, stay below 30% throughout the sample.

## Cognition

Table 4.1.25 *Acquisitional pattern of Korean IS vocabulary in the category COGNITION*

Cognition							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	알다 <i>alta</i>	V <sub>act</sub>	know	94.7	95.7	83.3	91.7
2	모르다 <i>moluta</i> *	V <sub>act</sub>	do not know	84.2	90.9	84.2	86.7
3	잊어버리다 <i>icepelita</i>	V <sub>act</sub>	forget	63.2	86.4	89.5	80.0
4	똑똑하다 <i>ttokttok hata</i>	V <sub>stat</sub>	clever, smart	68.4	68.2	77.8	71.2
5	생각 <i>sayngkak</i>	N	think, thought	57.9	81.8	88.9	76.3
6	궁금하다 <i>kwungkumhata</i>	V <sub>stat</sub>	curious, inquisitive	42.1	68.2	66.7	59.3
7	기억하다 <i>kiekhata</i>	V <sub>act</sub>	remember	31.6	72.7	77.8	61.0
8	이해하다 <i>ihayhata</i>	V <sub>act</sub>	understand	26.3	18.2	44.4	28.8
9	관심 <i>kwansim</i>	N	interest	15.8	13.6	33.3	20.3
10	계획 <i>kyeyhoyk</i>	N	plan	5.3	9.1	11.1	8.5

\* language-specific item

Of the terms of the category COGNITION, ‘know’ (*alta*) and ‘not know’ (*moluta*), which has its own verb root in Korean, are already active vocabulary with 3 years.

Typical examples of usage that mothers provided can be seen in (117) and (118).

- (117) a. *Na to alketunyo.* (3;5)  
**I know** (that), **too**.
- b. *Oppa ka pullok cwumyen Komaweyo hayya tway, alasse?* (4;9)  
 If (your) big brother [=the child] gives (you) a Lego (you) have to say  
 Thank you, **got it?**
- c. *Emma, i key mwenci ale?* (4;11)  
 Mom, **do (you) know what this is?**
- (118) a. *Molla.* (3;9)  
**Don't know.**
- b. *Nay ka moluko kulaysseyo.* (3;5)  
**I didn't know** (so I) did like this.
- c. *Emma, nay ka moluko silswu haysse.* (5;9)  
 Mom, I **didn't know** (so I) made a mistake.
- d. *Way molla?* (5;4)  
 Why **don't** (you) **know?**
- e. *Hyenswu, ne nun i kes to molunya?* (5;8)  
 Hyenswu, you **don't even know this?**
- f. *Nwunmul i nallyeko hay. Molukeysse.* (6;3)  
 (I) wanna shed tears. (I) **don't know.**
- g. *Chinkwu ka eccel cwul molutela. Kulayse nay ka towacwesse.* (6;3)  
 (My) friend **was in a quandary**. Because of this I **helped** (him/her).

Uses of *alta* showed the verb with explanatory *-ketun*, when the child wants to indicate that it heard something before (117a), as a discourse marker meaning ‘got it’ when giving or receiving commands (117b), or with WH-complement marked by *-ci* (117c). *Moluta* appears in a variety of constructions in children’s examples: in simple statements (118a) and questions (118d, e); in the expression *moluko [V]* meaning ‘unknowingly, unintentionally’ (118b, c); and as discourse marker *molukeysse* with inferential suffix expressing uncertainty (118f) and in the expression *eccel cwul moluta* ‘not know which way to turn, desperately need help’ (118g), both given in utterances of 5-year-olds.

Of the other cognitive verbs asked about in the IS checklist ‘forget’ (*icepelita*) (119) and ‘think’ (*sayngkak (hata)*) (121) emerge in the 3-year-old group and become active in the 4-year-old group, ‘remember’ (*kiekhata*) (120) emerges in the 4-year-olds and is active in the 5-year-olds, and ‘understand’ (*ihayhata*), although more children produce it with 5 years than in the younger groups, stays below 50% and was not exemplified in children’s utterances.

- (119) a. *Icepelyesse.* (3;9)  
(I) **forgot** (it).
- b. *Cangnankam ul eti twessnunci icepelyesse.* (4;5)  
(I) **forgot** where (I) left the toy.
- c. *Tto icepelin key anilkka, ney cal nehe tuwessnuntey...* (4;10)  
**Could it be that (you) forgot (it) again**, although you stored (it) well?
- d. *Emma ka mwelako hayssnunci icepelyesse.* (5;10)  
(I) **forgot** what Mom said.
- (120) a. *Emma nun aki ttay kiekna.* (4;0)  
Mom **remembers** when Ø was a child.
- b. *Na ta kiekhako isse.* (4;6)  
I **remember everything**.
- c. *Emma, aki yessul ttay nay ka ipten ke Ywunse ka ipnun ke ya. Na i os kiekna.* (4;9)  
Mom, Ywunse is wearing what I wore as a child. I **remember** these clothes.
- d. *Cal kiekhay. Icepelici malko.* (5;10)  
**Remember (that) well. And don’t forget (it).**
- (121) a. *Sayngkak i an na. Icepelyessna pwa.* (4;7)  
(It) **does not come to (my) mind**. (I) **seem to have forgotten**.
- b. *Nay ka kulca kongpuhan ke icepelyessnuntey komkomi sayngkakhayponi kiek i nasse.* (4;8)  
I **forgot** the characters that (I) learned, **but as (I) thought about it deeply** (I) **recollected** (them).
- c. *Emma! Na hanthey cohun sayngkak i isse.* (4;6)  
Mom! I **have a good idea**.
- d. *Appa, nwuna ka nay sayngkak musihay. Waynyahamyen...* (6;1)  
Dad, Sister **disregards my mind** (lit. **thought**). The reason is...

*Icepelita* is shown mostly in past tense uses, often with a WH-complement clause marked by *-ci* (119b, d). *Kiekhata* is also reported in use with a third person subject (120a) and in an imperative by a 5-year-old contrasting ‘remember’ and ‘forget’ (120d). *Sayngkak* (‘thinking, thought’) is often used in the context of remembering (121a–b). In (121a) it is combined with negated *nata* (‘come up, come out’), from which the child draws the inference, using a ‘seem’-construction, that he has forgotten. In (121b) *sayngkak hata* is presented as leading to remembrance in a causal construction. With the attribute *cohun* (‘good’) (121c) *sayngkak* takes on the meaning of ‘idea’, while in the utterance in (121d), it would best be translated with ‘perspective, viewpoint’ or, more generally, ‘mind’.

Further uses of ‘know’ and ‘think’ and detailed analyses of the constructions they appear in are part of Chapter 4.1.2.

Two other words also emerge in Korean children’s vocabulary at age 3, namely *ttokttok hata* (‘clever, smart’) and *kwungkumhata* (‘curious, inquisitive’), of which the former reaches productivity in age group 5 and the latter stays below 70%.

While younger children’s utterance examples show references to the smartness of others (122a) or in an impersonal conditional (122b), older children’s examples show more and more self-confident statements about their own cleverness (122c, d).

- (122) a. *Emma ttokttok hata.* (3;8)  
Mom **is smart**.
- b. *Myelchi nun manhi mekumyen ttokttok haycyeyo.* (3;9)  
If (you) eat a lot of anchovys (you) **become smart**.
- c. *Na konglyong ilum icey manhi alci, na ttokttok haci...* (4;11)  
I **know a lot** dinosaur names now, I’m **smart** (, ain’t I)...
- d. *Na nun ttokttok hanka pwa.* (5;0)  
I **seem to be clever**.
- Emma, na ttokttok haci.* (5;3)  
Mom, I’m **smart** (, ain’t I).
- Na cengmal ttokttok hay.* (5;10)  
I’m **really smart**.

The examples in (123) show the use of *kwungkumhata* as predicate of the speaker (123a) as well as the addressee (123b), in both cases combined with an embedded complement clause marked by complementizer *-ci* (‘whether’).

- (123) a. *Ciyeni nun kongpu lul cal hatunci kwungkumhay! Waynyahamyen* (4;3)  
*Choyeni ka kongpu lul kalukhyecwessnuntey cakku icepelye, papo ya.*  
(I’m) **curious** whether Ciyen studies well at all! The reason is that Choyen  
[=the child] taught (her) how to study, but she **keeps forgetting all the time**, that **fool**.
- b. *Ywunseya, i ke ettehkey mantuleesnunci kwungkumhaci? An kaluchyecwul ke ta.* (4;9)  
Ywunse, (you’re) **curious** how (I) made this thing, right? (I) won’t teach you.

The terms for ‘interest’ and ‘plan’, that were also part of this semantic group, were only reported for very few children of the Korean sample and do not seem to play an important role in their IS vocabulary between 3 and 6. One single example sentence from a 5-year-old child was given for *kwansim* (‘interest’) contrasting his own and mother’s mental state. It is displayed in (124).

- (124) *Nan kwansim epstakwu. Emma kwansim isse?* (6;3)  
 (I said) for me this isn’t interesting. Are (you) interested (in this) Mom?

### Reality & Evidentiality

Table 4.1.26 *Acquisitional pattern of Korean IS vocabulary in the category REALITY & EVIDENTIALITY*

Reality & Evidentiality							
Rank	Item	PoS	English translation	3 years	4 years	5 years	total
1	맞다 <i>macta</i>	V <sub>stat</sub>	be right	84.2	86.4	88.9	86.4
2	거짓말 하다 <i>kecismal hata</i>	[N V]	lie	73.7	90.9	88.9	84.7
3	진짜 <i>cincca</i>	N, Adv	really	68.4	91.3	89.5	83.6
4	틀리다 <i>thullita</i>	V <sub>stat</sub>	wrong	68.4	86.4	83.3	79.7
5	꼭 <i>kkok</i>	Adv	sure, in any case	68.4	77.3	77.8	74.6
6	같다 <i>kathhta</i> *	V <sub>stat</sub>	seem to	42.1	63.6	83.3	62.7
7	가짜 <i>kacca</i> *	N	fake	31.6	68.2	83.3	61.0
8	보이다 <i>poita</i>	V <sub>pass</sub>	seem, look as if	47.4	59.1	55.6	54.2
9	맞히다 <i>machita</i>	V <sub>pass</sub>	guess	36.8	54.5	72.2	54.2
10	원래 <i>wenlay</i>	Adv	actually, originally	31.6	59.1	72.2	54.2
11	당연히 <i>tangyenhi</i> *	Adv	certainly, naturally	26.3	50.0	66.7	47.5
12	만약에 <i>manyakey</i>	Adv	maybe, in case	15.8	59.1	55.6	44.1
13	사실 <i>sasil</i>	N	truth, reality	21.1	40.9	33.3	32.2
14	아마 <i>ama</i> *	Adv	maybe, perhaps	21.1	31.8	38.9	30.5
15	믿다 <i>mitta</i>	V <sub>act</sub>	believe	15.8	31.8	38.9	28.8
16	척 하다 <i>chek hata</i>	[N V]	pretend to	5.3	36.4	72.2	37.3

\* language-specific item

With 3 years, Korean children start using first linguistic means to express the reality or evidentiality of things they talk about. The first term of this category that is already productive for 84% of the 3-year-olds is *macta* (‘right’). Parent’s examples for children’s uses of *macta* are given in (125). The 3-year-olds’ utterances are simpler, but combine *macta* with a variety of suffixes (125a). 4-year-olds’ example sentences were both questions with an embedded complement clause (125b). Here, *macta* is used in the sense of “doing things right”, i.e., know-how and convention, which suggests that the meanings for which 3-year-

olds use the term are similar. Only a 5-year-old's example shows *macta* with reference to truth and reality (125c).

- (125) a. *Emma, macciyo.* (3;4)  
 Mom, **(this is) right (isn't it).**  
*Macassupnita.* (3;8)  
 (This) was right.  
*Maccanha.* (3;9)  
 (This) is right (as you should know).  
 b. *Ilehkey ssunun ke macci?* (4;9)  
**Is it right** to use (it) this way?  
*Ilehkey hanun ke maca?* (4;11)  
**Is it right** to do (it) like this?  
 c. *Emma, nay mal i macci?* (5;3)  
 Mom, what I'm saying **is right** (isn't it).

Four other terms are emerging in children's vocabulary with around 70% and gain common productivity at 4 years: the counterpart of *macta* ('right') – *thullita* ('wrong'), the verb 'lie' (*kecismal hata*) and the epistemics *cincca* ('real(ly)') and *kkok* ('sure, in any case'), of which the former can, as in English or German, be used as intensifier, and the latter as commissive, for example in promises. *Kecismal hata*, *cincca*, and *kkok* were the terms in this semantic category that yielded most parent examples (12, 17, and 13 utterances, respectively).

For *thullita* ('wrong'), only utterances from younger children were entered by Korean parents, all coming from contexts of making mistakes in games, homework, or writing characters, thus not referring to truth or lying. The many utterances with *kecismal hata* ('lie') were either complaints about siblings telling lies (126a), requests to parents not to lie (126b), confessions of having lied and according apology (126c), or a statement of the norm that one should not lie (126d).

- (126) a. *Hyenga ka na cen ey an kulayssnuntey cikum kecismal hay.* (3;6)  
 Although I didn't do this before, Brother **is lying now.**  
*Nwuna ka tto kecismal haysse!* (3;10)  
 Sister **lied again!**  
 b. *Emma, Appa, kecismal hacima.* (4;0)  
 Mom, Dad, **please don't lie.**  
 c. *Nay ka kecismal haysseyo.* (4;5)  
**I lied.**  
*Kecismal haysse. Mianhayyo.* (4;7)  
 (I) **lied.** (I) am sorry.  
 d. *Kecismal hamyen an tway.* (5;3)  
**It is not o.k. if (someone) lies.**

Frequent uses reported of *cincca* ('real(ly)'), especially for younger children, show it as intensifier of a stative predicate (127a). The last two examples of (127a) show complex utterances involving an inference the child is making: in the first one, the child arrives at a judgment about a person's character from her behavior; in the second, the child tries to infer someone's mind from his behavior. Combined with an action verb, *cincca* may express or ask for committal to a planned action, as in (127b).

- (127) a. *Cincca mas isse.* (3;5)  
**Really** tasty.  
*I kes un cincca elyewun ke ya.* (3;11)  
 This **is really difficult**.  
*Cincca cohahay.* (4;6)  
 Ø **really** like(s) (this).  
*Cakun nwuna cincca nappa. Limokhon to ancwuko.* (5;8)  
 Sister is **really** bad. (She) doesn't even give (me) the remote control.  
*Appa nun Choyeni ka cinccalo silhunka pwa, ppalli osici anhunikka!* (4;3)  
 Dad seems to **really** dislike Choyen [=the child], since (he) is not coming quickly.
- b. *Cincca sacwul keci?* (4;7)  
 Will (you) **really** buy (this) for (me)?
- c. *Emma cincca Chwungcwu kanun ke ya.* (5;5)  
 Mom is **really** going to Chwungcwu.  
*Na cincca an mekesse.* (5;10)  
 I **really** didn't eat (it).
- d. *I ke cincca ya? Kecismal aniya?* (4;9)  
**Is this real? Isn't it a lie?**  
*I ke cincca aniko kaccaci.* (4;9)  
**This isn't real, it's fake.**

Utterances of older children, finally, show *cincca* used for committing to the truth of one's previous statement in an ongoing dialogue (127c), probably to convince the hearer who may have expressed doubt. For one child, two utterances were reported that show his contrastive distinction of 'truth-lie' and 'real-fake' (127d).

The adverb *kkok* ('sure, definitely, in any case') was almost exclusively seen in examples where it is used as committal, especially in giving and taking promises (128). Only one child example of a 5-year-old shows it in an epistemic use (129).

- (128) a. *Emma cangnankam sale kkok kaya twayyo.* (3;9)  
 Mom, (you) **have to definitely go** buy (this) toy/toys.  
*Senmul kkok sacwe.* (4;6)  
**Definitely buy** a present **for** (me).  
*Emma kkok yaksok cikhyeya tway.* (4;11)  
 Mom, (you) **definitely have to keep** a **promise**.
- b. *Kkok kkok yaksokhay.* (3;9)  
 (I) **definitely definitely promise / Definitely definitely promise** (this to me).

- (129) *Mulkoki ka cwukessna pwa. Kkok cwukun mosup kathay.* (3;5)  
The fish seem(s) to have died. (They/it) **definitely looks like a dead appearance.**

In the 4-year-old group a list of further items starts being used by 50–68% of the children. Of these, the counterpart of *cincca* ('real(ly)') – *kacca* ('fake') – and the complement taking verb *kathta* ('seem to') become highly productive among the 5-year-olds. The other items emerging at age 4 stay below 75%. These are *poita* ('seem, look as if'), which is also used as matrix verb of a complement clause construction, the verb 'guess' (*machita*), the epistemics *wenlay* ('actually, originally') and *tangyenhi* ('certainly, naturally'), and the sentence adverb or connector *manyak ey* ('maybe, in case').

Example utterances for *kacca* can be seen in (130). Depending on the context, possible translations for *kacca* range from pretense over fake to irreality.

- (130) a. *TV eyse hanun ke kaccaci?* (4;3)  
What they do on TV **is fake (isn't it)?**
- b. *Kaccalo mal hayssciyo.* (4;7)  
Ø said (this) **untruly** [lit. **with fake**].
- c. *Kaccalo mekepwa.* (5;3)  
Try to **pretend to** eat (this).

*Kathta* and *poita* both take sentential complements to form 'seem'-constructions. Example utterances were few, although *kathta*-constructions are very frequent in the older Korean children's speech both in the narratives and interviews of the present study, but show *kathta* used for an inference (131a), for politeness (131b), and for talk about appearance (see 129 above), qualifying the certainty of one's epistemic judgement. *Poita* appears in one utterance related to appearance (132).

- (131) a. *Kamki kellyese mom i an cohayo. Nayil elinicip mos kal kes kathuntey.* (4;9)  
(I) don't feel well [lit. body is not good] because (I) caught a cold.  
**It seems like** (I) won't be able to go to the kindergarten tomorrow.
- b. *Emma nun yeyppun kes katha.* (5;10)  
**It seems** that Mom is pretty.
- (132) *Ttokkatha poyeyo.* (5;0)  
Ø **seems to be the same.**

All examples of *machita* ('guess') were reported in the fixed form *Nay ka machyesse* meaning 'I guessed (it) right'. While *tangyenhi* ('certainly, naturally') is only given in examples where it simply functions as a commissive (133), *wenlay* ('actually, originally') shows a variety of uses with temporal and epistemic meaning or intensifying function (134).

- (133) *Tangyenhi kulehketunyo.* (3;5)  
**Of course**, (it's) like this.
- Ku ken tangyenhi cinccaci.* (4;7)  
**Of course**, this **is real.**

- (134) a. *Wenlay kulay.* (3;5)  
It's **originally** like this. [i.e., It's always been like this. How come you doubt it?]
- b. *Wenlay yeki issessnunteyyo.* (3;9)  
It's **originally** been here. [implying: How come (I/you) couldn't find it?]
- c. *Wuli appa wenlay mwetunci cal hay.* (4;8)  
Our dad WENLAY does everything well. [i.e., It's always been like this, cannot be doubted]
- d. *I ke wenlay nay kkeci, Ywunse kke anici?* (4;9)  
But this is **originally** mine, not Ywunse's (isn't it)?

*Manyak ey* ('maybe, in case') was only reported in one example utterance, seen in (135).

- (135) *Manyak ey mal iya...* (4;7)  
**Hypothetically speaking...**

Another equivalent of 'maybe', the sentence adverb *ama* ('maybe, perhaps') as well as *sasil* ('truth, reality') and the verb 'believe' (*mitta*) do not appear in Korean children's common vocabulary before age 6, but stay being used by percentages between 16–41% throughout the present sample. No examples were given for *ama*. *Sasil* is reported in one sentence of a child's confession (136). *Mitta* ('believe') also appears only in a single example, where it has the specific meaning of religious belief and takes a nominal object (137). We therefore do not know whether the other children for which the term is reported to be productive use it as epistemic verb with sentential complement or not.

- (136) *Na sasil un aisukhulim mekesse.* (5;10)  
**Actually**, I ate (the) icecream.
- (137) *Nan Yeyswunim ul mite.* (4;7)  
I **believe** in Jesus.

Showing a rather sudden appearance in Korean children's IS words at age 5 is the construction *chek hata* ('pretend to'), which from 5% of children using the expression with age 3 quickly jumps to a production proportion of 72% in the 5-year-olds, probably reflecting children's acquired conceptual understanding of pretense. Looking at usage examples provided by parents, in addition to pretense that can be falsified by checking reality (138a), the construction is often used in relation to personal attributes like prettiness or talent, when complaining about people that act too proud or tend to show off, by construing an appearance–reality distinction (138b).

- (138) a. *Canun chek hacima. An canun ke ta ala.* (4;8)  
**Don't pretend to be sleeping.** (I) **know** that (you) are not sleeping.
- b. *X nun yeyppun chek hay.* (5;10)  
**X pretends to be pretty/good.**
- Seyengi nun maynnal calnan chek hayyo.* (5;10)  
Seyeng always **pretends to be "well-born"** [i.e., gifted with all good attributes]

### 4.1.1.3 German–Korean comparison of IS word acquisition

#### **Overall internal state (IS) vocabulary**

The vocabulary part of the ISL-Checklist shows similar results for German and Korean children in overall quantity and rate of IS words acquired, with Korean development proceeding more gradually and German IS vocabulary making a “jump” from 3 to 4 and only a minor increase in the following year.

One interesting general observation is that individual differences in which words are acquired before others are higher for Korean children, whereas German children show greater conformity in their lexicons.

We see high numbers of reported items for single Korean children (see table 4.1.14), but higher individual variance in which of the listed items are the ones that a single child produces, which shows up in fewer items being productive above 75% over the age groups and a comparably high number of terms which are used by 50–75% of the children. This suggests that Korean children’s IS lexicon acquisition goes along quite individual paths.

Their acquisitional pattern stands in contrast to the German children, for which a high concordance is visible in which items account for the increase of IS vocabulary in each age group, as seen by a long list of items over 75% for the older age groups which are shared as productive vocabulary by all children of the respective group, and only few items with productivity between 50–75%.

It remains an open question whether this pattern – strong concordance in the selection and sequence of IS words acquired by German children and higher variability in selection and sequence of IS words acquired by Korean children – can be further substantiated beyond the present sample and items studied or whether it might be an artifact of the selection of items for the IS word checklist, for which more sources on German child language were available and thus influential than sources on Korean.

#### **Acquisitional pattern of different semantic categories of the IS lexicon**

Comparing the patterning and trajectory of IS vocabulary development in the different semantic categories of the IS-Word Checklist, we see striking similarities between the two languages.

In both German and Korean, the 3-year-olds start out with highest means of productive words in the more concrete categories of BODY STATES, PERCEPTION & SENSES, SOCIAL BEHAVIOR,

and EMOTION EXPRESSION, which have in common that they refer to experiences that are at least partly tangible and/or observable. This category cluster is then followed by the two categories DESIRE & EVALUATION and ABILITY & SUCCESS, which have means of proportions of productive words of about .60 of the listed items. These six categories stay occupying the first six ranks up to age 5 in both German and Korean.

Moreover, in both languages, the categories of COGNITION and REALITY & EVIDENTIALITY are among the quantitatively least represented lexical groups in children's IS vocabulary at age 3 and show the largest growth of additional words in the subsequent age groups. Consequently, the ranks of these groups rise from ranks 10–12 to ranks 8–10.

Differences between German and Korean 3-year-olds are observable in the mean proportions of acquired items and rankings of the remaining semantic groups.

*T*-tests performed on the means of the single semantic categories reveal a significant difference between German and Korean children for the categories of SOCIAL FEELINGS & RELATIONSHIPS and PERCEPTION & SENSES (each  $p < .05$ ), with Korean children having more productive words in the respective groups. Although these differences are not significant anymore in the 4- and 5-year-olds, SOCIAL FEELINGS & RELATIONSHIPS keeps occupying rank 7 for Korean children in all age groups, whereas it drops to ranks 11 and 12 for German children.

For German children, on the other hand, the category COMMUNICATION & DISCOURSE occupies the highest ranks after the six “early acquired” categories. In the older age groups it also shows a close to significantly higher mean of productive words compared to Korean children ( $p = .060$  at 4 years and  $p = .088$  at 5 years), for which the category drops to the last ranks, respectively.

For both languages, the semantic groups of words for EMOTION and MORALITY & NORMS fall in between SOCIAL FEELINGS & RELATIONSHIPS and COMMUNICATION & DISCOURSE concerning their ranked proportion of acquired items.

### **Acquired IS words and their uses in the 12 semantic categories**

#### *General observations*

Before getting to the developments in specific semantic fields, two observations in the development of the IS lexicon —and lexicon acquisition in general— and in the structural changes of children's uses of words with growing age should be mentioned.

Concerning the sequential acquisition of words, as seen in the onset age and the proportions of children that are productive with a term, one is naturally confronted with the fact that the equation “one word = one meaning” does not hold, and items have to be seen in their semantic relationships to one another, especially when comparing different languages. Often, different words cover different aspects of one shared script, or they express different construals or perspectives entailing different connotations, or, alternatively, one single word can express a variety of related concepts or situations depending on the constructions and structural contexts in which it is used. In the acquisition of the words from the IS-Word Checklist, where alternative items with similar meanings are present, we have seen either one term being the first acquired for all children, while alternative words are acquired later and need time to reach a similar productivity; or we have seen that children go individual pathways of acquisition, some acquiring one term first, others another, which shows up in medium sized group percentages for both or all competing terms at the same time. In both cases, it seems that children first acquire one word that covers a variety of meanings or uses for them, which are then gradually differentiated as new words are acquired and contrasted in meaning with the first ‘global’ term. In ISL acquisition, this could especially be observed in the group of emotion words.

Concerning the changes of children’s uses of words over the three age groups, in both German and Korean, increases in structural complexity can be seen, in accord with the specifics of each language. In German, which requires person and number markings on the verb, many uses of younger children show restrictions on the variety of person markings or grammatical subjects with which a particular word is combined, especially when the term has not reached 75% common productivity yet. These restrictions get loosened with age and increasing group productivity. In addition, terms are often reported in frequent frames like *Das ist*\_\_\_(‘that is\_\_\_’), *Ich bin* \_\_\_(‘I am\_\_\_’), or *Bist du* \_\_\_(‘are you\_\_\_’), which are gradually extended with additional material like intensifiers and other modal or epistemic adverbs, and finally prepositional and noun phrases as well as clausal complements. In Korean, since person and number are not marked on the verb and referents are frequently dropped to be inferred from context, most stative and action verbs are already seen with a variety of forms from age 3, especially suffixes and sentence enders *-ta* (declarative), *-ci* (committal), *-canha* (obvious), or *-nuntey* (circumstantial), but also increasingly with past tense (*-ess/-ass*) and inferential (*-keyss*) marking. Increases in structural complexity are seen in constructions with multiple clauses, often expressing causal or conditional relations, as well as sentential complements, increasingly often with multiple embedding.

### *Body and perception*

Both German and Korean 3-year-olds are already productive with most vocabulary about BODY STATES asked for in the IS word checklist. Similarly, children from both samples are productive with most words for PERCEPTION & SENSES that were part of the questionnaire.

One difference is observed in Korean children's early use of items for comparisons: 'same', 'different', and 'similar', which reach common productivity one year earlier than for German children, in the case of 'similar' even two years. Chi-square tests show that these items are productive for significantly more children in the Korean than in the German sample:

'same' (*gleich / ttokkaththa*);  $\chi^2 = 12.864$ ,  $df = 1$ ,  $p < .001$

'different' (*anders / taluta*);  $\chi^2 = 6.122$ ,  $df = 1$ ,  $p < .05$

'similar' (*ähnlich / pisushata*);  $\chi^2 = 31.946$ ,  $df = 1$ ,  $p < .0001$

The reasons for this remarkable difference cannot be seen from the present data and might be either attributable to general frequencies in caregiver talk to young children or to specific recurring scripts of events or interactions where comparisons are made and trained.

### *Desire, evaluation, and ability*

With 3 years, both German and Korean children possess basic vocabulary to express their intentions, desires, and preferences with terms equivalent to 'want', 'like' and 'need', and use evaluators like 'pretty', 'good', and 'funny', and superlatives equivalent to 'favorite'. They also verbalize their ability and inability to do things, what they can already do well and on their own, and begin to say if something is 'hard' or 'exhausting'.

In all these fields, they add many new words at age 4, adding to the semantic variety of concepts that can be verbally expressed and related to in this domain, e.g., with meanings similar to 'cute', 'prefer', 'severe', 'appeal', 'easy', 'learn', or 'try'.

In both languages, most of the terms acquired last in the age period studied overlap also. To the least frequently reported terms for German and Korean children belong, for example, words for 'practice' or 'hope'.

Moreover, German and Korean mothers entered most child examples for terms equivalent to 'want' and 'favorite' as well as 'can' and 'cannot'.

Just *yeypputa* ('pretty'), which is productive for 100% of the Korean children from age 3, appeared also in a large number of example utterances for the category DESIRE & EVALUATION, but not German *schön* ('pretty') – while the use of 'need' was frequently exemplified by German, but not Korean, mothers.

In the category ABILITY & SUCCESS, for all terms other than ‘can’ and ‘cannot’ only few examples were noted (all  $\leq 7$ ) in the German sample, whereas the terms *honcase* (‘on one’s own, alone’), *himtulta* (‘exhausting’), *cal hata* (‘do well’), and *paywuta* (‘learn’) all appeared in 13–18 example utterances for the Korean sample.

Since the decision for mothers was free as to for which terms in a semantic list they would note down actual utterances of their child, the information about numbers of examples entered for a single item per language cannot be seen as any kind of “hard” measure. Nevertheless, high numbers of examples for specific terms clearly exemplify which words or utterances mothers of one culture deemed typical or important enough to be written down – either because they are used frequently by their children, or because they fit into the mothers’ “frame of attention” and, thus, in both cases, show cultural salience of some sort.

#### *Morality, norms and rules*

In the semantic group around morality, norms, rules, and other types of social guidelines and conventions, similarities are again observable in the sequential development of German and Korean children’s IS lexicon.

The young learners of both languages start with high productivity of so called ‘social words’, or speech act words, like ‘thank you’ and ‘sorry’ at age 3, closely followed, around the 4<sup>th</sup> birthday or shortly thereafter, by items for reference to permission, prohibition, orders, and obligations, which can be said to serve as a frame, or “management system” of social interactions.

Between 3 and 5 years, children of both languages also acquire words for moral judgments of behavior, e.g., ‘bad’, ‘naughty/misbehaving’, ‘well-behaved’, but at variable time points.

Finally, words for ‘popular’ and ‘famous’, that express a social judgment of recognition that is a group evaluation or convention, do not reach 50% productivity before age 6.

On the other hand, linguistic or cultural differences could be seen in the numbers of parent examples and age of acquisition and usage of some specific terms.

Items of the semantic category MORALITY & NORMS appeared in much more utterance examples provided by mothers for Korean children (146 utterances in total) than for German children (109 utterances). While, for German, *müssen* (‘must’), *dürfen* (‘may’), and *sollen* (‘should’) appeared in extremely many usage examples (40, 24, and 13 utterances), but all other terms were present in  $\leq 8$  examples, the Korean database contains also many examples for *komapta* (‘thank you’) and *mianhata* (‘sorry’) (together 31 utterances).

In both groups, a number of language-specific items were also listed in this semantic category, as translations in this domain had not been easy and some terms clearly lacked a counterpart in the other language. Of these, *bitte* ('please') belongs to the active words of German 3-year-olds, *sollen* ('should') becomes active at 4 years, and the impersonal pronoun *man* ('one') is productive for 52–65% in all age groups. For Korean children, the term *insa* ('salutation, appropriate address') is of special importance and 3-year-olds are already highly productive with the expression. Doing *insa* well is related to *chakhata* ('well-behaved, virtuous'), which is a similar key word in Korean and used by already 74% at age 3.

Interestingly, the words for 'poor, pitiable' were for both German and Korean mainly reported in children's exclamations of compassion – with an animal, other child, or story character. The Korean word nevertheless emerged one year earlier in common IS vocabulary than its German equivalent, and was reported productive for significantly more children,  $\chi^2 = 10.544$ ,  $df = 1$ ,  $p < .01$ . Similarly, although 'popular' does not reach 50% production in both languages, it is used by significantly more Korean than German preschoolers,  $\chi^2 = 6.250$ ,  $df = 1$ ,  $p < .05$ .

#### *Emotion expression and emotion*

All 3-year-olds in Germany and Korea are highly productive with words for laughing and crying, referring to facial expressions of emotions. Korean children use the word 'tears' equally frequently, *nwunmul nata* ('emit tears') being a frequently used alternative expression for crying. Of the German children, that do not have such a frequent construction in the ambient language, much lower percentages of productivity with 'tears' are reported.

In talking about feelings and emotions, children of both languages are actively producing constructional frames in which markers of valence can be inserted: *geht \_\_\_ (gut/schlecht)* in German, and *kipun i \_\_\_ (cohta/napputa)* in Korean. Other general terms for 'feel', 'heart' or similar words are slowly emerging. While 'excited' reaches 50% productivity for German 4-year-olds and stays at a similar percentage in the 5-year-olds, it almost does not appear in Korean children's vocabulary. On the other hand, the term for surprise *nollata* is used by > 60% of the Korean children from 3 years on, whereas *überrascht* does not emerge before age 5 in German children's commonly produced IS words. *Nollata* is indeed frequently used in Korean everyday conversations, but some of its functions might in German be covered by the expression for shock or "negative surprise" *erschrecken*, which is productive from age 3. But German *erschrecken* can also be used for actions of terrifying or playing a trick on someone, which were also reported in parents' examples. These few considerations show that it is not

easy to make simple comparisons of emotion vocabulary and its development between two languages, and that much more data of language use, for example from corpora, are needed, differentiating the meanings one item can take on in different constructions as well as the frequencies of constructions.

Of the positive emotions, ‘fun’ was the item that was earliest productive with almost 90% at age 3 in both languages. In both German and Korean a list of ‘happy’-words was available that comprise different shades in meaning like joy, gladness, contentedness, cheerfulness, or pleasantness, but are not really translatable into English. Of these, in each language, one term was produced by somewhat more than 50% of the children at age 3, but the other terms were also produced by > 40% of the 3-year-olds. These production percentages then increased in smaller or bigger steps for all terms over the next two age groups. In both languages, this pattern of similar distribution of productivity over a list of terms was caused by single children acquiring different ‘happy’-words as their first or dominant term for happiness and only gradually adding other terms to take over some functions of their first ‘all-purpose happy-word’.

In the domain of negative emotions, both languages also showed a similar sequence of lexicon acquisition. For both German and Korean 3-year-olds, one first dominant term was highly productive for each of the three basic emotions fear, sadness, and anger: *Angst*, *traurig*, and *böse* for German, *musepta*, *sulphuta*, and *hwa nata* for Korean children. Dependent on the availability and frequency of competing terms with similar meanings in the ambient language, further terms were added over the subsequent age groups. One further word for sadness — *soksanghata*, covering shades of hurt and disappointment— emerged in Korean children’s common IS lexicon at age 3 and became highly productive at age 5, but appeared in more than twice as much usage examples provided by Korean parents than *sulphuta* from the beginning. Again, corpus data of spoken Korean and/or child-directed speech would be needed to make sense of this observation. For German, *traurig* was the single dominant item for sadness throughout. For anger, the picture reversed, with Korean children using one dominant term, *hwa nata*, throughout the sample, but German children adding first *sauer* and then *wütend* to their words for expressing anger. A second group of items, emerging at age 3 in both languages and becoming highly productive soon thereafter, were words for boredom and disgust. After these, children in both languages added words for ‘annoying’ and ‘worry’ to their common IS vocabulary. Although the overall sequence of acquisition was similar, some differences in the onset and total percentages of children that are productive with an item were observed. German children were reported to use the word ‘disgusting’ earlier and

more frequently than Korean children,  $\chi^2 = 7.291$ ,  $df = 1$ ,  $p < .01$ . Korean children, on the other hand, were reported earlier and more frequently to use the word ‘annoying’,  $\chi^2 = 6.629$ ,  $df = 1$ ,  $p < .05$ , and also ‘boring’ and ‘worry’, but not reaching significance in a Chi-square test,  $\chi^2 = 3.725$ ,  $df = 1$ ,  $p < .06$ , and  $\chi^2 = 3.841$ ,  $df = 1$ ,  $p < .06$ , respectively.

Another interesting difference between the languages was observed in the usage examples provided by children’s mothers. While German mothers most frequently entered examples of their children producing exclamations of their emotions with one or multiple intensifiers like ‘I am really angry now’, Korean mothers reported emotion words used by their children mostly in complex utterances expressing causal connections or inferences between the emotion verbalized and related (often social) behavior.

#### *Social behavior, social feelings, and relationships*

Of the words that were asked about in the group of social behaviors, all 3-year-olds in both languages were highly productive with ‘play’, ‘kiss’, ‘hit’, and ‘together’, and around three third with the word ‘present’. Culture-specific words for the social actions *besuchen* (‘visit’) in German and *teylyeta cwuta* (‘bring, accompany’) in Korean emerged at age 3 and became active in the older age groups. All of these items designate frequent and important experiential events of young children, probably contributing to the early and cross-culturally shared acquisition of these words. Yet, Korean mothers entered almost twice as much usage examples of their children for items of SOCIAL BEHAVIOR than German mothers (91 utterances vs. 51 utterances).

In the semantic category of SOCIAL FEELINGS & RELATIONSHIPS some similarities were seen in the sequence of acquisition of subgroups of IS items. For both languages, words for ‘transitive’ emotions (‘like’, ‘love’, ‘hate’) and some items referring to complex interpersonal attitudes or behaviors like scolding, ‘promise’, or missing someone, were acquired before words for emotional and behavioral reactions to being hurt in a relationship (‘feel offended’, ‘sulk’, ‘forgive’), and self-reflective (‘proud’, ‘ashamed’) or complex social emotions (‘envy’).

These rough similarities notwithstanding, profound differences stand out between German and Korean children’s acquisition in this specific semantic domain of the IS lexicon. Korean children use 9 of the translation-matched items up to one year earlier than their German counterparts – the words for the ‘transitive’ emotions, the items ‘miss’ and ‘promise’, terms for ‘be sulky, feel offended’ and ‘forgive’, as well as the self-reflective emotions ‘proud’ and ‘ashamed’. As a consequence, more Korean children overall are productive with these words

than German children, as seen in the Chi-square test results summarized in Table 4.1.27. The items ‘scold/be scolded’, ‘win’, and ‘envy’ did not show a difference in production between the two languages. All remaining words on the list had been language-specific items and thus cannot be directly compared.

Table 4.1.27 *IS words of SOCIAL FEELINGS & RELATIONSHIPS used by more Korean than German children*

Meaning/Translation	German		Korean		$\chi^2$ (df = 1)
	Item	% Prod.	Item	% Prod.	
like	<i>mögen</i>	74.6	<i>coahata</i>	100.0	17.517 <sup>***</sup>
love	<i>lieben</i>	85.9	<i>salanghata</i>	96.7	4.410 <sup>*</sup>
hate	<i>hassen</i>	34.9	<i>mipta</i>	75.0	19.906 <sup>***</sup>
miss	<i>vermissen</i>	66.7	<i>poko siphta</i>	98.3	20.983 <sup>***</sup>
promise	<i>versprechen</i>	74.6	<i>yaksok</i>	91.5	6.122 <sup>*</sup>
sulk / offended <sup>a</sup>	<i>beleidigt / schmollen</i>	31.7	<i>ppichita / ekwulhata</i>	59.3	9.358 <sup>**</sup>
forgive	<i>verzeihen</i>	23.8	<i>yongsehata</i>	62.7	18.854 <sup>***</sup>
proud	<i>stolz</i>	25.4	<i>calanghata</i>	57.6	13.085 <sup>***</sup>
ashamed, embarrassed	<i>sich schämen</i>	23.8	<i>changphihata</i>	72.9	29.418 <sup>***</sup>

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

<sup>a</sup> These two words were combined into one variable counting children producing at least one of the two terms, since some of their uses overlap and German children were reported to produce *beleidigt* earlier, which was translated to *ekwulhata*, and Korean children were reported to produce *ppichita* earlier, which was translated to *schmollen*.

Looking at the actual utterance examples that German and Korean mothers provided, we see most usage examples of German children for ‘be friends’ and ‘best friend’, which had been language-specific items. Leaving the language-specific terms aside, between 4–7 examples each were entered for ‘like’, ‘love’, ‘miss’, ‘scold’, ‘win’, and ‘promise’, and no examples for the sulking and forgiving terms and none for the self-reflective emotions, totaling 38 usage examples. For the Korean children, in comparison, a total of 80 usage examples (without language-specific terms) were provided for the category, covering all abovementioned words (see also Chapter 4.1.1.2).

#### *Communication, cognition, and epistemic stance*

With 3 years, German and Korean children actively use speech verbs and words for narrating and ‘story’. Over the next two years, they add verbs for specific turns in dialogue such as ‘ask’, ‘answer’, or ‘explain’, and explanatory sentence connectors similar to ‘that is to say’.

Around the 4<sup>th</sup> birthday, German and Korean children become productive with the mental verbs ‘know/ not know’ and ‘forget’, which were also the terms with the most usage examples

for each language in the category COGNITION. Somewhat later, but also at age 4, they become productive with verbs for ‘think’ and ‘remember’. While all of these mental verbs do not show a difference in acquisition and productivity between the two languages, German children are reported earlier and more frequently to use *verstehen* (‘understand’) than Korean children are to produce *ihayhata* (‘understand’),  $\chi^2 = 18.962$ ,  $df = 1$ ,  $p < .0001$ . The few usage examples given for *verstehen* show it in contexts of understanding what someone said in a conversation, thus leaving the question open whether German children also represent a meaning of understanding as mental process.

While a few expressions are already emerging at age 3, it is also with 4 years that German and Korean children start actively producing the first epistemic adverbs and verbs of the category REALITY & EVIDENTIALITY showing an incredible growth of vocabulary over the 5<sup>th</sup> year. In this semantic group, although many terms were roughly translatable, acquisitional patterns and the uses of specific items in children’s utterances cannot easily be compared and will be considered for each language separately. The greatest similarity between both languages was seen in the uses of the verb ‘lie’, which seems to become an important word for the children as it was represented by comparatively many usage examples. For German children, the verb *glauben* (‘believe’) was most frequently reported in discourse uses of the marker *ich glaube* added to a declarative that don’t necessarily entail an epistemic meaning, while some of children’s uses could also be epistemically interpreted. Similarly, *stimmen* (‘be right’) was frequently seen as marker *stimmts* on sentences with the discourse function of getting the hearer’s agreement, but it was also sometimes used for more explicit claims of truth or falsity. The adverb *vielleicht* (‘maybe’) appeared exclusively in sentence-initial position and in what seemed quite fixed constructions, often marking proposals, but also guesses, i.e., a kind of epistemic inference. *Bestimmt* (‘sure, most probably’) was used more flexibly, in variant positions and with a more clear function of expressing grade of certainty. *Wirklich* (‘real(ly)’), on the other hand, was most frequently reported in uses as an intensifier, making it hard to guess how much of an epistemic representation children have for the term. In contrast, *echt* (‘real(ly)’) was somewhat less productive and reported in only few single usage examples, in which it was nevertheless explicitly used to make an appearance–reality distinction. *Eigentlich* (‘actually, originally’) was reported in uses with the conversational function of an opposition to the other’s action or proposal, and as discursive marker in questions. Finally, the verbal expression for ‘pretend’ (*so tun als ob*), which was used by 45% of the 4- and 5-year-olds, was reported in actual uses of appearance–reality.

Korean children's most frequently reported word in the category, *macta* ('be right'), was for younger children reported in uses referring to know-how and convention, before it appeared in reference to truth in a 5-year-old's usage example. *Cincca* ('real(ly)') was most frequently seen in uses as intensifier with a commissive function of expressing committal or seeking the committal of the hearer, and only appeared in utterances by older children around age 5 for the distinction of truth and fake. Its counterpart *kacca* ('fake'), which was acquired around a year later, was reported exclusively with reference to fake and irreality. *Kkok* ('sure, in any case') was most frequently reported in commissive uses, and only seen at age 5 with an epistemic use. Usage examples of *tangyenhi* ('certainly, naturally') show the term only with a commissive function, whereas *wenlay* ('actually, originally') is reported in uses with both intensifying and epistemic function. While German children often marked utterances with *ich glaube* (lit. 'I believe'), Korean children from around age 5 frequently use 'seem'-constructions with *kaththa* ('seem to') or *poita* ('seem, look as if'). German children, on the other hand, do not produce *scheinen* ('seem') before age 6 yet, which is the case for *mitta* ('believe') in Korean children, which was only seen in one usage example for religious belief. *Kaththa* and *poita* were reported in uses for the comparison of appearances, but not in an appearance–reality distinction. Moreover, *kaththa* also marks inferences or politeness. The Korean expression for 'pretend', *chek hata*, became productive for 72% of the 5-year-old children, but was besides the marking of a real–fake distinction frequently reported in uses of "social fake", i.e. "pretense" to be pretty or talented.

In summary, the usage examples for cognitive and epistemic verbs and adverbs show frequent uses of the terms as discourse markers or with conversational functions, which seem to be in line with the phenomenon of "use before meaning" that has been reported for the acquisition of abstract terms like temporal and mental expressions. Nevertheless, the usage patterns of single items differ in the degree to which they are used for non- or less-epistemic functions, and while in Korean children's uses the age distinction between more conversational uses in younger children and beginning epistemic uses around age 5 was more clearly visible over the items, for German children, such an age distinction was not directly seen in the uses reported. In the end, it is not easy to say from the present data what meanings exactly children are representing when using these words, since the reported utterances are too few and do not provide further context for interpretation. To be able to probe these representations at a deeper level, additional experiments of children's receptive interpretations of specific items would be needed.

### 4.1.2 Acquisition of IS Verbs with Complement Clauses

After assessing children's IS lexicon acquisition between 3 and 6 years, the second focus on ISL in development was on IS verbs and the syntax of complementation.

The second part of the ISL checklist had asked mothers about their child's productive use of 4 internal state verbs – WANT, SAY, KNOW and THINK – on 3 levels of syntactic complexity: as single verb without complements, as verb combined with a coordinated or juxtaposed complement clause in form of a second main clause without complementizer, or as matrix verb governing an embedded complement clause marked by a complementizer.

For the verb WANT, the constructions defined as level 2 in German and level 2 and 3 in Korean differed somewhat from the constructions of the same level with the other three IS verbs, but were included because of their functional parallels and comparable syntactic complexity (see Chapter 3.2 for a description of the constructions and the reasons for choosing WANT and SAY together with KNOW and THINK).

It was of interest at which ages and in which sequence children would master the different verbs with juxtaposed and especially with embedded complement clauses, and whether complementation with WANT and SAY would precede the use of complement clauses with KNOW and THINK in both languages. In a second step, the usage examples provided by the children's parents were analyzed for the specific constructions in which these verbs are used on the three levels, with special interest in the functions and meanings expressed, i.e., whether discursive uses precede actual mental reference and what kinds of concepts children seem to represent of KNOW and THINK.

#### 4.1.2.1 German acquisition

##### **Development of single IS verbs and their complementation constructions**

In a first step, for each of the four IS verbs examined counts and proportions of children per age group for the different levels of complementation complexity were assessed. They are summarized in Table 4.1.28.

With 3 years, the majority of the German children (71.4%) use the verb WANT already on the highest complementation level with complementizer and embedded complement clause. This percentage steadily increases with successive age groups.

Table 4.1.28 *German children's use of 4 IS verbs with different complementation types over the three age groups*

Verb	Level of usage	Age							
		3 years		4 years		5 years		Total	
		Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>WANT</b>	0 no use	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
	1 single verb	2	(9.5)	0	(0.0)	0	(0.0)	2	(3.4)
	2 NP VP	4	(19.0)	5	(25.0)	2	(11.1)	11	(18.6)
	3 embedded CC	15	(71.4)	15	(75.0)	16	(88.9)	46	(78.0)
	Total	21	(100.0)	20	(100.0)	18	(100.0)	59	(100.0)
<b>SAY</b>	0 no use	0	(0.0)	0	(0.0)	1	(5.3)	1	(1.6)
	1 single verb	1	(4.5)	0	(0.0)	0	(0.0)	1	(1.6)
	2 juxtaposed CC	10	(45.5)	5	(25.0)	4	(21.1)	19	(31.1)
	3 embedded CC	11	(50.0)	15	(75.0)	14	(73.7)	40	(65.6)
	Total	22	(100.0)	20	(100.0)	19	(100.0)	61	(100.0)
<b>KNOW</b>	0 no use	3	(13.6)	0	(0.0)	0	(0.0)	3	(4.9)
	1 single verb	11	(50.0)	1	(5.0)	0	(0.0)	12	(19.7)
	2 juxtaposed CC	1	(4.5)	2	(10.0)	2	(10.5)	5	(8.2)
	3 embedded CC	7	(31.8)	17	(85.0)	17	(89.5)	41	(67.2)
	Total	22	(100.0)	20	(100.0)	19	(100.0)	61	(100.0)
<b>THINK</b>	0 no use	13	(59.1)	7	(35.0)	4	(21.1)	24	(39.3)
	1 single verb	4	(18.2)	2	(10.0)	2	(10.5)	8	(13.1)
	2 juxtaposed CC	3	(13.6)	4	(20.0)	3	(15.8)	10	(16.4)
	3 embedded CC	2	(9.1)	7	(35.0)	10	(52.6)	19	(31.1)
	Total	22	(100.0)	20	(100.0)	19	(100.0)	61	(100.0)

For the verb *SAY*, 45.5% of the German 3-year-olds use it with juxtaposed complement clauses, 50% already with embedded complement clauses. In the 4-year-old group, uses on level 3 increase to 75%, the remaining children use the verb with juxtaposition. This pattern then stays similar for 5-year-olds (73.7% and 21.1%, respectively).

For complementation with the verb *KNOW*, the pattern is somewhat different. Of the German 3-year-olds, 13.6% have not yet acquired the verb, 50% use *KNOW* only in constructions, where it appears as single verb without complement clause, 31.8% use it with complementizer and embedded complement clause, but only one child (4.5%) produces the verb with juxtaposed complement clauses only. From 3 to 4 years, there is a remarkably sharp increase in usage of *KNOW* on level 3 (to 85%). Level 2 usage is reported for 10% of the children. For 5-year-olds, only a small further increase in higher complementation levels can be evidenced. *THINK* is the latest IS verb acquired by German children, and the latest one to appear with complement clause constructions. With 3 years, 59.1% of the children have not yet acquired

the verb, the majority of children who produce the verb (18.2%) still use it as a single verb only, and only 3 and 2 children use the verb on complementation levels 2 and 3 (13.6% and 9.1%, respectively). Again, we can see considerable development from 3 to 4 years, visible in a total of 85% of children producing the verb, and 55% using it on complementation level 2 or 3 (20% with juxtaposition only, 35% with embedding). The percentage of children producing THINK with embedded complement clauses then increases to 52.6% in the 5-year-olds. Uses on lower levels decrease, but contrary to the three other IS verbs examined, even in the oldest group 21.1% do not use the verb at all yet.

The developmental patterns just described are visualized in the bar graphs in Figure 4.1.05.

### **Sequence of productive competence with complement clause constructions with WANT, SAY, KNOW, and THINK**

To test the hypothesis that children acquire competence with complement clause constructions in a stable sequence for the IS verbs investigated, a Guttman scale analysis was conducted.

The components of the scale were defined as productivity of constructions of the respective matrix verb combined with a complement clause, either as juxtaposed clause omitting the complementizer or as embedded clause with overt complementizer, in the sequence: WANT < SAY < KNOW < THINK (see Table 4.1.29).

The first two types defined by the scale, i.e., using none of the 4 verbs with complement clause constructions or using only WANT with complement clauses, were not attested in the German sample. The majority of German 3-year-olds were competent with both WANT and SAY together with complement clause constructions on level 2 or 3. In the 4- and 5-year-old groups, most children were already producing complement clauses with all 4 IS verbs, i.e., conforming to pattern 5 defined by the scale, while the second largest group was competent with KNOW, but not THINK, i.e., exhibited pattern 4.

Only 5 children in the German sample did not conform to one of the patterns defined by the scale. The scale thus exhibited a high coefficient of reproducibility of .98. The index of consistency was only .43 (a value of >.50 shows scalability), which is probably due to the unattested first two patterns of the scale. Nevertheless, the average ages for children matching the defined patterns show a clear age trend. Because of this, we might still conclude that there is a sequence of using complement clauses with IS verbs in that WANT and SAY are combined earlier with complement clauses than KNOW and THINK. SAY might serve as model for the acquisition of complement clause constructions with the cognition verbs KNOW and THINK.

## 4 Results

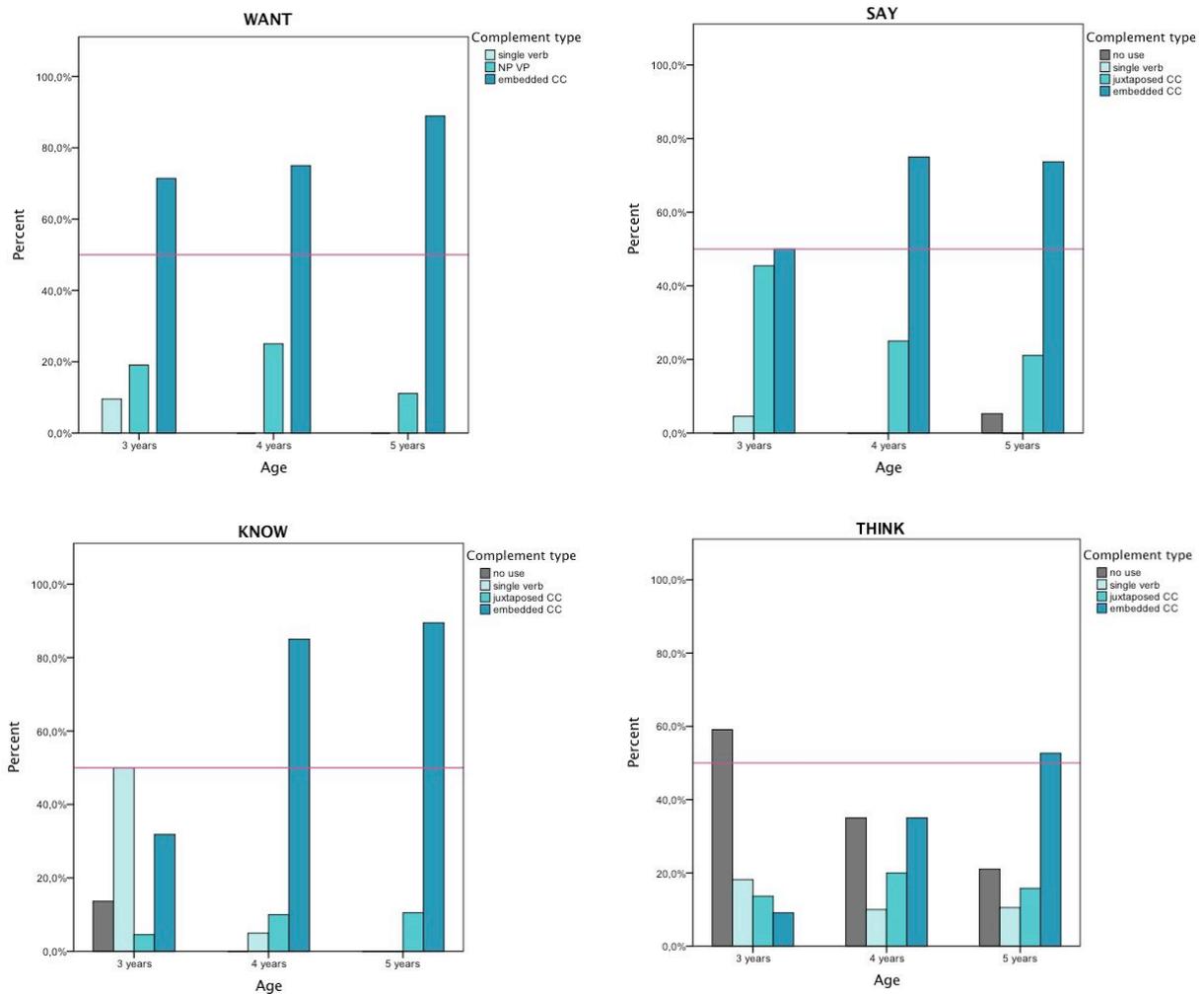


Fig. 4.1.05 Developmental pattern of complementation with WANT, SAY, KNOW and THINK in German children

Table 4.1.29 *Guttman scalogram analysis of German children's competence with complement clause constructions of 4 IS verbs*

IS verb	Predicted patterns					Other	Total N
	1	2	3	4	5		
WANT	-	+	+	+	+		
SAY	-	-	+	+	+		
KNOW	-	-	-	+	+		
THINK	-	-	-	-	+		

Age	Mean frequency of occurrence					Other	Total N
	1	2	3	4	5		
3 years	0	0	10	4	3	4	21
4 years	0	0	1	8	11	0	20
5 years	0	0	0	6	11	1	18
Total	0	0	11	18	25	5	59
Average Age	-	-	3;7	4;8	4;11	(4;2)	

### Utterance examples for the use of different constructions with the 4 IS verbs

Looking at the usage examples provided by mothers for the constructions they marked on the checklist, the constructions in which WANT, SAY, KNOW, and THINK are reported on the three complementation levels are described, examining their meanings or pragmatic functions.

#### *Usage examples with WANT*

Out of the 145 example utterances provided for WANT, a total of 124 utterances (85.5%) start with the frame *Ich will* \_\_\_\_, expressing a wish of the first person singular. Only 21 examples (14.5%) were given with uses of other persons as subjects, mostly third person singular.

Typical level 1 uses combined the single verb with a simple NP as object – mostly types of food, pets, or toys – or with *noch mehr* ('more').

With the level 2 construction type WANT NP VP, usually children's wishes to do certain activities or, if negated, refusals to conform to a command or instruction were expressed.

In both level 1 and level 2 examples with WANT, no differences in usage or constructions between younger and older children were visible.

Level 3 uses of WANT with an embedded clause introduced by a complementizer were seen with three functions: emphasis, contrast, or reported speech.

Subjects of the embedded clause are usually not the same as those of the matrix clause, i.e., this construction expresses the wish of somebody about what someone else should do or not do (see Chapter 3.2).

The most frequent construction in German 3-year-olds was *Ich will, dass du* \_\_\_\_, addressing an emphasized wish to another, as in (1).

- |        |   |       |
|--------|---|-------|
| (1) a. | Ich will, dass du mit mir spielst.<br>I want.1s that you with me play.2s<br>'I want you to play with me.' | (3;4) |
| b.     | Ich will, dass du mitkommst.<br>I want.1s that you come.with.2s<br>'I want you to accompany (me).'        | (3;4) |
| c.     | Ich will, dass du mich anmalst.<br>I want.1s that you me paint.on.2s<br>'I want you to paint on me.'      | (4;1) |

These uses decrease with age, probably because this construction would be considered an impolite and harsh command if used by adults, and older children get both sensitive to the appropriateness of constructions and acquire alternative means of formulating request, e.g., with questions. The use of this construction by 3-year-olds might mirror its frequent use by

their mothers, as German mothers, to my knowledge, often use this type of construction to emphasize their commands to the child, like in (2).

- (2) a. Ich will, dass du jetzt ins Bett gehst.  
I want.1s that you now in bed go.2s  
'I want you to go to bed now.'
- b. Ich will, dass du dein Zimmer aufräumst.  
I want.1s that you your room tidy.up.2s  
'I want you to tidy up your room.'

Related to the expression of a wish that is emphasized, is that of a wish contrasted to the present reality or the account of another (3). These uses are frequent across age, but older children start adding the particle *aber* that further stresses the meaning of contrast.

- (3) a. Ich will, dass Papa mich abholt. (3;7)  
I want.1s that daddy me pick.up.3s  
'I want that daddy picks me up.' [i.e., not mommy or so. else]
- b. Ich will aber, dass wir das Buch lesen. (5;1)  
I want.1s ABER that we the book read.1p  
'But I want that we read the book.'  
[i.e., I don't care that you don't want to – or that you propose to do sth else.]
- c. Ich will aber, dass wir morgen Kekse kaufen. (5;10)  
I want.1s ABER that we tomorrow cookies buy.1p  
'But I want that we buy cookies tomorrow.'
- d. Ich will aber, dass Justin zu mir spielen kommt. (5;2)  
I want.1s ABER that Justin to me play come.3s  
'But I want that Justin comes to my home to play.'  
[i.e., even if you don't allow it – I want to!]

Sentences with a third person subject in the matrix clause and a first person subject in the embedded clause often fulfill the purpose of reporting a speech act or request of another person (4). These uses are reported increasingly often for older children.

- (4) Nuka will, dass ich mit ihr spiele. (3;10)  
Nuka want.3s that I with her play.1s  
'Nuka [said she] wants that I play with her.'

The following example (5) shows the mix-up of the WANT construction with reported speech, as it keeps the modal verb *sollen* ('should') of the original utterance by the father, that would be present if SAY was the matrix verb, but would be omitted in the case of using WANT, which already expresses the function of wish or command.

- (5) Papa will, dass ich mich alleine anziehen soll. (4;3)  
Daddy want.3s that I me alone get.dressed should.1s  
'Daddy wants [=said] that I should get dressed on my own'

One example of a combination of a third person matrix clause with a second person complement clause is reported for a 5-year-old child (6).

- (6) Ole will, dass du kommst. (5;5)  
 Ole want.3s that you come.2s  
 ‘Ole wants you to come.’

#### *Usage examples with SAY*

For the verb SAY, a total of 118 usage examples were entered.

Of the 44 uses as single verb reported, 14 (31.8%) are instances of variants of the construction *sag ich nicht* (‘I won’t tell (you)’), which seems to be an important formulaic phrase used by German children of all ages.

Almost equally frequent is the construction *(X) hat’s gesagt* (‘(X) said this’), used to assign responsibility for a statement or opinion to someone else or to report the source of one’s knowledge or point of view.

SAY is also used in questions and requests for clarification (7).

- (7) a. Was hast du gesagt? (4;1)  
 What have.2s you said  
 ‘What did you say?’  
 b. Sag nochmal. (3;8)  
 Say.IMP again  
 ‘Say (that) again.’

An interesting case is the use as discourse marker *sag mal* (Lit. ‘say one time’), which can be used for moral complaints about another’s behavior (8).

- (8) a. Sag mal! (4;4)  
 Say.IMP MAL  
 [i.e.: Tell me how - for god’s sake - you could do something like this!]  
 b. Na sag mal! Das geht aber nicht! (3;5)  
 NA say.IMP once That go.3s ABER not  
 [i.e., Hey, tell me why’d you do that! That is not ok!]

It can also be used with a juxtaposed question as introductory attention getter (9).

- (9) Sag mal, kann ich...? (5;1)  
 Say.IMP MAL can.1s I  
 ‘Say, can I...?’

Both complement clause constructions using juxtaposition (level 2) or embedding (level 3) are used to report what someone has said. All further examples reported, thus, have a third person singular as matrix clause subject. Both construction types are in most cases

exchangeable, a minor difference being that clauses introduced by *dass* can be used to add emphasis or to mark a contrast of the utterance reported to a statement of someone else.

Some typical examples of children's usage are given in (10).

- (10) a. Oma hat gesagt, das macht man nicht. (3;3)  
 Grandma have.3s said that do.3s one not  
 'Grandma said one doesn't (=shoudn't) do that.'
- b. Lilly hat gesagt meine Puppe ist hässlich. (4;2)  
 Lilly have.3s said my doll is ugly  
 'Lilly said my doll is ugly.'
- c. Angie sagt ich bin nicht mehr ihre Freundin. (4;9)  
 Angie say.3s I am not anymore her friend  
 'Angie says I'm not her friend anymore.'
- d. Kathrin hat gesagt, dass wir nur noch Montags Spielzeug mitbringen dürfen. (5;2)  
 Kathrin have.3s said that we only still Mondays toys bring.with may.1p  
 'Kathrin said we're only allowed to bring toys with us on Mondays.'
- e. Steffi hat gesagt, dass man die Piraten anrufen kann. (5;3)  
 Steffi have.3s said that one the pirates call can.3s  
 'Steffi said one can call the pirates.'

#### *Usage examples with KNOW*

KNOW as single verb is used by German children in three main types of constructions, all of which have some sort of interactive or discourse function. Moreover, all three types are attested in utterance examples for all ages.

The first construction type is the negation *Ich weiß nicht* ('I don't know'), which is used to indicate one's inability or sometimes dislike to answer a question. Some variants of the construction use a demonstrative pronoun, as in (11).

- (11) a. Das weiß ich nicht. (4;1)  
 That know.1s I not  
 'I don't know that.'
- b. Ich weiß das nicht. (4;8)  
 I know.1s that not  
 'I don't know that.'

Other variants are more formulaic like in (12).

- (12) a. Weiß ich nicht. (3;6)  
 Know.1s I not  
 'I don't know.'
- b. Weiß nicht. (5;7)  
 Know.1s not  
 'Dunno.'

The second type of single verb constructions with KNOW is the affirmative *Ich weiß das* ('I know that'), also occurring in different variants, some of which are more formulaic and involve the pragmatic connotation that one has heard something often and is tired of hearing it over again, for example, in reply to a caregiver's admonition (13).

- (13) a. Ja, ich weiß das. (4;0)  
Yes I know.1s that  
'Yes, I know that.'
- b. Ich weiß das schon. (4;2)  
I know.1s that already  
'I know that already.'
- c. Ich weiß! (4;10)  
I know.1s  
'I know!'
- d. Weiß ich doch schon! (4;4) / Weiß ich doch. (5;3)  
Know.1s I DOCH already      Know.1s I DOCH  
'I know (that) already [as you should know]!'

The third construction type is primarily of interactive function, comprising uses as attention getter, intensifier, or to create an atmosphere of excitement for the news one is about to tell: the question *Weißt du (was)?* ('You know (what)?') (14a).

This construction frequently appears in its contracted form *weißte* ('you know') together with a juxtaposed clause. Exemplar uses are given in (14b–e).

- (14) a. Mama, weißt du was... (3;9)  
Mommy know.2s you what  
'Mommy, you know what ...'
- b. Die Paula hat Husten, weißte? (3;5)  
The Paula have.3s cough you.know  
'Paula's got a cough, you know?'
- c. Weißt du? Heute war was los. (4;0)  
Know.2s you Today were.3s something on  
'Today things were really happening, you know?'
- d. Weißt du, Tung ist frech. Er hat erzählt... (5;2)  
Know.2s you Tung is naughty He have.3s told...  
'Tung is naughty, you know, he told...'
- e. Weißt du, ich habe das ... gemacht. (5;5)  
Know.2s you I have.1s the ... made  
'Did you know, I made the ...'

All further uses of KNOW with juxtaposed complement clauses, as reported by mothers, often seem to be children's repetition of mother's or someone else's reminders, commands, or statements, signaling something like 'I heard you. I understand what you want to tell me.' (15). Often, norms, plans, or promises are involved rather than facts, which would be

expected from the literal meaning of KNOW. Moreover, all examples given have the first person singular as subject.

- (15) a. Ich weiß, die Barbie gehört ins Barbiehaus. (4;6)  
 I know.1s the Barbie belong.3s in.the Barbie.house  
 'I know, the Barbie belongs in the Barbie house.'
- b. Ich weiß, ich soll aufräumen. (4;7)  
 I know.1s I should.1s clean.up  
 'I know I should clean up.'
- c. Ja, ich weiß du sagst nein. (5;8)  
 Yes I know.1s you say.2s no  
 'Yes, I know you (will) say no.'

In this last example (15c), the child anticipates the negative answer of his mother to his request.

For uses of KNOW with complementizer and embedded clause, the situation is similar. All examples have the first person singular as matrix clause subject. The majority of uses reported involve the acknowledging repetitions of another's request or admonition (often with a bugged tone) (16). The next type of usage, almost as frequent as the previous one, expresses commitment to, or reminds of shared plans or appointments (17). Here, most examples include an explicit temporal reference.

- (16) a. Ich weiß doch, dass die Puppe nicht reden kann. (3;5)  
 I know.1s DOCH that the doll not talk can.3s  
 'I know that the doll can't talk.' [so don't tell me again]
- b. Mama, ich weiß, dass ich baden soll. (4;0)  
 Mom I know.1s that I bathe should.1s  
 'Mom, I know I should take a bath.'
- c. Ich weiß, dass ich zuhören soll. (4;6)  
 I know.1s that I listen should.1s  
 'I know that I should listen.'
- d. Ich weiß, dass ich aufräumen muss. (5;2)  
 I know.1s that I tidy.up must.1s  
 'I know that I have to tidy up.'
- e. Oh Mann, ich weiß doch, dass der Ball in die Kiste kommt. (5;4)  
 Oh man I know.1s DOCH that the ball in the box come.3s  
 'Boy, I know that the ball has to go in the box.' [so don't tell me]
- (17) a. Ich weiß, dass Papa heute zum Fußball geht. (4;2)  
 I know.1s that dad today to.the soccer go.3s  
 'I know that dad will go to play soccer today.'
- b. Ich weiß, dass morgen Musikschule ist. (4;4)  
 I know.1s that tomorrow music.school is  
 'I know that tomorrow is [=I have to go to] music school.'

- c. Ich weiß, dass Oma und Opa am Freitag kommen. (4;6)  
 I know.1s that grandma and grandpa on Friday come.3p  
 'I know that grandma and grandpa will be coming on Friday.'
- d. Ich weiß, dass wir morgen schwimmen gehen. (5;4)  
 I know.1s that we tomorrow swimming go.1p  
 'I know that we'll go swimming tomorrow.'
- e. Ich weiß, dass Paul morgen kommt. (5;8)  
 I know.1s that Paul tomorrow come.3s  
 'I know that Paul will come tomorrow.'

In level 3 complementation uses of KNOW, the complementizer *dass* can serve the function of adding emphasis to one's own viewpoint or position in an argument, claiming factivity for one's own perspective or judgment (18).

- (18) a. Ich weiß, dass das so ist. (3;4)  
 I know.1s that that so is  
 'I know that it's like that.' [so don't tell me something else]
- b. Ich weiß, dass ich die Puppe zuerst hatte. (4;4)  
 I know.1s that I the doll first had.1s  
 'I know that I had the doll first.'

A similar function has been observed for parallel constructions of WANT and SAY, where *dass* emphasized a command or statement in contrast to that of someone else.

Finally, few factive uses of KNOW are reported for 5-year-olds (19). In (19a) a timeless property is expressed, but the statement refers to a particular person and object; in (19b), on the other hand, the child makes a generic statement about kinds.

- (19) a. Ich weiß, dass das Auto dir gehört. (5;4)  
 I know.1s that the car you belong.to.3s  
 'I know that this is your car.'
- b. Ich weiß, dass Tiere Menschen mögen. (5;2)  
 I know.1s that animals humans like.3p  
 'I know that animals like humans.'

In summary, KNOW with embedded complement clauses seems to be used by German children on a continuum of functions from interactive uses and reference to the present situation, over reference to previous discourse and future plans, events and obligations, to more abstract and generic factual statements. These latter uses, which represent the dictionary meaning of KNOW in terms of knowledge and factivity, seem to be acquired last by children and used least frequently.

*Usage examples with THINK*

For the last IS verb, THINK, fewer examples were provided by mothers, as it was produced by fewer children in the sample than the other IS verbs.

In the utterance examples given for THINK as a single verb, two main functions or meanings can be observed: *denken* as verb of opinion, often in the context of deciding between alternatives, and *denken* in the sense of the process of thinking or planning, which is interchangeable with the longer particle verb *nachdenken*.

Each of the two uses accounted for exactly 50% of the 16 examples given. It is worth noting that all opinion uses are formulated as questions with a second person singular subject (20); process uses, on the other hand, have first person and third person subjects (21).

- |         |   |        |
|---------|---|--------|
| (20) a. | Denkst du Ja?<br>Think.s you Yes<br>'Do you think "yes"?'                                 | (3;10) |
| b.      | Denkst du das auch?<br>Think.2s you that also<br>'Do you think the same?'                 | (4;3)  |
| c.      | Was denkst du darüber?<br>What think.2s you about.that<br>'What do you think about that?' | (4;7)  |
| d.      | Na Mama, was denkst du?<br>NA Mommy what think.2s you<br>'Ok, mommy, what do you think?'  | (5;7)  |
|         |   |        |
| (21) a. | Ich denke noch, Mama!<br>I think.1s still mommy<br>'Mom, I'm still thinking!'             | (3;3)  |
| b.      | Mama denkt.<br>Mom think.3s<br>'Mom is thinking.'   | (4;8)  |

For THINK with juxtaposed complement clause, 22 utterance examples were entered. Half of them had first person subjects, the other half third person subjects.

For level 3 uses with embedded complement clause, a total of 16 examples was provided by the mothers. Only two of these had first person subjects; in all other examples, subject of the matrix clause was a third person singular.

For both construction types that combine THINK with a complement clause, first person uses express subjective perspectives or epistemic uncertainty, for example if something is perceptually unclear, or if the speaker anticipates the future, as in (22) with juxtaposed clause, or (23) with complementizer and embedded clause.

- (22) a. Ich denke, das ist ein Hase. (4;1)  
I think.1s that is a rabbit  
'I think that is a rabbit.'
- b. Ich denke, das ist falsch. (4;10)  
I think.1s that is wrong  
'I think this is wrong.'
- c. Ich denke, wir können das machen. (5;1)  
I think.1s we can.1p that make  
'I think we can do that.'
- d. Ich denke, er kommt wieder zur Hexe. (5;4)  
I think.1s he come.3s again to.the witch  
'I think he'll come back to the witch.'
- (23) a. Ich denke, dass die Tasche zu klein ist. (3;10)  
I think.1s that the bag too small is  
'I think that the bag is too small.'
- b. Ich denke, dass ich meinen Drachenturm kriege, den ich mir wünsche. (5;2)  
I think.1s that I my dragon.tower get.1s which I me wish.1s  
'I think that I'll get the dragon tower that I want.'

Used with a third person subject, THINK constructions with complement clause report another's opinion, often as direct quote of a verbal statement of that person. In this case it functions as one type of construction for reported speech, as was the case with constructions of WANT and SAY with complementizer and embedded clause. Uses with juxtaposition can be seen in (24).

- (24) a. Opa denkt, ich bin ein Frechdachs. (4;0)  
Grandpa think.3s I am a rascal  
'Grandpa thinks I'm a rascal.'
- b. Papa denkt, das Auto ist weg. (5;4)  
Dad think.3s the car is away  
'Dad thinks the car is gone.'
- c. Bobby denkt "So dann geh ich mal". (5;8)  
Bobby think.3s So then go.1s I once  
'Bobby thinks: "Well, I'll go then."'

If introduced by complementizer *dass*, complement clauses of THINK contain others' judgments, often moral ones, as in (25).

- (25) a. Emy denkt, dass ich noch ein Baby bin. (4;4)  
Emy think.3s that I still a baby am  
'Emy thinks that I'm still a baby.'
- b. Papa denkt, dass ich frech bin. (4;10)  
Dad think.3s that I naughty am  
'Dad thinks that I'm naughty.'
- c. Oma denkt, dass ich das nicht kann. (5;1)  
Grandma think.3s that I that not can.1s  
'Grandma thinks that I can't do that.'

- d. Mama denkt, dass ich lüge. (5;2)  
 Mom think.3s that I lie.1s  
 ‘Mom thinks that I’m lying.’

Besides the majority of uses of THINK with complement clauses reporting judgments and opinions, a few utterance examples of complementation level 2 and 3 clearly express a false belief (26).

- (26) a. Mama denkt ich schlafe schon. (4;0)  
 Mom think.3s I sleep.1s already  
 ‘Mom thinks I’m already sleeping.’
- b. Papa denkt sicher, ich bin weg. (4;10)  
 Dad think.3s surely, I am away  
 ‘Dad will surely think I’m away.’
- c. Mama denkt, dass ich das war. (5;7)  
 Mom think.3s, that I that were.1s  
 ‘Mom thinks that it was me.’

A single utterance example was reported using a perfective tense to describe a first person’s false belief. It is given in (27).

- (27) Ich habe gedacht, du bist noch im Wohnzimmer. (4;4)  
 I have.1s thought you are still in.the living.room  
 ‘I thought you were still in the living room.’

#### 4.1.2.2 Korean acquisition

##### Development of single IS verbs and their complementation constructions

In Table 4.1.30, the parent report data are summarized displaying counts and proportions of Korean children in each age group for the according level of complementation on which they use each IS verb examined.

Almost all Korean children with 3 years produce the verb WANT up to the defined level 3 construction with subordinate clause and required markers, rising to 100% with 5 years.

The verb SAY is used by already 57.9% of the 3-year-olds with embedded complement clause constructions, while 10.5% use it with juxtaposed clauses only and 31.6% as single verb. The percentage of usage on complementation level 3 steadily increases in the two older age groups, yielding 89.5% with 5 years.

Table 4.1.30 *Korean children's use of 4 IS verbs with different complementation types over age groups*

Verb	Level of usage	Age							
		3 years		4 years		5 years		Total	
		Count	(%)	Count	(%)	Count	(%)	Count	(%)
<b>WANT</b>	0 no use	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
	1 single verb suffix	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
	2 converbial conx	1	(5.3)	2	(8.7)	0	(0.0)	3	(5.1)
	3 subordinate cl conx	18	(94.7)	21	(91.3)	17	(100.0)	56	(94.9)
	Total	19	(100.0)	23	(100.0)	17	(100.0)	59	(100.0)
<b>SAY</b>	0 no use	0	(0.0)	1	(4.3)	1	(5.3)	2	(3.3)
	1 single verb	6	(31.6)	2	(8.7)	0	(0.0)	8	(13.1)
	2 juxtaposed CC	2	(10.5)	4	(17.4)	1	(5.3)	7	(11.5)
	3 embedded CC	11	(57.9)	16	(69.6)	17	(89.5)	44	(72.1)
	Total	19	(100.0)	23	(100.0)	19	(100.0)	61	(100.0)
<b>KNOW</b>	0 no use	0	(0.0)	1	(4.3)	0	(0.0)	1	(1.7)
	1 single verb	10	(52.6)	7	(30.4)	5	(29.4)	22	(37.3)
	2 juxtaposed CC	2	(10.5)	5	(21.7)	2	(11.8)	9	(15.3)
	3 embedded CC	7	(36.8)	10	(43.5)	10	(58.8)	27	(45.8)
	Total	19	(100.0)	23	(100.0)	17	(100.0)	59	(100.0)
<b>THINK</b>	0 no use	10	(52.6)	6	(26.1)	5	(29.4)	21	(35.6)
	1 single verb	6	(31.6)	8	(34.8)	5	(29.4)	19	(32.2)
	2 juxtaposed CC	0	(0.0)	0	(0.0)	1	(5.9)	1	(1.7)
	3 embedded CC	3	(15.8)	9	(39.1)	6	(35.3)	18	(30.5)
	Total	19	(100.0)	23	(100.0)	17	(100.0)	59	(100.0)

Half of the Korean children at age 3 (52.6%) produce KNOW as single verb only, the other half uses the verb on complementation levels 2 and 3 (10.5% juxtaposition, 36.8% embedding). With 4 years, the use as single verb only falls to 30.4%, while the uses with complement clause constructions rise to 21.7% with juxtaposed clause and 43.5% with embedded clause. Use of KNOW with embedded clause then further increases to 58.8% in the 5-year-olds with lower level uses further decreasing.

The majority of Korean 3-year-olds (52.6%) does not yet produce the verb THINK, 31.6% use the verb only in single verb constructions, while a minority of 3 children (15.8%) is proficient with embedded complement clauses with THINK as matrix verb. From 3 to 4, the percentage of children using THINK increases (to 73.9%), as does the proportion of children using it on complementation level 3 (to 39.1%). These proportions stay similar in the 5-year-olds. The bar graphs in Figure 4.1.06 illustrate the developmental pattern just described.

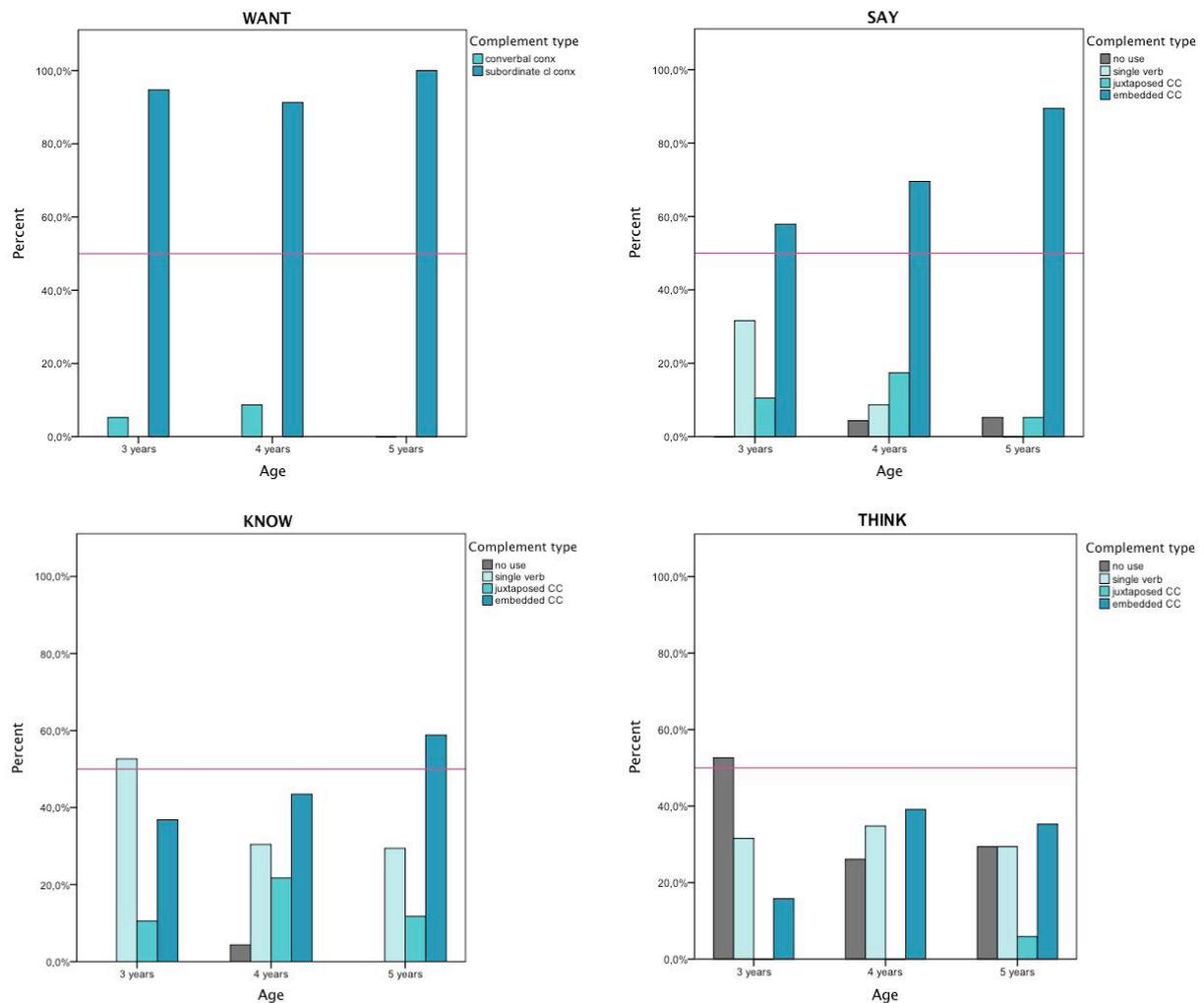


Fig. 4.1.06 Developmental pattern of complementation with WANT, SAY, KNOW and THINK in Korean children

### Sequence of productive competence with complement clause constructions with WANT, SAY, KNOW, and THINK

The Guttman scale analysis testing the acquisition of competence with complement clause constructions for the 4 IS verbs in the stable sequence WANT < SAY < KNOW < THINK is summarized in Table 4.1.31. Scale components were defined as productivity of the respective verb with either juxtaposed and/or embedded complement clauses with overt complementizer.

The first pattern type defined by the scale, which would show no productivity with clausal complements of any of the 4 IS verbs, was not attested, but 7 younger children were showing competence only with complement clauses of WANT, but not the other verbs. 13 children were productive with complement clauses with WANT and SAY, and the remaining children that exhibited patterns defined by the scale were additionally competent with clausal complements with KNOW (pattern 4), or KNOW and THINK (pattern 5). Higher ranked patterns steadily

increased in proportion in the older age groups, while lower ranked patterns decreased; and the mean ages of the predicted patterns show a steady increase with each successive pattern. As confirmed by the computed indices, the scale is highly reproducible (the coefficient of reproducibility is .98) and scalable (the index of consistency is .56).

Korean children thus acquire the competence to use IS verbs with complement clauses first with WANT, then SAY, then KNOW, then THINK. This is especially interesting because SAY and KNOW are reported productive for all children from age 3, but KNOW is used much longer as single verb only, while SAY proceeds much faster to be used with sentential complements.

Table 4.1.31 *Guttman scalogram analysis of German children's competence with complement clause constructions of 4 IS verbs*

IS verb	Predicted patterns					Other	Total N
	1	2	3	4	5		
WANT	–	+	+	+	+		
SAY	–	–	+	+	+		
KNOW	–	–	–	+	+		
THINK	–	–	–	–	+		

Age	Mean frequency of occurrence					Other	Total N
	1	2	3	4	5		
3 years	0	4	6	4	3	2	19
4 years	0	3	3	8	7	2	23
5 years	0	0	4	5	6	2	17
Total	0	7	13	17	16	6	59
Average Age	–	4;1	4;7	4;9	4;11	(4;8)	

### Utterance examples for the use of different constructions with the 4 IS verbs

We will now turn to the analyses of the usage examples for the 4 IS verbs on the respective three levels of complementation provided by Korean mothers on the checklist.

#### *Usage examples with WANT*

On the first complexity level defined, where WANT is structurally realized as verbal suffix *-llyay*, Korean children primarily combine the suffix with three verbs accounting for the majority of examples: *mekta* ('eat'), *sata* ('buy'), and *hata* ('do'), asking for food and sweets, toys, or expressing the wish to do a certain activity or play a game (28).

- (28) a. Na khonphulayikhu mek-ullay. (3;9)  
I cornflakes eat-DINT  
'I wanna eat cornflakes.'
- b. Emma, ceythukha sa-llyay. (3;11)  
Mom Ø jetcar buy-DINT  
'Mom, I wanna buy a jetcar.'
- c. Emma, chokhophai te mek-ullay. Hay to tway? (4;11)  
Mom Ø choco.pie more eat-DINT Do also alright  
'Mom, I wanna eat more choco pie, may I?'
- d. Konglyongkhing cangnankam sa-llyay. (5;10)  
Ø Dinosaur.king toy buy-DINT  
'I wanna buy the Dinosaur King toy.'
- e. Na khomphyuthe ha-llyay. (6;2)  
I computer do-DINT  
'I wanna play computer.'

The second construction with WANT, defined as level 2 for Korean, was combined of the verb *siphtha* with a NP VP complement marked by the suffix *-ko*.

As in the level 1 construction, 'eat' and 'buy' were frequent verbs of the complement, as was 'go' plus a location (29).

- (29) a. Na pokkumpap mek-ko siphe. (4;0)  
I fried.rice eat-COMP want  
'I want to eat fried rice.'
- b. Mimi inhyeng sa-ko siphe. (3;8)  
Ø Mimi doll buy-COMP want  
'I want to buy a Mimi doll.'
- c. Dongmulwen ka-ko siphe. (4;9)  
Ø zoo go-COMP want  
'I want to go to the zoo.'

In addition, some other verbs were used in the construction as well, as seen in (30).

- (30) a. Cacenke tha-ko siphe. (3;10)  
Ø bike ride-COMP want  
'I want to ride (my/the) bike.'
- b. Pyengali manci-ko siphe. (4;7)  
Ø chick touch-COMP want  
'I want to touch the chick.'
- c. Wuli to cip eyse kangaci khiwu-ko siphtha. (5;5)  
We too home at puppy raise-COMP Ø want.DCL  
'I want (that) we raise a puppy at home, too.'

The most frequent combination, nevertheless, was *siphtha* combined with *nolta* ('play') and a person. 22 of the 59 examples provided involved this construction. Some of them are displayed in (31).

- (31) a. Sunghwun ilang nol-ko siph-ta. (3;9)  
 Ø Sunghwun with play-COMP want-DCL  
 ‘I want to play with Sunghwun.’
- b. Chinkwu lang nol-ko siph-e. (3;10)  
 Ø friend with play-COMP want  
 ‘I want to play with (my) friend.’
- c. Sungmin-i hyeng ilang nol-ko siph-ta. (4;11)  
 Ø Sungmin big.brother [of a boy] with play-COMP want-DCL  
 ‘I want to play with (my) brother [= close friend] Sungmin.’

For the WANT construction defined as level 3 for Korean, typical examples are shown in (32).

- (32) a. Emma, Sungmin-i hyeng-a cip ey nol-le ka-myen coh-keyssta. (3;6)  
 Mom Ø Sungmin big.brother home to play-GOAL go-COND be.likable-DCRS.DCL  
 ‘Mom, I’d like to go to brother Sungmin’s home to play.’
- b. Cwuyeng-i imo nayil tto w-ass-umyen coh-keyssta. (4;6)  
 Cwuyeng auntie tomorrow again come-PAST-COND Ø be.likable-DCRS.DCL  
 ‘I’d like that aunt Cwuyeng would come again tomorrow.’
- c. Nay sayngil i ppalli w-ass-umyen coh-keysse. (5;10)  
 My birthday NOM quickly come-PAST-COND Ø be.likable-DCRS  
 ‘I’d like that my birthday would come soon.’

#### *Usage examples with SAY*

The verb SAY as a single verb is used by Korean children most often in the imperative formula *malhaypwa* meaning ‘tell me,’ ‘say something,’ or ‘speak to me’ (33). It can be accompanied by the adverb *ppalli* (‘quickly’, ‘soon’), adding urgency and emphasis to the request. In other cases, the phrase *na hanthey* (‘to me’) was added for emphasis of the speakers need or wish.

- (33) a. Malhay-pwa!!! (3;6)  
 Speak-try.IMP  
 ‘Tell me! / Say something!’
- b. Ppalli malhay-pwa! (4;6)  
 Quickly speak-try.IMP  
 ‘Tell me quickly! / Say it right now!’
- c. Emma, na hanthey malhay-pwa. (5;8)  
 Mom me DAT speak-try.IMP  
 ‘Mom, tell me / say it to me.’
- d. Oh Sengmin, ney ka malhay-pwa! (5;10)  
 Oh Sengmin you NOM speak-try.IMP  
 ‘Oh Sengmin, speak it out!’

Another variant is the use of *malhaypwa* in the construction (*na*) *ttalase malhaypwa* ‘speak after me’, as in (34).

- (34) Appa, malhay-pwa. Na ttala-se malhay-pwa: ka, na ... (4;9)  
 Dad speak-try.IMP Me follow-PREC speak-try.IMP KA NA  
 ‘Dad, say it. Speak after me: KA, NA ... [Korean alphabet]’

The next frequent construction with SAY as single verb is a simple declarative with a third or first person subject stating who said something.

- (35) a. Appa ka malhay-ss-eyo. (3;8)  
 Dad NOM Ø speak-PAST-POL  
 ‘Dad said that / something.’
- b. Nay ka malhay-sse. (4;3)  
 I NOM Ø speak-PAST  
 ‘I said that / something.’

Older children finally start producing combinations of SAY in other constructions involving, for example, a second person subject or a question (36).

- (36) a. Ney ka malhay-ss-canha. (6;3)  
 You NOM speak-PAST-OBVS  
 ‘But you said that (as you know).’
- b. Sensayngnim hanthey malhay-sse? (6;3)  
 Ø teacher DAT speak-PAST  
 ‘Did you tell the teacher?’

Level 2 constructions with SAY using juxtaposed complement clauses yielded only nine examples provided by Korean mothers. The examples given comprise two different uses: the first is a direct speech report of what a third person has said (37a); the second use again involved the imperative combined with a question about preference or judgment (37b–c). These utterances are not examples of WH-complements, which would be marked by *-ci*, but questions that could stand alone but are combined with a SAY matrix clause.

- (37) a. Sensayngnim i “Yeywen i cal hay-ss-ta” hay-ss-eyo. (3;4)  
 Teacher NOM Yeywen NOM well do-PAST-DECL say-PAST-POL  
 ‘The teacher said “Yeywen [= name of the speaking child] did well.”’
- b. Emma! I konglyongkhatu cwung ey enu kes i mam ey tule malhay-pwa. (4;8)  
 Mom These dinosaur.cards among LOC which thing NOM heart LOC enter [= like]  
 speak-try.IMP  
 ‘Mom! Tell me which of these dinosaur cards do you like?’
- c. Nwuka ceyil ippu-ni ppalli malhay-pwa! (5;10)  
 Who.NOM SUPERL pretty-Q quickly speak-try.IMP  
 ‘Say quickly: who is the prettiest?’

SAY on complementation level 3 with complementizer and embedded complement clause was used by children of all ages primarily to report the speech of a third person subject. Interestingly, most examples provided involve reporting other people’s judgments about one’s looks or personality (38), reflecting the importance of such external judgments for Korean children and Koreans in general. Other uses involve plans and promises (39), again exemplifying contexts of social interaction.

- (38) a. Sensayngnim i yeypu-ta-ko hay-sse. (3;5)  
Teacher NOM Ø pretty-DCL-COMP say-PAST  
'Teacher said that (I am) pretty.'
- b. Halmeni ka inmul na-nta-ko malhay-sse. (3;6)  
Grandma NOM Ø character come.out-from-DCL-COMP speak-PAST  
'Grandma said that (I) have charisma.'
- c. Emma, appa ka Choyeni te coh-ta-ko malhay-sse! (4;3)  
Mom dad NOM Choyen more like-DCL-COMP speak-PAST  
'Mom, dad said that he likes Choyen [= name of the speaking child] better!'
- d. Emma, ce nwuna ka na kwiyeyp-ta-ko hay-sse. (4;10)  
Mom that big.sister [of a boy] NOM I cute-DCL-COMP say-PAST  
'Mom, that "sister" [i.e. older girl] said that I'm cute.'
- e. Na po-ko phipu ka hayah-ta-ko malhay-sse. (5;10)  
Me look.at-CONN Ø skin NOM white-DCL-COMP Ø speak-PAST  
'Looking at me (he/she) said that my skin is white.' [a compliment for Koreans]
- (39) a. Sensayngnim i nayil thaykwento ha-nta-ko malhay-sse. (3;6)  
Teacher NOM Ø tomorrow Taekwondo do-DCL-COMP speak-PAST  
'Teacher said that we are going to do Taekwondo tomorrow.'
- b. Nwuna ka kathi iss-e-cwu-ntako hayssta. (3;9)  
Big.sister NOM Ø together stay-CONNV-give-DCL-COMP say-PAST  
'Sister said that she would stay with (me/us).'
- c. Woysamchon i cangnankam sa-cwu-nta-ko malhay-sse. (4;8)  
Uncle [= mother's brother] NOM Ø toy buy-give-DCL-COMP speak-PAST  
'Uncle said that he will buy me a toy.'
- d. Halmeni ka na po-ko siph-ta-ko malhay-sse. (5;10)  
Grandma NOM Ø me see-COMP want-DCL-COMP speak-PAST  
'Grandma said that she (will) miss me.'

Only one example each was given for a first person (40) and a second person matrix clause subject (41).

- (40) Appa hanthey masiss-nun ke sa-o-la-ko malhay-sse. (4;5)  
Ø dad DAT be.delicious-ATTR thing buy-come-IMP-COMPL speak-PAST  
'I told dad that he should buy me something delicious.'
- (41) Emma, sensayngnim hanthey na onul mos ka-nta-ko malhay-ss-eyo? (4;7)  
Mom teacher DAT I today not.able.to go-DCL-COMPL Ø speak-PAST-POL  
'Mom, did you tell the teacher that I can't come today?'

#### *Usage examples with KNOW*

A total of 61 usage examples were entered for KNOW as a single verb for Korean children, mirroring their frequent use of these constructions.

Two major uses of KNOW as single verb stand out, both of which belong to interactive contexts of receiving commands or admonitions. In the first one, the forms *alasse* or *alkeysse* function as signal that one has heard and is going to conform to a command or request just

received, similarly to English “got ya” or German *verstanden* (‘understood’), which are used in similar contexts, but not as pervasively as their Korean counterpart (42). These assertive signals are sometimes extended by older children with a commissive intention statement about what one is going to do or when one is going to do what has been requested (43).

- (42) a. Al-keyss-e. (3;5)  
 Know-DCRS-DCL  
 ‘Got it.’ (Lit. ‘I’ll know’)
- b. Ney, al-ass-eyo. (3;8)  
 Yes Ø know-PAST-POL  
 ‘Yes, I got it.’ (Lit. ‘Yes, I’ve come to know [=understood]’)
- (43) a. Al-ass-e. Nay ka towa-cwu-lkkey. (4;11)  
 Know-PAST-DCL I NOM Ø help-give-CINT  
 ‘Got it. I will help (you/him/her).’
- b. Al-keyss-e. Cikum ha-lkkey. (6;1)  
 Know-DCRS-DCL Now Ø do-CINT  
 ‘Got it. I’ll do it now.’

The second, similar use, also involves the first person singular as subject and expresses something like “I heard it”/ “I got it”, but with an undertone that one is bugged and does not want to hear that again (44). In this sense, the forms *ala* or *alasse* are frequently combined with *na to* (‘I too’) or sentence enders like *-canha* (obvious ‘as you (should) already know’) or *-ketun* (explanatory ‘given that (... you should now be able to see my point)’), stressing the obviousness that one does not need to be told whatever was said again. The examples in (45) further show the use of the declarative plus complementizer *-ta-ko* as idiomatized sentence ender *-tako/-takwu* (i.e., short for *-ta-ko haysse* ‘I said that...’) expressing with additional emphasis that one is repeating what one has said before and what the other should therefore know already and react accordingly.

- (44) a. Na to al-a. (3;6)  
 I too Ø know-DCL  
 ‘I know (that).’ [implying ‘you don’t have to tell me’]
- b. Al-canha. (3;8)  
 Ø know-OBVS  
 ‘(You know that) I know (that).’ [= I obviously know that already]
- c. Na to al-ketun. (3;9)  
 I too Ø know-EXPL  
 ‘I know (that).’ [= it is a given fact that I know that already, so...]
- (45) a. Al-ass-tako. (3;9)  
 Ø know-PAST-DCL.COMP  
 ‘(I told you that) I understood.’

- b. Al-ko iss-takwu. (4;7)  
 Ø know-COMP be-DCL.COMP  
 ‘(I told you that) I am knowing (that).’

The single verb KNOW in Korean is not only used to accept or acknowledge commands or admonitions, but also when giving them – expecting the hearer to verbally assert one’s command, request, or reminder (46). The examples of usage with committal *-ci* are all addressed to a sibling, since they would violate norms of politeness if addressed to adults. Example (46c) shows an appropriate address of her mother by a 5-year-old child formulated as question with polite suffix.

- (46) a. Al-keyss-ci. (4;6)  
 Know-DCRS-COMM  
 ‘You will know that, don’t you?’ meaning ‘Will you do that?’
- b. Al-ass-ci. (4;6)  
 Know-PAST-COMM  
 ‘You’ve understood now, haven’t you?’ meaning ‘Got it?’
- c. Emma icey al-keyss-eyo? (5;0)  
 Mom now know-DCRS-Q.POL  
 ‘Mom, do you know now (what I want/mean)?’

Other examples of utterances also expressing that what was just said is familiar to or common ground of both speaker and interaction partner are given in (47) and (48). In (47), the previous knowledge of the first person is asserted, using the circumstantial *-(nu)ntey* indicating background circumstances relevant to the current conversation.

- (47) a. Na nun a-nuntey. (3;8)  
 I TOC Ø know-CIRCUM  
 ‘(As for me,) I know (that).’
- b. Swuhwan-i to a-nuntey. (3;9)  
 Swuhwan also Ø know-CIRCUM  
 ‘Swuhwan [=name of the child speaking] knows (that), too.’

In (48), the child reminds his interaction partner that he/she or somebody else should already know what was said. Without context, it is not clear, whether sister and father in the examples are the addressee or a third person, who is the topic of the dialogue.

- (48) a. Nwuna al-canha! (3;9)  
 Big.sister [of a boy] Ø know-OBVS  
 ‘Sister, you know that!’ [i.e., ‘Don’t you remember? I/Someone else told you before!’]  
 or ‘Sister knows that already, as you should know!’
- b. Appa nun al-canha! (4;0)  
 Dad TOC Ø know-OBVS  
 ‘But Daddy, you know that already, don’t you!’  
 or ‘Daddy knows that already, as you should know!’

Besides uses of KNOW that are centered around interactions and dialogue, 4-year-old's example utterances also contain uses, where *alta* refers to knowledge as familiarity with something, for example, the alphabet or stuff on TV (49).

- (49) a. Na ku ke wenlay al-ko iss-ketun-yo. (4;3)  
I that thing originally know-COMP be-EXPL-POL  
'I've already known this for a long time.'
- b. [watching TV:] Emma, ce ke al-cyo. Al-canha-yo?! (4;7)  
Mom that thing know-COMM.POL Know-OBVS-POL  
'Mom, you know that, don't you. You know that, don't you?!'
- c. Na twu al-a! Ce ke halmeni cip eyse pw-ass-e. (4;7)  
I too know-DCL That thing grandma house LOC see-PAST-DCL  
'I know that too! I've seen/watched that at Grandma's home.'
- c. Emma, na [hankul] al-ci. Ku kulssi to al-a. (4;7)  
Mom I [Korean character] know-COMM That character also know-DCL  
'Mom, I know [Korean character]. That character over there, I also know.'
- d. Ta al-a. (4;7)  
Ø all know-DCL  
'I know all of these/everything.'
- e. Emma, i ke na al-a. "Kwu" ca ya. (5;3)  
Mom this thing I know-DCL "Kwu" character be.DCL  
'Mom, this one I know: it's the character "kwu".'

In two cases, a child contrasted his/her own familiarity with something with the unfamiliarity of his/her parent, using both *alta* ('know') and *moluta* ('not know') (50).

- (50) a. Na-n al-a, appa molu-ci. (4;6)  
I-TOC Ø know-DCL Dad Ø not.know-COMM  
'I know that, you don't, Dad, do you?'
- b. Na-n a-nuntemma nun way moll-a? (4;8)  
I-TOC Ø know-CIRCUM Mom TOC why not.know-Q  
'I know that, why don't you, Mom?'

In a single example utterance of a 5-year-old child, *alta* refers to know-how (51).

- (51) Al-a. A-n-tako. Kaluchy-e-cwu-cima, honca ha-l ke y-a. (5;4)  
Know-DCL Know-IMPV-DCL.COMP Teach-CONNV-give-NIMP alone do-ATTR  
thing be-DCL  
'I know that. I said I know (how to do it). Don't teach me, I wanna do it on my own.'

A final use of KNOW as a single verb observed in Korean children's utterance examples is the idiomatic phrase in (52).

- (52) Al-ase hay. (4;11)  
Ø know-PREC do.IMP  
'Do as you wish.' [i.e., 'act following your own understanding of the situation']

The level 2 utterances with KNOW produced by Korean children used the same construction types as matrix clauses that were productive in single verb sentences. Complement clauses realized as coordinated main clauses both preceded or followed the matrix clause.

First, *alkeyssse* ‘got it’ was used by older children as a formulaic marker on normative statements or commands to siblings, to emphasize them and to request the other’s acknowledgment and reassurance (53).

- (53) a. I key nay kke ya. Al-keyss-e? (5;3)  
This thing.NOM my stuff be.DCL. Know-DCRS-Q  
‘This is my stuff. Got it?’
- b. Yeywen-i ne kulehkey ha-cima, al-keyss-ci. (6;1)  
Yeywen you like.that do-NIMP know-DCRS-COMM  
‘Yeywen, don’t you do that, got it?’

Frequently, level 2 constructions with KNOW involved repetitions of previous discourse, including plans, promises, or admonitions of norms and rules (54).

- (54) a. Na to al-a. Nayil un kyohoy ka-ci-yo! (3;4)  
I too know-DCL Tomorrow TOC church go-COMM-POL  
‘I know (that), too. Tomorrow (we)’ll go to church!’
- b. Kimchi manhi mek-e-ya toy-ci. Na to al-a. (5;5)  
Kimchi [Korean dish] a.lot eat-CONNV-NECS become-COMM I too know-DCL  
‘(One) should eat a lot of Kimchi. I know (that), too.’
- c. Sensayngnim i natuli ka-nta-ko hay-sse. Na to al-a. (6;3)  
Teacher NOM outing go-DCL-comp say-PAST I too know-DCL  
‘Teacher said we’ll go on an outing tomorrow. I know (that), too.’

Other uses involved statements of knowledge as familiarity, know-how, or ability to answer a question or solve a problem confronted with (55).

- (55) a. Na to al-a. ‘Laytu’ canha. (3;6)  
I too know-DCL “Red” [engl.] OBVS  
‘I know (that), too. (It’s) (obviously) “red”.’
- b. Na al-a. Onul i Kumyoil i-ci. (4;7)  
I know-DCL Today NOM Friday be-COMM  
‘I know (that). Today is Friday.’
- c. Emma, ceki Myengkun-i cip i-ta. Na cal al-ci. (4;11)  
Mom, over.there Myengkun house be-DCL I well know-COMM  
‘Mom, over there is Myengkun’s house. I know (that) well.’
- d. Na-n al-a. 6+7=13 iya. (6;3)  
I-TOC know-DCL 6+7=13 be-DCL  
‘I know (it). 6+7=13.’

Interestingly, one group of examples entered by Korean mothers exhibited both characteristics of juxtaposed independent complement clauses and embedded ones. In these constructions (56), the main clause with KNOW precedes the complement clause, which is typical for most

juxtaposed main clauses and ungrammatical for embedded clauses which, as all other verbal attributes, have to precede the matrix verb; but the following complement clause is marked by a nominalizer which is used as one possible complementizer for KNOW-complement clauses. As these sentences were all entered by Korean mothers as examples for level 2 utterances with KNOW, they were treated as such in the descriptive quantifications at the beginning of the chapter. Nevertheless, these constructions look much like a “right-dislocated embedded complement clause” — possibly representing an interim stage Korean children go through in the acquisition of complement clause embedding with a nominalizer.

- (56) a. Al-ko isse-yo. Chengso hay-ya toy-nta-n-un kes ul. (4;3)  
 Know-COMP be-POL Clean.up do-NECS become-IMPFV-ATTR thing ACC  
 ‘I know (that). That (I) have to clean up...’
- b. Na to al-a! Nayil yuchiwen ka-n-un nal i-n kes. (4;6)  
 I too know-DCL Tomorrow kindergarten go-IMPFV-ATTR day be-ATTR thing  
 ‘I know (that), too. That tomorrow is the day (I) (will/have to) go to kindergarten...’
- c. Na al-a-yo. Kulehkey ha-myen antoy-n-un ke. (5;0)  
 I know-DCL-POL Like.that do-COND should.not-IMPFV-ATTR thing  
 ‘I know (that). That (one) is not allowed to do that...’
- d. Na to al-ta. Nwuna sayngil i-n ke. (5;8)  
 I too know-dcl Big.sister birthday be-attr thing  
 ‘I know (that), too. That it’s sister’s birthday...’

Most utterances using correct level 3 complementation with KNOW were examples in which children repeated something uttered in the preceding discourse, indicating that they don’t have to be told again (57). As in simpler constructions, these were often reminders of plans, dates, or norms and rules.

- (57) a. Na nun Kayen i o-n-un ke a-nuntey... (3;8)  
 I TOC Kayen NOM come-IMPFV-ATTR thing know-CIRCUM  
 ‘But I know that Kayen is coming...’
- b. Tongsayng ul cal po-n-un kes i enni la-n-un kes un al-ko iss-e. (4;3)  
 Younger.sibling ACC well look.after-IMPFV-ATTR thing NOM big.sister [of a girl]  
 call-IMPFV-ATTR thing TOC Ø know-COMP be-DCL  
 ‘(I) know that it is said that looking well after her younger sibling is what makes a big sister.’
- c. Nayil komo o-n-un ke na to al-a. (5;5)  
 Tomorrow aunt [father’s sister] come-IMPFV-ATTR thing I too know-DCL  
 ‘I know, too, that (my) Komo (will be) coming tomorrow.’

Two examples were given for embedding with the complementizer suffix *-ci* (58).

- (58) a. Kyohoy ka-myen i pen cwu ey senmul pat-nun-ci ta al-a. (4;7)  
 Church go-COND this time week at present receive-IMPFV-DIS.COMP Ø all know-DCL  
 ‘(I) know it all (already), that if (we) go to church this week (we) are (going to) receive presents.’

- b. Emma ka wuli salangha-nun-ci al-a-yo. (4:8)  
 Mom NOM we love-IMPV-DIS.COMP Ø know-DCL-POL  
 ‘(I) know that Mom loves us / that you love us, Mom.’

A few examples of KNOW with embedded clauses expressed knowledge of facts irrespective of prior discourse. In (59a) the statement is about a stable attribute of a concrete object present in the given scene. (59b) and (59c) then express generic knowledge about kinds; in (59b) about a stable attribute, in (59c) about taxonomic associations. In (59b), the child’s knowledge is further contrasted with the sibling’s ignorance.

- (59) a. I kes mek-umyen mom to thunthunay-ci-nun-ci al-a. (3:11)  
 This thing eat-COND body also strong-CN-IMPV-DIS.COMP Ø know-DCL  
 ‘(I) know that if you eat this your body will become strong.’
- b. Pakcwy ka emcheng musep-ta-n-un ke na-n al-a, Ywunse nun molu-ci? (4:9)  
 Bat NOM enormously be.frightening-DCL-IMPV-ATTR thing I-TOC know-DCL  
 Ywunse TOC not.know-COMM  
 ‘I know that bats are terribly frightening, you don’t, Ywunse, do you?’
- c. Pom ey nun cangmi, haypalaki, napi ka na-o-n-un kes al-a. (5:10)  
 Spring in TOC rose sunflower butterfly NOM come.out-come-IMPV-ATTR thing  
 Ø know-DCL  
 ‘(I) know that, in spring, roses, sunflowers and butterflies come out.’

In a final single example of a 5-year-old, the past tense *alasse* combined with an embedded complement clause conveys the meaning of ‘came to know that \_\_\_’, indicating the experience of learning and remembering a new fact:

- (60) Yak ul manhi mek-kena hampulo mek-umyen antoy-n-un ke-l al-ass-e. (5:10)  
 Medicine ACC much eat-OR indiscriminately eat-COND should.not-IMPV-ATTR  
 thing-ACC Ø know-PAST-DCL  
 ‘(I)’ve come to know that (one) should not take too many medicine or shouldn’t take it indiscriminately.’

In summary, KNOW seems to be used by Korean children primarily in interactive functions of negotiating commands, plans, or reciprocal acknowledgement of what was already said in discourse. While a second group of functions concern the reference to familiarity and know-how, uses of the verb for the reference to factual knowledge, although reported in example utterances of all age groups, are very rare in the present data. This raises the question of what concept or meaning Korean children are actually representing of KNOW.

#### *Usage examples with THINK*

Overall, few example utterances were entered for the verb THINK for Korean children, probably reflecting the low percentages — compared to the other three IS verbs — of children actively producing the verb, even at age 5.

Accordingly, most usage examples reported included THINK as a single verb. Among these examples, two slightly different meanings or uses of *sayngkak hata* could be distinguished.

In the first one, the verb was used in the sense of ‘thinking about’ something, involving a process of deciding, remembering, or coming up with a solution for a problem.

The utterances in (61) give some examples of this use. They all have the first person singular as subject.

In (62), THINK with this meaning is used in imperatives with the verb extension *-pwa* (‘try’), which parallels the frequent uses of SAY in the same construction reported above.

- (61) a. Nay ka sayngkak hay-sse. (3;5)  
I NOM think-PAST  
‘I thought (about it).’
- b. [playing a computer game:] I tolmeyngi lul ilehkey ha-myen epse-ci-ese (4;8)  
ka-l swu ka iss-ess-e. Nay ka sayngkak ul hay-pw-ass-ci.  
Ø this stone ACC like.this do-COND not.be.there-CN-CAUS Ø go-ATTR  
solution NOM exist-PAST-DCL I NOM think ACC do-try-PAST-COMM  
‘(I) could go, because if (you) do the stones like this (they/it) disappear(s).  
I thought (this solution out).’
- c. Nay ka sayngkak hay-se coh-un sayngkak i na-o-n ke ya. (4;11)  
I NOM think-CAUS good-ATTR thought NOM come.out-come-ATTR thing be.DCL  
‘‘Cause I thought about it, I came up with a good idea.’
- d. Sayngkak hay-po-ko yayki hay-cwu-lkkey. (5;8)  
Ø think-try-CONN talk-give-CINT  
‘I will think (about it) and then tell (you).’
- (62) a. Sayngkak hay-pwa!!? (3;6)  
Think-try.IMP  
‘Think (about it)!!?’ [i.e. reconsider, try to remember, or similar meaning]
- b. Emma, sayngkak com hay-pwa-yo. (4;7)  
Mom, think a.little.bit do-try.IMP-POL  
‘Mom, try and think a bit (about this).’ [cf. 62a]
- c. Emma, sayngkak hay-pwa. Kiek na-ci. (4;7)  
Mom think-try.IMP Memory come.out-COMM  
‘Mom, think (about it). You remember, don’t you?’

The second use or meaning of *sayngkak hata* was in the sense of ‘thinking up’, having a thought or coming up with an idea. In this sense, all examples had first person subjects. In some cases, *sayngkak hata* was extended by *nayta* (‘emit, produce’), further elaborating the construal of this second use.

- (63) a. Nay ka kunyang sayngkak hay-ss-ci mwe. (3;9)  
I NOM just.so think-PAST-COMM what  
,I just came up with this thought [i.e. got no specific reason].’
- b. M: Nwuka kulay? Ch: Nay ka kunyang sayngkak ha-n ke ya! (4;6)  
Who.NOM like.this I NOM just.so think-ATTR thing be.DCL  
Mother: ‘Who said this?’ Child: ‘I just thought (this) up!’

- c. I ke [pullok] nay ka sayngkak hay-se mantu-n ke ya. Cal hay-ss-ci? (4;9)  
This thing [Lego] I NOM think-PREC make-ATTR thing be.DCL Ø well do-PAST-COMM  
,I thought this [Lego] up (on my own) and made it. I did (it) well, didn't I?'
- d. Ku ke nay ka sayngkakhay nay-n ke ya. (4;6)  
That thing I NOM think produce-ATTR thing be.DCL  
,That thing I made up (on my own).'
- e. I ke nay ka sayngkak hay ny-n ke ya. Mesci-ci? (4;10)  
This thing I NOM think produce-ATTR thing be.DCL Handsome-COMM  
,I thought this up. (It's) handsome, isn't it?'

Only three utterance examples were entered for uses of THINK with a complementation construction on level 2. They are presented in (64). While the first two utterances show uses with juxtaposed questions, in (64c), a clause referring to a thought process and a second clause expressing the result of the thinking are combined in a causal construction.

- (64) a. [To a sibling:] Ilehkey ecilu-myen antoy-ci? Sayngkak hay-pwa. (4;3)  
Like.this mess.around-COND should.not-COMM Think-try.IMP  
'You shouldn't mess around like this, should you? Think about it.'
- b. Sayngkak hay-pwa. Ne ka ku ttay oppa hanthey suthikhe cwu-nta-ko hay-sse, (5;4)  
an hay-sse?  
Think-try.IMP You NOM that time big.brother [of a girl] DAT sticker give-DCL-COMP  
say-PAST not say-PAST.Q  
'Think about it. Did you say that time that you would give (your) brother the sticker,  
or didn't you?'
- c. Enni-tul i nemu yeypu-cyo, emma! Nay ka sayngkak ha-nikka yeypu-n kes (5;10)  
kath-a-yo.  
Big.sister [of a girl]-PL NOM too pretty-COMM.POL Mom I NOM think-CAUS  
pretty-ATTR thing seem-DCL-POL  
'The "big sisters" (older girls) look too pretty, Mom! As I think about it, (they)  
seem to be pretty.'

In comparison, 15 examples for THINK on complementation level 3 were given.

The majority of these show instances of usage with a first person singular subject in the matrix clause and use of the complementizer *-ko* (65). Besides one example of THINK in present tense (65c), all other examples of this construction had a past tense marker on the matrix verb, which indicates a change-of-state in mental representation due to the thought process, while the embedded clause represents the result of thinking. These results were most of the time evaluations or social or moral judgments of some sort. Note also the syntactic complexity of some of the utterances, involving multiple combinations of embedding, complementation and/or subordination.

- (65) a. Na-n Unkyel-i pota te yeypu-n os ul ip-ko tani-ko siph-ta-ko sayngkak hay-sse. (4;3)  
I-TOC Unkyel compared.to more pretty-ATTR clothes ACC wear-CONN  
walk.about-COMP want-DCL-COMP think-PAST  
'I came to think that I want to wear and walk about with prettier clothes than Unkyel.'

- b. Emma mal i mac-ta-ko sayngkak hay-sse. (4;7)  
 Mom speech NOM be.right-DCL-COMP think-PAST  
 ‘I came to think that what Mom [=you] said is right.’
- c. Na-n ku chayk caymi eps-ta-ko sayngkak hay. (4;7)  
 I-TOC that book interest not.have-DCL-COMP think.DCL  
 ‘I think that this book is boring.’
- d. Sungmin hako nun hyengcay-nikka sai cohkey nol-a-ya toy-nta-ko sayngkak hay-sse. (4;8)  
 Sungmin with TOC brothers-CAUS Ø relationship well play-CONNV-NECS  
 become-DCL-COMP think-PAST  
 ‘I came to think that (I) should play harmoniously with Sungmin, because we are brothers.’
- e. Na nun hyeng i nappu-ta-ko sayngkak hay-sse. (4;11)  
 I TOC big.brother [of a boy] NOM be.bad-DCL-COMP think-PAST  
 ‘I came to think that “brother” [elder brother or friend] is bad.’

Only two examples were given where the matrix clause subject is a third person, whose speech or opinion is reported by the child; one is displayed in (66).

- (66) a. Emma, ce enni na-n yeypu-ta-ko sayngkak hay. (5;8)  
 Mom that big.sister [of a girl] I-TOC pretty-DCL-COMP think.DCL  
 ‘Mom, that “big sister” [elder girl] thinks that I’m pretty.’

In two further utterances entered by Korean mothers, the nominal complementizer *kes* was used together with a first person past tense THINK in the matrix clause (67). This construction presents the content of the embedded clause as a plan for action resulting from a thought process.

- (67) a. Nay ka kongpu ha-l ke sayngkak hay-sse. (4;5)  
 I NOM study do-ATTR thing think-PAST  
 ‘I think that I’m going to study.’
- b. Nayil nwun wa-se elinicip an ka-n-un ke sayngkak hay-sse. (4;11)  
 Tomorrow snow come-CAUS kindergarten not go-IMPFV-ATTR thing think-PAST  
 ‘Because it’s going to snow tomorrow, I thought, I will not go to kindergarten.’

Finally, the complementizer *-ci* was also reported in two example utterances of a 5-year-old child in combination with the verb THINK in imperative or propositive form. In both cases, this combination is used to ask the hearer to help in deciding what to do.

- (68) a. Wuli eti ka-lci emma ka sayngkak hay-pwa. Na twu sayngkak hay-po-lkkey. (5;10)  
 We where go-DIS.COMP Mom NOM think-TRY.IMP I too think-try-CINT  
 ‘Mom, try to think about where we should go. I’ll think about it, too.’
- b. Mwel ha-ko nol-ci sayngkak hay-po-ca. (5;10)  
 What.ACC do-CONN play-DIS.COMP think-try-PROP  
 ‘Let’s think about what we (could/should) play.’

Uses of the verb THINK by Korean children on all three levels of complementation, in summary, construe a mental process leading to a result – be it an idea, solution, retrieved memory, plan, judgment, or decision.

#### 4.1.2.3 German-Korean comparison

##### Pattern and sequence of the acquisition of complement clause constructions with WANT, SAY, KNOW, and THINK

Both German and Korean children exhibit the same sequence of acquiring competence producing complement clause constructions with the four IS verbs, namely in the order: WANT < SAY < KNOW < THINK, as supported by respective Guttman scale analyses. The syntactic development of combining IS verbs with clauses that simultaneously represent the content of the internal state referred to, thus, seems to start first with more concrete verbs of desire and speech, before being extended to more abstract verbs referring to mental states and their propositional content.

Table 4.1.32 summarizes the percentages of German and Korean children for the single age groups, that are actively producing complement clauses with each of the four IS verbs, summing up usage on level 2 and 3. Colored numbers display percentages > 50% and > 75%, respectively. Table 4.1.33 presents the results of connected Chi-square comparisons.

Table 4.1.32 *Percentages of children per age group producing the 4 IS verbs with complement clauses comparing German and Korean*

German					Korean				
Verb	3 years	4 years	5 years	Total	Verb	3 years	4 years	5 years	Total
WANT	90.4	100.0	100.0	96.6	WANT	100.0	100.0	100.0	100.0
SAY	95.5	100.0	94.8	96.7	SAY	68.4	87.0	94.8	83.6
KNOW	36.3	95.0	100.0	75.4	KNOW	47.3	65.2	70.6	61.1
THINK	22.7	55.0	68.4	47.5	THINK	15.8	39.1	41.2	32.2

Table 4.1.33 *Comparison of percentages of German and Korean children producing the 4 IS verbs with complement clauses (level 2 and 3)*

Verb	German	Korean	$\chi^2$ (df = 1)
WANT	96.6	100.0	0.369
SAY	96.7	83.6	5.915*
KNOW	75.4	61.1	2.871 <sup>†</sup>
THINK	47.5	32.2	2.940 <sup>†</sup>

<sup>†</sup>  $p < .09$  \*  $p < .05$

While German and Korean 3-year-olds are already competent in the production of WANT with complement clauses and required markers and therefore no difference can be seen for this verb between the two languages, a significantly higher proportion of German children becomes competent with complement clause constructions with SAY during that age period.

The verb SAY is already produced by 96% of the German 3-year-olds in combination with complement clauses, as compared to 68% of the Korean 3-year-olds. Half of these children use the verb already with embedded clauses marked by a complementizer, with rising proportions of this competence level in the older age groups. Of the Korean children, 58% already produce SAY with embedded clauses at age 3, also with rising proportions up to the 5-year-olds, of which 90% use this construction. The big difference between the German and the Korean pattern in the acquisition of complement clause constructions with SAY is thus that the numbers of children reported to use the verb on complementation level 2 with juxtaposed complement clauses only is much higher in all three German age groups (21%–46%) than in the Korean groups, of which only 5%–17% are reported to use the verb on this level. It seems that German children go through long phases of using SAY with juxtaposed main clauses, before they start using constructions with embedded clause and complementizer, whereas Korean children seem to move much more quickly from the use of the single verb to usage on level 3.

Korean children, although using KNOW with sentential complementation at a higher percentage than German children with 3 years, do not reach the 75% mark before age six.

On the other hand, German children show an extreme increase in productivity of KNOW with complement clauses from 3 years to 4 years, jumping from 36% to 95%, and contrary to SAY, very few German children are reported to use KNOW on complementation level 2 only. This sudden “jump” is not visible for Korean children, whose productivity with complement clauses with KNOW increases more slowly and steadily over the three age groups (47%–65%–71%). Moreover, although all Korean children produce both SAY and KNOW from age 3, SAY is readily combined with sentential complements, whereas KNOW is used as single verb for a longer time, before it becomes a matrix verb of clausal complements.

In both languages, the verb THINK is not productive yet for more than half of the 3-year-olds. For sentential complements with THINK, Korean children do not reach the 50% mark during the age period studied; German children, on the other hand, already pass it with 4 years. Uses with complement clauses increase steadily with age for German children (23%–55%–68%) and are a bit higher in all age groups than for Korean children, for which higher proportions of children in the three age groups use the single verb only and the use of complement clause

constructions increases from 3 to 4, but stays similar for 4- and 5-year-olds (16%—39%—41%). Nevertheless, the difference in total productivity percentages of KNOW and THINK between the whole samples of German and Korean children is only of marginal significance.

That German children are somewhat faster in the acquisition of complement clause constructions with the specific IS verbs studied here, might be because the target constructions with the different verbs are more similar. For SAY, KNOW, and THINK, almost all uses with juxtaposed complement clauses are of the form *Subject IS-Verb coordinated S-complement [SVO]*, and for all three verbs the embedded complement construction takes the form *Subject IS-Verb embedded S-complement ['dass' SOV]*, requiring addition of complementizer *dass* and a word order change. Due to these parallels, constructions acquired with one verb, especially the transformation from level 2 to 3, can easily be transferred to the use with other verbs.

In Korean, on the other hand, while constructions with embedded complement clauses are similar in constituent order for SAY, KNOW, and THINK, taking the form *(Subject) embedded S-complement [SOV-complementizer] IS-Verb*, the level 2 constructions in which children used these verbs differed. Whereas for SAY, the complement clause with declarative or question marking was inserted between the subject (if overt) and the IS matrix verb, the matrix clause with IS verbs KNOW and THINK did either precede or follow the coordinated clause. Moreover, in addition to that a different complementizer is used for KNOW (*-(nu)n kes*) than for SAY and THINK (*-(ta)ko*), alternative complementizers are allowed and used in combination with KNOW (*-ci*) and THINK (*-ci* or *-(nu)n kes*) that involve slightly different connotations or usage contexts, as can be seen in the utterance examples in 4.1.2.2. This makes transfer of structures acquired with one IS verb to the use with another verb and the connection between level 2 and level 3 constructions not as straightforward as in German acquisition and might serve a more “piecemeal” acquisition of different constructions with specific verb-complementizer combinations in Korean children. Moreover, the comparatively high percentages reported of usage of KNOW and THINK as single verb only up to age 5 could indicate that the more specific and formulaic uses of the single verb constructions, taken together with the mentioned observations might prevent Korean children from making early generalizations over different verbs and constructions.

### Reported uses and functions of the 4 IS verbs in complement clause constructions of different levels of complexity

#### *Want*

Simple constructions with WANT defined as level 1 and 2 serve the same functions and are used in similar contexts for German and Korean children. They use them to express their desire for food they like, toys they want to possess, or games they enjoy.

Complex sentences with WANT, that are exemplary of level 3, often involve a third person subject in the embedded or subordinated clause, expressing the speaker's wish about what someone else should do or what they wish to happen. In this sense, both in German and Korean, the complement clause of WANT holds a proposition that is not true at the moment in which it is uttered. In Korean, the construction therefore requires markers of the conditional and 'deductive reasoning'. In German, the factive complementizer *dass* emphasizes the wish that the speaker wants the proposition to become reality.

#### *Say*

As single verb, SAY is used by German and Korean children to report who said something or is the source of their information by using the frame 'X said this' (*X hat's gesagt / X ka malhaysse*). Moreover, the verb is most often produced in frequent formulas with discourse regulating functions. For German children, these are the rejecting *sag ich nicht* and the moral attention getter (*na sag mal!*). In Korean, children widely produce the imperative *malhaypwa*. SAY with complement clauses —both coordinated and embedded— is dominantly used by German and Korean children to report a third person's speech. The contexts of children's usage examples frequently involve judgments and praise, repetition of rules and regulations that were uttered by caregivers or peers. For Korean usage examples, others' promises or dates and shared plans are frequent contexts as well.

For both languages, constructions are reported in which the imperatives that are frequently used with single verb SAY are combined with a juxtaposed question addressed to a second person (see (9) for a German, (37c) for a Korean example).

In German utterance examples, the use of the complementizer *dass* has the additional function to add emphasis to a statement due to its factive connotation, especially when it is used to mark a contrast, e.g., between previously and now (10d), or between one person's account and that of another (10e).

*Know*

For the usage of KNOW and its constructions there are also some important commonalities found between German and Korean children.

For the single verb, we can again see frequent formulaic forms with interactive or discourse functions. Both German and Korean children have a basic construction of first person singular ‘I know’, which is extended by various pronouns and particles, or suffixes in Korean, that further stress its function as signal of “not wanting to be told again” what the other just said.

(69) shows a schematic display of the constructions with their building blocks, covering all varieties found in the parent examples.

(69) German:	ich weiß (das) (doch) (schon)		
	I know.1s (that) (DOCH) (already)		
Korean:	(na) (to) al	- a	DCL
		- canha	OBVS
		- ketun	EXPL
		- nuntey	CIRCUM
		- ass/ko iss - takwu	DCL.COMP
	(I) (too) know		

All examples of KNOW with complementation in both languages have first person singular matrix clause subjects. The majority of the utterance examples of KNOW with complement clauses are acknowledging repetitions of others’ reminders or admonitions of norms, rules, and plans and promises, signaling —as did the single verb ‘I know’-constructions— that one has heard, remembers, and/or does not need to be told again. This use of KNOW in referring to previous discourse is especially obvious in embedded combinations of the form:

know.1s [ say.2s/3s [ ... ] ] (see German (15c) and Korean (54c)).

The same expressions of stance that were combined with the single verb ‘I know’-construction are also found with complement clauses.

In both languages, only few uses of KNOW are reported with genuine reference to factual knowledge. It seems that uses of KNOW in its dictionary sense appear later and not as frequent as its conversational uses.

In German 5-year-olds two examples refer to knowledge of a stable property of a present object, or to a generic property of a kind. In the three examples entered for each a Korean 3-, 4-, and 5-year-old, the first one expresses knowledge of a stable property of a present object, the second of a generic property of a kind, the third of taxonomic associations.

Despite these commonalities, some important differences stand out between the two languages, in constructions and their uses, but also in the meanings covered by the verb KNOW and its lexical alternatives.

For German children, the negated form *weiß nicht* in the first person singular is widely used and reported, but does not appear in examples given including complementation. In the Korean parent reports, negated forms of *alta* do generally not appear, because they are covered by the separate verb *moluta* ('not know, be ignorant of') and are almost absent in the ambient language.

Korean children use additional constructions —*alasse/alkeysse* and *alassci/alkeyssci*— in contexts of taking and giving commands and requests, signaling acknowledgment and agreement to conform, or, when giving a command, asking the hearer to signal this acknowledgment. These constructions are reported in high numbers, underlining their pervasive use by Korean children. They are also combined with juxtaposed clauses containing statements, rules or commands for which conforming acceptance by the other is requested. The verb's meaning in this interactive context is only marginally connected to what one would count as 'knowledge', even in a broad sense. It could be described as an act of acknowledgment, active understanding, or assimilation.

Concerning the subjects of matrix clauses with KNOW, Korean children's utterance examples also show KNOW in contexts, where the child reminds others that they should know something already (48), or in contrastive sentences stressing their own knowledge versus the interaction partner's ignorance (59b). For German children, utterance examples with other matrix clauses than the first person singular 'I know (already)'-construction, are not found in the parent report data. The only construction in German reports, where a second person is marked on the verb, is in the formula *weißt du/weißtete*. It functions as an attention getter or excitement creator in discourse and is produced in combinations with a juxtaposed clause containing "news" the child is reporting to the hearer.

The Korean verb *alta*, on all levels of complementational complexity, is further reported in contexts where its semantics covers meanings of familiarity with something, or of know-how and ability. These uses would be encoded by different verbs in German, mainly *kennen* for familiarity and *können* for ability, or would have to be translated into quite different constructions.

In the single languages, special connotations and discursive uses of the different complementizers can also be found. In German, the complementizer *dass* is, for example, reported in uses where it emphasizes the factive meaning of KNOW with the conversational

function of “claiming truth” for the speaker’s viewpoint or opinion. For Korean children, uses of the complementizer *-ci* are reported in addition to the nominalizer *-(nu)n kes*. *-Ci* involves the connotation that, originally, two possibilities had been present (e.g., whether X is the fact or not) which have come to a resolution in one direction. Embedded complement clauses with *-(nu)n kes* are often combined with the past tense form *alasse* meaning ‘I came to know, I learned that’ rather than ‘I knew’, which in English or German would indicate a past state of knowledge that is not present anymore,

Overall, reviewing the uses reported for Korean KNOW, it seems that the overarching meaning lying behind the different uses of the Korean verb *alta* expresses a more dynamic concept of knowledge than the classical German or English conception of knowledge as a state, or even possession. Often, it involves connotations of reasoning, active understanding, and inference, i.e., the processes leading to a mental representation, rather than referring to the form or stability of the representation itself. This is also true for its use in the interactive context, where active “ac-knowledg-ment” is signaled or asked for and the change of an assimilation is construed, where something not accepted so far becomes something that is accepted and then belongs to one’s knowledge or representational system.

### *Think*

In examining the utterances reported by parents for children’s usage of the mental verb THINK on different levels of complementation, German and Korean show quite different patterns of constructions and meaning connotations of the verb.

In uses of THINK as single verb, German children produce two construction types: questions with a second person marking asking for another’s opinion or a decision between two alternatives; and declaratives with first or third person marking expressing that someone is in the state of an ongoing process of thinking or planning. The first use has the more conversational function of requesting a reply, while the verb *denken* in this context refers to an opinion that might be uncertain at present.

In Korean examples of single verb THINK, while constructions reported are more varied, two basic meanings are visible as well. The first one is described as ‘thinking about’, expressing a process of deciding, remembering, or finding a solution, which is further elaborated by frequent extension in a serial verb construction with *pota* (‘try’). It is produced with first person subjects in combination with present tense, past tense, and/or causal markers, or as imperative expressing the request ‘try to remember, reconsider’. The second meaning of

*sayngkak hata* can be translated as ‘thinking up’, involving inventions and spontaneous ideas. All examples reported have first person singular subjects. Here also, the verb is often used in a serial verb construction, this time using *nayta* (‘emit, produce’).

The coordinated complement clauses Korean children combine these simple verb constructions with contain a statement of the result of the process encoded by the verb, i.e., decision, remembrance, solution or invention, mental product, in the case of first person declaratives, or the question the hearer should reconsider or decide in the case of the imperative.

Constructions and uses on complementation levels 2 and 3 are similar for German children. In the reported examples, where a first person is subject of the matrix clause, the verb THINK encodes a subjective perspective or opinion. In examples with third person matrix clause subjects, it expresses someone’s opinion or judgment, often as a report of a previous statement of that person. The factive complementizer *dass* invokes the association of truth and reality and thus stresses the strength of the opinion.

In addition to these usage contexts, German examples contain some statements expressing a false belief of self or someone else.

In Korean children’s uses of THINK with embedded complement clauses, first person matrix subjects are dominant and only very few examples contain reports of a third person’s opinion. The focal use of *sayngkak hata* in complement clause constructions with complementizer *-ko* is the expression of a change-of-mind, often marked additionally with a past tense suffix. The complement clauses in these constructions contain the evaluation or decision of how to judge a certain situation that results from that change. A possible translation of the verb in these sentences is ‘I came to think that’.

In addition, Korean children also produce two further complementizers together with THINK. The nominalizer *-(nu)n kes* was reported in combination with a first person subject and past tense marking on the verb. This construction expresses a plan for action that results from thinking about the given situation. The complementizer *-ci*, which entails the construal of two alternative possibilities, was used in combination with an imperative or propositive to ask the hearer for help in a decision.

In Korean examples, no uses of THINK in the context of referring to or expressing a false belief were reported.

Taken together, in German children's uses of the verb THINK, the concept of opinion or judgment as a current (and probably stable) state of mental representation is in focus. Korean children's usage, on the other hand, foregrounds the meaning of a change-of-representation through mental activity, for example, searching and finding a solution for a problem, thinking out a plan, retrieving something from memory that seemed to be lost, or coming to an evaluation.

These interpretive reconstructions of the meanings of KNOW and THINK in German and Korean children's uses will be of interest to the question of whether and how competence with mental verbs may be helpful in solving theory of mind tasks (Chapter 5.2).

### 4.1.3 Use of ISL in a picture book narrative

How children use the IS vocabulary and complement clause constructions acquired in the narration of a socio-emotional story from a wordless picture book, was the final focus of analyses on internal state language (ISL).

For both culture/language samples, it was of interest how the quantity of ISL use would develop over the three age groups, and how the syntactic and conceptual complexity of IS clauses would increase, as visible in complement clause constructions with IS verbs as well as clause linkage and subordination expressing causal and contrastive relations between the internal state mentioned and related actions and events, or to other internal states of the same or other characters mentioned in the narration. Finally, the production of types and tokens from different semantic categories was analyzed tracking their proportions in children's total IS clauses over age, and assessing differences between German and Korean.

#### 4.1.3.1 German ISL use in narrative

##### **Overall narrative development and ISL use**

In the beginning, children's narratives were analyzed in their general characteristics, such as length and productivity. Descriptives of the parameters assessed are reproduced in Table 4.1.34. Then, the quantity of ISL in the narratives was analyzed, in total numbers of IS clauses, IS tokens, and IS types produced by each child. Of these, ratios were calculated per total clauses produced to account for differences in narrative length over age or between individual children. The descriptive statistics of ISL quantity are summarized in Table 4.1.35. Finally, correlations were calculated, to look for significant positive relationships of the measures of narrative production and ISL use with age. In this chapter, correlations with age in months were favored over ANOVAS over three age groups, because group sizes were unequal due to missing data in the German sample and some measures did not fulfill the assumption of homogeneity of variances between the age groups. For consistency, the same pattern of analyses was repeated for the Korean sample. Table 4.1.36 summarizes the correlations for German children's narratives.

German children produced a mean of 30 clauses in their narrations and of 1.4 clauses per picture. Length of narration (in total clauses) did not correlate with age (Table 4.1.36).

Clauses had a mean length of 6 morphemes for 3-year-olds and 7 morphemes in the older groups.

Table 4.1.34 *Descriptive statistics of measures of narrative productivity of German children over age*

Measure	Age group											
	3 years			4 years			5 years			Total		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Total clauses	30	9.2	16–45	30	7.1	19–43	29	6.0	18–38	30	7.7	16–45
Total morphemes	181	65.2	74–317	204	53.1	105–300	191	65.9	83–309	190	61.9	74–317
Total pictures	20	2.3	13–21	21	0.9	18–21	20	1.0	18–21	20	1.7	13–21
Clauses / picture	1.5	0.46	1.0–2.0	1.3	0.44	1.0–2.0	1.4	0.48	1.0–2.0	1.4	0.45	1.0–2.0
Morphemes / picture	9.0	2.83	3.7–15.1	9.9	2.43	5.8–14.3	9.4	3.18	4.6–14.7	9.4	2.81	4.6–14.7
Morphemes / clause	6.0	0.89	3.7–7.0	7.0	0.48	6.0–8.0	6.6	1.29	4.7–9.0	6.4	1.03	3.7–9.0

Table 4.1.35 *Descriptive statistics of quantity of ISL in German children's narratives over age*

Measure	Age group											
	3 years			4 years			5 years			Total		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
IS clauses	14	5.8	3–26	15	5.7	5–23	16	4.7	6–24	15	5.4	3–26
Ratio IS cls / total cls	.44	.123	.15–.60	.50	.132	.26–.77	.55	.096	.33–.67	.49	.124	.15–.77
IS tokens	15	6.6	3–30	18	6.7	5–26	17	5.5	6–26	16	6.3	3–30
Ratio IS tok / total cls	.48	.149	.15–.68	.59	.147	.26–.81	.59	.115	.33–.72	.54	.145	.15–.81
IS types	10	4.3	2–20	14	5.1	5–23	13	4.5	5–20	12	4.7	2–23
Ratio IS typ / total cls	.35	.117	.10–.53	.46	.096	.26–.66	.45	.108	.27–.63	.41	.119	.10–.66

Table 4.1.36 *Correlations of age and linguistic productivity and ISL in German children's narratives*

Measure	1	2	3	4	5	6	N
1. Age	–						41
<b>Linguistic productivity</b>							
2. Total clauses	–.10	–					41
3. Morphemes / clause	.23 <sup>†</sup>	.32 <sup>*</sup>	–				41
<b>Proportions of ISL</b>							
4. Ratio IS clauses / total clauses	.39 <sup>**</sup>	.24 <sup>†</sup>	.62 <sup>***</sup>	–			41
5. Ratio IS tokens / total clauses	.34 <sup>*</sup>	.26 <sup>†</sup>	.66 <sup>***</sup>	.95 <sup>***</sup>	–		41
6. Ratio IS types / total clauses	.37 <sup>**</sup>	.10	.54 <sup>***</sup>	.70 <sup>***</sup>	.79 <sup>***</sup>	–	41

<sup>†</sup>  $p < .08$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

On average, half of the clauses German children produced contained an IS word or construction, with a range of proportions between .15 and .77. All measures of ISL in narrative (ratios of IS clauses, tokens, and types) exhibited significant positive correlations with age. Although no significant correlations were found with length of narration (total clauses), even stronger relationships than with age held between ISL measures and morphemes per clause, i.e., a measure of complexity or “richness” of single event verbalizations.

### Syntactic complexity of ISL – causality and complementation

#### *Causal and contrastive IS clauses*

German children, on average, produced 4 IS clauses per narration in which they verbalized a causal or contrastive relation between the internal state and another state of affairs in the story, i.e., with an action, event, previous internal state of the same protagonist, or internal state of another story character. Ratios were computed for causal/contrastive internal state clauses per total clauses and per total IS clauses. Both proportions increased over the age groups, but showed only weak positive correlations with age in months: causal/contrastive IS clauses per total clauses,  $r = .25$ ,  $p < .06$ , and causal/contrastive IS clauses per total IS clauses,  $r = .20$ ,  $p < .11$ .

Table 4.1.37 *Descriptive statistics of causal/contrastive IS clauses of German children over age*

Measure	Age group											
	3 years			4 years			5 years			Total		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Total caus/contr IS clauses	3	4.7	0–20	5	4.1	0–11	4	3.5	0–12	4	4.2	0–20
Ratio caus/contr IS cls / total IS cls	.15	.195	.00–.77	.29	.218	.00–.50	.21	.157	.00–.50	.20	.194	.00–.77
Ratio caus/contr IS cls / total cls	.07	.111	.00–.44	.16	.115	.00–.30	.13	.100	.00–.33	.11	.111	.00–.44

#### *IS verbs with complement clauses*

Constructions of an IS verb in a matrix clause with coordinated or subordinated complement clause were produced by 12 children in the German sample. All IS verb complement clause constructions that appeared in their narrations are presented in Table 4.1.38, showing the matrix verb, complementizer, and type of complement clause used, together with numbers of tokens and of children who produced the construction.

Table 4.1.38 *IS verb complement clause constructions in German children's narratives*

Construction				Age			Total	
Matrix IS verb		Compl.tizer	Comp. type	3 years	4 years	5 years		
<b>Perception</b>								
1	<i>gucken</i>	look	<i>wie</i>	WH	–	1 (1)	–	1 (1)
2	<i>so (V)</i>	(V) in such a way	<i>wie</i>	WH	–	–	1 (1)	1 (1)
3	<i>sehen</i>	see	<i>dass</i>	S	–	–	1 (1)	1 (1)
Total					–	1 (1)	2 (2)	3 (3)
<b>Emotion</b>								
1	<i>Angst haben</i>	be afraid	<i>dass</i>	S	1 (1)	1 (1)	1 (1)	3 (3)
2	<i>sich freuen</i>	be happy about	<i>dass</i>	S	1 (1)	1 (1)	1 (1)	3 (3)
Total					2 (2)	2 (1)	2 (2)	6 (5)
<b>Speech / Communication</b>								
1	<i>sagen</i>	say	∅	coord. S	2 (2)	–	2 (2)	4 (4)
2	<i>sagen</i>	say	<i>dass</i>	S	–	–	1 (1)	1 (1)
Total					2 (2)	–	3 (2)	5 (4)
<b>Cognition / Evidentiality</b>								
1	<i>wissen</i>	know	<i>wo</i>	WH	1 (1)	–	–	1 (1)
2	<i>glauben</i>	believe	∅	(formulaic)	–	2 (2)	3 (2)	5 (4)
3	<i>sich überlegen</i>	think about	<i>dass</i>	S	–	1 (1)	–	1 (1)
Total					1 (1)	3 (3)	3 (2)	7 (6)
<b>Total</b>					5 (3)	6 (4)	10 (5)	21 (12)

*Note.* Numbers represent counts of tokens for each construction; numbers in parentheses report the number of children producing the construction, and, in the rows labeled ‘Total’, parentheses contain the number of children who produced one or more IS verb complement constructions in the respective verb group.

The IS matrix verbs observed were either verbs of perception, emotion, speech/communication, or cognition/evidentiality. Constructions were similarly distributed over these four semantic categories. Tracking the percentages of children producing IS verb complement clause constructions over the three age groups (17%–40%–38%), we see an increase from age 3 to 4, but no difference between the older groups.

Frequently, German 3-year-olds started their description of a picture by pointing and saying *guck mal* (‘look’ lit. ‘look once’). Exclamations of this kind, when combined with a WH-complement (see an example in (1), were not included in the list of perception verbs in Table 4.1.14 and the analyses of complement clause constructions (cf. also Diessel 2004: 108).

- (1) [*Guck mal*] *was der da macht.* (4;0)  
**Look** what that one is doing.

Uses of *gucken* referring to the perception of a protagonist, as in (2), were included.

- (2) *Da guckt er [wie die anderen Hasen baden].* (4;8)  
Here **he is watching** how the other rabbits are swimming.

Emotion verbs appeared more frequently with an embedded S-complement marked by *dass* than any other semantic IS verb group. Utterance examples from all three age groups are given in (3).

- (3) a. *Ich hab Angst [dass der Fuchs den Hase auffrisst].* (3;3)  
**I am afraid** that the fox might eat the rabbit.
- b. *Er hat Angst [dass er runterfällt].* (5;2)  
**He is afraid** that he might fall down.
- c. *Da freut er sich wieder [dass die Puppe da ist].* (4;1)  
**There he is happy again** that the doll is there.
- d. *Und dann hat er sich gefreut [dass er nicht mehr so ein Angsthase war].* (5;9)  
**And then he was happy** that he was not such a fraidy-rabbit anymore.

*Sagen* ('say') was used by four children with a coordinated main clause, only one child produced it with an embedded complement clause introduced by *dass*. An example of *sagen* with coordinated complement clause can be seen in (4).

- (4) *Da weint er, weil die gesagt haben [du bist ein Angsthase].* (4;0)  
There he is crying **because they said** "you are a fraidy-rabbit".

Sometimes, thoughts were verbalized as private speech (5).

- (5) a. *Der Fuchs hat gesagt [ich renn lieber von hier weg].* (5;5)  
**The fox said** "I'll better run away from here".
- b. *Er sagte [wieso bin ich nur so ein Angsthase].* (5;9)  
**He said** "why am I just such a fraidy-rabbit".

The most frequent IS verb complement construction produced by German children involved the verb *glauben* ('believe'), which they used as the formulaic discourse marker *ich glaub(e)* (in sentence-initial position) / *glaub ich* (in middle or sentence-final position) combined with a main clause, stressing the subjectivity or a mild uncertainty of their interpretation of a certain picture. The construction was observed in utterances by 4- and 5-year-old children (6).

- (6) a. *Da spielen die Fußball und da buddeln sie [glaub ich].* (4;8)  
There they are playing soccer, and there they are digging, **I think**.
- b. *[Ich glaub] Die wollten beide kämpfen, aber er ist dann schnell weggerannt.* (5;4)  
**I think** they both wanted to fight, but then he quickly ran away.

Only two of the 41 German children, whose narratives were analyzed, used a cognition verb with a complement clause (7).

- (7) a. *Der weiß [wo der Hase ist], weil er das Dicke sieht von den Hase.* (4;0)  
**He knows** where the rabbit is, because he can see the fat part of the rabbit.
- b. *Da hatte er sich überlegt [dass er den Schwanz festhält].* (4;9)  
**Then he had imagined** that he (could) hold the tail.

### Changes in vocabulary use from different semantic categories

After investigating complex IS constructions in children's narrations, the use of expressions from different semantic categories and their changes over the age groups were assessed. In Table 4.1.39, for each age group, the production of IS tokens is summarized showing the proportions of the 12 semantic categories, along with ranks assigned to them. These proportions are further visualized in Figure 4.1.07.

The semantic category of which most IS tokens were produced was SOCIAL BEHAVIOR, which accounted for one quarter to one third of the ISL used in each age group. In the group of the 5-year-olds, EMOTION tokens sharply increase in use, promoting the category to rank 1 with .31 of the total IS tokens. PERCEPTION & SENSES, on rank 3 at age 3 with .17 of the total IS tokens, sharply decreases from the 3- to the 4-year-olds (to .07). DESIRE & EVALUATION, which also belonged to the IS expressions most frequently used by younger children, shows a similar decrease with age from .13 to .07. While MORALITY & NORMS decreases from .05 to .01, SOCIAL FEELINGS & RELATIONSHIPS increases from .03 to .08 from the 3- to the 5-year-olds, becoming rank 3 at age 5 after having been ranked group number 9 at age 3.

Table 4.1.39 *Proportions and ranks of different semantic categories per total IS tokens in German 3-, 4-, and 5-year-olds*

Semantic Category	Age					
	3 years		4 years		5 years	
	Rank	Proportion	Rank	Proportion	Rank	Proportion
Body states	6	.07	7	.06	4	.07
Perception & senses	<b>3</b>	<b>.17</b>	6	.07	7	.05
Emotion expression	5	.08	4	.08	6	.05
Social behavior	<b>1</b>	<b>.24</b>	<b>1</b>	<b>.33</b>	<b>2</b>	<b>.28</b>
Desire & evaluation	<b>4</b>	<b>.13</b>	<b>3</b>	<b>.11</b>	5	.07
Ability & success	8	.03	11	.01	9	.02
Emotion	<b>2</b>	<b>.17</b>	<b>2</b>	<b>.18</b>	<b>1</b>	<b>.31</b>
Morality & norms	7	.05	8	.04	11	.01
Social feelings & relationships	9	.03	5	.07	3	.08
Communication & discourse	10	.02	9	.03	10	.01
Cognition	12	.00	12	.01	12	.01
Reality & evidentiality	11	.01	10	.02	8	.03

*Note.* Bold face is used to highlight the values of semantic categories with proportions above .083, which would be expected if all categories were equally distributed.

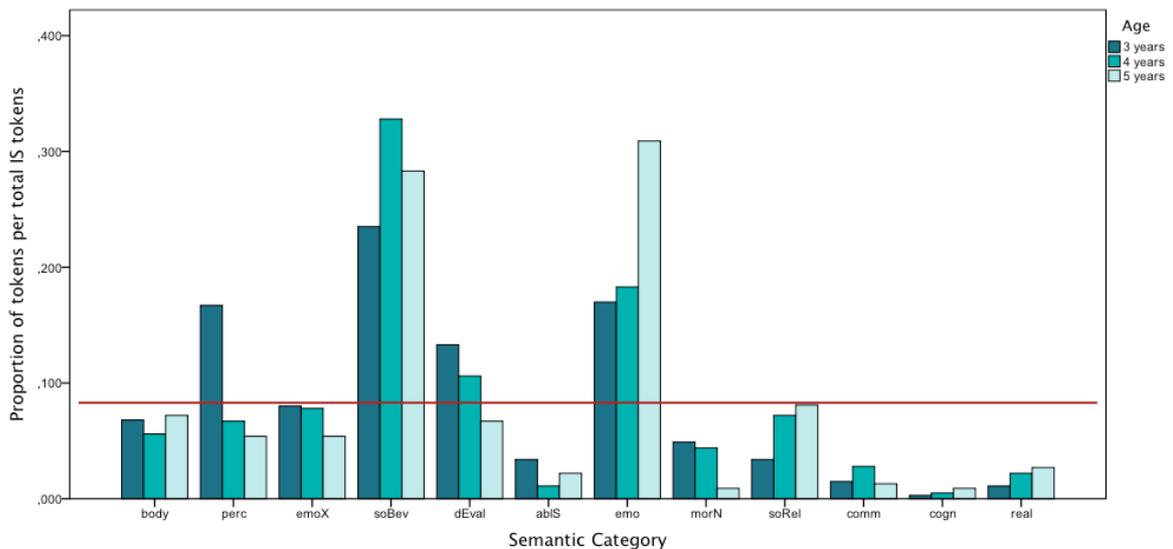


Fig. 4.1.07 Proportions of items from different semantic categories per total IS tokens for German 3-, 4-, and 5-year-olds

*Note.* body = body states, perc = perception, emoX = emotion expression, soBev = social behavior, dEval = desire & evaluation, abIS = ability & success, emo = emotion, morN = morality & norms, soRel = social feelings & relationships, comm = communication & discourse, cogn = cognition, real = reality & evidentiality. The reference line at .083 marks the expected proportions if all categories were equally distributed.

IS expressions from the categories COMMUNICATION, COGNITION, and REALITY & EVIDENTIALITY were used very rarely, each made up between .00–.03 of the total IS tokens in all age groups. For REALITY & EVIDENTIALITY, nevertheless, an increase with age seems observable, from a proportion of .01 to .02 to .03, and from rank 11 to 10 to 8 over the three age groups.

In the following, for each of the 12 semantic categories, types of IS words or constructions used by German children are listed – under the age group of their first appearance in children’s narratives. This means, while words and constructions listed under ‘3 years’ were used by 3-year-olds as well as older children in the sample, the terms under ‘4 years’ or ‘5 years’ were only observed for children of this age or older. Like this, changes in vocabulary usage could be visualized showing the diversification and growing precision of children’s IS vocabulary and their linguistic construal of story events.

The words and constructions German children used in their narratives from the category of BODY STATES, are seen in Table 4.1.40. The types that appeared first in older children’s verbalizations were, e.g., particle verb variants of basic verbs used before (*ein-schlafen* ‘fall asleep’), new terms for more child-like expression used by 3-year-olds (*Aua haben* ‘have an Ouch’ → *sich weh tun* ‘hurt oneself’), or a causative verb (*ver-hungern* ‘starve to death’).

Table 4.1.40 *IS types of the semantic category BODY STATES used in German children's narrations*

<b>Body states</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 schlafen	sleep	5 einschlafen	fall asleep
2 tot	dead	6 sich weh tun	hurt oneself
3 Aua haben / machen	have an Ouch	7 kalt	cold
4 Beule	bump	8 zittern	shiver
		<b>5 years</b>	
		9 verhungern	starve to death

Table 4.1.41 *IS types of the semantic category PERCEPTION & SENSES used in German children's narrations*

<b>Perception &amp; senses</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 sehen	see	15 so wie	just like, in the same way
2 schauen	look	16 zeigen	show, point to
3 zuschauen	watch	17 gucken [WH-comp]	look [WH-comp]
4 gucken	look	<b>5 years</b>	
5 rausgucken	look out	18 hingucken	look
6 sich angucken	look at each other	19 nachgucken	check
7 guck (mal)	look (att. getter)	20 sehen [dass S-comp]	see [that S-comp]
8 guck (mal) [coord. S]	look [coord. S]	21 so [VP] [WH-comp]	[VP] just like [WH-comp]
9 guck (mal) [WH-comp]	look [coord. S]		
10 blind	blind		
11 suchen	search		
12 finden	find		
13 sich verstecken	hide		
14 laut	noisy		

3-year-olds produced a variety of perception terms, including the three major verbs for seeing and looking *sehen*, *schauen*, and *gucken*, and verbs for ‘hide’, ‘search’ and ‘find’ (Table 4.1.41). *Schauen* and *gucken* additionally appeared in stems of particle verbs, *gucken* also in a reciprocal construction (Item 6). Moreover, the attention getter *guck (mal)* was frequently produced in combination with a simple clause or WH-complement. In the older children's narrations, *gucken* and *sehen* were used as matrix verbs of WH- or S-complement clauses, and further particle verbs with *gucken* appeared, as did constructions for comparisons, simple (Item 15) and complex (Item 21).

Table 4.1.42 *IS types of the semantic category EMOTION EXPRESSION used in German children's narrations*

<b>Emotion expression</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 weinen	cry	5 machen [gesture/sound]	make [gesture/sound]
2 lachen	laugh	6 strahlen	radiant smile
3 [A] / so gucken	look [A] / like this	7 Tränchen	tears (diminutive)
4 die Zähne knappen	snarl	<b>5 years</b>	
		8 heulen	howl (=cry)
		9 hochspringen	jump up

To refer to the emotional expressions of the characters in the story, from 3 years, German children used *lachen* and *weinen*, which were sometimes replaced by words expressing more fine-grained semantic distinctions or connotations in the older groups (Items 6, 7, 8) (Table 4.1.42). Moreover, some children used sounds and gestures in combination with constructions such as ‘look like \_\_\_’ or ‘do/make \_\_\_’ trying to act out the protagonist’s expression.

Describing social actions and events depicted in the picture book, German 3-year-olds used as much as 21 different IS types, from ‘together’ and ‘alone’, ‘playing’ and ‘dancing’, over a variety of actions that are part of fighting or chasing each other, as well as some items for acts of giving and receiving (Table 4.1.44). Items that appeared first in the older groups were either more adult-like expressions for the same events, were structurally more complex, e.g., reciprocal or passive, and/or yielded a more precise or detailed event construal.

Of the category DESIRE & EVALUATION, German children used words for wanting, liking, preferring, and ‘funny’ in their narrations (Table 4.1.43). For this story, almost no new items of the category were observed in older children’s verbalization.

Table 4.1.43 *IS types of the semantic category DESIRE & EVALUATION used in German children's narrations*

<b>Desire &amp; evaluation</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 wollen	want	7 nicht mögen (=möchte)	not like (to do)
2 nicht wollen	not want	8 lustig finden	find (sth.) funny
3 mögen (=möchte)	like (to do)	<b>5 years</b>	
4 gerne	like (to do)	—	
5 lieber	prefer to		
6 was Lustiges	a funny thing		

Table 4.1.44 *IS types of the semantic category SOCIAL BEHAVIOR used in German children's narrations*

Social behavior			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 alleine	alone	22 gemeinsam	together, jointly
2 zusammen	together	23 schlagen	beat
3 tanzen	dance	24 angreifen	attack
4 spielen	play	25 kämpfen	fight
5 anfassen	touch	26 zu [NP] [gesture] machen	make [gesture] to (so.)
6 stoßen	poke	27 fangen	catch
7 schubsen	push	28 packen	grab
8 beißen	bite	29 geschenkt kriegen	get as present
9 kneifen	pinch	<b>5 years</b>	
10 hauen	hit	30 nicht mitspielen	not join in play
11 boxen	box	31 einen Ringkampf machen	wrestle
12 Platz machen	give room to	32 wegtreiben	chase away
13 jagen	chase	33 gekriegt werden	get caught (passive)
14 wegrennen vor [NP]	run away from (so.)	34 schenken	give as gift
15 schnappen	nab	35 Blumen pflücken für [NP]	pick flowers for (so.)
16 zurück halten	hold back		
17 geben	give		
18 für [NP] [NP] kaufen	buy (sth.) for (so.)		
19 kriegen	get		
20 bekommen	receive		
21 ins Bett bringen	bring to bed		

Only 5 different IS types referring to ABILITY & SUCCESS were observed in the narrations, which also did not account for many IS tokens either (.01–.03 in all age groups). *Können* ('can') and the negated *nicht können* ('cannot') as well as *stark* ('strong') and *hinkriegen* ('manage to') were used by 3-year-olds and older children. In 5-year-olds' narrations, the expression *versuchen* ('try') also appeared (Table 4.1.45).

Table 4.1.45 *IS types of the semantic category ABILITY & SUCCESS used in German children's narrations*

Ability & success			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 können	can	—	
2 nicht können	cannot	<b>5 years</b>	
3 stark	strong	5 versuchen	try
4 hinkriegen	manage (to do sth.)		

Table 4.1.46 *IS types of the semantic category EMOTION used in German children's narrations*

Emotion			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 traurig	sad	11 wütend	angry
2 Angst (haben)	be afraid	12 erschrecken	get frightened, terrified
3 Angst (haben) [dass S-comp]	be afraid [that S-comp]	<b>5 years</b>	
4 ängstlich	fearful	13 sich (nicht) trauen	(not) dare to
5 böse	bad (=angry)	14 sauer	sour (=angry)
6 sich freuen	be happy, pleased	15 Angst machen	frighten
7 sich freuen [dass S-comp]	be happy [that S-comp]		
8 froh	happy, glad		
9 fröhlich	happy, cheerful		
10 glücklich	happy, contented		

German children from age 3 used words for the basic emotions happiness, sadness, anger, and fear in their narrations. The predicates *Angst haben* and *sich freuen* were also combined with sentential complement clauses (see examples in (3) in the previous section). The usage as it appears over age strongly resembles the acquisitional pattern observed in the checklist results. *Angst* ('fear') and *traurig* ('sad') are used early on as dominant terms for sadness and fear; *freuen*, *froh*, *fröhlich*, and *glücklich* all appear as words for happiness with individual children using one of these terms; and *böse* is the dominant term for anger from age 3, but gets complemented by *wütend* and *sauer* in the older age groups' verbalizations. Five further terms from the fear-domain were observed – in line with the dominant theme of the fraidy-rabbit story: the adjective *ängstlich* ('fearful'), the reflexive verb *erschrecken* ('get frightened, terrified'), and the constructions *Angst machen* ('frighten'), which encodes the experiencer in dative case and the intentional object of fear as grammatical subject, and *sich (nicht) trauen*, which takes an infinitival complement and means '(not) dare to (do sth.)'.

Table 4.1.47 *IS types of the semantic category MORALITY & NORMS used in German children's narrations*

Morality & norms			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 böse	bad	6 Belohnung	reward
2 klauen	steal	<b>5 years</b>	
3 müssen	must, have to	7 man	one (impersonal)
4 komisch	strange		
5 Preis	prize		

In their narratives, German children also used a few expressions from the category MORALITY & NORMS, for example, evaluators of immorality (*böse*) or abnormality (*komisch*) (Table 4.1.47). They referred to stealing (*klauen*), expressed necessities using modal verb *müssen*, and verbalized fraidy-rabbit's receiving a 'prize' or 'reward' in the end of the story, while most of these terms were already used by 3-year-olds. One 5-year-old child made a comparison with reference to a general norm using the impersonal pronoun *man* ('one').

SOCIAL FEELINGS & RELATIONSHIPS, together with COGNITION, belonged to the only two semantic categories for German children of which more new types were observed in the older age groups than had already been used by 3-year-olds (Table 4.1.48). This fits well with the finding that IS tokens of this category substantially increased with age. Terms that verbalized relationships of story characters were 'be friends', 'have no friends', and 'be family'. Besides these, many verbs for interpersonal attitudes and complex behaviors were used, e.g., for terrifying someone, picking on, and laughing about someone on the negative side, and winning, helping, cheering, and rescuing someone on the positive side.

Four IS types of the category COMMUNICATION & DISCOURSE appeared in the German narrations (Table 4.1.49). Besides the explanatory connector *nämlich* ('that is to say, namely'), three different constructions with speech verb *sagen* were used by the children. While younger children produced *sagen* with a nominal object and children of all ages used it with coordinated complement clause, only one 5-year-old produced *sagen* with embedded complement clause and complementizer *dass* (see the previous section and examples (4) and (5)).

Table 4.1.48 IS types of the semantic category SOCIAL FEELINGS & RELATIONSHIPS used in German children's narrations

Social feelings & relationships			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 Freunde (sein)	be friends	6 ärgern	pick on (so.)
2 erschrecken	frighten, terrify	7 helfen	help
3 lachen über [NP]	laugh about (so.)	8 keine Freunde haben	have no friends
4 auslachen	laugh about (so.)	<b>5 years</b>	
5 gewonnen (haben)	be the winner	9 Familie (sein)	be family
		10 Angst einjagen	frighten, terrify
		11 jubeln	cheer
		12 retten	save, rescue

Table 4.1.49 *IS types of the semantic category COMMUNICATION & DISCOURSE used in German children's narrations*

Communication & discourse			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 nämlich	that is (to say)	—	
2 sagen [NP]	say [NP]	<b>5 years</b>	
3 sagen [coord. S]	say [coord. S]	4 sagen [dass S-comp]	say [that S-comp]

Reference to story characters' COGNITION was quite rare. Three mental verbs were produced, each in one instance only by an individual child: *wissen* ('know'), *sich überlegen* ('think about, plan, imagine') ((7) in the previous section), and *denken* ('think') (8).

- (8) *Und [nur weit weg] denkt der bestimmt.* (5;7)  
And "just far away!" **this one probably thinks.**

3-year-olds talked about rabbits going in the 'wrong' direction, and the fox being 'obviously' (*sowieso*) bad. All other terms from the category REALITY & EVIDENTIALITY were employed by the children to express different degrees of certainty in their inference about a given picture, so the marker *ich glaub/glaub ich* and adverbs *vielleicht* and *bestimmt* (8).

Table 4.1.50 *IS types of the semantic category COGNITION used in German children's narrations*

Cognition			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 wissen [WH-comp]	know [WH-comp]	2 sich überlegen [dass S-comp]	think about, plan [that S-comp]
		<b>5 years</b>	
		3 denken [AdvP]	think [AdvP]
		4 Idee	idea

Table 4.1.51 *IS types of the semantic category REALITY & EVIDENTIALITY used in German children's narrations*

Reality & evidentiality			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 falsch	wrong	4 ich glaube / glaub ich [S]	I think (formulaic)
2 sowieso	in any case	5 bestimmt	sure, certainly
3 vielleicht	maybe	<b>5 years</b>	
		—	

## 4.1.3.2 Korean ISL use in narrative

**Overall narrative development and ISL use**

Descriptives of quantitative measures of narrative length and productivity, and of total ISL in clauses, tokens, and types, are displayed in Tables 4.1.52 and 4.1.53. Table 4.1.54 holds the correlations of productivity, proportions of ISL, and age.

Korean children's narratives become longer over age, as indicated by increasing means of total clauses, morphemes, and of pictures verbalized, as well as by increasing ratios of clauses and morphemes per picture. Number of total clauses shows a significant positive correlation with age. The mean length of clauses stays at around 5.6 morphemes per clause for all age groups and does not show any relationship to age as measured by correlation.

Table 4.1.52 *Descriptive statistics of measures of narrative productivity of Korean children over age*

Measure	Age group											
	3 years			4 years			5 years			Total		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Total clauses	25	14.8	2-65	27	9.5	5-41	32	9.5	14-51	28	11.3	2-65
Total morphemes	143	103.5	14-432	155	66.8	27-262	180	59.4	58-282	160	76.0	14-432
Total pictures	17	6.3	2-21	18	4.3	5-21	20	2.4	12-21	18	4.5	2-21
Clauses / picture	1.3	0.56	1.0-3.0	1.4	0.31	1.0-2.1	1.6	0.44	1.0-2.3	1.5	0.44	1.0-3.0
Morphemes / picture	7.8	4.15	4.0-20.6	8.3	2.57	3.7-12.5	8.9	2.42	4.8-13.4	8.4	3.00	3.7-20.6
Morphemes / clause	5.5	1.16	3.8-7.0	5.7	0.99	3.7-7.7	5.6	1.35	4.0-9.4	5.6	1.15	3.7-9.4

Table 4.1.53 *Descriptive statistics of quantity of ISL in Korean children's narratives over age*

Measure	Age group											
	3 years			4 years			5 years			Total		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
IS clauses	14	10.0	2-41	17	7.6	1-28	22	8.5	6-35	18	8.9	1-41
Ratio IS cls / total cls	.59	.199	.27-1.00	.61	.143	.20-.84	.66	.127	.43-.84	.62	.155	.20-1.00
IS tokens	17	13.6	3-56	22	10.2	1-40	26	10.2	7-43	22	11.5	1-56
Ratio IS tok / total cls	.72	.320	.27-1.50	.76	.192	.20-1.03	.78	.176	.48-1.08	.76	.225	.20-1.50
IS types	12	7.8	2-28	16	7.0	1-28	18	5.8	5-27	16	7.1	1-28
Ratio IS typ / total cls	.54	.310	.19-1.50	.57	.129	.20-.81	.56	.114	.36-.80	.56	.187	.19-1.50

Table 4.1.54 *Correlations of age and linguistic productivity and ISL in Korean children's narratives*

Measure	1	2	3	4	5	6	N
1. Age	–						57
<b>Linguistic productivity</b>							
2. Total clauses	.33**	–					57
3. Morphemes / clause	.07	.26*	–				57
<b>Proportions of ISL</b>							
4. Ratio IS clauses / total clauses	.20 <sup>†</sup>	.30*	.36**	–			57
5. Ratio IS tokens / total clauses	.12	.28*	.46***	.92***	–		57
6. Ratio IS types / total clauses	.03	–.04	.44***	.74***	.86***	–	57

<sup>†</sup>  $p < .08$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Korean children used ISL quite frequently in their narrations. A mean ratio of .62 of their total clauses contained IS expressions or constructions, with ranges between .20 and 1.00. Many IS clauses held more than one IS token, so that the range of ratios of IS tokens per total clauses was .20–1.50. In mean, Korean children produced 16 different IS types in their narration.

Interestingly, ISL ratios did not significantly correlate with age, but showed moderate positive correlations with narrative length (total clauses), except for IS types, and stronger ones with clause length (morphemes per clause).

### Syntactic complexity of ISL – causality and complementation

#### *Causal and contrastive IS clauses*

Korean children produced 7 IS clauses on average in their narration that expressed a causal or contrastive relation to other states of affairs in the story, with a range between 0–22 such clauses. A mean proportion of .19 of the total clauses per narrative and .29 of the total IS clauses produced by Korean children were causal or contrastive IS clauses. These ratios show high individual differences with ranges of mean proportions of .00–.51 causal/contrastive IS clauses per total clauses, and of .00–.81 causal/contrastive IS clauses per total IS clauses. On the other hand, they visibly increase from 3 to 5 and exhibit significant correlations with age: causal/contrastive IS clauses per total clauses,  $r = .43$ ,  $p < .001$ , and causal/contrastive IS clauses per total IS clauses,  $r = .40$ ,  $p < .01$ .

Table 4.1.55 *Descriptive statistics of causal/contrastive IS clauses of Korean children over age*

Measure	Age											
	3 years			4 years			5 years			Total		
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Total caus/contr IS clauses	4	6.3	0–22	7	6.0	0–21	9	7.1	0–20	7	6.7	0–22
Ratio caus/contr IS cls / total IS cls	.16	.209	.00–.56	.31	.244	.00–.81	.37	.218	.00–.63	.29	.237	.00–.81
Ratio caus/contr IS cls / total cls	.10	.130	.00–.41	.20	.160	.00–.51	.26	.161	.00–.45	.19	.163	.00–.51

*IS verbs with complement clauses*

In total, 29 Korean children produced IS verb complement clause constructions in their narratives. The percentage of children using such constructions increased steadily over the three age groups (33%–48%–68%). As for the German sample, IS matrix verbs came from semantic categories of perception, emotion, speech/communication, and cognition/evidentiality. In addition, Korean children produced two complement clause constructions describing a social behavior as a combination of a verb of ‘goal-directed action’ and a complement clause expressing the social goal or caused result of that action (Table 4.1.56).

Table 4.1.56 *IS verb complement clause constructions in Korean children’s narratives*

Construction					Age			Total
Matrix IS verb		Compl.tizer	Comp. type	3 years	4 years	5 years		
<b>Goal-directed action</b>								
1	hata	make	–key	S	–	–	1 (1)	1 (1)
2	mun makta	hold the door closed	–key	S	–	–	1 (1)	1 (1)
Total					–	–	2 (2)	2 (2)
<b>Perception</b>								
1	pota	see	–nun kel	S	–	–	1 (1)	1 (1)
2	pota	watch	–nun kes	S	–	–	1 (1)	1 (1)
Total					–	–	2 (2)	2 (2)
<b>Emotion</b>								
1	hwa nata	get angry	∅	S	1 (1)	–	–	1 (1)
2	nanli chita	freak out	–tako	S	–	1 (1)	–	1 (1)
3	∅ (V)	(feeling) (V)	–tako	S	–	–	1 (1)	1 (1)
4	kekcheng hata	worry	–lyeko	S	–	–	1 (1)	1 (1)
5	kep nata	be afraid	–lkkapwa	S	–	–	1 (1)	1 (1)
6	∅ (V)	(being afraid) (V)	–lkkapwa	S	–	–	1 (1)	1 (1)
Total					1 (1)	1 (1)	4 (3)	6 (5)

Speech / Communication								
1	kulehta	like this = say	∅	coord. S	4 (3)	5 (4)	2 (2)	11 (9)
2	ilehta	like this = say	∅	coord. S	1 (1)	–	–	1 (1)
3	∅ (V)	(saying) (V)	∅	coord. S	2 (1)	–	–	2 (2)
4	∅ (V)	(saying) (V)	–cako	S	1 (1)	1 (1)	–	2 (2)
5	∅ (V)	(saying) (V)	–tako	S	–	3 (2)	3 (2)	6 (4)
6	mulepota	ask	∅	coord. S	1 (1)	–	–	1 (1)
7	hata	say	∅	coord. S	1 (1)	3 (2)	2 (2)	6 (5)
8	hata	say	–lako	S	–	1 (1)	–	1 (1)
9	hata	say	–tako	S	–	1 (1)	–	1 (1)
10	malhata	speak	–tako	S	1 (1)	1 (1)	1 (1)	3 (3)
11	kulehkey malhata	speak like this	∅	coord. S	1 (1)	–	–	1 (1)
12	(soli) chita	scream	–tako	S	–	1 (1)	–	1 (1)
13	insa hata	greet	–tako	S	–	–	1 (1)	1 (1)
14	chingchan hata	praise	–tako	S	–	–	1 (1)	1 (1)
Total					12 (5)	16 (9)	10 (7)	38 (21)
Cognition / Evidentiality								
1	∅ (V)	(thinking) (V)	∅	coord. S	1 (1)	–	–	1 (1)
2	kaththa	seem	–nun kes	S	1 (1)	5 (1)	41 (6)	47 (8)
3	kaththa	seem	–ul kes	S	–	2 (2)	1 (1)	3 (3)
4	kaththa	seem	–ten kes	S	–	–	1 (1)	1 (1)
5	kwungkumhata	be curious about	∅	coord. S	–	1 (1)	–	1 (1)
6	sayngkak hata	think	∅	coord. S	–	1 (1)	–	1 (1)
7	moluta	not know	–nunci	S	–	–	1 (1)	1 (1)
8	alta	here: think, believe	–un cwul	S	–	–	1 (1)	1 (1)
Total					2 (2)	9 (4)	45 (7)	56 (13)
Total					15 (5)	26 (11)	63 (13)	104 (29)

*Note.* Numbers represent counts of tokens for each construction; numbers in parentheses report the number of children producing the construction, and, in the rows labeled ‘Total’, parentheses contain the number of children who produced one or more IS verb complement constructions in the respective verb group.

Most complement clause constructions were produced with speech verbs and *kaththa* (‘seem’) of cognition/evidentiality. These two verb groups accounted for 36% and 54% of all IS verb complement clause constructions, emotion for 6%, and perception and goal-directed action for 2% each.

Almost all complement clause constructions uttered by Korean 3-year-olds in the narration task used basic speech verbs like *hata* (‘say’), *malhata* (‘speak’), *kulehta* (lit. ‘like this’), or *mulepota* (‘ask’) with coordinated S-complements. Examples can be seen in (9).

- (9) a. *Kulayse thokki ka [oci malla] kulay.* (3;6)  
Because of this the rabbit **says** (lit. ‘is like’) “don’t come over here”.
- b. *Kuntey thokki ka ... nuktey hanthey mulepwasse [ya, yey eti ka].* (3;9)  
But the rabbit **asked** the fox “hey, where is he going”.

- c. *Keprayngi thokki ka cakku cakku [nen nwukwunya] kulehkey malhayse* (4;0)  
*tomang kasseyo.*  
 Fraidy-rabbit ran away **because (they) were saying (lit. ‘speaking like this’)**  
 “who are you” [= “you’re a nobody”] all the time.

Older children produced similar constructions with these verbs, but also used them with complementizer *-ko* and embedded declarative (*-ta-ko*), imperative (*-la-ko*), or propositive (*-ca-ko*) complement clauses (10). In 4- and 5-year-olds’ narrations, some other speech verbs that expressed in more detail the purpose or manner of speaking – like ‘scream’, ‘greet’, and ‘praise’ – also appeared with embedded complement clauses (11). Another frequent strategy of Korean children was to omit the speech verb after the complement clause and to either simply use the polite ender *yo* (12a), or to embed the whole construction into a larger sentence frame as in (12b).

- (10) a. [*Aytul ikyesstako*] *malhayyo.* (5;3)  
 (They) **say that** the children **won**.
- b. *Thokkitul i (yo) [ttaylilako] haysseyo.* (5;0)  
 The rabbits **said “beat (him)”**.
- (11) [*Cal haysstako*] *insa hanta.* (5;4)  
 (They) **greet (him) (saying) that (he) did well**.
- (12) a. [*Ellung kacako*]  $\emptyset$  *yo.* (4;3)  
 (He) **(said) “let’s go fast”**.
- b. *Acessi ka keprayngi thokki hanthey [cal haysstako]  $\emptyset$  ssang cwuko isseyo.* (5;1)  
 The man is giving fraidy-rabbit a prize **(saying) that (he) did well**.

Some 4-year-old Korean children also used verbs of cognition with coordinated complement clauses (13), or *kathhta* (‘seem’) with embedded complement clauses marked by the nominalizer *kes*, which becomes the most frequent complement clause construction with 44 instances overall at age 5. The most frequent version of *kathhta*-complementation was with a present or imperfective tense marked on the verb of the complement clause preceding *kes* (*-nun kes*) (13b, 14a); but Korean children also produced constructions with future tense (*-ul kes*) (14b) and past or retrospective marking (*-ten kes*) (14c). In the 5-year-olds’ stories, two constructions with verbs of knowledge *alta* (‘know’) and *moluta* (‘not know’) and embedded complement clauses appeared (15). Combined with the complementizer *-(n)un cwul*, *alta* takes on the meaning of ‘think, believe’ (15b).

- (13) a. *Kulayse ilehkey kkoch path eyse [mwe hako nolci] kwungkumhayse...* (4;7)  
 Because of this, **as (he) was wondering** “what should (I) play” like this on the flower field...
- b. [*Yewu ka [kkoli ey mwe puthessna] sayngkak hayponun kes*] *kathayo.* (5;1)  
**The fox seems to think** “what is / is something sticking on my tail”.

- (14) a. [Wulekacwuko nolacwuko issnun ke] **kathay**. (5;10)  
**It seems that** (he) is playing with (him) because he is crying.
- b. [Yewu ka namu ey putichyese cwukul ke] **kathayyo**. (4;7)  
**It seems that** the fox will die because he bumped into the tree.
- c. *Kuleko nun [tongnay salamtul i [thokki mansey lako] waychyessten kes] kathay*.(5;0)  
 And then **it seems that** the people of the village **had shouted** “long live the rabbit”.
- (15) a. [Yewu issnunci] **to moluko pakkath ey nawase nawa ketko issney**. (5;10)  
**Not even knowing [=totally unaware]** that the fox is there, he comes out on the field coming out and walking around.
- b. *Kepcayngi thokki ka [swuyengcang kiphun cwul] alko tulekaki silhehayyo*. (6;2)  
 Fraidy-rabbit, **believing** that the swimming pool is deep, dislikes to go in.

5-year-olds, becoming highly productive with embedded complement clauses, combined these also with verbs of emotion using different markers on the embedded clause (Table 4.1.56). A typical example is given in (16), a further example can be seen in (10-Kb) in the last section of the chapter. Just as for omissions of speech verbs after complement clauses of reported speech, Korean children sometimes omitted the verb after complement clauses that expressed the content or intentional object of an emotion. The few single examples of constructions of verbs of perception (17) or goal-directed action (18) were also uttered by 5-year-old children. While *pota* (‘see’) was also combined with *kes* as marker of the embedded clause, the embedded clauses of the causative action verbs were marked by *-key*.

- (16) *Kepcayngi thokki ka (yo) [swuyeng ul hamyen (yo) mul ey ppacilkkapwa (yo)]* (5;7)  
*kep nacwuko an tulekan ke yeyyo*.  
**Because** fraidy-rabbit **fears** that he might drown in the water if he swims, he does not go in.
- (17) [Nuktey ka tomang issnun kes] **poko isseyo**. (5;10)  
 (They) **are watching** how the wolf is fleeing.
- (18) [Yewu ka tuleol swu epskey] **mun makko isseyo**. (5;10)  
 (They) **are holding the door closed** so that the fox cannot come in.

### Changes in vocabulary use from different semantic categories

In the next section, we turn to the analyses of Korean children’s use of IS vocabulary from different semantic categories. The quantities of tokens used from each of the 12 semantic categories, in proportions of the total IS tokens produced, are displayed in Table 4.1.57 and Figure 4.1.08, visualizing changes over the three age groups.

Table 4.1.57 Proportions and ranks of different semantic categories per total IS tokens in Korean 3-, 4-, and 5-year-olds

Semantic Category	Age					
	3 years		4 years		5 years	
	Rank	Proportion	Rank	Proportion	Rank	Proportion
Body states	4	.07	8	.05	7	.06
Perception & senses	5	.07	5	.07	6	.07
Emotion expression	8	.04	7	.05	8	.05
Social behavior	<b>1</b>	<b>.36</b>	<b>1</b>	<b>.38</b>	<b>1</b>	<b>.29</b>
Desire & evaluation	<b>3</b>	<b>.13</b>	4	.08	<b>4</b>	<b>.10</b>
Ability & success	10	.03	10	.03	11	.03
Emotion	7	.05	3	.08	<b>3</b>	<b>.10</b>
Morality & norm	9	.03	6	.06	9	.05
Social feelings & relationship	<b>2</b>	<b>.14</b>	<b>2</b>	<b>.12</b>	<b>2</b>	<b>.12</b>
Communication & discourse	6	.07	9	.05	10	.04
Cognition	12	.00	12	.01	12	.00
Reality & evidentiality	11	.00	11	.02	<b>5</b>	<b>.10</b>

*Note.* Bold face is used to highlight the values of semantic categories with proportions above .083, which would be expected if all categories were equally distributed.

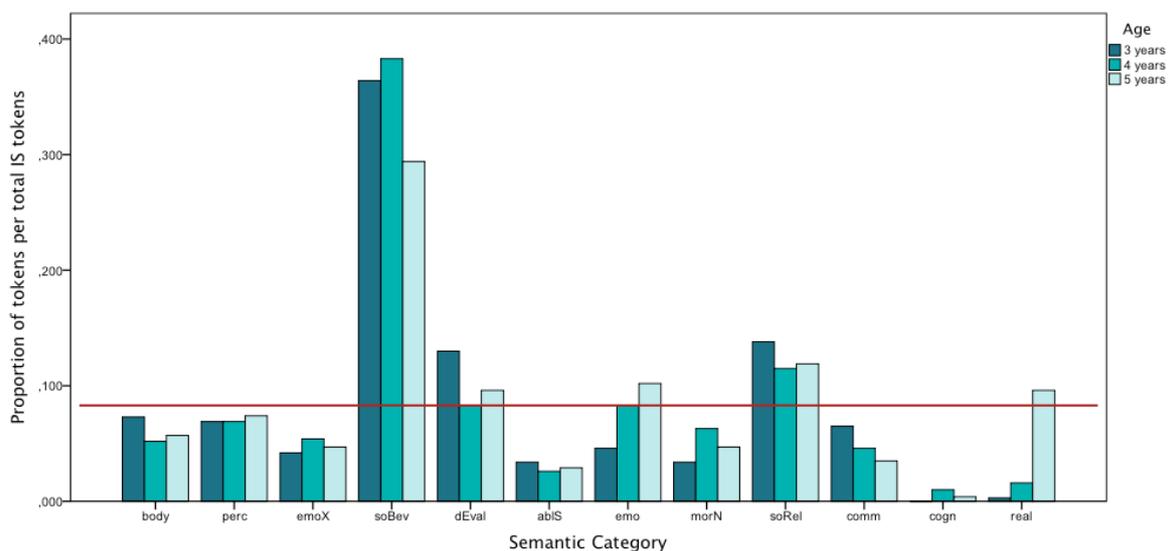


Fig. 4.1.08 Proportions of items from different semantic categories per total IS tokens for Korean 3-, 4-, and 5-year-olds

*Note.* body = body states, perc = perception, emoX = emotion expression, soBev = social behavior, dEval = desire & evaluation, abiS = ability & success, emo = emotion, morN = morality & norms, soRel = social feelings & relationships, comm = communication & discourse, cogn = cognition, real = reality & evidentiality. The reference line at .083 marks the expected proportions if all categories were equally distributed.

Most frequently, Korean children of all three age groups used expressions for SOCIAL BEHAVIOR in their narrations, with proportions of .36 and .38 of total IS tokens at age 3 and 4, then dropping to .29 at age 5. The second ranked category in all age groups was SOCIAL FEELINGS & RELATIONSHIPS with proportions staying between .12–.14. DESIRE & EVALUATION, ranked 3<sup>rd</sup> category for Korean 3-year-olds with .13 of the total IS tokens, slightly decreased with age to .08–.10 of tokens and rank 4. In comparison, the use of words for EMOTION steadily increased with age (.05–.08–.10), making it the third frequent category after social behaviors and feelings in the older age groups. Similarly, expressions of COMMUNICATION & DISCOURSE decreased over age from .07 to .04 and from rank 6 to 10, while those of REALITY & EVIDENTIALITY made a radical increase from age 4 to 5, from .02 to .10 and from rank 11 to 5. The sharp increase in this latter group was probably caused by Korean 5-year-olds' wide use of 'seem'-constructions.

Tables 4.1.58–4.1.69 hold the summaries of the IS types observed from each of the 12 semantic categories, with age groups indicating for each term the age of the first appearance in the data.

From the category BODY STATES, Korean children produced a variety of 15 IS types in total (Table 4.1.58). 3-year-olds and older children verbalized states of sleeping and resting, sickness and injury, or temperature. Items first appearing in the older age groups were terms for dying, being alive, and, by a 5-year-old, 'survived'. They also produced items with more detailed or concrete semantics, instead of 'sick' or 'hurt', for example, 'cough' or 'wound', or 'get scratched', a passive verb.

Table 4.1.58 *IS types of the semantic category BODY STATES used in Korean children's narrations*

<b>Body states</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 cam	sleep	9 hokppwul	bump
2 cata	sleep	10 cwukta	die
3 swyta	rest	11 sayng sayng	alive, lively
4 aphuta	sick, hurt	12 kulkhita	get scratched
5 tachita	injured	<b>5 years</b>	
6 hok	bump	13 kichim	cough
7 chwupta	cold	14 sala nassta	survived
8 tepta	hot	15 sangche	wound

Table 4.1.59 *IS types of the semantic category PERCEPTION & SENSES used in Korean children's narrations*

Perception & senses			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 pota	see, look	8 chacta	search, find
2 poita	visible	9 chyetapota	look up, look at
3 swumta	hide	10 cikhyepota	watch, stare
4 nathanata	appear	11 kwukyeng hata	watch
5 mancita	touch, feel	12 poki man hata	just look, watch
6 kathta	look like	13 mas issta	delicious, tasty
7 chelem	like	<b>5 years</b>	
		14 [S-comp]-n kes pota	see [that S-comp]
		15 an poita	unable to see, invisible
		16 naytapota	look out
		17 anceng hata	be quiet
		18 taluta	different

From 3 years, Korean children talked in their narratives about a range of perceptual events like seeing and looking, hiding, being visible, and appearing (Table 4.1.59). They also used terms for comparisons of looks and appearance like *kathta* ('look like') or *chelem* ('like'). In older children's narrations, 11 further types appeared. These comprised expressions like 'search, find', 'watch', 'delicious', 'be quiet', and adding to the items for comparisons, *taluta* ('different') — alongside a variety of constructions with *pota* ('see'), including a construction with *-ki man hata* ('just do X (and nothing else)') (Item 12), combination with an embedded complement clause, or different compound verbs (Items 9, 10, 16).

While 3-year-olds produced only two different expressions of the category EMOTION EXPRESSION, namely *wulta* ('cry') and 'with a [A] face' inserting an adjective, 6 new types appeared in the 4-year-olds', and 3 further items in the 5-year-olds' stories (Table 4.1.60). These words and constructions then referred to a wide range of emotional expressions in different modalities, from facial expressions like 'tears' and laughing, to sounds, gestures, and body postures. For example, Items 6, 7, 8, 10 and 11, were all used to refer to expressions of fear, Item 9 for anger, and Item 12 for happiness and cheering. Moreover, reduplicated onomatopoeic expressions were also produced, which are typical for Altaic languages, like *pingkulkey pingkulkey* ('smiling') or *ttel ttel* ('trembling and shaking').

Table 4.1.60 *IS types of the semantic category EMOTION EXPRESSION used in Korean children's narrations*

Emotion expression			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 wulta	cry	3 nwunmul	tears
2 [A] mosup ulo	with a [A] face	4 wusta	laugh
		5 pingkulkey pingkulkey	smiling
		6 soli ciluta	scream, cry out
		7 kaman issta	be quiet, not say a word
		8 ilehkey hata [gesture]	make like this [gesture]
		9 ip i phwullye ttellita	mouth opens and trembles
		<b>5 years</b>	
		10 ttelta	quiver
		11 ttel ttel	trembling and shaking
		12 son tulta	reach the hands up

To describe the SOCIAL BEHAVIOR of the characters in the picture book, Korean children produced a variety of 36 different IS types, 23 of which were already used by 3-year-olds, while 13 further terms appeared first in the older age groups (Table 4.1.61). Expressions appearing at 3 years comprised words for playing and singing together, holding hands, terms for ‘jointly’, ‘together’, and ‘alone’, expressions for actions and events of chasing, grabbing, and fighting, and different words for giving, receiving, and making a gift. Older children sometimes produced more sophisticated variations of these terms, including passives and causatives (Items 28, 33, 36), or more precise or vivid descriptions of the actions depicted (e.g., Items 27, 29, or 35). In addition, words for the social actions and events of accompanying, meeting, and gathering (Items 30–32), newly appeared in older children’s narratives.

As seen in the IS token proportions, Korean 3-year-olds, but also older children, frequently verbalized the intentions of characters in the story, using different constructions for ‘want to [VP]’ including *-lyeko* in combination with *hata* or *kulehta*, or *-ko siphta*, and the construction *-le katalota* (‘go/come in order to [VP]’) (Table 4.1.62). Older children also produced *-ki sillehata* (‘dislike to [VP]’) or used *-lyeko* for subordination in a complex sentence (Item 7). Besides the many expressions for action intentions, Korean children used one verb for dislike, *sillehata*, and two evaluators, namely *nemu*, which is combined with an adjective, meaning ‘too [A]’ and the predicate *kwaynchanhta* (‘alright, o.k.’).

Table 4.1.61 *IS types of the semantic category SOCIAL BEHAVIOR used in Korean children's narrations*

<b>Social behavior</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 nolta	play	24 an nolta	not play (with others)
2 noli hata	make a game	25 chwum chwuta	dance
3 son capta	hold hands	26 honca [VP]	[VP] on one's own
4 nolay hata	sing a song	27 ccol ccol ttala ota	persistently follow (so.)
5 twulise	together (two)	28 caphita	get caught (passive)
6 kathi	together	29 pal lo chata	kick with the foot
7 [NP]lang [NP]lang	[NP] and [NP] jointly	30 teylita	accompany
8 hamkkey	together	31 mannata	meet
9 honca issta	be alone	32 moita	gather
10 ttaluta	follow	<b>5 years</b>	
11 ccochta	chase	33 ccochkita	get chased (passive)
12 capta	grab	34 chita	strike
13 ssawuta	fight	35 kkwulpang macita	receive a clout
14 ssawum	fight	36 cwukita	kill
15 ttaylita	hit		
16 multa	bite		
17 kkaymulta	bite		
18 mullita	get bitten (passive)		
19 senmul	present, gift		
20 cwuta	give		
21 haycwuta	make (sth.) for (so.)		
22 patta	receive		
23 [VP]-key hata	make (so.) [VP]		

Table 4.1.62 *IS types of the semantic category DESIRE & EVALUATION used in Korean children's narrations*

<b>Desire &amp; evaluation</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 [VP]-lyeko hata	want to [VP]	6 silhehata	dislike
2 [VP]-lye(ko) kulehta	want to [VP]	7 [VP]-lyeko [S]	[S] because wanting to [VP]
3 [VP]-ko siphta	want to [VP]	<b>5 years</b>	
4 [VP]-le (kata/ota)	(go/come) in order to [VP]	8 kwaynchanhta	alright, o.k.
5 nemu [A]	too [A]	9 [VP]-ki silhehata	dislike to [VP]

Table 4.1.63 *IS types of the semantic category ABILITY & SUCCESS used in Korean children's narrations*

Ability & success			
Item	Engl. translation	Item	Engl. translation
<b>3 years</b>		<b>4 years</b>	
1 haypota	try	4 himtulta	exhausting
2 [VP]-e pota	try to [VP]	5 seykey	with strength
3 mos [VP]	not be able to [VP]	6 silphay hata	fail
		<b>5 years</b>	
		7 cal hata	do (sth.) well
		8 him seyta	strong
		9 seycita	become stronger
		10 kanghaycita	become more powerful
		11 [VP]-l swu epsta	not be able to [VP]
		12 ttata	gain, win

From the semantic category of ABILITY & SUCCESS, Korean children produced only expressions for ‘try’ and ‘not be able to’ in their narrations from age 3, but nine further terms were used in narrations of older children (Table 4.1.63). Besides *himtulta* (‘exhausting’) and another construction for being unable to do something (Item 11), many expressions referred to strength and power, sometimes with the suffix *-ci-* (‘become’) to express that fraidy-rabbit gained in strength or power when finally fighting with the fox; another group of items concerned winning, performing well and failing.

The category EMOTION, which had shown a substantial increase in tokens with age, was also represented by an increasing variety of types in the older age groups (4.1.64). Terms produced from age 3 referred to fear, surprise, anger, or happiness, but not sadness. Words for sadness then appeared in 4-year-olds’ narrations, along with different expressions for states of happiness, fun, and cheerfulness. Some children showed productivity with the action verb variants of the emotion predicates *musewehata* (‘be afraid’) and *sulphehata* (‘be sad’). Other items produced came from the domain of fear and worrying, e.g., *kep nata* (‘fearful’), *kekceng hata* (‘worry’), the conjunction *-(u)lkkapwa* (‘being afraid that [S]’), or *ansim hata* (‘calm, free of worries’) coming from the Chinese characters for ‘peaceful heart’. Many Korean children made use of the emotional marker *mak*, which adds a lot of emotional vividness to narrations and the actions described but is hardly translatable. Finally, a 5-year-old child produced the expression *yak ollita* (‘offended, angry’).

Table 4.1.64 *IS types of the semantic category EMOTION used in Korean children's narrations*

<b>Emotion</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 musepta	afraid	7 musewehata	be afraid
2 kepcayngi	fraidy-cat	8 sulphuta	sad
3 nollata	surprised	9 sulphehata	be sad
4 kkamccak nollata	feel astonishing surprise	10 ansim hata	calm, free of worries
5 hwa nata	angry	11 mak	recklessly, wildly
6 culkepey	cheerfully, happily	12 sinnanta	high-spirited, cheerful
		13 sinnakey	cheerfully
		14 caymi isskey	having fun
		15 hayngpok haycita	become happy, contented
		<b>5 years</b>	
		16 kep nata	fearful
		17 [S]-(u)lkkapoa	being afraid that [S-comp]
		18 kekceng hata	worry
		19 yak ollita	angry, offended
		20 cohta	feel good, happy

Table 4.1.65 *IS types of the semantic category MORALITY & NORMS used in Korean children's narrations*

<b>Morality &amp; norms</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 annyeng	(greeting)	10 cangnan chita	play a trick, prank
2 insa hata	greet	11 molkang	wildly, recklessly
3 nwuna	big sister (of a boy)	12 nanli chita	freak out
4 tongsayng	little sibling	13 cal hayssta	"you did well"
5 sihap	competition	14 hyeng	big brother (of a boy)
6 ssang	prize	15 oppa	big brother (of a girl)
7 il ttung hata	be first, No. 1	16 sensayngnim	teacher, mister
8 cangnankwuleki	rascal	17 mansey	"should live 10,000 years" (idiom)
9 [VP]-ya toyta	have to, must [VP]	<b>5 years</b>	
		18 senpay	first-born, senior
		19 nala	country
		20 yongkam hata	courageous, brave
		21 an toynta	not allowed

Korean children produced a total of 21 types from the category MORALITY & NORMS, many of which were expressions related to Korean norms for greetings and appropriate address of family members and elders, the latter appearing first in older children's narrations (Table 4.1.65). The second large group of expressions referred to naughty or abnormal behavior. Korean children from age 3 also talked about competitions, receiving a prize, or being No.1, and expressed necessities with *-ya toyta* ('must, have to'). A 5-year-old child produced the term *yongkam hata* ('brave').

Describing social relationships, feelings, and attitudes, children from age 3 referred to being friends, becoming close, or used *sai cohkey* ('in harmonious relationship') (Table 4.1.66). They also verbalized positive interpersonal attitudes or complex behaviors like 'help' and 'look after', as well as negative ones like terrifying someone. Almost all new types appearing in older children's narratives added to these two groups, among them expressions for looking after and saving someone, for praise, or including someone into play, and on the negative side, making or being made fun of, expelling someone, excluding someone, or being excluded from the group. Many of these constructions make use of causatives, passives, or verbal compounds with *-cwuta* ('give'). First seen in 4-year-olds' narrations, verbs for 'transitive' emotions of liking or disliking someone were used. A noteworthy observation is that two words for social emotions, *pukkulepta* ('embarrassed, ashamed') and *pulepta* ('envy') were already used by Korean 3-year-olds.

In their narrations, Korean children of all ages used a variety of constructions of different speech verbs with NP-, VP- or AdvP-complements, or with coordinated or embedded complement clauses marked by a complementizer (Table 4.1.67). Many of these constructions, together with examples, were introduced in the previous section on IS verb complementation. Further, Korean children produced short forms of reported speech marking *-tay* and *-lay* (Items 10 and 11), which are also used as hearsay evidentials.

Besides a few 3-year-olds already producing 'seem'-constructions with *-nun kes kathta*, items from the categories COGNITION and REALITY & EVIDENTIALITY did not appear in the narratives before age 4 (Tables 4.1.68 and 4.1.69). The constructions with *kathta* ('seem') and the cognition verbs 'think', 'be curious whether', and *alta* ('know') and *moluta* ('not know') in combination with sentential complements have been described in the previous section of the chapter. Further items used were *kitalita* ('wait') and *papo* ('fool, idiot'), and *-tay* as hearsay evidential.

Table 4.1.66 *IS types of the semantic category SOCIAL FEELINGS & RELATIONSHIPS used in Korean children's narrations*

<b>Social feelings &amp; relationships</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 chinkwu	friend	13 cohahata	like (so.)
2 chinhakey toyta	become close	14 silhta	dislike (so.)
3 chinkwutul ita	be friends	15 nola cwuta	(lit. "give play to (so.)")
4 sai cohkey	harmoniously	16 pwa cwuta	look after
5 cikhita	look after	17 kwuhay cwuta	save, rescue
6 towacwuta	help	18 an manna cwuta	(lit. "not give meeting (so.)")
7 ikita	win	19 nollita	make fun of, play tricks on
8 nollal/nollay chita	surprise, terrify (so.)	20 ccochkhye nata	expel, ostracize
9 koylophita	terrify (so.)	21 chingchan	praise
10 cal an [VP.pass]	not let (so.) [VP]	<b>5 years</b>	
11 pukkulepta	embarrassed, ashamed	22 pota	look after
12 pulepta	envy	23 sallita	save (so.'s) life
		24 sai phyenhata	comfortable relationship
		25 caki man an kkita	get excluded (from group)
		26 [NP] man tteye nohko	excluding (so.) (from group)
		27 [NP] man ppay nohko	excluding (so.) (from group)
		28 an nola cwuta	(lit. "not give play to (so.)")
		29 nollim patta	be made fun of
		30 haychita	harm, hurt

Table 4.1.67 *IS types of the semantic category COMMUNICATION & DISCOURSE used in Korean children's narrations*

<b>Communication &amp; discourse</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 [NP, AdvP] hata	say [NP, AdvP]	11 [NP]-lay	call (so.) [NP]
2 [NP]-lako (mal) hata	call (so.) [NP]	12 [S-comp]-tako hata	say that [S-comp]
3 [coord. S] hata	say [coord. S]	13 [S-comp]-tako chita	scream that [S-comp]
4 [coord. S] ilehta	like this (=say) [coord. S]	<b>5 years</b>	
5 [coord. S] kulehta	like this (=say) [coord. S]	14 [NP, AdvP]-lako waychita	scream [NP, AdvP]
6 [coord. S] kulehkey mal hata	speak like this [coord. S]		
7 [S-comp]-tako mal hata	say that [S-comp]		
8 [VP]-cako hata	say let's [VP] (embedded)		
9 mulepota	ask		
10 [S]-tay	[S] (reported speech)		

Table 4.1.68 *IS types of the semantic category COGNITION used in Korean children's narrations*

<b>Cognition</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
—		1 [coord. S] kwungkum hata	be curious about [coord. S]
		2 [coord. S] sayngkak hata	think [coord. S]
		3 kitalita	wait
		4 papo	fool, idiot
		<b>5 years</b>	
		5 [S-comp]-ci moluta	not know that [S-comp]
		6 [S-comp]-nun cwul alta	think, believe that [S-comp]

Table 4.1.69 *IS types of the semantic category REALITY & EVIDENTIALITY used in Korean children's narrations*

<b>Reality &amp; evidentiality</b>			
<i>Item</i>	<i>Engl. translation</i>	<i>Item</i>	<i>Engl. translation</i>
<b>3 years</b>		<b>4 years</b>	
1 [S-comp]-nun kes kathta	it seems that [S-comp]	2 [S-comp]-l kes kathta	it seems that [S-comp] (future)
		3 [S]-tay	[S] (hearsay or indirect knowledge)
		<b>5 years</b>	
		4 [S-comp]-ulkkapoa [VP]	[VP] thinking that possibly [S-comp]

#### 4.1.3.1 German–Korean contrasts of ISL use in the narrative

##### Productivity and ISL use

While German and Korean children were equally productive in their narratives, a statistically significant increase in productivity measures with age was found for Korean children only, whereas German children exhibited similar productivity over the three age groups.

Table 4.1.70 holds comparisons and *T*-test results for German and Korean productivity and ratios of ISL use.

The length of German and Korean children's narrations was roughly equivalent, but German children's clauses were longer, i.e. contained more morphemes. This might reflect the fact that Korean is a pro-drop language and allows for frequent ellipsis of referents if they were mentioned before.

Table 4.1.70 *T-tests for differences in narrative production and ISL use between German and Korean children*

Variable	German	Korean	t(96)
	M (SD)	M (SD)	
<b>Linguistic productivity</b>			
Total clauses	30 (7.7)	28 (11.3)	0.76
Morphemes / clause	6.4 (1.03)	5.6 (1.15)	3.54**
<b>Proportions of ISL</b>			
Ratio IS clauses / total clauses	.49 (.124)	.62 (.155)	-4.40***
Ratio IS tokens / total clauses	.54 (.145)	.76 (.225)	-5.73***
Ratio IS types / total clauses	.41 (.119)	.56 (.187)	-4.50***

\*\*  $p < .01$  \*\*\*  $p < .001$

Korean children used considerably more ISL overall than German children in their narrations, visible in significantly higher ratios of IS clauses, tokens, and types per total clauses. For Korean children, ratios of ISL use were similar over age, whereas German ISL ratios showed an increase and significant positive correlations with age. For both languages, ratios of ISL use in narrative were stronger correlated with clause length (in morphemes per clause) than with age, suggesting that structural and/or semantic “richness” of expression in describing a single picture might be importantly related to ISL use and account for some of the great variance seen in ISL use between individual children in all ages.

### Differences in syntactic complexity of ISL

Table 4.1.71 *T-tests for differences between German and Korean children in the use of causal/contrastive IS clauses in their narratives*

Variable	German	Korean	t(96)
	M (SD)	M (SD)	
<b>Proportions of caus/contr IS clauses</b>			
Ratio caus/contr IS clauses / total IS clauses	.20 (.194)	.29 (.237)	-2.00*
Ratio caus/contr IS clauses / total clauses	.11 (.111)	.19 (.163)	-3.04**

\*  $p < .05$  \*\*  $p < .01$

Comparisons and *T*-tests for ratios of causal and contrastive IS clauses are found in Table 4.1.71. Korean children produced more causal and contrastive IS clauses than German children, both as a proportion of total clauses, as well as of total IS clauses produced. The latter shows that even though Korean children used more ISL overall, their higher proportion

of causal and contrastive IS clauses is not only a consequence of the higher production of ISL overall, but even with respect to the amount of IS clauses produced, they expressed more causality and contrast. A mean of 29% of Korean children's IS clauses expressed causal or contrastive relations to preceding or following utterances and 19% of the total clauses in their narrations were such causal/contrastive IS clauses. For German children, causal/contrastive IS clauses made up 11% of total clauses and 20% of IS clauses.

A closer look at the clause connectors children used reveals that Korean children relied heavily on causal conjunctions and converbs to create coherence, like *kulayse*, *-se*, or *-kacwuko*, whereas German children's most frequently used connectors were temporal ones such as *und dann*.

Turning to complement clause constructions with IS verbs, Korean children again produced more of these ISL constructions than German children,  $\chi^2 = 4.576$ ,  $df = 1$ ,  $p < .05$ , repeating the comparative pattern found for overall ISL and for causal/contrastive IS clauses.

#### **Differences in use of vocabulary from different semantic categories**

Table 4.1.72 holds a comparison of proportions and relative ranks of produced IS tokens of the 12 semantic categories, together with Chi-square test results. Proportions are also visualized in a bar graph in Figure 4.1.09.

German children used significantly more IS words for PERCEPTION & SENSES; looking at the German data more closely, this is due to German 3-year-olds excessive use of these expressions, which nevertheless decrease with age. The second category of which German children produced much more items was EMOTION, with .22 of total IS tokens compared to .08 for Korean children.

Korean children used significantly more expressions for SOCIAL BEHAVIOR overall, although it was the first ranked category in both languages. They also verbalized much more SOCIAL FEELINGS & RELATIONSHIPS than German children, with .12 of the total IS tokens as compared to .06. Moreover, this category is ranked second for Korean children, whereas it is rank 7 of the semantic groups for German children's IS tokens. Additionally, Korean children produced significantly more expressions of COMMUNICATION & DISCOURSE, as was seen in the many types and complement clause constructions used for weaving direct and indirect speech of protagonists into their stories. REALITY & EVIDENTIALITY had also a higher proportion of IS tokens for Korean than for German children, but this is probably due to the heavy use of 'seem'-constructions in Korean narrations.

Table 4.1.72 Comparison of proportions of different semantic categories per total IS tokens between German and Korean children

Semantic Category	Language / culture				$\chi^2$ (df = 1)
	German		Korean		
	Rank	Proportion	Rank	Proportion	
Body states	6	.07	6	.06	0.412
Perception & senses	<b>4</b>	<b>.10</b>	5	.07	5.691 <sup>*</sup>
Emotion expression	5	.07	8	.05	3.773 <sup>†</sup>
Social behavior	1	.28	<b>1</b>	<b>.34</b>	9.345 <sup>**</sup>
Desire & evaluation	3	.10	3	.10	0.148
Ability & success	9	.02	11	.03	0.395
Emotion	<b>2</b>	<b>.22</b>	4	.08	72.536 <sup>***</sup>
Morality & norms	8	.03	7	.05	2.616
Social feelings & relationships	7	.06	<b>2</b>	<b>.12</b>	18.115 <sup>***</sup>
Communication & discourse	11	.02	<b>9</b>	<b>.05</b>	9.626 <sup>**</sup>
Cognition	12	.01	12	.01	0.011
Reality & evidentiality	10	.02	<b>10</b>	<b>.05</b>	8.096 <sup>**</sup>

<sup>†</sup>  $p < .06$  <sup>\*</sup>  $p < .05$  <sup>\*\*</sup>  $p < .01$  <sup>\*\*\*</sup>  $p < .001$

Note. Bold face highlights those groups with significantly higher proportions.

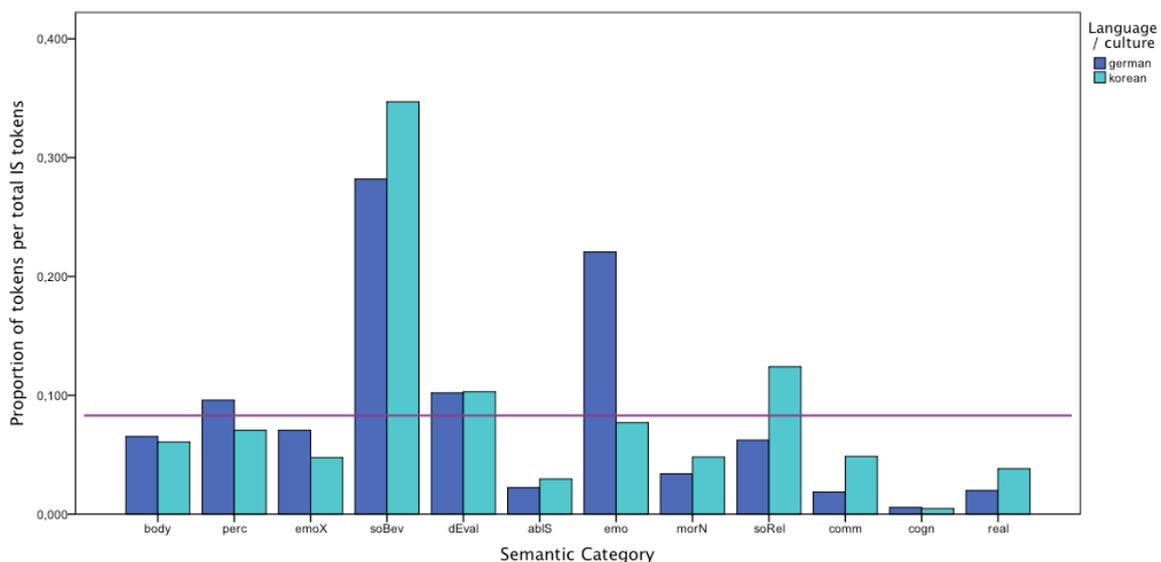
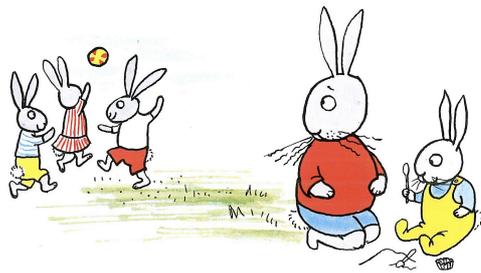


Fig. 4.1.09 Proportions of items from different semantic categories per total IS tokens in comparison of German and Korean children

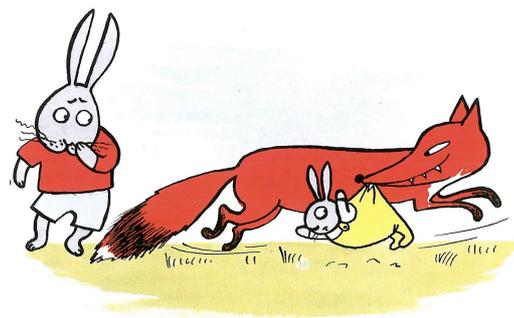
Note. body = body states, perc = perception, emoX = emotion expression, soBev = social behavior, dEval = desire & evaluation, abIS = ability & success, emo = emotion, morN = morality & norms, soRel = social feelings & relationships, comm = communication & discourse, cogn = cognition, real = reality & evidentiality. The reference line at .083 marks the expected proportions if all categories were equally distributed.

### Verbalization of key scenes with internal vs. interpersonal focus

Summarizing the pattern seen in the IS token quantities of different semantic categories, German children used more expressions describing ‘internal’ states like perceptions and feelings, whereas Korean children used more IS tokens from categories describing ‘interpersonal’ actions, attitudes, and relationships. These tendencies for language or culture-specific construals of events in the story will be illustrated with some typical verbalizations of four important scenes in the picture book.



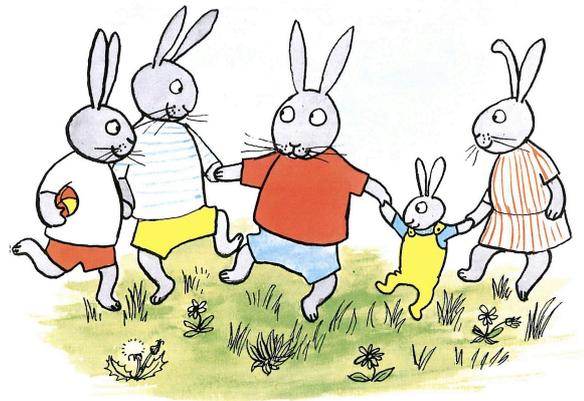
Picture 4: “Exclusion from play”



Picture 10: “Dilemma”



Picture 15: “Success”



Picture 17: “Inclusion in group”

Fig. 4.1.10 Important scenes from the picture book chosen for comparisons of event verbalizations

#### *Picture 4: “Exclusion from play”*

When narrating the scene in Picture 4, German children frequently referred to the main character’s, i.e., fraidy-rabbit’s, feelings (see (4-G)), whereas Korean children frequently verbalized the social exclusion, sometimes struggling to find the right construction (with causatives, passives, or ‘only + Pronoun’) as can be seen in (4-K).

- (4-G) a. *Der sieht traurig aus.* (4;1)  
This one looks sad.
- b. *Die spielen Fußball und er nicht und er ist traurig.* (4;9)  
These are playing soccer and he not and he is sad.
- c. *Da hat er auch Angst und spielt mit einen kleinen Hasen der nich ihn Angst macht.* (5;2)  
There he is also afraid and is playing with a little rabbit that does not scare him.
- (4-K) a. *Kuntey pakk eyse nolko siphuntey chinkwtul i pakkath eyta cal an chacye.* (3;9)  
But although he wants to play outside, his friends, on the field, don't let him kick [the ball].
- b. *Kong noli hataka ccochkye nanun ke.* (4;11)  
While they are playing ball, they're chasing him out.
- c. *Chinkwtul ilang kathi nolko siphuntey chinkwtul i an nolacwe.* (5;8)  
He wants to play jointly together with his friends, but the friends don't play with him [lit. don't play-give him].
- d. *Chinkwtul i na man tteye nohko chwukku hanun kes kathayyo.* (5;8)  
It seems like the friends play soccer and exclude just him [lit. me].
- e. *Chinkwtul i kong noli hako issnuntey caki man an kkyese tongsayng ilang molay noli hako isseyo.* (5;10)  
His friends are playing ball, but because they exclude just him [lit. himself], he's playing jointly with his younger sibling in the sand.

*Picture 10: "Dilemma"*

Looking at Picture 10, in which fraidy-rabbit's "Dilemma" is depicted between his fear and the need to save the baby rabbit from the fox, most children in both cultures described only the dominant action or movement event – that the fox is taking or carrying the baby rabbit away. On the other hand, if children included fraidy-rabbit's stance into their narration, German children would refer to his emotion (10-G), whereas the two Korean children in (10-K) described his prosocial attitude and wish to do something about the situation (and to restore harmony).

- (10-G) a. *Jetzt rennt der weg. Der hat Angst.* (3;4)  
Now this one is running away. This one is afraid.
- b. *Dann bringt er des Baby zurück. Und die Mutter ist ganz traurig, weil des Baby jetzt weg ist.* (4;6)  
Then he is bringing the baby back [child means: away]. And the mother is totally sad because the baby is away now.
- c. *Und dann rennt der Fuchs mit 's Kleine weg, und der Große ist traurig.* (4;9)  
And then the fox is running away with the small one, and the big one is sad.

d. *Jetzt ist er traurig, weil sein Hase weg ist.* (5;10)  
Now he is sad because his rabbit is away.

(10-K) a. *Kulaykacwuko [ni illowa – yey hanthey kacima] ilehsseyo.* (3;9)  
Because of this he said like ‘you come here – don’t go to this one’  
[child using a different voice].

b. *Kulayse kepcaynge thokki ka ayki lul sallilyeko kekceng hako isseyo.* (5;5)  
Because of this fraidy-rabbit is worrying, wanting to save the baby.

*Picture 15: “Success”*

In the narration of Picture 15, when the fox is finally fleeing the scene and the rabbits all come running from the village, German children predominantly described their ‘happiness’, with a variety of ‘happy’-words like *froh*, *fröhlich*, *glücklich*, *sich freuen*, and often separately for the coming rabbits, fraidy-rabbit, and/or the baby (15-G).

(15-G) a. *Dann sind alle froh.* (3;6)  
Then all are happy.

b. *Da freuen sich alle. Der springt über den Zaun. Da freut er sich wieder, dass die Puppe da ist.* (4;1)  
There all are happy. This one is jumping over the fence. There he is happy again, that his doll [meaning the baby rabbit] is there.

c. *Und die andern kommen angerannt und sind glücklich, und die andern beiden auch.* (4;9)  
And the others are coming running and are happy, and the other two are, too.

d. *Alle sind fröhlich.* (5;4)  
All are happy.

e. *Die freuen sich, wenn der Fuchs da rüber springt.* (5;8)  
They are happy when the fox is jumping over this.

Korean children tended to focus on the social relationships instead (15-K). While 3-year-olds described that fraidy-rabbit and the baby became friends, older children emphasized the praise and recognition fraidy-rabbit would receive, or his inclusion in the group. Except for the coming rabbits raising their hands and fraidy-rabbit and baby holding hands and smiling, these things are not directly depicted in the picture, but Korean children made these inferences by employing concepts which are important to them.

(15-K) a. [Pointing to fraidy-rabbit and the saved child:] *Cinaysseyo sai cohkey.* (3;8)  
They spent the time in harmonious relationship.

b. [Pointing to fraidy-rabbit and the saved child:] *Chinhan chinkwu ka toyesseyo.* (3;5)  
They became close friends.

c. *Thokki ka [pointing to fraidy-rabbit:] yey ka ikyesstako mal haycwuko isseyo.* (3;11)  
The rabbits are saying (to him) [lit. speak-give] that this one won.

- d. [Pointing to rabbits who are coming from the village] *I chinkwutul wa* (4;11)  
 [pointing to fraidy-rabbit and saved child] *i chinkwutul sai cohkey nolasseyo.*  
 These friends and these friends played in harmonious relationship.
- e. *Salamtul i thokki cohahaysseyo.* (5;0)  
 The people came to like the rabbit. [lit. ‘liked’ with past indicating change-of-state]
- f. *Kepcayngi thokki hanthey chingchanhako isseyo.* (6;2)  
 They are praising fraidy-rabbit.

*Picture 17: “Inclusion in group”*

Narrating the content of Picture 17, most German children said that the rabbits are dancing together, and some, seen in (17-G), verbalized emotions, namely the happiness of all rabbits, or that fraidy-rabbit is not afraid anymore.

- (17-G) a. *Ist er gar kein Angsthase mehr. Ein bisschen vor dem bösen Fuchs* (4;0)  
*ist er nur ein Angsthase.*  
 Is he not a fraidy-rabbit anymore. A little bit of the bad fox is he only scared.
- b. *Und dann tanzen alle fröhlich um ein Kreis herum.* (5;9)  
 And then all are dancing happily around a circle.
- c. *Da freun se sich alle und tanzen.* (5;10)  
 There they are all happy and dance.

Korean children verbalized the change-of-state in relationship more explicitly using both causal clause connectors and temporal markers or constructions indicating change-of-state, combined with expressions of ‘togetherness’, ‘closeness’, or ‘harmony’.

- (17-K) a. *Kepcayngi thokki lang icey kathi nolko isseyo.* (3;11)  
 Now they are playing jointly together with fraidy-rabbit.
- b. *Kathi chinhakey twaysseyo.* (4;0)  
 Together, they became close [used for relationships].
- c. *Kuliko chinkwutul ilang kathi sai cohkey nolasseyo.* (4;11)  
 And then he played jointly together in harmonious relationship with his friends.
- e. *Kulaykacwuko (yo) thokkitul i (yo) mak (yo) kepcayngi thokkitul hanthey (yo)* (5;7)  
*son capko (yo) nolacwunun kes kathayo.* [yo is used as filler]  
 Because of this, it seems, the rabbits, MAK, take the fraidy-rabbits’  
 hands and play with them [lit. play-give].
- d. *Kulayse kepcayngi thokki lang kathi nolkey toyesseyo.* (6;2)  
 Because of this they came to [toyta = change of state] play jointly together  
 with fraidy-rabbit.

In summary, two distinct perspectives and dominant construals of socio-emotional events surface in the children’s verbalizations of the same pictures: for German children it is good to be ‘happy’ and bad to be ‘sad’ or ‘afraid’; for Korean children, it is not good to be ‘excluded’ and it is good to be part of a group and ‘in harmonious relationship’ with others.

## 4.2 Development of IS understanding in German and Korean children

### 4.2.1 Theory of mind (ToM) development

#### 4.2.1.1 German children's ToM development

##### **Overall theory of mind (ToM) score**

German children's total performance score in the theory of mind (ToM) test battery shows a significant increase with age,  $F(2,60) = 22.23, p < .001$ .

Paired comparisons of a post-hoc Tukey test performed on age group means revealed significant differences between 3-year-olds and each of the older groups, but no difference between 4- and 5-year-olds. Similar to what has been observed in the acquisition of IS vocabulary, German children seem to make a huge developmental leap from 3 to 4 years followed by only small progress from 4 to 5.

##### **Developmental stages of IS understanding: sequence of passing different ToM tasks**

Table 4.2.01 gives an overview of German children's theory of mind task performance comparing mean scores for single test questions as well as overall scores over the three age groups, marking significant increases.

To visualize the sequential pattern of passing the various ToM tasks, the test questions in Table 4.2.01 are ranked by summing their means at 3 years with their total mean, thus combining information about earliness and overall frequency of passing a respective question in the whole sample.

A closer analysis of this sequential pattern of passing different ToM test questions for both German and Korean children is undertaken in Chapter 4.2.1.3.

#### 4.2.1.2 Korean children's ToM development

##### **Overall theory of mind (ToM) score**

As expected, Korean children's overall theory of mind (ToM) score increases significantly with age, both for overall scores excluding the knowledge-ignorance questions,  $F(2,59) = 25.52, p < .001$ , and those including them,  $F(2,33) = 24.96, p < .001$ . Post-hoc Tukey tests performed for both score types showed significant differences between all three age groups with an ongoing increase in children's ToM performance from 3 to 6.

### Developmental stages of IS understanding: sequence of passing different ToM tasks

An overview of Korean children's theory of mind task performance is given in Table 4.2.02, displaying the mean scores for all different ToM test questions over the age groups, marking significant differences between age groups and visualizing the sequential acquisition pattern by ranking questions by earliness and overall frequency of being passed by Korean children (see expl. for Table 4.2.01).

Table 4.2.01 German children's ranked mean scores for single ToM test questions over 3 age groups

Rank	Test Question	Age Group by Year			Total
		3 years	4 years	5 years	
1	Simple EMO / Des EMO I	1.00	.95	1.00	.98
2	Simple EMO / Des EMO II	.91	1.00	1.00	.97
3	Des EMO w/o simulation possibility	.78	A 1.00	A 1.00	.92
4	KI content I	.70	.75	A 1.00	.81
5	<i>Justification - Des EMO w/o simulation possibility</i>	.65	.80	.75	.73
6	KI content II	.59	.75	A 1.00	.77
7	Dislike-Belief EMO	.52	A .90	A 1.00	.79
8	FB OTHER	.52	A .88	A .93	.77
9	Like-Belief EMO	.52	A .85	A .95	.76
10	FB DO w/o pull of real	.48	A .90	A .95	.76
11	KI location	.46	A .85	A .95	.74
12	FB DO	.43	A .90	A .90	.73
13	KI location w/o pull of real	.41	A .80	A .90	.69
14	<i>Justification - FB OTHER</i>	.37	A .78	A .79	.63
15	FB SELF	.35	A .75	A .88	.65
16	FB THINK content I	.22	A .80	A 1.00	.65
17	FB THINK content II	.22	A .80	A 1.00	.65
18	FB THINK location	.24	A .70	A .80	.56
19	FB THINK location w/o pull of real	.24	A .58	A .70	.49
20	Des FB EMO	.22	.20	.35	.25
21	Des FB EMO w/o simulation possibility	.09	.25	.35	.22
22	<i>Justification - Des FB EMO</i>	.07	.25	A .33	.21
ToM score (excluding KI questions)		7.8	A 13.3	A 14.7	11.7
ToM score (including all 22 test questions)		10.0	A 16.4	A 18.6	14.7

*Note.* Significant differences between age groups are indicated by upper case letters in the columns left to the mean scores of 4- and 5-year-olds, based on two-sided tests using the Bonferroni correction ( $p = .05$ ). A, sign. diff. to the 3-year-old group; B, sign. diff. to the 4-year-old group.

Table 4.2.02 Korean children's ranked mean scores for single ToM test questions over 3 age groups

Rank		Age Group by Year				total	
		3 years		4 years	5 years		
1	Simple EMO / Des EMO I	.79		.96	A	1.00	.92
2	Simple EMO / Des EMO II	.79		.96	A	1.00	.92
3	Des EMO w/o simulation possibility	.79		.87		.95	.87
4	Dislike-Belief EMO	.68		.87	A	.95	.84
5	<i>Justification - Des EMO w/o simulation possibility</i>	.50		.63		.75	.63
6	Like-Belief EMO	.37	A	.74	A B	1.00	.71
7	FB SELF	.16		.39	A	.58	.38
8	FB OTHER	.11	A	.48	A	.63	.41
9	FB THINK content I	.11		.30	A B	.75	.39
10	FB DO w/o pull of real	.21		.22		.35	.26
11	FB THINK content II	.00	A	.57	A	.70	.44
12	KI content I	.00	A	.39	A B	.91	.43
13	KI content II	.00	A	.43	A B	.82	.42
14	<i>Justification - FB OTHER</i>	.11		.26	A B	.55	.31
15	FB THINK location w/o pull of real	.16		.22		.35	.24
16	FB THINK location	.05		.26	A B	.60	.31
17	FB DO	.05		.17	A B	.65	.29
18	KI location	.00		.21	A B	.82	.33
19	Des FB EMO w/o simulation possibility	.11		.09	A B	.45	.21
20	Des FB EMO	.05		.09	A B	.35	.16
21	KI location w/o pull of real	.00		.07	A B	.36	.14
22	<i>Justification - Des FB EMO</i>	.03		.04	A B	.25	.10
ToM score (excluding KI questions)		5.1	A	8.1	A B	11.9	8.4
ToM score (including 22 test questions)		4.5	A	9.6	A B	15.1	9.7

*Note.* Significant differences between age groups are indicated by upper case letters in the columns left to the means scores of 4- and 5-year-olds, based on two-sided tests using the Bonferroni correction ( $p = .05$ ). A, sign. diff. to the 3-year-old group; B, sign. diff. to the 4-year-old group.

#### 4.2.1.3 ToM development across the two cultures

##### Comparison of overall ToM scores

A significant difference in theory of mind scores can be found between German and Korean children, both for scores including all questions,  $t(97) = 4.29, p < .001$ , and scores excluding the knowledge-ignorance questions,  $t(123) = 4.33, p < .001$ , two-tailed tests.

German children showed a significantly higher performance in theory of mind tasks than their Korean counterparts and thus seem to acquire certain skills faster than preschoolers in Korea.

### Shared sequence of acquisition: stages of passing different ToM task types

It was then of interest, whether, although differences in rate of acquisition were obvious, still a common developmental sequence for theory of mind could be found that was shared across the two cultures.

A first major goal was thus to find out whether there is something like a general sequence of passing different theory of mind tasks that could reveal something like developmental stages of internal state understanding. This was done by analyses with Guttman scalograms.

Looking at mean scores and test question rankings in tables 4.2.01 and 4.2.02, the simple emotion tasks (Simple EMO / Des EMO) seem to be easiest for both German and Korean children, showing the highest mean scores from 3 years onwards. These are followed by test questions, where children had to predict an emotion from knowledge about a character's likes and dislikes and his beliefs about the content of a closed food container ((Dis-)Like-Belief EMO). Moreover, the third task type involving emotions, the desire-false belief-emotion questions (Des FB EMO), where likes/dislikes as well as a false belief have to be taken into account to correctly predict a character's emotion, showed lowest performance in both culture groups.

Between the "easy" emotion tasks passed first and the "hard" desire-false belief-emotion tasks, the different knowledge-ignorance (KI) and false-belief (FB) tasks occupy the middle ranks of both tables.\*

It was hypothesized that this pattern is not only visible in group means for these test questions, but holds true as a general developmental sequence in that individual children who passed lower ranked questions (i.e. 'harder' ones), would also show competence with higher ranked (i.e. 'easier) question types, but not the other way round.

To confirm this, a Guttman scale analysis was conducted (see Chapter 3.2 for an explanation). Table 4.2.03 holds the predicted patterns and analysis for both cultures. Mean numbers were calculated from children's mean scores over all questions belonging to the task type of the component.

For German as well as Korean children, the predicted scale could perfectly be confirmed with reproducibility coefficients of .98 for both cultures, and indices of consistency of .67 for German and .75 for Korean, respectively.

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\* For clarity, and because they involve the additional skill of verbalizing one's reasoning, which would add an additional dimension to the "pure" perspective taking abilities tested in the simple test questions, the three justification questions were excluded from all further analyses of developmental sequence.

## 4 Results

Table 4.2.03 *Guttman scalogram analysis for theory of mind task types in two cultures*

Tasks	Predicted patterns					Other patterns	Total N
	1	2	3	4	5		
Simple EMO/ Des EMO	–	+	+	+	+		
(Dis)like-Belief EMO	–	–	+	+	+		
KI + FB	–	–	–	+	+		
Des FB EMO	–	–	–	–	+		

German children							
Age	Mean frequency of occurrence					Other patterns	Total N
	1	2	3	4	5		
3 years	2	6	5	8	0	2	23
4 years	0	1	2	10	5	2	20
5 years	0	0	1	11	7	1	20
Total	2	7	8	29	12	5	63
Average Age	3;8	3;7	4;2	4;8	5;2	(4;4)	

Korean children							
Age	Mean frequency of occurrence					Other patterns	Total N
	1	2	3	4	5		
3 years	3	10	4	1	0	1	19
4 years	1	6	10	4	0	2	23
5 years	0	0	6	7	6	1	20
Total	4	16	20	12	6	4	62
Average Age	3;10	4;1	4;10	5;2	5;11	(4;7)	

Moreover, the numbers given in the tables for children conforming to each pattern give an informative picture of the development over the age groups. German children start with a median pattern of 3, which means that average 3-year-olds are able to pass simple emotion and (dis)like-belief-emotion tasks. Eight children show patterns 1 or 2, another eight children have already mastered knowledge-ignorance and false-belief tasks – pattern 4, which becomes the median pattern observed in 4- and 5-year-olds. In these older groups, the lower patterns from 1 to 3 yield fewer and fewer observations, while first cases of pattern 5 emerge – for five children in the 4- and seven children in the 5-year-olds.

Korean children with 3 years start with a lower median pattern of 2, rising to pattern 3 in the 4- and pattern 4 in the 5-year-olds. This accords with the pattern found in the post-hoc paired comparisons of the ANOVA done on overall ToM mean scores, where we observed a

significant increase for Korean children for each further age group, whereas German children's scores increased significantly only from 3 to 4, but were generally higher.

We also find that numbers of cases with patterns 1 and 2 are decreasing and disappearing over the age groups, and pattern 5 is finally emerging for six children of age 5. Although Korean 5-year-olds have the same median pattern as German children (pattern 4), they have a smaller number of children corresponding to the pattern and still 6 cases of children, who have not yet mastered knowledge-ignorance and false-belief questions (pattern 3), which is the case for only one German child of that age.

### **Specific sequences and factors: KI and FB in German and Korean children**

In a second analysis, the goal was to detect developmental patterns for the mastering of knowledge-ignorance and false-belief tasks.

A total of 12 test questions, 4 knowledge-ignorance (KI) – 8 false-belief (FB) questions, belonged to this task group, all occupying middle ranks in the tables of group means (4.2.01 and 4.2.02). Although some similarities are visible in the relative ranks of specific question types, a common pattern is not obvious from those data and an explorative approach was taken to find patterns in the scoring of individual children that would yield a highly reproducible Guttman scalogram summarizing a common sequence of development that could be interpreted in terms of factors of the comparative “difficulty” of tests explaining the sequence found.

Whereas the Guttman scale in the previous part was used to confirm a hypothesized sequence of acquisition, Guttman scales were now employed to detect common developmental sequences for German and Korean children.

Separately for each culture and separated between KI and FB tasks, in a first step, for each single pair of two test questions, numbers of cases were counted for each age group that did not score on any of the two questions, that scored on both questions, and that scored on only one of the two test questions, differentiating which of the two questions was mastered first.

Then, questions were grouped together into one component that had similar numbers of children mastering them over the age groups and that did not show a clear pattern of one specific question being acquired before the other in > 75% of the cases scoring on one question only. Where one test question was mastered first in equal to or more than 75% of cases, the remaining question was sorted into a second component of the Guttman scale.

This procedure yielded separate Guttman scalograms for KI and FB tasks, each divided into components, i.e. groups of test questions, that were mastered sequentially.

In a final step, Guttman scalograms for KI and FB questions were combined into one model of development of false-belief task skills that would represent the pattern of acquisitional sequence observable in each of the two cultural samples.

*German children's sequence of understanding knowledge-ignorance and false belief*

The resulting Guttman scalograms of this procedure for German children can be seen in Tables 4.2.04, 4.2.05 and 4.2.06.

For German children, knowledge-ignorance (KI) questions could be separated into two components (Table 4.2.04), with KI questions concerning the ignorance of the animal characters about the content of their food containers being mastered before children can ascribe the same ignorance to monkey Minnie in the two change-of-location tasks.

Table 4.2.04 *Guttman scalogram of knowledge-ignorance tasks for German children*

Tasks	Predicted patterns			Other patterns	Total N
	1	2	3		
KI content	–	+	+		
KI location	–	–	+		

German children					
Age	Mean frequency of occurrence			Other patterns	Total N
	1	2	3		
3 years	7	9	5	2	23
4 years	4	1	12	3	20
5 years	0	2	18	0	20
Total	11	12	35	5	63
Average Age	4;0	3;11	4;11	(4;1)	

Task type therefore seems to make a difference with ignorance due to unobserved deception being easier for children to ascribe for changes in the content of a container than in the switch of location from one container to another.

The average of the German 3-year-olds master the first, but not the second task type, whereas the rising majority of 4- and 5-year-olds are competent in both tasks (pattern 3). Reproducibility of the scale was .96, and the index of consistency was .51, confirming the scalability and robustness of the scale.

The procedure for false-belief (FB) test questions for German children yielded a Guttman scale with four components. The scale had a reproducibility coefficient of .98 and an index of consistency of .88.

Table 4.2.05 *Guttman scalogram of false-belief tasks for German children*

Tasks	Predicted patterns					Other	Total N
	1	2	3	4	5		
FB OTHER + FB DO	–	+	+	+	+		
FB SELF + FB THINK content	–	–	+	+	+		
FB THINK location	–	–	–	+	+		
FB THINK location w/o pull of real	–	–	–	–	+		

German children							
Age	Mean frequency of occurrence					Other	Total N
	1	2	3	4	5		
3 years	10	7	0	1	4	1	23
4 years	0	4	0	4	10	2	20
5 years	0	0	3	1	15	1	20
Total	10	11	3	6	29	4	63
Average Age	3;7	4;0	5;6	4;7	4;11	(4;3)	

The first component comprises the FB OTHER question of the ‘Smarties task’, where children have to ascribe a false belief to their friends about the unexpected content of a familiar candy container, and the ‘action’ versions (FB DO) of the two change-of-location tasks, where children have to predict the action of a character based on a false belief, i.e. searching in the original place, although the item has been moved. These test questions are the ones where German children show first understanding of false beliefs – about a third of the 3-year-olds in our sample.

The second component consists of the FB SELF question of the ‘Smarties task,’ which asks for the child’s own false belief about a deceptive container, and the FB THINK questions about the animals whose favorite food was exchanged.

The last two components consist of the ‘thought’ version (FB THINK) of the change-of-location tasks, with the false-belief question with ‘pull of the real’, where the location of monkey Minnie’s ring changed from one container to the other, being mastered earlier than the same question ‘without pull of the real’, where the cake that has been removed from its original location has been eaten and has no current location. This kind of task has been reported to be easier for children to solve, as the current location or the urge to tell it to the

experimenter cannot distract the child from formulating the main character's false belief. Contrary to this, we find that the opposite holds true for German children in our sample, as the task without pull of the real is solved later and thus seems to be more difficult for children than its classical counterpart.

Looking at the table of the FB task analysis, the German acquisition pattern of a huge developmental "jump" from 3 to 4 is most obvious and extreme for the false-belief questions. Whereas 43% of the 3-year-olds do not show false belief understanding in any of the four components (pattern 1), already 50% of the 4-year-olds master the full range of FB questions (pattern 5) and no child shows pattern 1 anymore. 75% of the 5-year-olds exhibit pattern 5, with the lowest observed pattern being pattern 3, i.e. mastering all questions except the change-of-location tasks.

In trying to explain the acquisitional sequence extracted, a number of factors seem to be at play. As in the KI tasks, we see a strong trend for tasks involving an unexpected or changed content of a container to be mastered earlier than tasks involving a change of location. On the other hand, the 'action version' of false-belief questions, even for the location tasks, seem to be so much easier for German children to answer correctly than their corresponding 'thought version' that the FB DO questions cluster with the easier 'content questions' and are part of the very first component of the scale.

Combining the KI and FB scales into an overall model, we see the pattern that is summarized in table 4.2.06, exhibiting a reproducibility coefficient of .96 and an index of consistency of .77.

The three last FB components including the FB THINK questions of the exchange-of-content and change-of-location tasks remain in the model as latest acquired components.

The earliest FB tasks mastered, on the other hand, cluster together with the easier KI questions about the food container contents into a first component, questions of which are either mastered simultaneously or at least in a non-biased order. The more difficult KI questions about the location of an item make up component 2 and are mastered before the remaining FB tasks.

In this overall picture, a third factor influencing the sequence of passing different false-belief tests comes to the fore. KI tasks are passed before most of the FB tasks.

Putting it all together, German children acquire an understanding of someone's ignorance of an unseen deception before they are able to verbalize that character's false belief. Both KI and FB are easier for them, when they are about the changed content of a container rather than a change in location of an item. As a third, but very strong factor, 'action' versions of a false

belief question, asking about what a character holding a false belief does, not what she thinks, are many times easier for German children than ‘thought’ versions and are mastered as early as KI content tasks.

Table 4.2.06 *Combined Guttman scale of knowledge-ignorance and false-belief tasks for German children*

Tasks	Predicted patterns						Other	Total N
	1	2	3	4	5	6		
KI content + FB OTHER + FB DO	–	+	+	+	+	+		
KI location	–	–	+	+	+	+		
FB SELF+ FB THINK content	–	–	–	+	+	+		
FB THINK location	–	–	–	–	+	+		
FB THINK location w/o pull of real	–	–	–	–	–	+		

German children								
Age	Mean frequency of occurrence						Other	Total N
	1	2	3	4	5	6		
3 years	8	6	2	0	1	2	4	23
4 years	0	2	2	0	2	10	4	20
5 years	0	0	0	3	3	12	2	20
Total	8	8	4	3	6	24	10	63
Average Age	3;7	3;11	4;3	5;6	4;10	5;0	(4;2)	

One of the patterns that resulted from the chosen procedure (pattern 3 in the FB model, pattern 4 in the combined scale), defined for children who passed ‘FB SELF’ and ‘FB THINK content’ test questions, but not ‘FB THINK location’ questions, was represented by only three German children, all of which belonged to the 5-year-old group. Except for this pattern, the mean ages of all other patterns show a gradual increase in steps of 2–7 months.

#### *Korean children’s sequence of understanding knowledge-ignorance and false belief*

The Guttman scalograms resulting for Korean children’s successive mastery of KI and FB tasks are summarized in Tables 4.2.07, 4.2.08 and 4.2.09.

For knowledge–ignorance tasks, the resulting scale consisted of three components, dividing between the ‘KI content’ questions, which were mastered first, and the ‘KI location’ questions, of which the version with “pull of the real” was a separate component and passed before the version without “pull of the real”, which was the hardest KI question for Korean

children in the sample. The reproducibility coefficient of the Korean KI scale was .97, the index of consistency .73.

Table 4.2.07 *Guttman scalogram of knowledge-ignorance tasks for Korean children*

Tasks	Predicted patterns				Other patterns	Total N
	1	2	3	4		
KI content	–	+	+	+		
KI location	–	–	+	+		
KI location w/o pull of the real	–	–	–	+		

Age	Mean frequency of occurrence				Other patterns	Total N
	1	2	3	4		
3 years	11	0	0	0	0	11
4 years	9	2	1	1	1	14
5 years	1	0	6	2	2	11
Total	21	2	7	3	3	36
Average Age	4;2	4;10	5;7	5;7	(5;5)	

The Guttman scale for Korean children's successive mastery of false-belief tasks, that resulted from the described procedure, consisted only of two components, with all tasks that involved false beliefs about the content of a container being passed before the tasks involving a change of location. The components were scalable and their sequence robust, as seen in an index of consistency of .50 and a reproducibility coefficient of .98.

In both the Korean KI and FB scale, we see that none of the 3-year-olds is able to pass any of the test questions and that the major shift in mental state understanding takes place around age 5, when more than half of the children in the 5-year-old group begin to pass the test questions. A major factor accounting for the developmental sequences found in both scales seems to be the greater easiness in understanding and passing test questions about contents of containers as compared to test questions concerning ignorance or false belief about changed locations of items.

In a final step, the KI and FB scales for Korean children were combined into one model (Table 4.2.09). The combined model yielded a reproducibility coefficient of .94 and consistency index of .59, indicating a robust scale. When the Korean children with missing KI data were included, with systematic estimations of their passing/failing of the KI questions

from the following components in the model, reproducibility and consistency changed to .96 and .67, respectively.

Table 4.2.08 *Guttman scalogram of false-belief tasks for Korean children*

Tasks	Predicted patterns			Other patterns	Total N
	1	2	3		
FB THINK content + FB OTHER + FB SELF	–	+	+		
FB DO + FB THINK location	–	–	+		

Age	Mean frequency of occurrence			Other patterns	Total N
	1	2	3		
3 years	18	0	0	1	19
4 years	12	7	3	1	23
5 years	4	11	4	1	20
Total	34	18	7	3	62
Average Age	4;4	5;3	5;5	(4;8)	

Table 4.2.09 *Combined Guttman scale of knowledge-ignorance and false-belief tasks for Korean children*

Tasks	Predicted patterns						Other	Total N
	1	2	3	4	5	6		
FB THINK content + FB OTHER / SELF	–	+	+	+	+	+		
KI content	–	–	+	+	+	+		
KI location	–	–	–	+	+	+		
FB DO + FB THINK location	–	–	–	–	+	+		
KI location w/o pull of real	–	–	–	–	–	+		

Age	Mean frequency of occurrence						Other	Total N
	1	2	3	4	5	6		
3 years	11	0	0	0	0	0	0	11
4 years	5	3	1	1	0	1	3	14
5 years	0	1	0	3	0	2	5	11
Total	16	4	1	4	0	3	8	36
Average Age	3;11	5;0	4;8	5;5	–	5;7	(5;5)	

Pattern 5, predicted by the model, was not attested in the current sample and pattern 3 was exhibited by a single child only.

As had been the case for German children, ascribing ignorance to a character that had been deceived about the content of his food container seems to make a difference and be easier for Korean children than ascribing ignorance to a character that had been deceived about the location of a desired item.

In contrast, we do not see any of the other advantages for types of questions observed for German children. KI questions show no systematic advantage over FB questions, as the first component for Korean children holds all FB questions concerning a content, and the KI question without “pull of the real” was the latest test question to be passed by Korean children. Moreover, DO and THINK versions of the change-of-location task are passed concurrently, as are FB OTHER and FB SELF, whereas both the FB DO and FB OTHER tasks had been easier for German children.

In summary, we find a shared sequence between the two culture groups in passing ToM-test questions about inferred emotional reactions before knowledge-ignorance and false-belief questions. Children of both groups then pass those questions that combine ascriptions of false-belief and emotional reactions. Cultural differences are found in the sequence of passing specific test questions of knowledge-ignorance and false-belief. One overarching factor that seems to influence both German and Korean children’s ToM test performance is that tasks involving a change of content of a single container are passed earlier than tasks involving a change of location from one container to another. Further, of the two change-of-location tasks, contrary to expectations, the versions “without pull of the real” were passed later than those that did not involve the supposedly facilitating absence of the target object from the scene. While no other differences in the tasks or questions themselves seemed to influence Korean children’s sequence of passing KI and FB tasks, three further differences determined the easiness with which German children mastered the tasks: knowledge-ignorance questions were easier for them than false-belief questions; in the unexpected content task, they first passed the question about the false belief of a friend in an imagined deception before the one about their own false belief; and the ‘action’ versions of the false-belief questions were much easier for them than the ‘thought’ versions.

## 4.2.2 Emotion concepts in development

### 4.2.2.1 German children's emotion understanding and concepts

#### Overall Emotion Understanding (EU) score

German children's emotion understanding, as measured by the Emotion Understanding Interview (EUI), shows a developmental increase from 3 to 6.

An ANOVA performed on children's overall scores shows a significant effect of age,  $F(2, 58) = 7.318, p = .001$ . A post-hoc Tukey test revealed that 3- and 4-year-olds differ significantly from 5-year-olds, but not from one another. A major developmental step in German children's emotion concepts thus seems to take place during the fifth year.

#### Developmental sequence of basic emotions HAPPY-SAD-ANGRY

Turning to the development of children's scores for the three single emotions assessed — HAPPINESS, SADNESS, and ANGER — a similar picture is visible for HAPPY and ANGRY, namely almost no difference between 3- and 4-year-olds and a major increase of scores in the 5-year-olds. SAD is showing a different pattern of a steady, gradual increase with each age group.

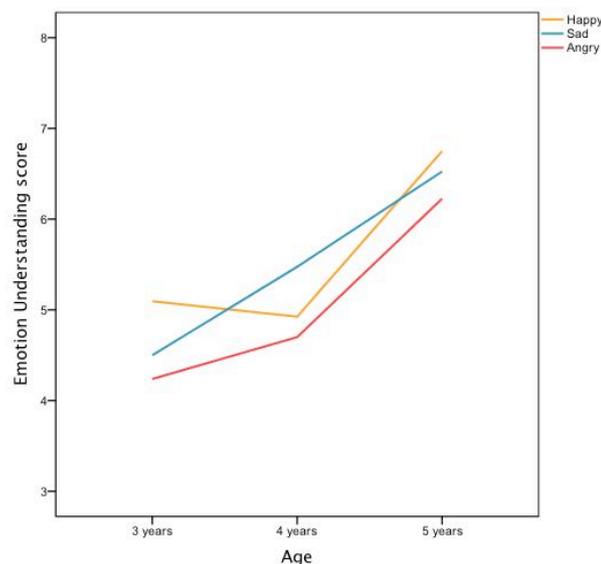


Fig. 4.2.01 Development of German children's mean scores for HAPPY, SAD and ANGRY over three age groups

In all three age groups, understanding of ANGER displays the lowest mean scores and thus seems to develop a little later than the understanding of the other two emotions.

### Acquisitional sequence of concept parts tested in single interview questions

In a further step of analyses, the single questions of the Emotion Understanding Interview were separately assessed for their mean scores over age groups and ranked, as for IS vocabulary and the single theory of mind questions, according to the sum of their total mean and their mean score at 3 years, to visualize the sequence in which they were mastered.

Table 4.2.10 displays the ranked sequence of passing EUI questions for German children.

Table 4.2.10 German children's mean scores for single EU questions over age groups

Rank	Test Question	Age Group by Year			Total
		3 years	4 years	5 years	
1	HAPPY — Show / Hide	.90	.88	.98	.92
2	SAD — Show / Hide	.86	.93	1.00	.93
3	ANGRY — Show / Hide	.86	.80	.95	.87
4	ANGRY — Face & Label	.76	.90	1.00	.89
5	SAD — Face & Label	.76	.70	1.00	.82
6	HAPPY — Face & Label	.74	.80	.90	.81
7	HAPPY — General Cause	.74	.53	.85	.70
8	ANGRY — Emo React to Friend	.64	.73	.85	.74
9	HAPPY — Emo React to Friend	.60	.80	.88	.76
10	SAD — Emo React to Friend	.62	.65	.80	.69
11	SAD — Act React to Friend	.57	.75	.75	.69
12	HAPPY — Act React to Friend	.57	.65	.75	.66
13	ANGRY — Act React to Friend	.52	.63	.78	.64
14	SAD — General Cause	.48	.55	.73	.58
15	HAPPY — Concrete Cause	.50	.38	.80	.56
16	SAD — <i>Justification Act React to Friend</i>	.40	.60	.63	.54
17	HAPPY — <i>Justification Show / Hide</i>	.45	.45	.50	.47
18	ANGRY — General Cause	.43	.35	.68	.48
19	ANGRY — <i>Justification Show / Hide</i>	.36	.48	.55	.46
20	SAD — Concrete Cause	.36	.43	.55	.44
21	HAPPY — <i>Justification Act React to Friend</i>	.29	.40	.68	.45
22	SAD — Self Regulation	.31	.40	.48	.39
23	ANGRY — <i>Justification Act React to Friend</i>	.24	.48	.60	.44
24	HAPPY — Self Regulation	.31	.05	.43	.26
25	SAD — <i>Justification Show / Hide</i>	.14	.48	.60	.41
26	ANGRY — Self Regulation	.21	.25	.50	.32
27	ANGRY — Concrete Cause	.21	.10	.33	.21
Total EU score		13.83	15.10	19.50	16.11

In view of the ranks of questions in Table 4.2.10, German children seem to be able to pass certain types of questions systematically before others, irrespective of emotion. The questions about showing and hiding their emotional expression, for example, are the first ones children are able to answer, followed by the ability to recognize and label facial expressions shown on a photograph. Reactions to a friend's emotion seem to make up the next part of the development, and self regulation comes last. The naming of causes for the single emotions shows a developmental pattern in which the naming of general causes precedes that of concrete recalls of a causing situation experienced, and causes for HAPPINESS are given earlier than causes for SADNESS, and causes for ANGER are named last.

The ability to justify their answers given for 'Show/Hide' and 'Action reaction to a friend's emotion' questions appears at the same time as the ability to name emotional causes, possibly reflecting the emergence of a general ability to reason about and verbally express causality.

### **Qualitative analyses of response types and changes over age**

Finally, the concrete content of children's answers to the interview questions was analyzed to track representational changes or foci over the age groups and, later, compare these between the two cultures. As described in the Methods chapter, qualitative response types were defined (see Table 3.2.07) and the single answers coded respectively. Generally, response types were compared as counts and proportions between age groups.

Since the numbers of responses given differed between groups and questions, no further statistical analyses were performed. The developmental story presented here is thus only descriptive allowing for different degrees of generalization for questions answered by many to all of the children and those answered by few children overall.

#### *Labels*

First, children's freely produced labels for the facial expressions of the three emotions were analyzed. It was of interest what labels German children typically ascribe to these faces and what differences can be made out between the three age groups. This included analyses of children's errors to be able to draw inferences about the acquisition process.

Children's spontaneous answers to the question "How does this child feel?" fell into three major categories: they either answered with a discrete emotion label, e.g. 'sad', a valence marker, e.g. 'bad', or named the expression, e.g. 'it laughs'.

Emotion labels and valence markers were produced either alone or in connection with negations (e.g. *nicht gut* ('not good'), *nicht glücklich* ('not happy')) and/or modifying stance markers expressing certainty ('maybe A') or gradation ('a little bit A'). Most often they appeared as predicates of children's utterances, but in some cases as adverbs of IS verbs like 'look' or 'feel' or as adjectives modifying a noun like 'face'.

Table 4.2.11 gives an overview of labels produced by German children for the three pictures together with percentages and counts of production per age group\*. For errors, the age of the child who produced the "wrong" label is additionally given in brackets. Percentages equaling or lying above 15% are presented in bold face.

HAPPINESS in this task is labeled by the majority of the German children with the simple valence marker *gut* ('good'). 60–75% of the labels produced for the happy face in each age group were valence markers rather than emotion labels. The different emotion labels for 'happy' offered by the German language are used concurrently and infrequently, thus repeating the pattern of production exhibited in the IS Word Checklist results. While the younger children in their labeling behavior still focus on the expression rather than the emotion, frequently using the expression label *lachen* ('laugh') (24% of the 3-year-olds' responses), percentages of expression answers decrease with age and disappear with 5 years. Contrary to the happy face, both sad and angry faces were rarely described with expression labels. One 3-year-old child referred to both SADNESS and ANGER as 'not smiling'. None of the 5-year-olds produced any expression labels in the task.

The sad face is dominantly referred to by German children with the emotion label *traurig* produced in about 45% of the answers through all age groups. The use of valence markers increases with age until valence and emotion terms are produced equally frequently (65% each) in 5-year-olds. Moreover, an increase of negations of positive terms with age is worth noting, totaling 60% of 5-year-olds' productions. Other concrete emotion labels used included labels for sickness, mood, or loneliness – all involving connotations of low arousal and helplessness.

The facial expression ANGRY is most frequently described with *böse* ('bad'), which is also the most dominant term for anger in the IS Word Checklist. Use of *böse* nevertheless decreases from 57% to 40% from 3- to 5-year-olds, while competing emotion labels *sauer* ('sour') and *wütend* ('angry'), which is the preferred adult term, emerge and increase, yielding 20–30% each in 5-year-olds' answers. For the angry face, valence markers were almost absent and

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\* Counts and percentages are given for answers, not children, as some longer answers contained more than one label.

produced only in single uses. Some alternative concrete labels uttered by German children focus on expressive aspects in interaction, namely *zornig* ('raging') and *meckerig* ('grumpy, niggling').

Concerning the labeling errors made by German children, a few errors with the happy face occurred in the older age groups: one wrong valence marker (*schlecht*) was produced, but quickly self-corrected by the child itself; one wrong emotion term of opposite valence (*traurig*) was used; and one 5-year-old labeled the happy facial expression as 'hard' (*hart*).

Errors with the two negative emotions occurred only in 3- and 4-year-olds' responses. As can be seen in Table 4.2.11, 5-year-olds were 100% correct on both pictures. SADNESS was labeled as ANGER by 4 children. ANGER was by one child referred to as 'crying', another labeled it 'afraid', two other children used 'sad' as emotion label for the angry face.

Conflations of SADNESS and ANGER, and emotions of negative valence in general, are discussed more broadly in the analysis of the causes for emotions that children provided and in Chapter 5.1.

### *Causes*

The causes children named for their feelings of HAPPINESS, SADNESS, and ANGER, were of interest with respect to the situational scripts that are part of children's emotion concepts. The qualitative analyses involved the errors and overlaps visible in the concepts, as well as children's focus on social causes for emotions related to relationships or the peer group compared to primarily self-oriented causes like the attainment of desired objects and goals or its frustration. For this purpose, general and concrete causes mentioned were viewed together.

German children's cause responses are summarized in Tables 4.2.12–14, displaying counts and, in parentheses, percentages.

German children of all ages mentioned predominantly self-oriented causes for HAPPINESS in the EUI (Table 4.2.12). These comprise descriptions or reference to the attainment of desired objects — in the 3-year-old group almost exclusively sweets or food, the engagement in liked activities or events like certain games, watching TV, or having birthday. 3-year-olds also mentioned cases of perceiving something beautiful or funny, while similar causes disappeared in the older groups\*.

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\* One 3-year-old German child answered to the question „What makes you happy?“ in a quite philosophical vein: „Die Welt (,the world').“

Table 4.2.11 Labels produced by German children for emotions in the face recognition and labeling task of the EUI displaying counts and percentages for label types and age groups

HAPPY							SAD							ANGRY							
Label	Engl. translation	3 years	4 years	5 years	Label	Engl. translation	3 years	4 years	5 years	Label	Engl. translation	3 years	4 years	5 years	Label	Engl. translation	3 years	4 years	5 years		
Valence marker																					
gut	good	52.4 (11)	50.0 (10)	75.0 (15)	schlecht	bad	9.5 (2)	20.0 (4)	15.0 (3)	schlecht	bad	4.7 (1)	-	10.0 (2)	blöd	stupid	4.7 (1)	-	5.0 (1)		
schön	beautiful	4.7 (1)	-	-																	
toll	great	4.7 (1)	10.0 (2)	-																	
Negated																					
-					nicht gut	not good	14.3 (3)	15.0 (3)	40.0 (8)	nicht gut	not good	4.7 (1)	-	5.0 (1)	nicht gut	not good	4.7 (1)	-	5.0 (1)		
					nicht schön	not beautiful	-	-	10.0 (2)	nicht schön	not beautiful	4.7 (1)	-	5.0 (1)							
Errors																					
schlecht	bad			5.0 (1) [5;3]																	
Total																					
		61.8 (13)	60.0 (12)	80.0 (16)	Total		23.8 (5)	35.0 (7)	65.0 (13)	Total		14.1 (3)	0.0 (0)	25.0 (5)							
Emotion label																					
froh	happy	9.5 (2)	15.0 (3)	-	traurig	sad	47.6 (10)	45.0 (9)	40.0 (8)	böse	bad (mad)	57.1 (12)	50.0 (10)	40.0 (8)	böse	bad (mad)	57.1 (12)	50.0 (10)	40.0 (8)		
fröhlich	happy	-	10.0 (2)	10.0 (2)	krank	sick	4.7 (1)	-	10.0 (2)	sauer	sour (angry)	-	25.0 (5)	30.0 (6)	sauer	sour (angry)	-	25.0 (5)	30.0 (6)		
glücklich	happy	-	10.0 (2)	10.0 (2)	schlechte Laune	bad mood	-	5.0 (1)	-	wütend	angry	4.7 (1)	10.0 (2)	20.0 (4)	wütend	angry	4.7 (1)	10.0 (2)	20.0 (4)		
sich freuen	be happy	-	5.0 (1)	-	einsam	lonely	-	-	5.0 (1)	zornig	raging	-	5.0 (1)	-	zornig	raging	-	5.0 (1)	-		
Negated																					
nicht traurig	not sad	-	5.0 (1)	-	Negated	not happy	-	-	5.0 (1)	meckerig	grumpy, giggling	-	-	5.0 (1)	meckerig	grumpy, giggling	-	-	5.0 (1)		
					nicht glücklich	not in good mood	-	-	5.0 (1)												
					nicht gut.gelaunt	not in good mood	-	-	5.0 (1)												
Errors																					
traurig	sad		5.0 (1) [4;6]			bad (mad)	4.7 (1) [3;3]	10.0 (2) [4;8, 4;9]		ängstlich	afraid	4.7 (1) [3;7]			ängstlich	afraid	4.7 (1) [3;7]				
hart	hard			5.0 (1) [5;8]	sauer	sour (angry)		5.0 (1) [4;10]		traurig	sad	4.7 (1) [4;0]	5.0 (1) [4;2]		traurig	sad	4.7 (1) [4;0]	5.0 (1) [4;2]			
Total																					
		9.5 (2)	50.0 (10)	25.0 (5)	Total		57.0 (12)	65.0 (13)	65.0 (13)	Total		71.2 (15)	95.0 (19)	95.0 (19)							
Expression																					
lachen	laugh				nicht lächeln	not smile	4.7 (1)	-	-	nicht lächeln	not smile	4.7 (1)	-	-	nicht lächeln	not smile	4.7 (1)	-	-		
lächeln	smile		10.0 (2)	-	so machen [expr.]	do like this [expr.]	-	5.0 (1)	-	weinen	cry	4.7 (1) [3;3]	-	-	weinen	cry	4.7 (1) [3;3]	-	-		
Errors																					
-																					
Total																					
		23.8 (5)	15.0 (3)	0.0 (0)	Total		4.7 (1)	5.0 (1)	0.0 (0)	Total		9.4 (2)	0.0 (0)	0.0 (0)							

With successive age groups, the number of social causes given for HAPPINESS increases, rising from 17% at age 3 to 47% at age 5, while self-oriented causes slightly decrease to 53% of the 5-year-olds' responses. While the majority of these social causes refers to shared time or joint activities with a close person like a parent, sibling, or friend, a few group-oriented causes are mentioned as well, first appearing at age 4 and increasing with 5 years. Examples include the child's popularity as a playmate, play in the group, being the best in sports, or making jokes and teasing each other in a group of male friends.

Although a few 'unclear' causes are provided by younger children, no conceptual confluences with other basic emotions are visible in German children's causes for HAPPINESS.

For SADNESS, social causes are mentioned most frequently by German children, rising from 48% at age 3 to 75% of the answers at age 5 (Table 4.2.13).

In German 3-year-olds' responses, these social causes are all other-oriented, referring to being scolded or punished by a caregiver or being intruded upon by a peer. Both of these cause types are, in contrast, treated by Stein et al. (2000) as prototypical for ANGER, not SADNESS.

A third of the causes for SADNESS told by 3-year-olds were self-oriented, expressing unfulfilled desires for sweets or food, or physiological states of sickness or having a bad dream, with the latter causes conflating SADNESS with pain or fear.

20% of the responses in the youngest group had to be treated as 'unclear'.

Starting with 4 years, the causes provided by German children were more clearly expressing a concept of SADNESS, including more "genuine" causes for SADNESS like the separation from significant others in the socially oriented category, or the prohibition to perform a desired activity, e.g., watching TV, in the self-oriented category. Being scolded disappears as cause, but aggression from a peer stays the most frequently mentioned cause for SADNESS at age 4.

Having emerged with 4 years, social causes of the group-oriented category rapidly increase with 5 years of age, becoming slightly more frequent than person-oriented causes. The most frequently mentioned of these causes are the exclusion from or being denied to play with by the peer group, or cases of ostracism or victimization.

While 5-year-old children still mention quite a few causes related to fear or sickness, 'unclear' cause statements have already disappeared.

For ANGER, socially oriented causes are the most dominant category in German children's responses from the youngest group, starting with 58% at age 3 and rising to already 91% at age 4 (Table 4.2.14). Self-oriented causes were present only in single examples of being denied a candy or a liked activity.

Table 4.2.12 *German children's response types for causes of HAPPINESS over age groups*

<b>HAPPY</b>				
<b>Response Orientation</b>	<b>3 years</b>	<b>4 years</b>	<b>5 years</b>	<b>Total</b>
Self	22 (73)	12 (57)	18 (53)	52 (61)
Social	5 (17)	8 (38)	16 (47)	29 (34)
I	5 (17)	6 (29)	12 (35)	23 (27)
II	0 (0)	2 (9)	4 (12)	6 (7)
Other / unclear	3 (10)	1 (5)	0 (0)	4 (5)
Total	30 (100)	21 (100)	34 (100)	85 (100)

Table 4.2.13 *German children's response types for causes of SADNESS over age groups*

<b>SAD</b>				
<b>Response Orientation</b>	<b>3 years</b>	<b>4 years</b>	<b>5 years</b>	<b>Total</b>
Self	8 (32)	8 (35)	7 (25)	23 (30)
Social	12 (48)	14 (61)	21 (75)	47 (62)
I	12 (48)	11 (48)	10 (36)	33 (43)
II	0 (0)	3 (13)	11 (39)	14 (19)
Other / unclear	5 (20)	1 (4)	0 (0)	6 (8)
Total	25 (100)	23 (100)	28 (100)	76 (100)

Table 4.2.14 *German children's response types for causes of ANGER over age groups*

<b>ANGRY</b>				
<b>Response Orientation</b>	<b>3 years</b>	<b>4 years</b>	<b>5 years</b>	<b>Total</b>
Self	3 (16)	1 (9)	2 (10)	6 (12)
Social	11 (58)	10 (91)	19 (90)	40 (78)
I	11 (58)	8 (73)	13 (62)	32 (63)
II	0 (0)	2 (18)	6 (28)	8 (15)
Other / unclear	5 (26)	0 (0)	0 (0)	5 (10)
Total	19 (100)	11 (100)	21 (100)	51 (100)

The highest proportion of the socially oriented causes consisted of other-oriented examples of a peer's aggression or intrusion. Further examples of the other-oriented category were being scolded by a caregiver in younger children, or having an argument, which was mentioned by older children. Another response type seen in all ages were cases, where someone did not behave the way the child wanted him to, e.g., does something "wrong" or does not bring something the child wanted.

As for both other basic emotions, group-oriented causes appeared with age 4 and increased with age 5, for ANGER to 28% of the responses in the oldest age group. Typical causes for this category were ostracism, issues of jealousy or status among a few close friends, or immoral behavior of a small group of peers.

'Unclear' causes, representing 26% of German 3-year-olds' answers, totally disappeared from age 4. In the same proportion of cases with 3 years, children named the same causal situation for both SAD and ANGRY, showing an unclear distinction between the two negative emotions. These overlaps decrease, but do not disappear, in the older groups.

### *Self regulation*

The 'self regulation' responses children provided to the question what they did, when they felt the emotion in question in the concrete situation they had named as cause in the previous interview question, did not receive specific type codes, but are simply described in the following paragraph. As the question about the regulation of the child's own emotion was only answered by a minority of both German and Korean children, comparisons between age groups tracking answer types and their proportions was difficult, and the results reported have to be interpreted with caution.

Almost all German children, being asked what they did when they felt happy, reported to maintain the current activity that caused the happy feelings.

The most frequent strategy named for coping with SADNESS was to seek a caregiver for help. While younger children simply responded to 'tell it' to mom or the teacher, older children would additionally describe the caregiver's regulating action. Some children simply mentioned to express their SADNESS through crying. Few responses referred to attempts of avoidance, suppression, or substitution, e.g., hiding, seeking another playmate, or, by a 5-year-old child, trying not to think about it any longer. This last-mentioned example probably shows the emergence of cognitive regulation strategies in older children.

For being ANGRY, no single dominant strategy was visible for German children: some would seek a caregiver for help, some follow another activity or seek a new playmate, a 5-year-old mentioned resting, probably to calm down. Other children would try to vent their ANGER, either by simply expressing it or screaming, or through reacting with aggression or retaliation. A strategy for coping with ANGER that newly emerged in the 5-year-olds' responses was 'proactive communication', examples of which included asking the other for his reasons or referring him to behavioral rules or morality.

Overall, caregivers seem to take on a prominent role for German children's regulation of negative emotions. Cognitive or communicative regulation strategies start to appear around age 5.

### *Expression strategies*

In the next section, the expression strategies and justifications children provided for their display behavior are described.

Table 4.2.15 presents German children's responses to whether they share or mask their expressions of the three basic emotions asked about, displaying counts and percentages in parentheses. Table 4.2.16 shows the counts and summarizing percentages for each emotion of children's main point of reference in their justification.

Table 4.2.15 *German children's social expression strategies for three basic emotions*

Response	3 years	4 years	5 years	Total
<b>HAPPY</b>				
Sharing <sup>a</sup>	16 (80)	13 (68)	12 (60)	41 (69)
Masking	4 (20)	6 (32)	8 (40)	18 (31)
<b>SAD</b>				
Sharing	12 (60)	10 (53)	6 (30)	28 (47)
Masking	8 (40)	9 (47)	14 (70)	31 (53)
<b>ANGRY</b>				
Sharing	11 (58)	11 (55)	5 (26)	27 (47)
Masking	8 (42)	9 (45)	14 (74)	31 (53)
<b>TOTAL</b>				
Sharing	39 (66)	34 (59)	23 (39)	96 (55)
Masking	20 (34)	24 (41)	36 (61)	80 (45)

The majority of German children reports to share the expression of their happy face with others (69%) (Table 4.2.15). About one third responds that they mask their HAPPINESS, rising from 20% at age 3 to 40% at age 5. Except for cases where children said to mask HAPPINESS also before parents, the majority replied that they mask the emotion before peers, but share it with parents.

Table 4.2.16 *German children's justifications of expression strategies*

Response Type	Sharing			Masking			Total	%
	3 years	4 years	5 years	3 years	4 years	5 years		
<b>HAPPY</b>								
Self	3	4	5	3	4	–	19	67.9
Other	3	2	2	1	–	–	8	28.6
Group	–	–	–	–	–	1	1	3.6
Norm	–	–	–	–	–	–	–	–
<b>SAD</b>								
Self	2	1	–	2	3	7	15	50.0
Other	–	3	3	–	2	3	11	36.7
Group	–	1	–	–	–	3	4	13.3
Norm	–	–	–	–	–	–	–	–
<b>ANGRY</b>								
Self	2	1	1	3	3	5	15	45.4
Other	3	4	4	1	2	1	15	45.4
Group	–	1	–	–	–	2	3	9.1
Norm	–	–	–	–	–	–	–	–
<b>TOTAL</b>								
Self	7	6	6	8	10	12	49	53.8
Other	6	9	9	2	4	4	34	37.4
Group	–	2	–	–	–	6	8	8.8
Norm	–	–	–	–	–	–	–	–

In the great majority of their justifications of their expression strategy for HAPPINESS, German children gave the 'self' as main point of reference (Table 4.2.16), mostly verbalizing a desire or evaluation, i.e., their (not) wanting or (not) liking to show their happy face, or, in single cases, their own good feelings or not being in the mood, respectively.

The 'other' as point of reference was given in 29% of the responses, almost exclusively in reasons for 'sharing'. While only one 3-year-old named the relationship (friendship) as reason, all other responses had perception, cognition, or communication as topic: 3- and 4-

year-olds would refer to perception, e.g., ‘so they see it’, ‘cause they haven’t seen it’, 5-year-olds to cognition and communication, e.g., ‘so they know’, ‘to tell them’.

One 5-year-old child gave the ‘group’ as cause for masking his HAPPINESS, explaining they would laugh about him – which he equally named as reason for hiding his SADNESS and ANGER in the peer group.

For SADNESS, responses to ‘mask’ the expression increased from 40% with 3 years to 70% with 5 years. About half of these children said to hide their expression from peers, but not parents, the other half would generally not show their SADNESS to others.

About twice as much justifications were given for ‘masking’ than for ‘sharing’ the emotion.

As reason for ‘sharing’, the younger children referred to the ‘self’ and their own wanting and liking to. Older children referred to the ‘other/relationship’ and explained to communicate – simply for information (‘they want to see it’), for reciprocity (‘cause they tell me then, too’), or for help and regulation (‘they should play with me then’).

Justifications for ‘masking’ mainly referred to the ‘self’. Children responded to dislike to or not want to show their sad face; one 5-year-old said to feel ‘uncomfortable’ (*unangenehm*).

Social references for justification of expression strategy increased with age. Two 4-year-olds answered he/she ‘would dislike it’ or ‘would cry too’, inferring the other’s emotional reaction. The 5-year-old children referred to perception and communication, responding that ‘the others shall not see it’, ‘it is a secret’, or to prevent that ‘they will ask questions’.

ANGER showed almost the same pattern of expression strategy over age for German children as SADNESS: ‘masking’ was named in half of the responses, rising from 42% at age 3 to 74% at age 5.

In their justifications, German children referred to both ‘self’ and ‘other’ – with ‘other’ being the more numerous reference point for ‘sharing’, and ‘self’ being more numerous for ‘masking’.

‘Self’-related reasons were all expressions of (not) wanting or (not) liking to show one’s emotion.

Some children, who said to show parents their ANGER, but not peers, explained that parents are nicer to them, or that they try to regulate or console.

Reasons to show friends their ANGER included aggressive intentions and, increasing with 5 years, letting them know.

German children masked their ANGER in younger age groups to avoid the other's anger, because he/she 'dislikes that', or because they're 'not my friend anymore'. In older children, awareness of one's position in the group appeared, and reasons for 'masking' ANGER included that peers would laugh about one – one child used the term *peinlich* ('embarrassing').

Overall, German children made no reference to norms or rules in justifying their expressive strategies for HAPPINESS, SADNESS or ANGER.

#### *Strategies of reacting to emotions of a friend*

The last questions of the EUI concerned children's reactions and behavioral strategies towards the emotions displayed by a close friend. The qualitative analyses of children's responses investigated empathic vs. dissociated feelings and prosocial vs. dissociating actions in reaction to negative emotions of a friend. Justifications of action strategies were analyzed for main point of reference to 'self', 'other', 'group', or 'norm'.

Tables 4.2.17 and 4.2.18 show the counts and percentages (in parentheses) of German children's reaction patterns to a friend's SADNESS and ANGER. Table 4.2.19 holds the summary of the justification responses for reactions to both emotions.

Table 4.2.17 *German children's reaction patterns to a friend's SADNESS*

Response Type	Action								
	prosocial				dissociating				
	3 years	4 years	5 years	Total	3 years	4 years	5 years	Total	
Feeling	<b>prosocial pattern</b>				mirroring /aggressive pattern				
	empathic/ mirroring	7 (41)	8 (42)	10 (53)	25 (45)	1 (6)	1 (5)	– (0)	2 (4)
	dissociated	independent pattern				<b>dissociated pattern</b>			
		3 (18)	3 (16)	4 (21)	10 (18)	6 (35)	7 (37)	5 (26)	18 (33)

About half of the German children in each age group responded to react with empathic or mirroring feelings to the friend's SADNESS, often using *auch* ('also, too') to indicate that they have "the same" emotion as the other. But the other half of the children reported responding with a dissociated feeling, e.g., 'good', 'happy', or, in the case of a 5-year-old, 'normal' – showing that he is unaffected by the friend's affective display.

Almost all children, who said to have empathic feelings for the friend, showed an overall 'prosocial pattern', i.e., responded with a prosocial action as well. Most frequently children

replied to ‘console’ (*trösten*) the friend; some children mentioned to seek a caregiver for help, some would involve the friend in play or another activity, a few older children replied to give them a gift.

16–21% of the German children in each group conformed to the ‘independent pattern’, i.e., said to perform prosocial actions, although being emotionally unaffected. 26–37% nevertheless reacted with a ‘dissociated pattern’, which comprised both unaffected or opposite feelings and a dissociating action. Examples of such reactions were ‘laughing’, ‘play alone’, and most often ‘play with someone else’.

In combination with a prosocial reaction, German children mostly provided justifications referring to the ‘other’, explaining to ‘make him/her happy again’, in few cases referring to the friendship, and, increasing with 5 years, to prevent him/her ‘being sad even longer’. As justifications for dissociating reactions, ‘self’ references were more numerous, in most instances stating that one ‘doesn’t want to play with him/her then’.

Table 4.2.18 German children’s reaction patterns to a friend’s ANGER

Response Type	Action								
	prosocial				dissociating				
	3 years	4 years	5 years	Total	3 years	4 years	5 years	Total	
Feeling	<b>prosocial pattern</b>				mirroring /aggressive pattern				
	empathic/ mirroring	2 (13)	5 (29)	8 (42)	15 (29)	3 (20)	3 (18)	4 (21)	10 (20)
	independent pattern				<b>dissociated pattern</b>				
	dissociated	4 (27)	1 (6)	– (0)	5 (10)	6 (40)	8 (47)	7 (37)	21 (41)

The reaction strategies German children named for the ANGER of a friend, conformed in 41% of cases to the dissociated pattern and only in 29% to the prosocial pattern. Together with children showing a ‘mirroring/aggressive’ type of reaction (20%), a total of 61% of the German children who answered the questions described a dissociating behavioral strategy. The ‘independent’ reaction type, which had been more frequent in response to a friend’s SADNESS, decreased with successive age groups, while prosocial patterns increased and were most numerous for 5-year-old children (42%).

Children describing an empathic or mirroring feeling replied to be ‘sad’ when the friend is ANGRY, or to be ‘angry, too’, with younger children using the German adjective *böse* and older children using increasingly often *wütend* or *sauer*. Dissociated feelings were reported as ‘good’, only one child used ‘happy’, another ‘normal’.

The prosocial actions that were most frequently mentioned included seeking a caregiver for regulation, consoling, or simply playing. A 5-year-old replied to communicate saying “don’t be angry”. Aggressive responses by the ‘mirroring/aggressive’ type were, e.g., ‘mock her’, ‘have a fight’, or ‘attack’.

The dissociating action responses of German children to an angry friend all described leaving the friend behind and engaging in play with others or another activity, e.g., ‘don’t play with him/her anymore’, ‘leave him/her’, ‘play with someone else’, ‘play alone’.

Justifications for prosocial reaction behavior were few. In half the cases they referred to ‘self’ and expressed desires and evaluations either of the behavior, e.g., ‘want to’ or ‘like’, or of the other’s emotion, e.g., ‘don’t like this’, ‘don’t want that she’s angry’. In the other cases, all being older children, social references were made to the friendship, the friend becoming happy again, or a caregiver regulating group behavior or enforcing rules.

Dissociating actions were more frequently justified with reference to the ‘self’ in all age groups, referring to own moods and likes, or disliking the other’s expression. One 5-year-old boy reasoned ‘I know that he can do something with himself’. References to the ‘other’, increasing with age, described the friend’s negative or aggressive behavior as reason (implying the own strategy is sought for self protection); only one girl explained ‘she is not my friend if she is like that’.

Table 4.2.19 *German children’s justifications of their reaction strategy to a friend’s negative emotion*

Response Type	Prosocial			Dissociating			Total	%	
	3 years	4 years	5 years	3 years	4 years	5 years			
<b>SAD</b>									
Self	1	1	1	2	4	1	10	<b>30.3</b>	
Other	3	5	9	–	1	1	19	<b>57.6</b>	
Group	1	–	1	–	–	–	2	<b>6.1</b>	
Norm	2	–	–	–	–	–	2	<b>6.1</b>	
<b>ANGRY</b>									
Self	2	2	1	2	3	6	16	<b>57.1</b>	
Other	–	1	2	1	2	4	10	<b>35.7</b>	
Group	–	–	1	–	–	–	1	<b>3.6</b>	
Norm	–	1	–	–	–	–	1	<b>3.6</b>	
<b>TOTAL</b>									
Self	3	3	2	4	7	7	26	<b>42.6</b>	
Other	3	6	11	1	3	5	29	<b>47.5</b>	
Group	1	–	2	–	–	–	3	<b>4.9</b>	
Norm	2	1	–	–	–	–	3	<b>4.9</b>	

#### 4.2.2.2 Korean children's emotion understanding and concepts

##### Overall Emotion Understanding (EU) score

For Korean children's total scores in the Emotion Understanding Interview (EUI), no significant age effect could be found in an ANOVA,  $F(2, 55) = 1.086, n.s.$ . Nevertheless, children's mean scores did steadily increase with successive age groups, as can be seen in Table 4.2.20. A probable reason for the absence of an age effect is the high variance in scores, speaking for huge differences between the emotion understanding of individual children.

##### Developmental sequence of basic emotions HAPPY-SAD-ANGRY

Concerning the development of scores for the three basic emotions —HAPPY, SAD and ANGRY— we see an advantage for the positive emotion HAPPY, especially in the older age groups (Fig. 4.2.02). Of the two negative emotions, ANGRY exhibits higher mean scores than SAD for Korean children in all three age groups. While HAPPY scores have the highest increase from 3 to 4 years, the negative emotions show higher increases in understanding scores from age 4 to 5.

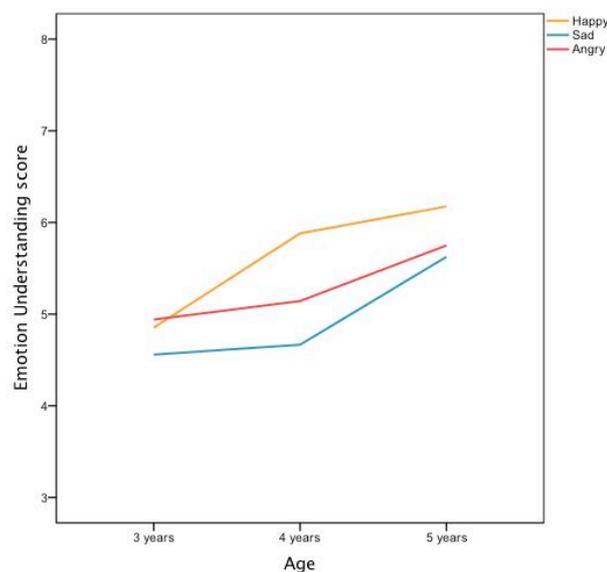


Fig. 4.2.02 Development of Korean children's mean scores for HAPPY, SAD and ANGRY over three age groups

##### Acquisitional sequence of concept parts tested in single interview questions

Table 4.2.20 displays the mean scores for single EUI questions over age groups, ranked in order to visualize the sequence in which they were mastered by Korean children. As had been the case for German children, systematic advantages in the development of certain question

types compared to others are visible in Korean children's sequential mastery of the questions, e.g. 'Show/ Hide' and 'Emotion reaction to a friend's emotion' questions in the beginning and 'Self regulation' questions in the end. These type advantages are irrespective of the single emotion, thus speaking for a general sequence in the acquisition of different parts of emotion concepts. This point will be further explored with a Guttman scale analysis in Chapter 4.2.2.3.

Table 4.2.20 Korean children's mean scores for single EU questions over age groups

Rank	Test Question	Age Group by Year			Total
		3 years	4 years	5 years	
1	SAD — Show / Hide	1.00	1.00	.98	.99
2	HAPPY — Show / Hide	1.00	.98	.95	.98
3	ANGRY — Show / Hide	.97	.98	1.00	.98
4	ANGRY — Face & Label	.91	1.00	1.00	.97
5	ANGRY — Emo React to Friend	.71	.74	.70	.71
6	HAPPY — Emo React to Friend	.65	.81	.85	.77
7	SAD — Emo React to Friend	.71	.60	.78	.69
8	HAPPY — Face & Label	.68	.64	.78	.70
9	SAD — Face & Label	.65	.79	.68	.70
10	HAPPY — Act React to Friend	.56	.62	.60	.59
11	HAPPY — General Cause	.44	.64	.78	.62
12	SAD — Act React to Friend	.47	.62	.65	.58
13	SAD — General Cause	.44	.45	.80	.56
14	HAPPY — <i>Justification Show / Hide</i>	.44	.64	.55	.54
15	HAPPY — Concrete Cause	.38	.60	.80	.59
16	ANGRY — Act React to Friend	.44	.64	.50	.53
17	HAPPY — <i>Justification Act React to Friend</i>	.38	.60	.58	.52
18	ANGRY — Concrete Cause	.41	.38	.60	.46
19	ANGRY — <i>Justification Show / Hide</i>	.38	.45	.53	.45
20	ANGRY — General Cause	.38	.31	.53	.41
21	ANGRY — <i>Justification Act React to Friend</i>	.41	.40	.30	.37
22	SAD — Concrete Cause	.38	.31	.50	.40
23	SAD — <i>Justification Show / Hide</i>	.38	.43	.38	.40
24	ANGRY — Self Regulation	.32	.24	.60	.39
25	SAD — <i>Justification Act React to Friend</i>	.32	.33	.48	.38
26	HAPPY — Self Regulation	.32	.36	.30	.33
27	SAD — Self Regulation	.21	.14	.40	.25
Total EU score		14.35	15.69	17.55	15.86

### Qualitative analyses of response types and changes over age

In the following, analyses of response types of Korean children's answers in the EUI are described for the different concept parts.

Again, counts and proportions were compared between the age groups to describe developmental changes, but due to irregular numbers of answers to different questions and between age groups, statistical analyses were not employed, and results have to be taken as merely descriptive.

#### *Labels*

The majority of Korean children referred to the happy face with the valence marker *cohta* ('good, like') (33–55% in all age groups), or the expression term *wusta* ('laugh') (35–45% in all age groups). In addition, only few emotion labels were produced at all for HAPPY by Korean children. In the total Korean sample, four children produced *kipputa* ('happy') in description of the happy face, two used *kipun cohta* ('good mood'), and two other *caymi issta* ('be/have fun'). The use of expression terms to refer to the emotion displayed did not decrease in the older age groups for Korean children (Table 4.2.21).

In labeling the emotion expressed by a sad face, Korean children dominantly used the expression term *wulta* ('cry') in all three age groups without decrease (33–55%). The emotion label *sulphuta* ('sad') was also produced by larger proportions of children in all three age groups. While *sulphuta* accounted for 15–18% of the answers in 3- and 5-year-olds, it was produced in 43% of the 4-year-olds' answers. No hypothesis can be given at the present moment for what this pattern might mean or whether it was just a coincidence in the sample. A variety of other emotion labels for SAD also appeared in children's responses, especially in those of 4- and 5-year-olds, semantically highlighting different aspects of SADNESS, like feeling hurt, being in a bad mood, or being miserable. Valence markers were produced in single instances for SAD, besides *napputa* ('bad'), the negated markers *an cohta* ('not good') and *an yeypputa* ('not beautiful'), which holds a moral connotation.

The majority of Korean descriptions of the feeling expressed by an angry face contained the emotion label *hwa nata* ('angry'). In 3-year-olds' answers *hwa nata* accounts for 47%, while the valence marker *napputa* ('bad') is produced in 29% of the responses. Valence responses then decrease with successive age groups, and the use of *hwa nata* rises to 85% in 5-year-olds' answers. No expression terms were produced throughout. Four alternative emotion labels or descriptions were given for ANGRY, each used by a single child only and highlighting

Table 4. 2. 2. 1. Labels produced by Korean children for emotions in the face recognition and labeling task of the EUI displaying counts and percentages for label types and age groups

HAPPY						SAD						ANGRY					
Label	Engl. translation	3 years	4 years	5 years	Label	Engl. translation	3 years	4 years	5 years	Label	Engl. translation	3 years	4 years	5 years			
<b>Valence marker</b>																	
좋다 cohta	good	41.2 (7)	33.3 (7)	55.0 (11)	나쁘다 napputa	bad	5.9 (1)	–	5.0 (1)	나쁘다 napputa	bad	29.4 (5)	19.0 (4)	10.0 (2)			
<u>Negated</u>																	
–	안 좋다 an cohta	–	–	–	안 예쁘다 an yeypputa	not good	5.9 (1)	4.8 (1)	5.0 (1)	–	–	–	–	–			
<u>Errors</u>																	
안 좋다 an cohta	not good	–	4.8 (1) [5;0]	–	–	–	–	–	–	–	–	–	–	–			
<b>Total</b>																	
		41.2 (7)	38.1 (8)	55.0 (11)	<b>Total</b>		37.6 (3)	4.8 (1)	10.0 (2)	<b>Total</b>		29.4 (5)	19.0 (4)	10.0 (2)			
<b>Emotion label</b>																	
기쁘다 kipputa	happy	5.9 (1)	9.5 (2)	5.0 (1)	슬프다 sulphuta	sad	17.6 (3)	42.9 (9)	15.0 (3)	화나다 hwanata	angry	47.1 (8)	81.0 (17)	85.0 (17)			
기분 좋다 kipun cohta	good mood	11.8 (2)	–	–	아프다 aphuta	sick, hurt	5.9 (1)	–	–	기분 나쁘다 kipun napputa	bad mood	–	4.8 (1)	–			
재미 있다 caymi issta	fun	–	4.8 (1)	5.0 (1)	속상하다 soksanghata	sad, hurt	–	4.8 (1)	5.0 (1)	싫다 sihta	dislike, hate	5.9 (1)	–	–			
<u>Negated</u>																	
–	–	–	–	–	기분이 상하다 kipun'isanghata	hurt mood	–	–	5.0 (1)	빠지다 ppicita	huffy, sulky	5.9 (1)	–	–			
<u>Errors</u>																	
–	–	–	–	–	불쌍하다 pulssanghata	miserable, pitiable	–	–	–	짜증나다 ccaccungnata	pesky, enervated	–	–	5.0 (1)			
<u>Negated</u>																	
–	–	–	–	–	기분 나쁘다 kipun napputa	bad mood	–	4.8 (1)	–	–	–	–	–	–			
<u>Errors</u>																	
슬프다 sulphuta	sad	–	9.5 (2) [4;10, 5;0]	–	이상하다 isanghata	queer, unusual	–	4.8 (1)	–	–	–	–	–	–			
<u>Negated</u>																	
–	–	–	–	–	기분 안 좋다 kipun an cohta	not in good mood	–	–	5.0 (1)	–	–	–	–	–			
<u>Errors</u>																	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–			
<b>Total</b>																	
		37.6 (3)	23.8 (5)	10.0 (2)	<b>Total</b>		23.5 (4)	61.9 (13)	35.0 (7)	<b>Total</b>		58.8 (10)	85.7 (18)	90.0 (18)			
<b>Expression</b>																	
웃다 wusta	laugh	35.3 (6)	42.9 (9)	45.0 (9)	울다 wulta	cry	47.1 (8)	33.3 (7)	55.0 (11)	–	–	–	–	–			
땀 나다 ttam nata	sweat	5.9 (1)	–	–	눈물 nwummul	tears	–	4.8 (1)	–	–	–	–	–	–			
<u>Errors</u>																	
웃다 wulta	cry	5.9 (1) [3;6]	–	–	–	–	–	–	–	–	–	–	–	–			
<b>Total</b>																	
		47.1 (8)	42.9 (9)	45.0 (9)	<b>Total</b>		47.1 (8)	38.1 (8)	55.0 (11)	<b>Total</b>		0.0 (0)	0.0 (0)	0.0 (0)			

a specific behavioral or feeling aspect of ANGER, e.g. being in a bad mood, hating someone or the situation, or being sulky or enervated.

Overall, Korean children made few labeling errors. All errors in referring to the happy face were instances of confusing HAPPINESS with SADNESS: one 3-year-old child used the expression term *wulta* ('cry'), two 4-year-olds the emotion label *sulphuta* ('sad'), and another the negated valence marker *an cohta* ('not good'). The only error observed for SADNESS was the use of the verb *mipta* ('hate') by one Korean 4-year-old. For ANGRY, only correct answers were provided.

### *Causes*

Korean children's responses to questions about general and concrete causes for their emotions are summarized in Tables 4.2.22–24 displaying counts and percentages in parentheses.

In all three age groups, half of the causes named by Korean children for HAPPINESS were self-oriented, the other half socially oriented (Table 4.2.22).

Self-oriented causes included special types of play, painting or crafting, or going to a special place or playground. Frequently, children just responded very generally 'if something is fun/interesting', one 5-year-old said 'if a good thing happens'. In the 3-year-old group, causes for HAPPINESS also included being made pretty, e.g., by wearing a skirt or getting a haircut.

Of the socially oriented causes, other-oriented ones were more numerous in the two younger groups, but were only half as frequent as group-oriented causes in the 5-year-old group, which showed a rapid increase with age. Frequent causes mentioned were meeting or playing with a friend in the younger two groups, and laughing and shared activities in the group in older children.

The value placed on harmonious relationships in Korean culture is visible in the frequent use of the term *sai cohkey* (lit. 'with good relationship'), used first in combination with a close friend, then produced increasingly in relation to the group. Related to this value are also causes, where the child says it is happy, because a friend or the group would *yangpo haycwuta* –meaning yield to them, let them go/take/do something first, share toys with them, or invite them to play.

Another type of experience strongly related with happiness for Korean children is the praise received by others. Examples are 'mom says I'm pretty', 'being proud', 'when mom praises me when I look after my younger sibling', or 'when the teacher praises me'.

No errors and almost no 'unclear' causes were observed in the Korean children's responses.

For the basic emotion SADNESS, Korean children predominantly mentioned socially oriented causes, rising from 53% at age 3 to 90% at age 5 (Table 4.2.23).

The self-oriented causes given, decreasing from 21% in the youngest group to 10% in the 5-year-olds, were examples of being denied a liked toy or activity, but also included experiences of fear or pain in the younger children, expressing connotations between those negative emotions.

Although causes of the group-oriented subcategory show an increase at age 5, the other-oriented causes concerning a single person or relationship were more numerous throughout. Frequent examples are aggression or intrusion by peers and siblings, or scolding and punishment from parents and teachers. Beside these, some causes mentioned behavior of others that was the opposite of the harmony-producing behavior of sharing with and leaving the child first priority that was named as causing happiness, e.g., if a friend is self-willed and obstinate, doesn't include one into play or share toys.

A few of the causes described by 3- and 5-year-olds conformed to situations of loss which are seen as prototypical situations for SADNESS in the emotion literature: mom goes away; missing relatives; grandpa died.

Causes of social category II – concerning group status and moral issues – were mostly cases of ostracism. 5-year-old children also named cases of breaking promises.

While, at age 3, 26% of Korean children's cause responses were still unrelated to being SAD or not understandable, 'unclear' causes decreased and disappeared in the 5-year-olds.

ANGER, for Korean children, was clearly an emotion caused by social interactions and circumstances (81–100%) (Table 4.2.24).

Self-oriented causes were almost absent in children's answers, only two 3-year-olds said to be angry when they are denied sweets.

Interestingly, the relational proportions of other-oriented and group-oriented causes stayed constant over age with about three quarters other-oriented and one quarter group-oriented causes mentioned. The most frequent cause in children's responses was the aggression of a sibling or friend. Only younger children named scolding or shouting of a parent or elder sibling. Older children increasingly mention cases of someone not listening or adhering to what they asked of him.

All group-oriented causes refer to cases of ostracism; some children concurrently mention their own attempts to communicate the issue to the group so they would stop their behavior.

'Unclear' or erroneous causes for ANGER are almost missing in Korean responses, but about one out of six children named the same situation both as a cause for SADNESS and for ANGER.

Table 4.2.22 *Korean children's response types for causes of HAPPINESS over age groups*

<b>HAPPY</b>				
<b>Response Orientation</b>	<b>3 years</b>	<b>4 years</b>	<b>5 years</b>	<b>Total</b>
Self	8 (50)	15 (50)	16 (50)	39 (50)
Social	7 (44)	14 (47)	15 (47)	36 (46)
I	5 (31)	9 (30)	5 (16)	19 (24)
II	2 (13)	5 (17)	10 (31)	17 (22)
Other / unclear	1 (6)	1 (3)	1 (3)	3 (4)
Total	16 (100)	30 (100)	32 (100)	78 (100)

Table 4.2.23 *Korean children's response types for causes of SADNESS over age groups*

<b>SAD</b>				
<b>Response Orientation</b>	<b>3 years</b>	<b>4 years</b>	<b>5 years</b>	<b>Total</b>
Self	4 (21)	4 (22)	3 (10)	11 (16)
Social	10 (53)	12 (67)	28 (90)	50 (74)
I	8 (42)	11 (61)	23 (74)	42 (62)
II	2 (11)	1 (6)	5 (16)	8 (12)
Other / unclear	5 (26)	2 (11)	0 (0)	7 (10)
Total	19 (100)	18 (100)	31 (100)	68 (100)

Table 4.2.24 *Korean children's response types for causes of ANGER over age groups*

<b>ANGRY</b>				
<b>Response Orientation</b>	<b>3 years</b>	<b>4 years</b>	<b>5 years</b>	<b>Total</b>
Self	2 (13)	0 (0)	0 (0)	2 (4)
Social	13 (81)	15 (100)	24 (96)	52 (93)
I	10 (62)	11 (73)	17 (68)	38 (68)
II	3 (19)	4 (27)	7 (28)	14 (25)
Other / unclear	1 (6)	0 (0)	1 (4)	2 (3)
Total	16 (100)	15 (100)	25 (100)	56 (100)

### *Self regulation*

As behavioral strategies when being happy, about half of Korean children's responses mentioned maintaining the joyful activity or joint play that caused the emotion, the other half named expressing their positive feeling through laughing – one child responded to 'make pretty'\*.

In trying to cope with SADNESS, Korean children over all ages mentioned three strategies about equally often: expressing the emotion, suppressing it, or engaging in 'proactive communication', e.g., telling others "please don't do that" or "please play with me". Only in two single instances did a child report to seek a teacher for help.

To regulate ANGER, most Korean 3-year-olds who answered the question say to express the emotion or to seek revenge. From 4 years on, the majority responds with 'proactive communication' to cope with ANGER, while aggression responses rapidly decrease. Many responses of 'proactive communication' by older children were accompanied by reflections on morality or norms that led to a cognitive reappraisal of one's aggressive intention and the employment of this strategy, e.g., "I don't hit, I just say something..." or "..., shouting is better than hitting." One 5-year-old boy reasoned about a strategy to prevent future intrusions by a friend with the conclusion "... I will have to learn Taekwondo (Korean martial art)."

Summarizing, Korean children frequently mention to simply express their HAPPINESS, SADNESS, or ANGER, when asked how they coped with the feeling. While they sometimes suppress their SADNESS, they usually try to vent their ANGER. A prominent strategy to regulate negative emotions is 'proactive communication', and 5-year-old children exhibit cognitive reflections and appraisals of different possible strategies.

### *Expression strategies*

Korean children's responses to the 'Show/Hide' questions of the interview and the related justification questions are summarized in Tables 4.2.25 and 4.2.26, displaying counts and percentages for expression strategies of 'sharing' and 'masking', and for main points of reference to 'self', 'other', 'group', or 'norm' in the justifications of strategies for the three basic emotions.

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\* Readers should notice the frequent use of the word ,pretty' (*yeypputa*) in relation with many of the emotion interview's topics and its importance for Koreans as some kind of moral value.

The majority of Korean children responded to display their happy face in front of others, but this number decreased with age (88% to 45% from 3 to 5), while ‘masking’ responses increased (12% to 55% from 3 to 5, respectively) (Table 4.2.25).

Table 4.2.25 *Korean children’s social expression strategies for three basic emotions*

Response	3 years	4 years	5 years	Total
<b>HAPPY</b>				
Sharing <sup>a</sup>	15 (88)	15 (71)	9 (45)	39 (67)
Masking	2 (12)	6 (29)	11 (55)	19 (33)
<b>SAD</b>				
Sharing	8 (47)	2 (10)	1 (5)	11 (19)
Masking	9 (53)	19 (90)	19 (95)	47 (81)
<b>ANGRY</b>				
Sharing	4 (24)	1 (5)	0 (0)	5 (9)
Masking	13 (76)	20 (95)	20 (100)	53 (91)
<b>TOTAL</b>				
Sharing	27 (53)	18 (29)	10 (17)	55 (32)
Masking	24 (47)	45 (71)	50 (83)	119 (68)

A large number of answers was given for justification of ‘sharing’, but comparably few for ‘masking’ (Table 4.2.26). Almost all justifications given had a social reference point.

The few ‘self’-references made named the quality of the positive feeling or one’s wish to show it as cause.

Most numerous were ‘other’-references stating that the other ‘likes it’; single responses were ‘to make (him/her) laugh’ and ‘cause (she/he’s) a friend’.

‘Norm’-references in the form ‘cause it’s pretty’ were frequent for younger children, but decreased with age. A 5-year-old said in response to why he’d show his happy face to his peers ‘cause (we) have to play together’, expressing the normative value of a positive display for harmonious relationships and group acceptance in Korea.

While ‘norm’-related responses decreased with age, those with ‘group’-reference increased, describing children’s being invited and involved in joint play and the creation of a fun atmosphere in the peer group or more directly ‘cause I want to make friends’ or ‘cause I want to make a harmonious relationship (*sai cohkey*) with my friends’. One 3-year-old child named being ‘ashamed’ (*changphi hata*) as reason for showing her smiling face\*.

\* In Asia, smiling is a prototypical display for shame or embarrassment.

A 4-year-old boy would not dare to laugh in front of his dad, because he would be ‘embarrassed’ (*pukkulepta*).

One interesting observation is that Korean children gave quite individual answers for whom they would show or dislike to show their happy expression. While the majority would generally share it, only single children would generally mask it, and some children each mentioned to hide the expression from peers only, or from dad and peers, but not mom, or from mom and peers, but not dad\*, or, in two cases of 5-year-olds, from both parents, but not from their peers.

This seems to indicate that Korean children develop an early sensitivity for relationships in which they feel harmony and security and such where they miss these feelings, and they develop conscious strategies for their emotion displays in single relationships and group situations.

Table 4.2.26 *Korean children’s justifications of expression strategies*

Response Type	Sharing			Masking			Total	%
	3 years	4 years	5 years	3 years	4 years	5 years		
<b>HAPPY</b>								
Self	1	2	3	–	3	–	9	12.7
Other	10	17	9	–	–	2	38	53.5
Group	2	4	6	–	2	–	14	19.7
Norm	5	3	1	–	1	–	10	14.1
<b>SAD</b>								
Self	1	2	–	1	4	1	9	16.7
Other	4	2	4	9	5	6	30	55.6
Group	–	–	–	3	4	3	10	18.5
Norm	–	–	–	2	2	1	5	9.3
<b>ANGRY</b>								
Self	–	1	1	–	1	4	7	12.7
Other	3	–	5	6	10	4	28	50.9
Group	–	–	3	2	2	4	11	20.0
Norm	–	–	–	4	1	4	9	16.4
<b>TOTAL</b>								
Self	2	5	4	1	8	5	25	13.9
Other	17	19	18	15	15	12	96	53.3
Group	2	4	9	5	8	7	35	19.4
Norm	5	3	1	6	4	5	24	13.3

\* The singling out of one parent did not show a systematic patterning with the child’s gender in either direction.

While about half of the Korean 3-year-olds still show their SADNESS in front of others, from 4 years on 90–95% of the children respond to ‘mask’ their negative emotion.

Around the 4<sup>th</sup> birthday, children mainly reply to hide SADNESS from peers, but display it before parents. Older children, on the other hand, would generally hide their feeling, show it to peers only, or to one parent (either mom or dad) only.

Most justifications children provided made reference to the ‘other/relationship’.

‘Self’-related reasons for ‘sharing’ or ‘masking’ a sad expression referred to the quality of one’s own feeling or to one’s liking or disliking to. A 5-year-old responded ‘that’s my heart (*maum*)’, with Korean *maum* taking on a meaning of trait of character.

As ‘other’-related reasons for showing their SADNESS, Korean children of all ages named the other’s behavior as cause, e.g., dad scolding or a friend hitting them, implying that they want to show their hurt feelings, which were caused by that behavior. Younger children also gave liking the other as a reason, whereas older children would describe parents’ regulating behavior when seeing them sad or crying.

Korean children justified to ‘mask’ their SADNESS most frequently over all age groups with the ‘other’ disliking the expression, e.g., ‘hates crying’, ‘dislikes a sad face’. A 3-year-old said ‘mom likes a happy emotion display (*phyoceng*)’, some older children mentioned that a parent ‘might get angry’ or ‘will scold me’.

A group of younger children also mentioned liking the other person as a reason for not showing them their SADNESS or clearly verbalized the aim to protect them, e.g., ‘they’d be hurt (*soksanghata*) if I often show it to them’ or ‘mom would get sad’.

The ‘group’ and ‘norms’ were also frequent reference points in Korean children’s explanations for their preference not to show a sad expression. The causes mentioned were similar in numbers and content for all three age groups.

The most frequent ‘group’-reference was being ‘ashamed /embarrassed’ (*changphihata* /*pukkulepta*); some children mentioned being disliked by peers or becoming victim of fun and aggression if showing a sad face.

Justifications mentioning norms either referred to a sad expression as ‘not pretty’/‘too unpretty’ or ‘a (too) bad appearance’.

Asked about their expressional strategies for ANGER, already 76% of the Korean 3-year-olds responded to ‘mask’ ANGER, rising to 95% and 100% of children in the subsequent age groups.

While the majority replied to generally mask the negative expression and some individual strategy patterns were observed as well, more 3-year-olds said to show parents their ANGER

and hide it from peers, whereas more 5-year-olds would hide their ANGER from parents, but show it to peers.

Children responding to openly express their ANGER would most often refer to the ‘other’, whose behavior brought the child into that state (implying he/she should be confronted with it) – frequent examples were ‘screamed’ or ‘went on my nerves’ (*ccaccungnata*).

For 5-year-olds, showing their ANGER is a response to or an attempt of regulation of how they are treated in the group, e.g., when they are bullied or nobody plays with them. One child said to show an angry face to prevent others hitting him.

‘Self’-related justifications for masking ANGER increased in the 5-year-olds, but were still the least represented of the four response categories overall. All of these children said that they ‘dislike to show’ that face.

The most frequent justification for masking ANGER with an ‘other/relationship’ as main point of reference referred to the other disliking the expression. Equally numerous were descriptions of the other’s negative reactions that would result from the display, e.g., ‘mom will be enervated’, ‘(I) might get scolded’, ‘dad won’t give (me) money’. Some children replied ‘mom/dad afraid/frightening (*musepta*)’. These statements could either be interpreted as the child being afraid of the parent or the parent being afraid (if the child shows her angry face). The latter reading would be possible if children at that age are not yet competent with the form *musewehata* (lit. ‘do afraid’), which should be used with a third person subject and differs from the stem used with a first person. This interpretation would be suggested by Clancy’s observation (Clancy 1999: 1409) that Japanese mothers use expressions of ‘being afraid’ in an educational purpose if the child is being loud, behaving self-willed or similar: if Korean mothers use similar scripts to teach their children to be nice and calm in front of others, Korean children in the interview might be repeating what they are frequently told (in the first person form).

Reasons named for hiding ANGER that referred to the ‘group’, were also similar over all ages. Many examples describe resulting negative behavior that one wants to avoid, e.g., being ‘laughed about’ by friends, that ‘they will not play with (me)’, or ‘they’ll always tell on me’. One 4-year-old said to be ‘embarrassed’ (*pukkulepta*).

‘Norm’-related justifications for masking ANGER were almost as frequent as ‘group’-related ones. One 3-year-old girl said ‘because I’m nice/well-behaved (*chakhata*)’; another explained masking before her dad with ‘cause dad gives us rice (=food)’ referring to roles in the family and according behavioral norms. Often, it was replied that ‘this is a strange/suspicious (*isanghan*)’ expression.

From the youngest age, Korean children show sensitivity to norms and relationships in their expressive behavior. With growing age, they increasingly hide negative emotions and find individual strategies for their expressions of positive and negative feelings considering the social outcomes their display might have.

#### *Strategies of reacting to emotions of a friend*

The strategies of reacting to negative emotions of a friend described by Korean children are summarized in Table 4.2.27, displaying counts and percentages of reaction patterns to SADNESS, and 4.2.28, displaying these numbers for ANGER. The counts and total percentages of the justifications children provided for their action response to the friend's display – referring to 'self', 'other', 'group', or 'norm' – are given in Table 4.2.29.

Table 4.2.27 *Korean children's reaction patterns to a friend's SADNESS*

Response Type	Action							
	prosocial				dissociating			
	3 years	4 years	5 years	Total	3 years	4 years	5 years	Total
Feeling	prosocial pattern				mirroring /aggressive pattern			
	8 (66)	15 (94)	16 (100)	39 (89)	– (0)	– (0)	– (0)	– (0)
Feeling	independent pattern				dissociated pattern			
	2 (17)	– (0)	– (0)	2 (4)	2 (17)	1 (6)	– (0)	3 (7)

The great majority of the Korean children reported a 'prosocial' pattern of reacting to a friend's SADNESS. The 'mirroring/aggressive' pattern was unattested and the remaining two patterns were visible in single instances only. All of these were some of the youngest children, replied to feel 'good' and did not give very clear responses for their behavioral reaction. 94% of the 4-year-olds and 100% of the 5-year-olds described clear empathy and prosocial attempts of behavioral regulation.

Children of all ages described their feeling responses with 'not good' (*an cohta*) or 'bad' (*napputa*); increasing with age, Korean children used 'sad' (*sulphuta*) or 'hurt' (*sanghata* /*soksanghata*). From 4 years on, the use of honorific qualifiers like *kes kathhta* ('seem') and *com* ('a little') also visibly increase in frequency.

For description of the prosocial actions they performed, Korean children used a variety of verbal expressions, many involving the verbal extension *-cwuta* ('give'), and sometimes produced them in frames of direct or reported speech like 'Let's \_\_\_' or 'I'll say \_\_\_'.

To give an impression, their bare forms are listed in the following, in the order of their first appearance: *nolacwuta* ('play with', lit. 'give play'), *nunmul kkuthiki haycwuta* ('make the tears stop'), *sai cohkey /kathi /chinhakey cinayta* ('spend the time in harmonious relationship /together /as close friends'), *salanghaycwuta* (lit. 'give love'), *calhaycwuta* ('be good to'), *N mantule cwuta* ('make N for (so.)'), *tolpwacwuta* ('care for, look after'), *towacwuta* ('help'), *wylohaycwuta* ('console'), *tallaycwuta* ('soothe, comfort'). In addition, children frequently responded to say something like "don't cry", "it's alright", or to apologize.

Justifications were given for prosocial behavior only. Except for one 'self'-reference by a 4-year-old with 'cause I dislike her crying face', all other explanations had a social reference – two thirds to the 'other', one third to a 'norm'. They referred, for example, to friendship, closeness, or liking the other; to the quality of the friend's sad expression or crying; or to the friend's usually playing with them or not playing with them when sad. Children justifying their behavior with a norm often previously used the form *-ya hata/toyta* ('should, have to') in their action response and said that one or a friend 'should not cry'; one 3-year-old gave the response 'if you cry Santa doesn't bring you a present'. Two other children replied that they have to apologize because they hit their friend first. A 3-year-old girl said 'cause I'm well-behaved (*chakhata*)'.

Table 4.2.28 Korean children's reaction patterns to a friend's ANGER

Response Type	Action							
	prosocial				dissociating			
	3 years	4 years	5 years	Total	3 years	4 years	5 years	Total
empathic/ mirroring	<b>prosocial pattern</b>				mirroring /aggressive pattern			
	9 (69)	12 (70)	13 (86)	34 (75)	2 (15)	2 (12)	1 (7)	5 (11)
Feeling	independent pattern				<b>dissociated pattern</b>			
	dissociated	1 (8)	1 (6)	1 (7)	3 (7)	1 (8)	2 (12)	– (0)

As reaction to a friend's ANGER, the 'prosocial' pattern was also the most frequent response type of Korean children. While dissociated feelings were again reported by single children only, a few children described the 'mirroring/aggressive' reaction pattern.

The use of words to describe feeling responses was almost the same as for SADNESS, with frequent uses of 'sad' and 'hurt', but some children also producing 'angry' (*hwa nata*).

Dissociating actions of the 'mirroring/aggressive' type were venting one's anger (*hwa nayta*), not helping, or hitting. Most frequently, Korean children reported 'prosocial communication'

of the sort: “don’t be angry”, “don’t be like that”, or “please stop it”, especially in older age groups. In a few cases, they also replied to say “it’s alright” (*kwaynchanha*) or to apologize. Some of the behavior towards a good relationship that was described for a friend’s SADNESS was also mentioned, except for soothing and consolation. Examples include ‘play with’, ‘hug’, ‘be good to’, ‘help’, or ‘spend time in harmonious relationship’.

Interestingly, in Korean children’s justifications for their reactions to an angry friend, ‘self’-referring responses are the most frequent category, followed by ‘other’ and ‘norm’-reference. This is mostly due to the children of the ‘mirroring/aggressive’ response type, who explained their dissociating behavior of venting their anger or reacting aggressively with the intensity of their feeling, e.g., ‘I’m in too much pain’, ‘I’m afraid (of him)’, ‘I’m enervated’, ‘my nerves are on edge’. Two other ‘mirroring/aggressive’ children referred to the immorality of the other’s behavior as ‘not o.k.’, or to her expression as ‘too strange/suspicious’. Justifications of prosocial actions with a ‘self’-reference included liking to do this, being sad, and disliking the other’s expression. Related to the ‘other’, Korean children referred to the friendship, the quality of the friend’s expression, to his not playing with them or being aggressive in justifying their prosocial acts or communication. Similar as for SADNESS, children referred to norms for having to apologize to or to soothe the friend for hitting him. One 5-year-old described to call a teacher because her friend had been ostracized by the group.

Table 4.2.29 *Korean children’s justifications of their reaction strategy to a friend’s negative emotion*

Response Type	Prosocial			Dissociating			Total	%
	3 years	4 years	5 years	3 years	4 years	5 years		
<b>SAD</b>								
Self	–	1	–	–	–	–	1	4.2
Other	3	5	7	–	–	–	15	62.5
Group	–	–	–	–	–	–	–	0.0
Norm	2	4	2	–	–	–	8	33.3
<b>ANGRY</b>								
Self	2	2	–	1	3	1	9	40.9
Other	2	3	2	–	–	–	7	31.8
Group	–	–	1	–	–	–	1	4.5
Norm	1	2	–	1	–	1	5	22.7
<b>TOTAL</b>								
Self	2	3	–	1	3	1	10	21.7
Other	5	8	9	–	–	–	22	47.8
Group	–	–	1	–	–	–	1	2.2
Norm	3	6	2	1	–	1	13	28.3

### 4.2.2.3 Comparison of German and Korean children's developing emotion concepts

#### Scores for total EU and single emotions and developmental trajectories

The total scores of German and Korean children on the EUI did not differ significantly from each other,  $t(117) = .149, n. s.$ . The overall variance of scores in both groups was comparably high, reflecting large individual differences.

Equally, no significant differences were found between German and Korean children's understanding scores for the single basic emotions.

Some differences showed up in the trajectories of German and Korean development. While German children's emotion understanding made only small progress from 3 to 4 and displayed a large increase from 4 to 5, Korean children's development showed only small increases in means over all age groups.

In developing understanding of the single emotions, ANGRY seems to be understood later than HAPPY and SAD by German children. For Korean children, while the positive emotion HAPPY exhibited highest understanding scores throughout, ANGRY was understood earlier and better than SAD.

#### Acquisitional sequence of concept parts

In the development of the mean scores for single answers of the EUI and the corresponding acquisitional sequence of different concept parts of basic emotions, systematic similarities had been found between German and Korean children's development. These were formulated and assessed in a Guttman scalogram analysis that grouped question types into developmental components and tested whether they exhibited a robust and reproducible sequence of acquisition.

Components of the scale were arranged in the following sequence: The 'Show/Hide' questions were put in the first component, as they had been the ones answered by most of the German and Korean children from age 3. In the second component, questions of 'Face recognition & labeling' and 'Emotion reaction to a friend's emotion' were grouped together, which formed a second block of questions mastered, occupying the ranks right after the 'Show/Hide' questions in Tables 4.2.10 and 4.2.20. Questions about the 'Action reaction to a friend's emotion' were then grouped into a third component. The justification questions for 'Show/Hide' and 'Action reaction to a friend's emotion' were, parallel to the treatment of justification questions in the ToM scalings, not included in the analysis.

‘Causes’ (comprising both general and concrete cause responses) made up component four; and ‘Self regulation’ questions, having been answered by fewest children in both cultures and occupying the last ranks in Tables 4.2.10 and 4.2.20, finally formed the fifth and last component of the scale.

The Guttman scale analysis of the sequential understanding of different conceptual aspects of basic emotions is presented in Table 4.2.30, with a shared scale and patterns proposed and separate analyses for the German and Korean sample.

For both cultures, the defined components were found scalable (indices of consistency for both German and Korean were .77), and the overall scale highly reproducible (both coefficients of reproducibility were .98). Moreover, the mean ages calculated for each pattern show a steady progression with succession in rank.

Table 4.2.30 *Guttman scale of components of emotion understanding for German and Korean children*

Tasks	Predicted patterns						Other	Total N
	1	2	3	4	5	6		
Show / Hide	–	+	+	+	+	+		
Face&Label + Emo React to Friend	–	–	+	+	+	+		
Act React to Friend	–	–	–	+	+	+		
Causes (general + concrete)	–	–	–	–	+	+		
Self Regulation	–	–	–	–	–	+		

German children								
Age	Mean frequency of occurrence						Other	Total N
	1	2	3	4	5	6		
3 years	2	4	3	4	3	2	3	21
4 years	0	2	5	7	2	1	3	20
5 years	0	0	2	5	6	7	0	20
Total	2	6	10	16	11	10	6	61
Average Age	3;8	4;2	4;5	4;8	4;11	4;10	(3;11)	

Korean children								
Age	Mean frequency of occurrence						Other	Total N
	1	2	3	4	5	6		
3 years	0	5	4	2	2	4	0	17
4 years	0	1	8	3	4	3	2	21
5 years	0	2	4	1	4	6	3	20
Total	0	8	16	6	10	13	5	58
Average Age	–	4;4	4;8	4;8	5;0	4;11	(5;2)	

## Qualitative differences in responses of German and Korean children

### *Labels*

In both cultures, children frequently produced markers of valence to describe the emotion behind a facial expression, especially for HAPPY.

Younger children often named the expression instead of using an emotion label. While expression terms decreased with age for German children, no such decrease is observed for expression terms in Korean children's answers for HAPPINESS and SADNESS. For ANGER, almost no terms for the facial expression are produced, neither by German nor Korean children.

German children usually refer to SADNESS with the dominant emotion term *traurig*. Korean children use the equivalent label *sulphuta* less frequently and produce a variety of other labels with meanings of feeling hurt and miserable. German children increasingly produced negated valence expressions to refer to SADNESS, with 5 years even as frequently as *traurig*. Korean children used negations in single instances only.

For ANGER, German children used the label *böse* and only gradually began replacing it with the competing emotion terms *sauer* and *wütend*. Korean children from age 3 readily recognized the angry face and labeled it with the emotion term *hwa nata* ('angry', lit. 'emanate fire').

### *Causes*

Differences found between German and Korean children's 'Cause' responses and their change over age concerned the numbers of social, i.e., other-oriented and group-oriented, causes given.

Korean children produced higher proportions of social causes overall,  $\chi^2 = 8.069$ ,  $df = 1$ ,  $p < .01$ .

Self-oriented causes named in both cultures were similar, including liked activities, getting sweets, or experiencing special places and events for positive, and prohibitions and denials of these as causes for negative feelings, but were more numerous for German children overall,  $\chi^2 = 7.371$ ,  $df = 1$ ,  $p < .01$ .

Similar causes mentioned in the other-oriented category in both cultures comprised joint play with a friend or family member for HAPPINESS, and scolding of caregivers and aggression and intrusions by peers and siblings for both SADNESS and ANGER. In both cultures, more

“genuine” causes for SADNESS describing the absence or loss of close persons are increasingly mentioned by older children.

Besides the similarities in situational causes mentioned in both cultural groups, Korean children’s responses include many examples expressing the Korean value of harmonious relationships and related behavioral ideals of sharing, helping, and giving others priority. They report to be happy, if others exhibit this kind of behavior to them, and to be sad, if others violate these norms and act self-willed.

In both cultures, causes for basic emotions related to the group are increasing with age. While group-oriented causes are generally absent in German 3-year-olds’ responses, then emerge at age 4 and increase with 5 years, they are already present in 11–19% of Korean 3-year-olds’ answers for all three emotions, further increasing with successive groups. In the German children’s responses for SADNESS, group-oriented causes increase to become the more numerous social cause category with 5 years. A similar shift from other- to group-oriented dominance in social causes is found for HAPPINESS, but not SADNESS, in Korean 5-year-old children.

Looking at Korean children’s cause responses for HAPPY, the group clearly increases as a factor of well-being through socially shared activities. For both German and Korean children, pride is also mentioned as a source of HAPPINESS. While it appears in older children of the German sample in causes related to status and popularity in the group, it is already present in answers of the Korean 3-year-olds and through all ages, but described in the form of receiving praise for one’s beauty and moral behavior.

In both cultures, exclusion from the peer group and cases of ostracism and victimization were frequent group-related causes for both SADNESS and ANGER. Possibly culture-specific causes were also observed: some German 5-year-olds mentioned cases of jealousy and conflicting interests among a small group of friends as causes for ANGER; Korean 5-year-olds sometimes referred to a broken promise as a cause for SADNESS.

#### *Errors and confluations of basic emotion concepts*

In the ‘face recognition & labeling’ task of the interview, similarities as well as differences were found between German and Korean children’s errors and confluations of concepts.

Errors in the reference to HAPPY were visible in the use of negative terms by a few children in both cultures, most often terms related to SADNESS.

Differences are observed in the labeling of negative emotions. Whereas eight of the German 3- and 4-year-olds showed confluations between negative emotions by referring to a sad

expression as ANGRY, or to an angry expression as SAD or 'afraid', only one Korean child referred to the sad face with 'hate'.

Concerning the conceptual confluences visible in the causes children named for their emotions, children of both cultures made no errors in their causes for HAPPINESS, but showed confluences of negative emotion concepts – all involving the emotion SADNESS.

About one quarter of all cause responses for SADNESS in both cultures (26% German, 25% Korean) exhibited such overlaps, most frequent in answers of 3-year-olds and decreasing with age, but still lying above 15% at 5 years for both samples. Often, children described the same situation as a cause for SADNESS and ANGER. Next in frequency were descriptions of pain or sickness as causes for SADNESS. A few children in both samples provided situations of fear as cause responses for SADNESS.

### *Regulation*

Both German and Korean children predominantly followed a strategy of maintaining the positive affect of HAPPINESS by going on with the (joint) activity mentioned as cause for the emotion, or trying to repeat the causing event.

Korean children often mentioned simple expression as a strategy for all three emotions.

For negative emotions, German children very frequently respond to seek a caregiver for help or regulation. Korean children, on the other hand, very rarely mention to ask a caregiver for regulation. They also mention no substitution or avoidance strategies, which sometimes appear in German children's answers. From early on, Korean children exhibit the practice of 'proactive communication' to regulate negative feelings and social situations. This strategy appears in German children's responses at age 5 and for ANGER only.

Cognitive appraisal of and reflective reasoning about regulative strategies first shows up in the answers of 5-year-olds in both cultures.

### *Expression strategies*

The majority of both German and Korean children responded that they share the expression of their happy face with parents and peers. Increasing with age, children in both cultures responded to mask their expression in some cases. While German children responding this way would almost always share their HAPPINESS with parents, but sometimes not with peers, Korean children described quite individual strategies of showing or hiding their emotion before mom, dad, and/or peers. The same difference was visible for the two other emotions.

No significant difference was found between the cultures for quantity of ‘masking’ replies for HAPPINESS.

As for the justifications children provided for the expression strategy they had named, Korean children gave overall twice as many responses (180) than German children (91) to the question, probably indicating the importance of appropriate display behavior in Korea and the early intentionality and consciousness of children’s strategies.

For HAPPINESS, German children most often referred to the ‘self’ and their own desire and evaluation as a reason for their display behavior. When using the ‘other’ as reference point of their justification, they would explain the attempt to communicate to the other, and his/her perception and knowledge. Korean children, in contrast, most frequently responded that the ‘other’ likes the emotion display. They also referred to the ‘norm’ of a ‘pretty’ appearance, especially younger children, and with growing age increasingly presented the ‘group’ as goal for their behavior, in which they want to be included and to contribute to a positive atmosphere.

In the development of display strategies for SADNESS, a significant difference is observable between the groups with Korean children masking expressions of SADNESS earlier and more frequently overall,  $\chi^2 = 10.685$ ,  $df = 1$ ,  $p < .001$ , from 4 years on representing 90% of Korean children’s responses. For German children, sharing the emotion is more numerous in the younger age groups, but masking also increases to 70% at age 5.

Most strategy justifications of German children, as for HAPPINESS, referred to the ‘self’, expressing positive or negative evaluation and desire. When giving the ‘other’ as reference point, again, communication and letting the other know or not know were the explanations older children provided. Korean children most frequently referred to the ‘other’ for both sharing and masking SADNESS, explaining to mask it because the other dislikes the expression and describing to show it in reaction to behavior of the other that hurt them. Korean children of all ages moreover replied to hide their sad face from the ‘group’, because they are ashamed or fear ostracism.

The same differences in earliness and quantity of ‘masking’ responses between German and Korean children is visible for ANGER as for SADNESS, with a significant difference between 91% Korean children responding to mask angry expressions and 53% German children responding to do so,  $\chi^2 = 20.887$ ,  $df = 1$ ,  $p < .0001$ . As for SADNESS, ‘sharing’ of ANGER is more numerous in German 3- and 4-year-olds and then decreases with 5 years, but ‘masking’ is the dominant response of Korean children already from the youngest age group.

In justifying their expression strategy, German children often referred to the ‘other’ as reason for openly displaying anger – to parents, because they help and console, to peers, to mirror their aggression or to ‘let them know’. For masking, on the other hand, ‘self’-references were again most numerous expressing children’s dislike. The Korean justifications again strongly differed from German explanations. They most frequently referred to the ‘other’ who dislikes the expression, or to reactions of anger and punishment from the ‘other’, then to ostracism impending from the ‘group’, and they attached an immoral value (‘strange, suspicious’) to the expression and a moral value (‘well-behaved’) to hiding it.

In summary, Korean children used far more social references as opposed to the self to justify their expression strategies for all three basic emotions,  $\chi^2 = 48.616$ ,  $df = 1$ ,  $p < .0001$ .

#### *Strategies of reacting to emotions of a friend*

The reaction strategies that German and Korean children described to the negative emotions of a close friend and the justifications they provided for them revealed some substantial differences between the two cultures.

Korean children reported significantly more often to react with a prosocial action to a friend’s negative display,  $\chi^2 = 28.519$ ,  $df = 1$ ,  $p < .0001$ . In the majority of cases, they showed an overall prosocial reaction pattern, reacting also with empathic feelings to the friend; independent, mirroring/aggressive, or dissociated reaction types were overall rarely attested. For both SADNESS and ANGER, prosocial pattern responses further increased with age, for SADNESS even reaching 100% in the 5-year-olds.

German children, on the other hand, reported empathic/mirroring feelings only in half the cases for both emotions. For SADNESS, 45% of the 49% empathic children also gave a prosocial action response; for ANGER, this were only 29% (of 49%), and the other 20% reported a mirroring/aggressive reaction. For both negative emotions, German children’s prosocial reaction patterns increased with age. For sadness, 16–21% reported an independent reaction pattern, i.e., they were not emotionally affected by the friend’s SADNESS, but reacted with a prosocial action. One third of the German children (33%) over all three age groups nevertheless responded to be both unaffected and to leave the friend behind (dissociating pattern). For ANGER, independent reactions were only reported by a few younger children and 41% showed a dissociating pattern.

Empathic and mirroring feelings were in both cultures described as ‘not good’ or ‘sad’ for SADNESS and as ‘sad’, ‘bad’ or ‘angry, too’ for ANGER – Koreans also produced ‘hurt

(feeling)' in both cases. While dissociated feelings were usually verbalized as 'good', some German children used 'normal', expressing unaffectedness.

The prosocial actions German children described for both emotions were: consoling, seeking a caregiver for help, or playing with the other. These actions were explained with wanting to react this way or disliking the friend's expression ('self'-reference) or with making the other happy again or the friendship, when referring to the 'other/relationship', which was more frequent for SADNESS. Aggressive reactions to ANGER were justified with reference to the other's behavior or with 'he should stop it'. The frequently mentioned dissociating actions of German children all described leaving the friend behind and engaging in play with others or another activity in a variety of formulations. Most reasons given for these reactions described the child's own mood or goal, e.g., wanting to play, and/or not wanting to play with the friend if she/he is like that. For ANGER, reasons of self-protection increased with age.

Korean children described a broad variety of prosocial behavior and intentions in reaction to both negative emotions. Frequently, these expressed the strive for a good relationship, including *nolacwuta* (lit. 'give play'), 'be good to', 'help', or 'spend the time in harmonious relationship (*sai cohkey*)'. For SADNESS, consolation, comforting, and caring were also often described; to ANGER, children frequently responded with 'prosocial communication', i.e., asking the other to calm down or stop his negative behavior. These interpersonal regulation behaviors stand in contrast to German children's frequent relying on caregivers for regulation of conflicts. When venting their anger in a mirroring or aggressive reaction to the friend's ANGER, Korean children referred to the unbearability of their emotional arousal in the situation. About 28% of Korean children's action justifications referred to norms or rules, a response type that was rarely attested in German children's answers. These children often used 'should' or 'have to' in combination with the action described. For SADNESS, children explained that 'one/a friend should not cry'/'it's not o.k. if one/a friend cries' (*an toynta*). In some cases for both SADNESS and ANGER children replied to have to apologize to the friend, because they made him/her sad or angry. 'Mirroring' children venting their anger over the friend's ANGER referred to the other's immoral behavior or expression.

Overall, Korean children gave more social justifications than German children,  $\chi^2 = 5.123$ ,  $df = 1$ ,  $p < .05$ . Although the amount of references to the 'other' were similar (48%), this was due to the frequent reference to 'self' for German (43%) and 'norm' for Korean children (28%).

Besides some similarities like consoling a sad friend or getting angry when a friend is angry/aggressive, children of the two cultures clearly show different tendencies in their reaction patterns, with German children being more independent in their behavioral decisions and Korean children being focused on the creation of positive relationships and conforming to interactional norms. It should be noticed that these differences are not only visible in the behaviors and justifications of the reaction strategies children described, but even in the feelings they have in response to a close friend's behavior or display.

In summary, while the general sequence of understanding or reflective abilities on different aspects of basic emotions is shared across the two cultures, the content and focus of children's representations and situational construals and strategies shows clear cultural differences.

#### 4.2.3 Relationships of theory of mind and emotion understanding in German and Korean children's development

In a final analysis of children's developing understanding of internal states, it was of interest whether children's theory of mind and emotion understanding would show correlations that would speak to a relatedness of these competencies in development that is independent of age. From a more abstract point of view, both measures test a conceptual understanding of mental states – the EUI of emotions, the ToM tests of beliefs, ignorance, and emotions in relation to desires and beliefs. From a closer perspective, on the other hand, the tasks differ in several aspects – from the types of questions, to the degree of active involvement of the child, to the fact that ToM tasks test the understanding or perspective taking skill of a story character's mental states, whereas the EUI explicitly asks about the child's own experiences.

Partial correlations calculated on theory of mind and emotion understanding scores entering age as control variable, are unexpectedly low and not significant,  $r = .04$ , *n. s.*, for German children, and  $r = .14$  (excluding KI questions) /  $r = .03$  (including KI questions), both *n. s.*, for Korean children's scores.

The question of why the two conceptual measures differ more from each other than each of them does from some of the ISL measures (see Chapter 4.3) will be taken up again in the discussion in Chapters 5.1 and 5.3.

### 4.3 Relationships of ISL and developing IS understanding

The final analyses performed had the aim to test the hypothesis that ISL in general could explain additional variance in ToM and EU over and above a general language measure like the PPVT. This was done by exploring the predictive value of specified parameters of internal state language for theory of mind and emotion understanding in a regression analysis.

Age and receptive vocabulary, which was measured by the PPVT and is known to show relationships with theory of mind (Milligan et al. 2007), were used as control variables, and it was assessed how much explanative power ISL would add on and above these two basic variables.

Measures of internal state language (ISL) that were selected for these analyses are listed in Table 4.3.01, together with descriptive statistics for the German, the Korean, and the combined sample.

Three measures of IS vocabulary were included in the correlational analyses: first, the total number of productive IS words from the IS-Word Checklist; then, each the subtotals for ‘Cognition & Evidentiality’, summing all words checked in the semantic categories of COGNITION and REALITY & EVIDENTIALITY described in chapter 4.1, and for ‘Emotion, Expression & Social relations’, summing all words checked in the semantic categories EMOTION EXPRESSION, EMOTION, and SOCIAL FEELINGS & RELATIONSHIPS.

Two measures of ISL use in narrative were selected for relational analyses: first, the ratio of IS clauses per total clauses produced in each child’s picture book narration; second, the ratio of IS clauses expressing causal or contrastive relations of the internal state referred to to actions, events, or other internal states mentioned in the story per total clauses produced.

A further variable that represented children’s productivity with IS verb complement clauses was included as possible predictor variable in the relational analyses. The IS Complementation score was computed using the parent report information on children’s production of complement clauses with SAY, KNOW, and THINK, giving one point for the production of juxtaposed complement clauses and two points for producing embedded complement clauses with complementizer for each verb (max. 6 points), and adding one point for each construction type of an IS verb with complement clause produced in the picture book narration. For the IS verb complement clauses produced in children’s narrations, types were scored instead of tokens, because they were better indicators of children’s proficiency with a

variety of IS verb complementation constructions and prevented that children who repeatedly used one particular construction, e.g., *-n kes kaththa* ('it seems that') constructions produced frequently by some Korean children, would yield disproportionately high scores for IS complementation. Individual children's scores on this final ISL measure ranged from 0 to 10.

Table 4.3.01 *Measures of Internal State Language with descriptive statistics*

Measure	German sample			Korean sample			Combined sample			Range
	N	M	SD	N	M	SD	N	M	SD	
<b>IS vocabulary</b>										
Total productive IS words	63	111.89	30.10	59	115.34	29.78	122	113.56	29.87	54–168
IS words in 'Cogn & Evid'	63	14.38	6.81	59	14.98	6.65	122	14.67	6.71	2–26
IS words in 'Emo & Soc'	63	28.33	9.92	59	30.78	9.89	122	29.52	9.94	8–48
<b>ISL use in narrative</b>										
IS clause ratio	41	.492	.124	57	.621	.155	98	.567	.156	.150–1
Caus/contr IS clause ratio <sup>a</sup>	41	.110	.111	57	.194	.163	98	.159	.149	.000–.512
<b>IS Verb Complementation</b>										
IS Complementation score	39	3.90	2.11	55	4.29	2.47	94	4.13	2.32	0–10

<sup>a</sup> Caus/contr IS clause ratio was not included in the analyses for the combined sample. The reason was that it failed the Kolmogorov-Smirnov test for normal distribution in the combined sample. Nevertheless, it was included in the analyses for the two culture samples as it showed normal distribution within each of the two groups.

#### 4.3.1 Relationships of ISL and ToM

The first block of analyses concerned relationships of ISL and children's theory of mind (ToM) scores. In a first step, correlations and partial correlations with control for age and PPVT were calculated for all ISL measures and theory of mind (ToM). These are reproduced in Tables 4.3.02 and 4.3.03.

Both ToM measures – including or excluding the knowledge-ignorance questions – show strong correlations with age, and even stronger ones with the PPVT. Both control variables – age and PPVT – are also highly correlated.

Almost all ISL measures included exhibited highly significant correlations with theory of mind. Strongest relationships were observed for IS vocabulary in 'Cognition & Evidentiality' and total productive IS words, followed by IS complementation and productive vocabulary of 'Emotion, Expression & Social relations'. Correlations between the ratio of IS clauses produced in the narrative and children's ToM were weaker and only of marginal significance.

Table 4.3.02 *Correlations among ToM, age, PPVT, and ISL measures in the combined sample*

Measure	1	2	3	4	5	6	7	8	9	N
1. ToM score (excluding KI Qs)	–									125
2. ToM score (all Qs)	.99 <sup>***</sup>	–								99
<b>Basic / control variables</b>										
3. Age	.57 <sup>***</sup>	.60 <sup>***</sup>	–							126
4. PPVT	.76 <sup>***</sup>	.79 <sup>***</sup>	.67 <sup>***</sup>	–						126
<b>IS vocabulary</b>										
5. Total productive IS words	.33 <sup>***</sup>	.36 <sup>***</sup>	.43 <sup>***</sup>	.40 <sup>***</sup>	–					122
6. IS words in 'Cogn & Evid'	.38 <sup>***</sup>	.40 <sup>***</sup>	.47 <sup>***</sup>	.44 <sup>***</sup>	.93 <sup>***</sup>	–				122
7. IS words in 'Emo & Soc'	.26 <sup>**</sup>	.27 <sup>**</sup>	.37 <sup>***</sup>	.31 <sup>***</sup>	.94 <sup>***</sup>	.82 <sup>***</sup>	–			122
<b>ISL use in narrative</b>										
8. IS clause ratio	.14 <sup>†</sup>	.17 <sup>†</sup>	.32 <sup>**</sup>	.12	.16 <sup>†</sup>	.15 <sup>†</sup>	.19 <sup>*</sup>	–		98
<b>IS Verb Complementation</b>										
9. IS Complementation score	.29 <sup>**</sup>	.32 <sup>**</sup>	.47 <sup>***</sup>	.36 <sup>***</sup>	.49 <sup>***</sup>	.50 <sup>***</sup>	.44 <sup>***</sup>	.33 <sup>**</sup>	–	94

†  $p < .09$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

As all ISL measures exhibited significant correlations with age, and all variables except IS clause ratio showed significant correlations with the PPVT as well, it was of interest, which of the relationships would stay significant after controlling for age and PPVT, thus showing independent connections of ISL and ToM (Table 4.3.03).

Surprisingly, after controlling for age and PPVT, no correlations were visible anymore between measures of ISL and ToM.

In a next step, hierarchical regression analyses were conducted for ToM scores excluding and including knowledge-ignorance questions, entering age in step 1 and PPVT in step 2. The models were both significant,  $F(2, 122) = 86.31, p < .001$ , and  $F(2, 96) = 81.66, p < .001$ . Age alone accounted for 33%/36% of the variance in ToM, the PPVT for an additional 26%/27%, yielding a combined variance explanation of 59%/63% (see Tables 4.3.04 and 4.3.05).

Since the development of ToM had been found to follow quite different dynamics in German and Korean children (Ch. 4.2.1), the same analyses were repeated for each culture sample separately to see whether the relational pattern just observed would hold for both cultural subsamples.

The German pattern of correlations and partial correlations between the ISL variables and ToM differed substantially from the pattern that surfaced in the combined and in the Korean sample.

Table 4.3.03 *Partial correlations of ToM and ISL measures controlling for age and PPVT*

Measure	1	2	3	4	5	6	7	8	9
1. ToM score (excluding KI Qs)	–								
2. ToM score (all Qs)	.97 <sup>***</sup>	–							
<b>Basic / control variables</b>									
3. Age <sup>a</sup>	–	–	–						
4. PPVT <sup>a</sup>	–	–	–	–					
<b>IS vocabulary</b>									
5. Total productive IS words	.02	.06	–	–	–				
6. IS words in 'Cogn & Evid'	.04	.05	–	–	.91 <sup>***</sup>	–			
7. IS words in 'Emo & Soc'	.01	.01	–	–	.94 <sup>***</sup>	.79 <sup>***</sup>	–		
<b>ISL use in narrative</b>									
8. IS clause ratio	.03	.07	–	–	.05	.03	.10	–	
<b>IS Verb Complementation</b>									
9. IS Complementation score	-.02	.02	–	–	.35 <sup>***</sup>	.35 <sup>***</sup>	.32 <sup>**</sup>	.23 <sup>*</sup>	–

<sup>a</sup> Control variables; \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Table 4.3.04 *Hierarchical regression analysis for variables predicting ToM (excluding KI questions) in the combined sample*

Step	Variable	B	SE B	$\beta$	$\Delta R^2$
1	Age	0.27	0.03	.57 <sup>***</sup>	.33
2	Age	0.05	0.04	.11	
	PPVT	0.17	0.02	.68 <sup>***</sup>	.26

\*\*\*  $p < .001$

Table 4.3.05 *Hierarchical regression analysis for variables predicting ToM (all questions) in the combined sample*

Step	Variable	B	SE B	$\beta$	$\Delta R^2$
1	Age	0.37	0.05	.60 <sup>***</sup>	.36
2	Age	0.08	0.05	.13	
	PPVT	0.23	0.03	.70 <sup>***</sup>	.27

\*\*\*  $p < .001$

For German children, several ISL variables still exhibited significant positive correlations with ToM, even after controlling for age and PPVT (see Table 4.3.06).

For the hierarchical regression analysis for German ToM, as well as for all subsequent regression models, after having entered the control variables age and PPVT in step 1 and step

2, ISL variables exhibiting significant partial correlations with ToM were entered with each successive step, starting with the variable that showed the strongest relationship.

If more than one variable of the categories IS vocabulary or ISL use in narrative showed significant partial correlations, the variable with the higher correlation coefficient was chosen for the regression. This was done, because these variables were derived from the same measure and share a substantial part of information, as seen in their extremely high intercorrelations (see Table 4.3.02 and 4.3.03). The IS vocabulary measures, for example, show correlations between  $r = .82$  and  $r = .94$ ,  $p < .001$ , and are therefore likely to obscure the regression model because of their high collinearity if entered together.

For German children, following this method, causal/contrastive IS clause ratio was entered in step 3 of the regression, IS vocabulary in 'Cognition & Evidentiality' in step 4. The final model, summarized in Table 4.3.07, was significant,  $F(4, 35) = 16.08$ ,  $p < .001$ . Although age still accounted for 44% of the variance in ToM, the ISL variables causal/contrastive IS clause ratio and IS vocabulary in 'Cognition & Evidentiality' were shown to significantly contribute to the variance in children's ToM scores, together explaining more variance in ToM ( $\Delta R^2 = .12$ ) than the PPVT ( $\Delta R^2 = .09$ ).

For Korean children, on the other hand, the relational pattern of ISL and ToM reproduced the pattern found in the combined sample, but most ISL variables did not even significantly correlate with ToM without entering controls. The only variable with a significant correlation with ToM scores excluding and including the knowledge-ignorance questions was causal/contrastive IS clause ratio,  $r = .30$ ,  $p < .05$ , and  $r = .42$ ,  $p < .01$ , but this relationship was also rendered insignificant, when controlling for age and PPVT.

Table 4.3.06 *Significant partial correlations of German ISL measures and ToM controlling for age and PPVT*

	ISL measure	Theory of Mind (ToM)
<b>IS vocabulary</b>		
1.	Total productive IS words	.23*
2.	IS words in 'Cogn & Evid'	.26*
3.	IS words in 'Emo & Soc'	.20 <sup>†</sup>
<b>ISL use in narrative</b>		
4.	IS clause ratio	.29*
5.	Caus/contr IS clause ratio	.37**

<sup>†</sup>  $p < .08$  \*  $p < .05$  \*\*  $p < .01$

Table 4.3.07 *Hierarchical regression analysis for variables predicting ToM in German children*

Step	Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
1	Age	0.40	0.07	.67 <sup>***</sup>	.44
2	Age	0.14	0.12	.23	
	PPVT	0.17	0.06	.53 <sup>*</sup>	.09
3	Age	0.16	0.11	.27	
	PPVT	0.13	0.06	.41 <sup>*</sup>	
	Caus/contr IS clause ratio	14.10	5.83	.27 <sup>*</sup>	.07
4	Age	0.12	0.11	.21	
	PPVT	0.09	0.06	.27	
	Caus/contr IS clause ratio	16.24	5.63	.32 <sup>**</sup>	
	IS words in 'Cogn & Evid'	0.24	0.11	.28 <sup>*</sup>	.05

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

For the Korean sample, the regression model was thus complete after step 2, as no ISL variables had shown independent relations to the theory of mind skills of Korean children. Models for both dependent ToM variables were significant,  $F(2, 59) = 35.30, p < .001$ , and  $F(2, 33) = 43.05, p < .001$ . Age explained 47%/63% of the variance in ToM, the PPVT another 8%/10%, adding to a total 55%/73% of explained variance (Tables 4.3.08, 4.3.09).

Table 4.3.08 *Hierarchical regression analysis for variables predicting ToM (excluding KI questions) in Korean children*

Step	Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
1	Age	0.27	0.04	.69 <sup>***</sup>	.47
2	Age	0.12	0.06	.31 <sup>*</sup>	
	PPVT	0.12	0.04	.46 <sup>**</sup>	.08

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Table 4.3.09 *Hierarchical regression analysis for variables predicting ToM (all questions) in Korean children*

Step	Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
1	Age	0.42	0.06	.79 <sup>***</sup>	.63
2	Age	0.20	0.08	.37 <sup>*</sup>	
	PPVT	0.18	0.06	.52 <sup>**</sup>	.10

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

In short, the production of causal and contrastive IS clauses and words of 'Cognition & Evidentiality' explained a substantial amount of German children's ToM test performance. For Korean children, ISL showed no such influence above age and the PPVT.

## 4.3.2 Relationships of ISL and Emotion Understanding (EU)

For the analyses of the relationships of ISL and emotion understanding (EU), the same steps were followed as for the analyses for theory of mind: correlational analyses and partial correlations controlling for age and PPVT were followed by a hierarchical regression analysis, first for the combined sample, then for each culture separately to test for cultural differences in the contribution of different ISL variables to the model.

Table 4.3.10 *Correlations among EU, age, PPVT, and ISL measures in the combined sample*

Measure	1	2	3	4	5	6	7	8	N
1. Emotion Understanding	–								119
<b>Basic / control variables</b>									
2. Age	.30 <sup>***</sup>	–							126
3. PPVT	.29 <sup>**</sup>	.67 <sup>***</sup>	–						126
<b>IS vocabulary</b>									
4. Total productive IS words	.20 <sup>*</sup>	.43 <sup>***</sup>	.40 <sup>***</sup>	–					122
5. IS words in 'Cogn & Evid'	.23 <sup>**</sup>	.47 <sup>***</sup>	.44 <sup>***</sup>	.93 <sup>***</sup>	–				122
6. IS words in 'Emo & Soc'	.19 <sup>*</sup>	.37 <sup>***</sup>	.31 <sup>***</sup>	.94 <sup>***</sup>	.82 <sup>***</sup>	–			122
<b>ISL use in narrative</b>									
7. IS clause ratio	.31 <sup>**</sup>	.32 <sup>**</sup>	.12	.16 <sup>†</sup>	.15 <sup>†</sup>	.19 <sup>*</sup>	–		98
<b>IS Verb Complementation</b>									
8. IS Complementation score	.42 <sup>***</sup>	.47 <sup>***</sup>	.36 <sup>***</sup>	.49 <sup>***</sup>	.50 <sup>***</sup>	.44 <sup>***</sup>	.33 <sup>**</sup>	–	94

†  $p < .07$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

While age and PPVT showed strong correlations with emotion understanding as expected, the strongest relationship with emotion understanding was measured for the IS Complementation score,  $r = .42$ ,  $p < .001$ . All other ISL variables exhibited positive correlations with emotion understanding as well (see Table 4.3.10).

When age and PPVT were controlled, the positive correlations of the IS vocabulary variables with emotion understanding were rendered insignificant, but both ISL use in narrative, as measured by the IS clause ratio, and the IS Verb Complementation score still showed strong relationships with emotion understanding (Table 4.3.11).

In the hierarchical regression analysis for emotion understanding in the combined sample, after entering age in step 1 and the PPVT in step 2, the IS Complementation score, which had shown the strongest correlation of the ISL variables, was entered in step 3, and the ratio of IS clauses in the narrative finally in step 4 (Table 4.3.12).

Table 4.3.11 *Partial correlations of EU and ISL measures controlling for age and PPVT*

Measure	1	2	3	4	5	6	7	8
1. Emotion Understanding	–							
<b>Basic / control variables</b>								
2. Age		–						
3. PPVT			–					
<b>IS vocabulary</b>								
4. Total productive IS words	.07			–				
5. IS words in 'Cogn & Evid'	.08			.91 <sup>***</sup>	–			
6. IS words in 'Emo & Soc'	.08			.94 <sup>***</sup>	.79 <sup>***</sup>	–		
<b>ISL use in narrative</b>								
7. IS clause ratio	.26 <sup>**</sup>			.05	.03	.10	–	
<b>IS Verb Complementation</b>								
8. IS Complementation score	.32 <sup>**</sup>			.35 <sup>***</sup>	.35 <sup>***</sup>	.32 <sup>**</sup>	.23 <sup>*</sup>	–

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Table 4.3.12 *Hierarchical regression analysis for variables predicting EU in the combined sample*

Step	Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
1	Age	0.18	0.06	.30 <sup>**</sup>	.09
2	Age	0.12	0.08	.19	
	PPVT	0.05	0.05	.16	.02
3	Age	0.03	0.08	.05	
	PPVT	0.04	0.04	.14	
	IS Complementation score	0.90	0.29	.35 <sup>**</sup>	.09
4	Age	–0.01	0.09	–.02	
	PPVT	0.06	0.04	.17	
	IS Complementation score	0.77	0.29	.30 <sup>**</sup>	
	IS clause ratio	7.74	4.06	.20 <sup>†</sup>	.03

†  $p < .06$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

The model was significant,  $F(4, 84) = 6.30, p < .001$ . Contrary to the results for theory of mind, age accounted only for 9% of the variance in emotion understanding, and the PPVT was not even a significant predictor variable. On the other hand, the IS complementation score explained another 9% of the variance and therefore proved to be as strong a predictor as age. The IS clause ratio, in the final step of the regression, was marginally significant at  $p < .06$  and added 3% of explained variance to the model. In sum, the regression model explained a total of 23% of variance in emotion understanding.

As with theory of mind, the analyses were repeated for each culture sample separately to be able to detect differences between German and Korean children in the relationships of ISL variables with emotion understanding and their contribution to a regression model.

For German children, the relational pattern of the ISL variables and emotion understanding mirrored that of the combined sample, with moderate positive relationships for the IS vocabulary variables and stronger ones for the IS clause ratio and the IS Complementation score. Only the ratio of causal/contrastive IS clauses used in the narrative, which had to be excluded from the analyses for the combined sample, but was included in the analyses for the separate culture samples, showed no significant relationship with emotion understanding. After calculating partial correlations with controls for age and PPVT, only one relationship of ISL with emotion understanding was still significant —that of the IS Complementation score,  $r = .32, p < .05$ . This variable was then used for a hierarchical regression analysis for German children's emotion understanding and entered in step 3 after age and PPVT.

The analysis yielded a significant model,  $F(3, 32) = 3.36, p < .05$ . While the PPVT did not contribute as predictor at all, the IS complementation score explained 9% additional variance over and above age for German children, adding to a total 24% of explained variance by the regression model (Table 4.3.13).

For Korean children, the relational pattern between the ISL measures and emotion understanding was slightly different. Of the IS vocabulary variables, only vocabulary in 'Cognition & Evidentiality' was moderately correlated to emotion understanding, but both measures of ISL use in narrative, including the causal/contrastive IS clause ratio, and the IS Complementation score were strongly correlated to it. After controlling for age and PPVT score, significant correlations remained for: IS clause ratio,  $r = .26, p < .05$ , causal/contrastive IS clause ratio,  $r = .39, p < .01$ , and IS Complementation score,  $r = .35, p < .01$ .

Table 4.3.13 *Hierarchical regression analysis for variables predicting EU in German children*

Step	Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
1	Age	0.22	0.09	.39*	.15
2	Age	0.20	0.16	.35	
	PPVT	0.02	0.09	.05	.00
3	Age	0.10	0.16	.17	
	PPVT	-0.02	0.08	-.06	
	IS Complementation score	1.04	0.54	.40 <sup>†</sup>	.09

<sup>†</sup>  $p < .07$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Table 4.3.14 Hierarchical regression analysis for variables predicting EU in Korean children

Step	Variable	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
1	Age	0.15	0.09	.24 <sup>†</sup>	.06
2	Age	-0.02	0.15	-.03	
	PPVT	0.14	0.10	.33	.04
3	Age	-0.09	0.14	-.14	
	PPVT	0.11	0.09	.26	
	Caus/contr IS clause ratio	16.70	5.71	.41 <sup>**</sup>	.14
4	Age	-0.15	0.14	-.22	
	PPVT	0.12	0.09	.27	
	Caus/contr IS clause ratio	13.92	5.70	.34 <sup>*</sup>	
	IS Complementation score	0.73	0.36	.27 <sup>*</sup>	.06

<sup>†</sup>  $p < .09$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Parallel to the analyses for the combined and the German sample, a hierarchical regression analysis was conducted for Korean children's emotion understanding. To avoid collinearity of predictors, only the stronger of the two measures of ISL use in narrative, causal/contrastive IS clause ratio, was used for the regression and entered in step 3 after age and PPVT. The IS Complementation score was entered in step 4 (Table 4.3.14).

The final model was significant,  $F(4, 48) = 4.90, p < .01$ , and explained a total of 29% of the variance in emotion understanding of the Korean children. While, again, the PPVT did not hold as predictor variable, and even age was only a marginally significant predictor ( $p < .09$ ) explaining merely 6% of Korean children's variance in emotion understanding, the ratio of causal/contrastive IS clauses used by children in the narrative was a strong predictor that accounted for more than twice the variance in children's scores than age (14%). Complementation with IS verbs, finally, accounted for another 6% of the variance in emotion understanding.

For both German and Korean children, the production of IS verbs with complement clauses as reported by parents and analyzed in children's narratives accounted for a substantial variance in emotion understanding. In the Korean sample, the use of causal and contrastive IS clauses, which had been a predictor of ToM for German children, is further the strongest predictor of emotion understanding before age and the PPVT.

## 5.1 ISL acquisition and the development of theory of mind and emotion concepts

In the following chapter, the findings of the study presented here are summarized and reviewed in a broader context and in relation to other research that has been carried out on the development of language and understanding of internal states in the preschool years.

Focus is on the large-scale developmental paths and sequences of specific skills that are stable across the two cultures. Cultural differences between German and Korean development will be discussed in detail in Chapter 5.3. A further look will be taken at the trajectories and dynamics over time of the major quantitative measures of ISL and ISU.

### 5.1.1 ISL development between 3 and 6 years

In the empirical study summarized, three different variables of internal state language (ISL) have been investigated in their development between 3 and 6 years and in comparison of children acquiring German or Korean as first language — children's developing lexicon for words and expressions for internal states spanning a comprehensive range of semantic categories, the acquisition of complement clause constructions with IS verbs, i.e., complex syntactic patterns allowing the simultaneous representation of internal states and their intentional/emotional/conceptual content, and the use of all these linguistic resources in the narration of a socio-emotional picture story.

#### **From concrete to abstract meanings and 'from body to mind'**

One major observation across all of these measures is the general trend of development from the use of words referring to more concrete, visible and/or sensual experiences to increasingly more abstract, intangible, and mental processes and representations without observational correlates.

This developmental trend is visible in that children of both languages/cultures start out at age 3 with a highly productive lexicon for bodily states, perceptions and senses, as well as of observable facial expressions of emotions and emotionally grounded interpersonal actions. At the same age they possess the first frequent expressions to refer to desires, abilities, basic feelings and emotions, and subjective evaluations and moral judgments, and these semantic fields of the lexicon become enriched and diversify with the addition of further vocabulary and uses over the next years. Words for cognition, mental states, and epistemic stance do not

appear before around the 4<sup>th</sup> birthday and show a rapid and substantial development after their first emergence. Moreover, complement clause constructions are first acquired and used by children of both languages with the more concrete verbs ‘want’ and ‘say’, which have more clearly scripted behavioral correlates in observable actions or speech, before they are used with the mental verbs ‘know’ and ‘think’, which are more abstract and lack clear scripts of externalization and corresponding behavior.

In the same vein, while 3-year-old children in both Germany and Korea narrating the wordless picture book were more focused on describing the characters, objects and actions depicted, older children included more and more of the internal and interpersonal levels into their narratives, that have to be inferred from the events and relations seen in the pictures. This can aptly be described as a shift in narrative from the “landscape of action” to the “landscape of consciousness” (Bruner 1986). Quantitatively, the proportions of use of IS tokens from more concrete semantic categories like desire, perception, emotion expression, or social behavior decreased, while those of more abstract categories like emotion, social relationships, or reality/evidentiality increased with age.

This development of the IS lexicon and its use, however, is not a single shift in terms of a simple distinction between ‘concrete’ terms and ‘abstract’ ones, but seems to follow a continuum of increasing grades of abstractness along which meaning acquisition proceeds. Of course, word acquisition is also influenced by other factors, like structural characteristics or those of the input. Yet, this general trend has been observed, above all the details, over semantic categories, inside semantic categories, and in usage examples and children’s narrations. These grades of abstractness seem to stretch from ‘body’ to ‘mind’ to ‘meta-mind’. This is visible, for example, in that basic terms of emotion and desire like ‘afraid’, ‘want X’, ‘like’ or evaluators like ‘bad’ or ‘funny’, while clearly expressing states of the mind, are still lower in abstractness and produced earlier than, for example, ‘proud’, ‘ashamed’, ‘believe’ or ‘pretend’, the meanings of which entail two representations that are juxtaposed and related – a supposed judgment of the self by others related to an internal feeling in the case of the social or self-reflective emotions, or a mental representation or intended appearance that is held against reality in the case of ‘believe’ and ‘pretend’. These relations are even less visible in a given scene and require more abstract mental simulation and inference to be ascribed.

Similar continuities, albeit not in the detailed and cross-linguistic view of semantic categories that has been followed in the present study, have been reported by other scholars. The early lexicon-oriented studies, for example, found a trajectory from ‘physiology’ over ‘volition’

and ‘emotion’ to ‘cognition’ (Bretherton & Beeghly 1982, Kauschke & Klann-Delius 1997). Wellman, Bartsch, and colleagues usually describe a shift from desire-talk to belief-talk – seeing this as indication of a parallel shift in children’s theory of mind from a desire- to a belief-based psychology (Bartsch & Wellman 1995, Tardif & Wellman 2000). While the unreflected use of children’s linguistic productions as a “window” onto their minds is questionable, the developmental trend in the meanings of children’s IS words indeed seems strongly connected to related developments in the understanding of the mind. Simply put, there seems to be a maturational basis which is shared across languages and cultures such that, for example, no child on earth will say “I believe it is here” before it says “I am tired” or “I want to eat”, which certainly has to do with the immediacy and relevance of bodily needs and simple feelings of distress or enjoyment, before moral norms, saving face, remembering and planning, or deceptions gain an experiential focus of relevance. Yet, it is less clear why this more abstract understanding of persons and minds, which children acquire over time, should be based on the quite specific concept of belief. From the view of the present study, which used a much broader range of semantic fields for inquiry, a similar shift and increase in abstraction was seen in the meanings for interpersonal feelings and attitudes. Words like ‘be sulky’, ‘forgive’, or ‘proud’ do not need a belief-psychology to be understood and acquired, and many Korean children use these words earlier than, for example, ‘think’. Hence, as argued above, it makes more sense to see meaning acquisition as developing along a general abstraction scale rather than along concrete psychological concepts.

### **From simple to complex structures**

Similar to the developmental increase seen in the abstraction of acquired word meanings and children’s verbalizations of events and stories, an increase in complexity was seen on the structural level of ISL and its use.

The usage examples provided by parents for their children’s typical uses of the IS words asked about in the ISL checklist showed an increase in complexity in children’s utterances that was in accord with specifics of the respective language: German children gradually extended their IS word uses to constructions with different subjects, i.e., person markings, more constituents, and added intensifying or other stance-marking adverbs and particles; moreover, the utterances reported increasingly covered different sentence types like exclamations, statements, questions, and directives. Korean children’s IS words and expressions were gradually combined with a greater variety of sentence enders and in multi-clause utterances with causal or conditional connections, or with complementation; especially

from around the 5<sup>th</sup> birthday, utterances with multiply interlacing clauses were reported and observed in narratives and interview responses.

The four IS verbs analyzed in their developing productivity with complement clause constructions are visibly developing along the stages of increasing syntactic complexity from single verbs utterances to matrix clause constructions with juxtaposed to such with embedded complement clauses, so that with each age group, higher proportions of children are producing the most complex constructions of level 3. From the usage examples we also see that the uses of older children show greater variety in the referents (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> person) of the matrix clause and other structural flexibilities.

In the narratives of both German and Korean children, children's verbalizations gradually develop from single event descriptions to coherent stories, which is also strongly related to their developing use of ISL. Internal state clauses were with increasing frequency over age combined with connectors or were part of constructions expressing causal or contrastive relationships between the internal state expressed and other events and circumstances of the story, e.g., as cause or consequence of a character's actions or reactions to events, or describing a contrast between inner state and behavior. In addition, utterances in which children combined an IS verb of perception, emotion, speech, or cognition with a complement clause were increasingly often observed in the narratives of the older age groups. The types of IS words and constructions that were first observed in the 4- and 5-year-olds' narratives often covered similar meanings as terms used by younger children, but expressed more complex or precise construals of the event depicted than their simpler counterparts. In German, these included different particle verbs of the same verb stem, reflexives, or reciprocals, in Korean, verb-chain predicates, and in both languages, the use of causatives and passives.

The observed development in the complexity of constructions of ISL seems to be related to the complexity of the representations or cognitive information that can be processed by children at a certain age. For example, simple predicates, evaluations, or relations need less "capacity" than more complex ones that involve simultaneous representations of states of self and other, before and after, mental content and reality and so forth – not only in language, but also in the working memory of cognitive processing (cf. Chapter 5.2).

### **Evidence for usage-based acquisition**

The observations of development in the use of IS words and the constructions in which these are employed, parallels developmental descriptions of so-called usage-based accounts of language acquisition (Tomasello 2003, Lieven et al. 2003, Croft & Cruse 2004, Chapter 11).

In this conception of acquisition, what children learn depends to a large extent on what is salient to them in context and input, and what they learn are concrete bits and pieces of language that are at first often restricted in their usage and context. Often, new items are first used in rather fixed constructions, consisting of much concrete material and only one or two slots in which different items can be inserted. In gradual steps, children come to use these more flexibly, e.g., in different contexts and elaborating on the constructional structure.

The analyses of the usage examples that parents provided for the IS items children were productive with revealed a similar picture.

Besides obvious factors of specific phonological, morphological, or syntactical difficulties due to which some items were acquired comparably late in their semantic group, frequency and salience of a referent in children's everyday experience accounted for early acquisition, as did frequency and salience in the ambient language (as far as it could be inferred from introspection). Moreover, across children, many items were reported in a fixed context, e.g., German *brauchen* and Korean *philyohata* 'need' almost exclusively for painting and crafting; or highly formulaic constructions served as typical frames for a class of items, like German *das ist aber \_\_\_* ('that is ABER \_\_\_') and Korean *\_\_\_ci?* ('isn't this/ain't I \_\_\_?') as most frequent frames for evaluators; or single items appeared most of the time in a single construction, as in German *X war böse* ('X was naughty') as only reported use for *böse* and Korean *\_\_\_ nollasscanha* ('(I) startled-OBVS \_\_\_') as only reported use for *nollata* ('be surprised'). Variations of these formulaic uses often appeared only in the reports of the older children and often involved more flexible substitution of person markings, i.e. 1<sup>st</sup> person, 2<sup>nd</sup> person, and 3<sup>rd</sup> person subjects, or verbal suffixes and sentence enders in Korean, and the adding-on of slots to the construction, e.g., for stance markers and intensifiers, or multiple clause connections.

Similar observations were made for the IS verb complement clause constructions, which usually start with one to three construction types accounting for most of the single verb uses, which often build the verbatim basis for matrix clauses of sentential complements, and also become successively elaborated upon with additions of stance markers, sentence enders, or similar material. Often, these frequent matrix constructions were restricted to specific types of speech acts or context, and, with increasing age, some new constructions were reported for single children.

As these interpretations are made from the collections of utterance examples provided by parents, research using more extensive naturalistic speech samples would be needed to substantiate them further.

### The emotion lexicon in acquisition

Before children come to productively use words for emotions, they are already highly productive with terms for basic emotional expressions. As in other domains, words for the bodily and/or externally visible states are mastered prior to those for the psychological ones. The general pattern seen for the developing emotion vocabulary was that a few basic terms were productive quite early, used by >75% of the 3-year-olds in the present sample, and that the largest growth of the lexicon in this category was seen from age 3 to 4.

Basic terms comprised a construction for the general expression of mood valence, and words for ‘fun’, ‘fear/afraid’, ‘sad’, and ‘angry/mad’. The items that were added over the following year covered more words related to general feeling or mood, different words for kinds of happiness, as well as ‘bored’ and ‘disgusting’.

Specific patterns were seen in cases where multiple items were available for a similar meaning. That happiness words, for example, passed common production levels of 50% or 75% in both languages only from age 4 was due to the fact that single children were producing different happiness terms at age 3. This means that individual children seem to pick up different terms as first word for ‘happiness’, exclusively using this first term for states of happiness for an extended time, before they add further terms and probably differentiate the meanings and usage contexts of these items. A different pattern was seen for German words for ‘angry/mad’. Here, all children used the same word (*böse*) as their first anger term, and acquired two other terms about a year later. In adult language, *böse* is no longer used for anger, showing that it probably gets replaced by the competing terms in later childhood. In Korean children’s emotion vocabulary, two items were present for states of sadness. While *sulphuta* was acquired first, *soksanghata*, acquired thereafter, appeared more often in parents’ usage examples and outnumbered *sulphuta* in production proportions at age 5. This pattern suggests a gradual differentiation and shift in preference between the two terms. Where only one item was available for a specific emotion, this term was acquired early and used exclusively with high production proportions, as for German *traurig* (‘sad’) and Korean *hwa nata* (‘angry’).

The acquisitional patterns just described were almost exactly paralleled by children’s label productions in the recognition task of facial expressions of emotions in the EUI.

Table 5.1.01 gives an overview of the development of basic emotion vocabulary in German and Korean – relating it to studies on English in the toddler and preschool years, and new results of Kristen (2010) on the IS word productions of German toddlers.

Table 5.1.01 *Development of words for emotions and social emotions across three languages*

MEANING	English		German		Korean																					
	Item	Age (%)	Item	Age (%)	Item	Age (%)																				
<b>Emotion expression</b>																										
CRYING	cry	28 (90.0) <sup>B</sup>	weinen	24 (78.9) <sup>K</sup>	wulta	44 (100.0)																				
				30 (100.0) <sup>K</sup>			56 (100.0)																			
				36 (100.0) <sup>K</sup>																						
				44 (91.3)																						
				54 (100.0)																						
66 (100.0)	69 (94.7)																									
LAUGHING	laugh	28 (47.0) <sup>B</sup>	lachen	24 (63.4) <sup>K</sup>	wusta	44 (100.0)																				
				30 (92.3) <sup>K</sup>			56 (100.0)																			
				36 (100.0) <sup>K</sup>																						
				44 (91.3)																						
				54 (100.0)																						
66 (100.0)	69 (94.7)																									
<b>Emotion</b>																										
HAPPINESS	happy	27 (73.3) <sup>R</sup> 28 (60.0) <sup>B</sup> 36 (91.7) <sup>R</sup> 45 (93.3) <sup>R</sup> 54 (95.0) <sup>R</sup> 66 (96.7) <sup>R</sup>	fröhlich	44 (43.5) 54 (75.0) 66 (50.0)	kipputa	44 (42.1) 56 (81.8) 69 (72.2)																				
							glad	glücklich	24 (7.0) 30 (29.0) 36 (51.5) 44 (43.5) 54 (65.0) 66 (60.0)	hayngpokhata	44 (52.6) 56 (59.1) 69 (77.8)															
												FEAR	afraid [scared]	27 (50.0) <sup>R</sup> 28 (73.0) <sup>B</sup> 36 (78.3) <sup>R</sup> 45 (93.3) <sup>R</sup> 54 (88.3) <sup>R</sup> 66 (90.0) <sup>R</sup>	Angst (haben)	24 (50.7) <sup>K</sup> 30 (87.0) <sup>K</sup> 36 (100.0) <sup>K</sup> 44 (95.7) 54 (100.0) 66 (95.2)	musepta	44 (100.0) 56 (95.7) 69 (88.9)								
																			SADNESS	sad	27 (50.0) <sup>R</sup> 28 (57.0) <sup>B</sup> 36 (80.0) <sup>R</sup> 45 (90.0) <sup>R</sup> 54 (91.7) <sup>R</sup> 66 (91.7) <sup>R</sup>	traurig	24 (40.8) <sup>K</sup> 30 (79.9) <sup>K</sup> 36 (92.4) <sup>K</sup> 44 (87.0) 54 (95.0) 66 (90.5)	sulphuta	44 (78.9) 56 (82.6) 69 (66.7)	
																										ANGER
	angry	wütend	24 (22.5) <sup>K</sup> 30 (30.4) <sup>K</sup> 36 (69.7) <sup>K</sup>	44 (52.6) 56 (68.2) 69 (88.9)																						

		45 (76.7) <sup>R</sup> 54 (80.0) <sup>R</sup> 66 (90.0) <sup>R</sup>		44 (39.1) 54 (80.0) 66 (85.0)	hwa nata	44 (89.5) 56 (91.3) 69 (94.4)
DISGUST	yucky disgusted	28 (33.0) <sup>B</sup> 36 (13.4) <sup>R</sup> 45 (16.7) <sup>R</sup> 54 (25.0) <sup>R</sup> 66 (33.4) <sup>R</sup>	eklig	24 (23.9) <sup>K</sup> 30 (62.3) <sup>K</sup> 36 (77.3) <sup>K</sup> 44 (73.9) 54 (80.0) 66 (95.2)	cingkulepta	44 (57.9) 56 (63.6) 69 (61.1)
SURPRISE	surprised	27 (13.3) <sup>R</sup> 28 (13.0) <sup>B</sup> 36 (51.7) <sup>R</sup> 45 (60.0) <sup>R</sup> 54 (75.0) <sup>R</sup> 66 (83.4) <sup>R</sup>	überrascht	24 (12.7) <sup>K</sup> 30 (18.8) <sup>K</sup> 36 (47.0) <sup>K</sup> 44 (17.4) 54 (30.0) 66 (50.0)	nollata	44 (68.4) 56 (68.2) 69 (61.1)
FUN	have fun	28 (67.0) <sup>B</sup>	Spaß (haben)	24 (25.4) <sup>K</sup> 30 (47.8) <sup>K</sup> 36 (71.2) <sup>K</sup> 44 (87.0) 54 (95.0) 66 (90.5)	caymi issta	44 (89.5) 56 (95.7) 69 (94.7)
BOREDOM	bored	27 (6.7) <sup>R</sup> 36 (31.7) <sup>R</sup> 45 (53.3) <sup>R</sup> 54 (58.4) <sup>R</sup> 66 (86.7) <sup>R</sup>	langweilig	44 (65.2) 54 (95.0) 66 (95.2)	simsimhata	44 (94.7) 56 (100.0) 69 (88.9)
Social behavior						
KISS	kiss	28 (87.0) <sup>B</sup>	küssen Kuss	24 (71.8) <sup>K</sup> 30 (95.7) <sup>K</sup> 36 (89.4) <sup>K</sup> 44 (87.0) 54 (100.0) 66 (95.0)	ppoppo hata	44 (100.0) 56 (100.0) 69 (100.0)
HIT			hauen	44 (87.0) 54 (95.0) 66 (95.0)	ttaylita	44 (94.7) 56 (95.7) 69 (83.3)
Social emotion						
LOVE	loving [love	27 (23.3) <sup>R</sup> 28 (87.0) <sup>B</sup> 36 (48.4) <sup>R</sup> 45 (50.0) <sup>R</sup> 54 (50.0) <sup>R</sup> 66 (55.0) <sup>R</sup>	lieben	24 (39.4) <sup>K</sup> 30 (63.8) <sup>K</sup> 36 (83.3) <sup>K</sup> 44 (69.6) 54 (100.0) 66 (90.5)	salanghanta	44 (94.7) 56 (95.5) 69 (100.0)
SHAME	ashamed	27 (0.0) <sup>R</sup> 36 (13.4) <sup>R</sup> 45 (13.3) <sup>R</sup> 54 (13.3) <sup>R</sup> 66 (26.7) <sup>R</sup>	sich schämen	44 (4.3) 54 (30.0) 66 (40.0)	changphihata	44 (52.6) 56 (86.4) 69 (77.8)
PRIDE	proud	28 (27.0) <sup>B</sup>	stolz	24 (4.2) <sup>K</sup> 30 (10.1) <sup>K</sup> 36 (27.3) <sup>K</sup> 44 (8.7) 54 (30.0) 66 (40.0)	calanghata	44 (36.8) 56 (63.6) 69 (72.2)

*Note.* Age in months; displaying group mean ages for the present data. R – Data from Ridgeway et al. (1985); percentages for 36, 54, and 66 months are calculated means from two groups with 6 months age-range each. B – Data from Bretherton & Beeghly (1982). K – Data from Kristen (2010).

This cross-cultural summary of acquisition data on emotion terms nicely shows the transitions from toddler's emerging uses to full productivity in the preschool years, and the wide-ranging cross-linguistic similarities. On the other hand, language-specific patterns due to item selection and/or the availability of words covering a similar emotional meaning are also visible. Slight discrepancies between the data of different studies probably result from different methodologies. The present study and that of Ridgeway et al. (1985) had a cross-sectional design. Because the age groups therefore consisted of different children, the increases over the age groups are not always linear. In Kristen's study (2010), a longitudinal design was used. With repeated reports for the same group of children, the increases appear more linear. In addition, the reports at 36 months sometimes show higher production percentages than those for the 44-months-old children of the present study. This might be the case, because mothers in her study were filling the same questionnaire for the third time, and due to the participation in the study and the prior familiarity with the checklist had acquired more experience with observing their child's productions and also a better memory for these.

An important question is what children's productions tell us about the meanings they are already representing. Wellman et al. (1995) argue that the uses they observed in the CHILDES data show that preschoolers possess an understanding of emotions as internal states as opposed to merely equating them with expressions or observational actions. However, there is still something missing from the whole picture. Looking at children's talk and understanding in the EUI, it was striking that they made quite many confluences of emotions —some when assigning emotion labels to pictures of facial expressions of emotions, and most in their descriptions of causes for their emotions. Moreover, the fact that words for facial expressions and interpersonal actions precede emotion terms in acquisition, plus the fact that the recognition and labeling of facial expressions of emotions and the understanding of situational causes of emotions are the first components of emotional understanding mastered in the preschool years (Pons et al. 2004), suggests that these "external cues" indeed play a major role in the acquisition and mapping of emotion terms. While children's use of such terms in causal and contrastive constructions shows that they truly assign a mental state meaning to these words once they reach a certain level of productivity, it appears from their confluences in the EUI that they have not yet fully mastered the detailed differentiations between the meanings of the different emotion terms. The uses at home, in familiar contexts, thus let us overestimate children's understanding, while the partiality and experience-bound nature of their early representations is revealed in unfamiliar experimental contexts (see also Nelson 1996). In terms of the three levels of meaning acquisition described by Nelson (Levy

& Nelson 1994, Nelson & Kessler-Shaw 2002), it seems that preschool children have passed on from using emotion terms only pragmatically in situational contexts where they have heard them used to the level of “denotation”, which implies a more flexible understanding of the words as symbolic concepts. However, they are still in the process of figuring out the relations and contrasts of the terms in a semantic system, which would be the level of “sense”. Future research should therefore extend the inquiries into preschooler’s comprehension and semantic contrasts of emotion terms, and into the later developments in production and comprehension in the school years.

### **Developing language for the social world and relationships: from interaction to relationships to self-reflection**

As important for a developing understanding of the psychological domain as private emotions, are interpersonal behaviors, attitudes, and feelings, which is why the associated semantic categories were included as second focus in the present study.

Not unexpectedly, in this domain, too, the items referring to directly observable social behaviors or event scripts are acquired first. They precede those that designate simple, “transitive” feelings like liking, loving, or disliking someone, and other interpersonal experiences like ‘scolding’, ‘promising’ or ‘missing’, which are more abstract and complex, involving scripted event sequences and often speech acts. Since these are, however, very frequent experiences for young children, they actively produce the respective words from 3 to 4 years (Korean children somewhat earlier than German children).

Words for self-reflective emotion, like ‘proud’ and ‘ashamed’, and for complex scripts of emotional and behavioral reactions to interpersonal disappointment or hurt feelings (‘feel offended’, ‘sulk’, ‘forgive’) appeared still later – around 4 to 5 years for Korean children, and only for few of the older children in the German sample. The appropriate use of these items requires the simultaneous representation of internal states of different persons and, in some cases, of multiple sequential events of a script.

Almost no research is known to me that explicitly concerns the semantic domain of interpersonality, and it seems to be a promising field for further research, especially in relation to social empathy and understanding. This would be an alternative approach to “theory of mind” to those centered around false-belief understanding, and could be fruitful for the investigation and understanding of cultural differences (see Chapter 5.3).

### Vocabulary of cognition and evidence: “from use to meaning” or the discourse roots of mental understanding

The semantic domain of cognition and reality/evidentiality is the IS word category that exhibits the most substantial growth and quickest development from 3 to 5 in both German and Korean. Not only are many new terms acquired over that period, but also the variety of constructions increases in which these are used by the children.

Mental verbs become highly productive and start being used with complement clauses; and epistemic adverbs and words and constructions for appearance and pretense start emerging.

In Table 5.1.02, the development of German and Korean children’s productivity with some of the central items in this domain is summarized – together with production data from English and German toddlers from Bretherton and Beeghly (1982) and Kristen (2010).

Table 5.1.02 *Development of words for cognition and evidence across three languages*

MEANING	English		German		Korean	
	Item	Age (%)	Item	Age (%)	Item	Age (%)
Mental state verbs						
KNOW	know	28 (66.0) <sup>B</sup>	wissen	24 (29.6) <sup>K</sup>	alta	44 (94.7)
				30 (76.8) <sup>K</sup>		
				36 (97.0) <sup>K</sup>		
				44 (65.2)		
				54 (95.0)		
66 (95.0)						
THINK	think	28 (33.0) <sup>B</sup>	denken	24 (4.2) <sup>K</sup>	sayngkak	44 (57.9)
				30 (18.8) <sup>K</sup>		
				36 (60.6) <sup>K</sup>		
				44 (43.5)		
				54 (75.0)		
66 (80.0)						
FORGET	forget	28 (30.0) <sup>B</sup>	vergessen	24 (18.3) <sup>K</sup>	icepelita	44 (63.2)
				30 (59.4) <sup>K</sup>		
				36 (77.3) <sup>K</sup>		
				44 (69.6)		
				54 (95.0)		
66 (95.0)						
REMEMBER	remember	28 (30.0) <sup>B</sup>	erinnern	24 (1.4) <sup>K</sup>	kiekhata	44 (31.6)
				30 (10.1) <sup>K</sup>		
				36 (43.9) <sup>K</sup>		
				44 (34.8)		
				54 (85.0)		
66 (75.0)						
Epistemic adverbs and truth–falsity, appearance–reality markers						
MAYBE	maybe	28 (33.0) <sup>B</sup>	vielleicht	24 (12.7) <sup>K</sup>	manyakey	44 (15.8)
				30 (42.0) <sup>K</sup>		
				36 (69.7) <sup>K</sup>		
				44 (73.9)		
				54 (90.0)		
66 (85.7)						

					ama	44 (21.1) 56 (31.8) 69 (38.9)
REAL/LY	real	28 (20.0) <sup>B</sup>	echt	24 (11.3) <sup>K</sup> 30 (29.0) <sup>K</sup> 36 (59.1) <sup>K</sup> 44 (26.1) 54 (75.0) 66 (90.0)	cincca	44 (68.4) 56 (91.3) 69 (89.5)
			wirklich	44 (56.5) 54 (85.0) 66 (80.0)	sasil	44 (21.1) 56 (40.9) 69 (33.3)
PRETEND	pretend	28 (30.0) <sup>B</sup>	so tun als ob	24 (12.7) <sup>K</sup> 30 (26.1) <sup>K</sup> 36 (40.9) <sup>K</sup> 44 (17.4) 54 (45.0) 66 (45.0)	chek hata	44 (5.3) 56 (36.4) 69 (72.2)
BELIEVE	—	—	glauben	24 (11.3) <sup>K</sup> 30 (36.2) <sup>K</sup> 36 (59.1) <sup>K</sup> 44 (60.9) 54 (85.0) 66 (75.0)	mitta	44 (15.8) 56 (31.8) 69 (38.9)
SEEM	—	—	scheinen	44 (4.3) 54 (15.0) 66 (35.0)	poita	44 (47.4) 56 (59.1) 69 (55.6)
					kes kathta	44 (42.1) 56 (63.6) 69 (83.3)

*Note.* Age in months; displaying group mean ages for the present data.

B – Data from Bretherton & Beeghly (1982). K – Data from Kristen (2010).

In this domain, as can be seen from Table 5.1.02 and, in more detail, from the analyses in Chapter 4.1.1, the cross-linguistic differences are more profound than in the emotion domain – especially between the two Germanic languages and Korean.

This is the case, because the pragmatic usage contexts of the single items where the mental/epistemic meanings are only backgrounded are quite wide and vary considerably between items. For many of the terms, one or two discourse-pragmatic functions are acquired first and seem to serve as constructional islands from which children gradually extend to include new structural options and contextual uses. Most clearly, this could be seen in the detailed analyses of the developing IS verb complement clause constructions.

Again, in review of the children's usage examples and narrative data, we see usage-based, constructional learning and a gradual progression from more pragmatic and context-bound to more abstract and flexible meanings and uses, supporting an interpretation of “use before meaning” or meaning acquisition from use in the mental/epistemic domain (Nelson 1996, Astington & Peskin 2004).

German children use *vielleicht* ('maybe'), for example, for proposals about what to do; *stimmts*, contracted from *stimmt es?* ('is it right?'), as committal-seeker. Equivalents of 'real/ly' are in both languages frequently used as intensifiers, in Korean with a commissive function. Korean words for 'sure' and 'certainly' were only reported in uses as committals.

The most frequently reported constructions with mental state verbs are both formulaic in nature and have a clear discourse-pragmatic function. German *weißte* ('you know') functions as attention-getter, Korean *alasse/alkeysse* as acknowledging signal to commands, and both languages possess a simple construction of 'I know', which can be extended with intensifying particles or suffixes and expresses "(you) don't (have to) tell me that over again". The latter is the construction that gets elaborated with the addition of complement clauses, which simply repeat the reminder or admonition probably stated more or less verbatim by the interlocutor in a previous discourse turn. How children make the transition from these pragmatic productions to the few reported uses of genuine statements of factual knowledge is an empirical problem yet to be focused on more closely.

While, in English, *I think* is frequently used as qualifying marker on statements (Diessel 2004), German children use *ich glaub(e)* ('I believe') for the same function, and Korean children 'seem'-constructions – which is reflected in the comparatively early acquisition of the respective verbs in cross-linguistic comparison. Korean children produce 'believe' much later than German children, and German children use 'seem' later, probably because Korean *mitta* and German *scheinen* do not appear in pragmatic discourse formulae in their respective languages. Although 'think' is not used as discourse marker by German and Korean children, it was frequently reported in constructions with the interactive function to request a reply or help in a decision; in Korean, additionally, in an imperative to remember or reconsider a statement made; and, in German, as matrix verb for reported speech (i.e., verbalized opinion).

In summary, children seem to use frequent pragmatic uses of mental and epistemic terms as "entry point" into the semantic field, using the discourse around these terms to go on to step-wise discover and master their mental/epistemic meanings. Unfortunately, the present parent reports and narrative productions did not provide enough data to find out exactly when the majority of children make the important transition in meaning acquisition for the single terms. However, the present study can serve as a starting point for future studies on the meaning acquisition of epistemic verbs and adverbs in German and Korean. Focusing on a few terms, a longitudinal collection of naturalistic data, or the conduction of cross-sectional comprehension experiments would be suitable designs for that purpose.

### Individual differences in internal state language

It must be noted that the individual differences in internal state language between single children of the same culture and age group were quite large. For children in each group, we see high variation in the amount of active IS words, with highest-scoring children in each year having more than twice the IS vocabulary than the lowest-scoring children of the same year. Large differences were also observed for the ratios of ISL use in children's narratives, with, e.g., ranges of .15–.60 for German and .27–1.00 for Korean 3-year-olds' IS clauses per total clauses. Among other factors, the main reason for these wide ranges might come from differences in the input children receive, especially the amount of conversation in the family, shared discourse about internal states, engagement in narratives and book reading and similar talk and activities. Relationships of mother's general and explanatory use of internal or mental state language, in free play, narrative, or book reading, with children's use of such language have been found in a number of longitudinal studies (Furrow et al. 1992, Taumoepeau & Ruffman 2006, 2008).

#### 5.1.2 Developing theory of mind and emotion concepts in the preschool years

Preschoolers' understanding of internal states, which has been assessed through different theory of mind tasks and an emotion understanding interview (EUI), clearly shows a substantial development from age 3 to 6 for both German and Korean children.

As has been argued by many researchers and scholars investigating this topic before, in the period from around the 4<sup>th</sup> birthday to 5 ½ years major developments in children's understanding of the mind take place, making it possible to talk about something like a new stage or substantial change in their mental representations and conceptions (Nelson 1996, Perner 1991, Wellman 2001). One of the most striking findings of the present study is the possibility to construct Guttman scales of different test question types of both theory of mind and emotion understanding, that robustly capture a common sequence of development shared by the majority of preschoolers of both the German and Korean study sample. These seem to reflect hierarchically organized levels of increasing cognitive abstraction and processing abilities.

**Taking perspectives, keeping track of them – and holding multiple perspectives at a time**

Theory of mind development as investigated with a battery of classical tasks showed a cross-culturally stable path of development along a scale of different perspective-taking skills as measured by specific test questions that require simple or combinatorial inferences of desires, emotional reactions, ignorance, and (false) beliefs.

The scale represents four stages all children pass in the same sequence. At first, they are able to infer simple emotional reactions from unfulfilled desires, i.e., that a character will be sad for not getting or finding what s/he wanted or expected. Shortly thereafter, children can infer positive and negative emotional reactions from a character's likes and dislikes and his beliefs about having found a liked or disliked food in a yet sealed container. These understandings are well in place before the 4<sup>th</sup> birthday. On the next stage, which children reach some time between age 4 and 6, they show understanding of knowledge/ignorance and (false) beliefs in the respective test questions. The last type of theory of mind tasks that children pass involves the combinatorial inference of a character's emotion from her/his desire and false belief. In order to answer correctly, children have to be able to infer and understand the character's false belief in a preceding step, and only about 30% of the oldest children in the present sample, i.e., of the 5-year-olds approaching the 6<sup>th</sup> birthday, are able to make this two-step inference.

In the culture specific scales of German and Korean children's passing of different test questions of knowledge/ignorance and false belief, which will be discussed in more detail in Chapters 5.2 and 5.3, a common factor was further found that influenced both sequences: children of both cultures passed tasks involving a changed content of a container before tasks involving a change of location of an item from one container to another.

The Guttman scale results make sense in that they parallel, in conceptual understanding, the lexicon development from simple desires and emotional reactions to terms for knowledge, belief, and other cognitive states – along the same dimensions of concreteness–abstractness and of immediate relevance mentioned in the discussion before. Tasks involving combinatorial inferences, then, are each one stage higher on the scale than the respective desire/emotion and ignorance/false belief stage. This seems to be related to the higher processing demand needed for remembering the further piece of information included and comparing and combining the informational bits to form the right inference for the answer.

Finally, the relative easiness of content-tasks compared to location-tasks might equally be explained by demands on memory and processing. All containers, the contents of which were switched during the test procedure, had labels on them depicting their previous or “usual”

content, i.e., Smarties or Ppeppelo, peanuts, or chewing gum. These pictures were present all the time while children were answering test and control questions and might have served as a memory aid. In the locations-tasks, on the other hand, children had only the short period of time when the object was transferred to attend to and remember its final whereabouts; while they were presented the questions, the two closed containers, that were simple colored boxes, gave no natural hints about their current nor previous contents, leaving a greater burden on children's memory-for-processing.

Wellman and Liu (2004) made a scaling study of theory of mind also using Guttman scale analyses. Their 5-item scale consisted of: diverse desire, diverse belief, knowledge access, contents false belief, and real-apparent emotion. Again, there seems to be a general progression from understanding desires to understanding mental states, and English-speaking children pass these stages in a common sequence. Recently, Wellman et al. (2011) could confirm in a longitudinal study that their Guttman scale actually represents stages of developmental progression for individual children. This lays new weight on the usefulness of scales in developmental research in general, and also on the representativeness of the present findings.

Vinden's results also seem to conform to the scale of difficulty found here (Vinden 1999): Western, Mofu, and Tolai children responded correctly to a desire–emotion question at younger ages than they were correct on false-belief questions, and children of all groups were again older when passing false-belief emotion test questions, if reaching that level at all. Moreover, in her study with Junín Quechua children (Vinden 1996), she had originally also used a change-of-location task, which she had to exclude from analyses because children had extreme difficulties with it, even with the control questions, so that she relied on the unexpected contents task alone. This observation further confirms the finding that change-of-location tasks are harder for children than contents tasks, and that memory might be the key to this difference.

### **Emotional understanding — from interactional pragmatics to reflective abilities**

German and Korean children also display a common sequence of ability to answer specific questions of the EUI that has been validated by a Guttman scale analysis, possibly describing a universal path of developing emotion concepts over the preschool years.

This is striking, since emotion understanding showed the highest individual differences, i.e., variance in scores, of all measures in the study, and the weakest correlation with age – both

for German and Korean children. In the Korean sample, this even resulted in a non-significant effect of age in an analysis of variance and no significant variance resolution in the regression analysis. Nevertheless, the scale analysis could confirm that, irrespective of highly individual onset times and rates, the developmental steps children go through in the construction of enriched concepts of basic emotions follow a robust order.

The developmental sequence visible for the three basic emotions HAPPY, SAD, and ANGRY can be summarized as follows:

First, children are able to respond whether they share or hide —or *want* to share or hide— their facial expression of an emotion.

On the next stage, they are able to recognize facial expressions of the three basic emotions from photographs and to verbally refer to them with an appropriate label, simultaneously to their ability to describe their affective response to the emotion of a friend.

The third stage involves the ability to describe an action response to a friend's emotion.

Only at stage 4 are children able to describe general causes or to remember a concrete situation inducing a specific emotion, e.g. anger or sadness, in them.

The final stage then comprises the ability to describe a strategy of self regulation for each emotion.

In summary, the scale starts with competences needed for successful interaction with others (stages 1–3), and only then proceeds to reflective abilities on own emotions and their regulation (stages 4 and 5). One could interpret this in the sense that children develop a conscious understanding of emotions through understanding others' emotions before their own. In another sense, the analyses show that they progress from more behavioral scripts to more abstract concepts that allow conscious reflection. Both these perspectives seem to work together in that, similar to language acquisition, children follow the principle “pragmatics first”, with effective interactions as goal and driving force.

External cues, situations, and especially actions and reactions of close persons are the first perceptual stimuli for their learning. For example, the reactions of mother, father, or other children to their emotional expressions leave traces in memory so that children readily respond without hesitation whether they (want to) show or (want to) hide that expression from them – even if they can justify the decision only from a later age. If showing negative emotions results in caregivers attention and caring, the child learns that they can be openly expressed, and maybe even develop a motivation for open or intensified display; if other children react in negative ways, the child will be motivated to hide his emotions. In the case that caregivers frequently refer to negative expressions as “unpretty” or “strange”, which

Korean children's responses seemed to suggest, this probably results in an early motivation to hide such expressions. The early ability of children in this study to respond to the expression question seems to reflect such immediate motivations that are strong even in very young children, but probably yet unreflected.

In the interview questions on stage 2, children show the ability to read faces and to know whether it feels good or bad when a friend shows a specific emotion – together with the ability to use appropriate labels. Recognizing how a close person is feeling and having an immediate response for how this is to be evaluated is most probably also learned implicitly in early interactions. Again, motivational memory traces might play a role in that process, while the connection with and use of linguistic labels is one step further towards a more conscious and explicit understanding.

A further step, then, is the ability to form scripts about emotional situations and strategies of (re)acting in these, which requires an abstraction over experiences of multiple similar events. When children at stage 3 of the scale are able to respond what they do when a friend displays a specific emotion, this seems to reflect the conscious access of such scripts, which is, again, a more explicit understanding than that of the lower stages, but is still oriented at interactions and children's implicit motivations in these. As with the responses about their expressive display, children are only later able to explain or justify their behavioral choice.

At a similar time as when children begin to name explicit causes for their own emotions, they formulate justifications for expression and actions towards others. This is the step into the explicit and reflective stages of a conceptual understanding of emotions. These justifications make the motivations children follow explicit – and differ considerably between the cultures (see Chapter 5.3).

Children's descriptions of causes for their basic emotions also rely on accessing scripts or event representations reflecting similarities over typical events and experiences. Many of these typical events are similar for children in Germany and Korea, although social causes were more numerous for Korean children. Positive feelings occur when doing liked activities, receiving favored food, presents, or going to a special place, or in joint play with a friend or family member; negative feelings arise from caregivers' scolding, prohibitions or denials of a liked activity, food, or toy, and from aggression and intrusions by peers and siblings. The ability to describe such causes seems to be related to autobiographical memory. Both involve conscious access to the child's own previous experience and linguistic packaging and linearization thereof. Generalizing over similar experiences and connecting these with an emotional label seems to be an important part in the building of categories.

That this is a step-wise process can be seen from the “errors” or conflations that children made. About one quarter of all children from 3 to 5 showed conflations of negative emotion concepts – all involving sadness. Strikingly, children in both cultures showed similar proportions of typical conflations: naming the same causes for anger and sadness was most frequent, then providing situations of pain and sickness for sadness, and finally some children described situations of fear as causes of sadness. Conflations of sadness with anger might appear, because the situational scripts arousing these emotions can indeed often be similar, as they typically involve a frustration, like when a parent denies a liked activity or a peer takes away the toy the child was playing with. The difference in that case is only the reaction to that situation, i.e., becoming angry, screaming, and maybe fighting, or, alternatively, feeling helpless, giving in, and crying; not seldom are instances in which children stamp their feet and cry at the same time. Conflations with pain or fear might appear, because these situations are similar in the feeling of helplessness, or simply, in that children often react with crying when something hurts or when they are scared.

It thus seems that children build explicit emotion categories from multiple cues, especially from scripts of typical external situations, from typical expressions, and maybe from feeling qualities, although the latter seem to be less used and also less reliable in comparison to the external cues. In making analogies and detecting similarities over experiences and the co-occurrences of labels (in the speech of others), situations, and expressions – and probably their own feelings, if labels are referring to themselves – the mapping or connection of these into a distinct category will develop gradually and become more accurate and adult-like with accumulating evidence.

The last stage of the aspects of emotional understanding tested in the interview was children’s ability to name regulative actions or strategies for their own emotions in relation to the specific cause they had described. This stage, more than the previous ones, requires reflective abilities and consciousness of the relations of own actions and feelings. It builds on the ability to access situational scripts from memory and involves the extension of such an event script with an action strategy. Few children answered this question and many younger children described simple expression of the emotion or less effective strategies. Only some 5-year-old children reported to employ cognitive strategies or showed reflective reasoning comparing different possibilities. The same reflective abilities emerged at age 5 in responses to other interview questions, especially by Korean children, e.g., in the justification of the action strategy towards a friend, or in giving social-instrumental explanations for a display strategy.

In review, a trend in emotional development from interactional pragmatics to reflective abilities is clearly visible – both in the stages of the scale of interview questions children are able to answer in successive sequence, but also in the kind of responses children give with growing age.

That understanding and categories of emotions evolve around children's appraisals of events and the pragmatics of goal-oriented action strategies has long been claimed by Stein and collaborators (Stein et al. 1993, 2000). Nevertheless, she consistently ignores the social and interactive dimension of emotion, describing children as if they were alone in a world of attained and unattained goals to which they are simply connected by their desires.

Similar to the present approach, Widen and Russell (2008, 2010) describe the development of discrete emotion categories as a gradual learning process of integrating information of situational scripts of causes and consequences with such of facial expressions and the use of emotion labels. The mapping of these different types of information or knowledge is a gradual process that takes some time, especially for the negative emotions, accounting for the confluences seen when children's emotion knowledge is probed on these different levels (see Widen & Russell 2008 for matching faces and labels; Stein et al. 2000, Bamberg 1997 for descriptions of situational causes for a label).

The findings of the present study of a sequential or hierarchical organization of emotion understanding are similar to the results and proposed model of Pons et al. (2004). The researchers tested 9 components of emotion understanding with children and found that 3 components each were mastered in separate, hierarchically organized developmental periods. The first period around 5 years comprised the understanding of faces and causes; the second period at about 7 years desire-emotion and belief-emotion inferences and distinctions between expressed and felt emotion; and the third period around 9–11 years cognitive regulation strategies and other skills entailing the appreciation of different perspectives on a situation. The children in the present study, whose age range covered the first period proposed by Pons et al. (2004), also showed the ability to recognize emotional facial expressions earlier than an understanding of situational causes of emotions. The ability to infer emotions from a false belief and the naming of cognitive regulation strategies were just emerging for some of the 5-year-old children, probably becoming commonly shared abilities only at the later ages found by Pons et al. (2004).

The only clear difference in developmental ages found concerned the late mastering of the desire-emotion inference in their study, which corresponds to the (dis)like-belief-emotion

questions of the ToM-task battery used here, which were mastered by the present children before the 4<sup>th</sup> birthday. The difference between their task and the present one is that Pons et al. asked children about the emotions of two different characters – one of which liked lettuce, the other not – when receiving the same object – lettuce, whereas the (dis)like-belief-emotion task involved only one character and his emotional reactions when imagining receiving a liked food (honey) versus a disliked food (potatoes). It thus seems that representing and making inferences from preferences of one character concerning two objects is easier for children than representing and processing the differing desires of two characters towards the same object.

A merely superficial discrepancy between the findings of Pons et al. (2004) and the present data is that children in this study were quite early responding that they hide their negative emotional expressions and were also able to justify their hiding from about one year later, whereas the understanding of hiding emotions and the distinction between expressed and felt emotion is said to be acquired at age 7 in their study. This can be explained if children's early first-person motives of hiding their face and their following ability to describe, for example, the negative social consequences they want to avoid that way are seen as an important precursor of the ability to attribute such a behavior to others, which was the specific skill tested by Pons et al. (2004). Moreover, children in the EUI did not describe themselves as displaying a happy face instead, i.e., explicitly representing and verbalizing both the felt emotion and the mismatching expression at the same time. This latter ability involves the simultaneous representation and processing of two states of affairs in a contrastive relation, which is a skill similar to those tested in false-belief tasks and, because of this, belongs to the same component in Pons et al.'s model as the false belief-emotion inference. Again, we see a developmental line from more concrete, interaction-based skills and understanding to more abstract representational skills.

Where the present study differs most significantly from existing research is in the acknowledgment of and focus on the social and interactive context and understanding that is inseparable of any valid account of emotions, and also of the developing emotion concepts of young children. This additional focus on the social resulted not only in the detection of major cultural differences, as they are discussed in Chapter 5.3, but also of important developmental trajectories that are shared by all children.

Besides the shift from social-interactional pragmatics to a reflective understanding of private emotions, a general increase in the importance of the group and peer community was visible, especially around age 5. This was seen in the increased naming of group-related causes for

emotions, and in rising proportions of responses to mask negative emotion expressions before peers, combined with increasing numbers of justifications of masking that make reference to the group. Even at this early age, experiences of being excluded, ostracized, or victimized, seem not to be rare, and are mentioned as causes for sadness or anger, or the prevention of such situations is given as reason for hiding certain expressions. In the latter part of the preschool years, thus, children in both cultures seem to develop an awareness for the need to balance private needs and goals with demands of the group and with what is required to get accepted and included in shared activities.

### **Individual differences in internal state understanding**

Concerning individual differences found in the measures of internal state understanding, there appears a considerable difference between the data for theory of mind and emotion understanding. High variance was found for emotion understanding, which also showed comparably weak connections with age, whereas theory of mind scores had a much lower variance in the age groups and correlated strongly with age, which also explained a great amount of variance in the regression analyses in Chapter 4.3.

This means that while the different theory of mind tasks were of similar difficulty for children of about the same age or age group in their respective culture, in the emotion understanding interview some 3-year-olds performed at ceiling, while some 5-year-olds had considerable difficulties to answer the questions.

This might be the case, because performance in the EUI is more dependent on personal experience, and the practice of reflecting own feelings and behavioral strategies, which could depend to a larger extent on personality and/or “training”, e.g., in the variable experiences in the family and conversations about the causes and behaviors around emotions. Theory of mind task performance is, in contrast, more directly related to representational and processing abilities and less to personal experiences or memories that can be triggered by a specific IS term. In these tasks, children have to understand, represent and remember the constellations of characters, objects, and locations of a story and to make judgments from that information. In this sense, the ToM tasks are more cognitive and abstract in nature, while the skills children expressed in the emotion interview were more related to their personal abilities of social interaction. This would explain the strong relationship with age for the former, and the high individual differences in the latter measure.

That there might be a difference between emotion understanding and the perspective taking abilities measured by classical theory of mind tasks, has also been noted by Dunn (1995), who

did equally not find significant correlations between EU and ToM, but also quite different correlates of social skills and understanding in a longitudinal setting. She concludes that “[t]hese differences in sequelae highlight the importance of differentiating the emotional and cognitive components of social understanding in framing developmental questions” (Dunn 1995: 187).

### 5.1.3 Stages and dynamics of ISL and ISU development from 3 to 6 years

We will now turn to a summary of the developmental trajectories of different measures of ISL and ISU across age groups for the two cultures. Figure 5.1.01 summarizes these developmental patterns in two line graphs, separated for German and Korean children. They plot the development of the group means of the different measures over the three age groups. For this summarizing comparison, data were transformed into  $z$ -scores to allow for the combination into a single graph.

For German children, a huge leap in development from 3 to 4 was found for the majority of measures taken: general IS vocabulary shows a large increase, especially in the semantic categories of ‘cognition’ and ‘reality/evidentiality’; children become productive with embedded complement clauses with the IS verbs ‘say’ and ‘know’, over half of them also with ‘think’; at the same time, they begin to pass knowledge-ignorance and false-belief tasks, leading to a jump in overall ToM scores. In these measures, then, no large increases are further seen from age 4 to 5.

A steady development was observed in children’s ISL use in the picture book narration. With each year, they use more IS types and tokens in their narratives, from 3 to 4, the biggest increase is seen in the categories of social behavior and relationships, from 4 to 5, a sharp increase is observed in tokens from the category of emotion.

A clearly exceptional pattern to those of the other measures is found for emotion understanding. Here, German 3- and 4-year-olds show very similar performance, and a large increase occurs from the 4- to the 5-year-old group, parallel to the increase in the use of emotion tokens in the narrative. The 5-year-olds are able to describe their reactions to the emotions of a friend; and the ability to name causes for own emotions and to justify expression and reaction strategies is beginning to emerge.

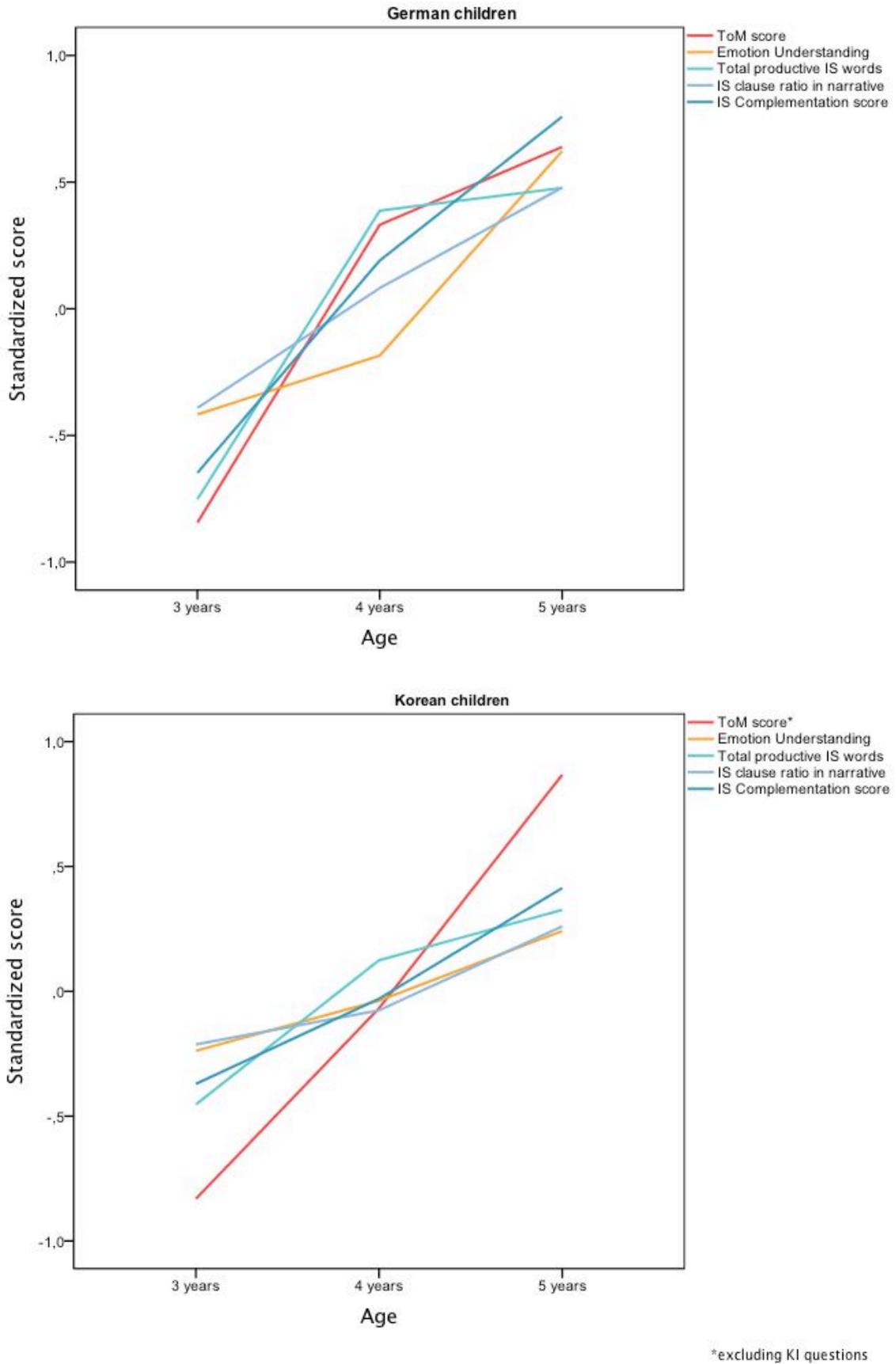


Fig. 5.1.01 Development of standardized mean scores of theory of mind, emotion understanding and ISL measures over age groups for German and Korean children

For Korean children, a quite different pattern of developmental dynamics is visible. For none of the measures taken any sudden leap or jump from one age group to another appears in the data. All measures show some kind of steady development with similar increases from 3 to 4 and from 4 to 5 years. However, the degree of development or increase in scores differs for the single measures taken.

Theory of mind clearly makes the largest increase from 3 to 6, with score means differing significantly for all 3 age groups. With 4 years, they show an understanding of how (dis)likes and beliefs predict an emotion, and start passing ‘contents’ false-belief tasks. At age 5, they understand ignorance related to contents and locations.

IS vocabulary falls in between with smaller mean differences between age groups, yielding a significant difference only for the 3- and 5-year-olds. The increases in IS vocabulary are found in most categories, but especially in ‘reality/evidentiality’. The use of complement clause constructions in the narrative with different IS verbs also steadily increases with age, as do the total IS types and tokens used. Especially items of the category ‘emotion’ are used more frequently with each year, and those of ‘reality/evidentiality’ increase sharply from age 4 to 5.

Emotion understanding, finally, although exhibiting small linear increases with successive age groups, fails to show significant group differences in pairwise comparison due to the high variance observed in this measure. With 4 years, descriptions of reactions to a friend’s emotion are emerging, as are the naming of causes and justifications for the expression of and reaction to a friend’s happiness. The latter abilities are then emerging for the negative emotions at age 5.

Although the commonalities discussed in this chapter suggest that the general developmental trends and sequential stages of theory of mind and emotion understanding are shared across cultures – looking at the dynamics of the developmental trajectories of the measures, it appears that children in each sample still follow quite specific developmental pathways or, at least, timescales. These differences, and the roles of language and culture for developing internal state understanding, will be the topic of the next two chapters.

## 5.2 The role of ISL for the developing understanding of internal states

In view of the findings summarized in the previous chapter, the discussion will now turn to the role of internal state language for the conceptual understanding of internal states between 3 and 6 years. Starting from the relationships found in the regression analyses, the chapter will concern the possible contributions of specific aspects of internal state language (ISL) to emotion understanding and theory of mind, looking in detail at both similarities and differences between German and Korean and between the linguistic and cognitive skills contributing to performance in the Emotion Understanding Interview (EUI) and the theory of mind tests administered.

### *Summary of the contributions of ISL variables in the regression analyses*

In the regression analyses in Chapter 4.3, three kinds of variables of internal state language have been analyzed in their correlations with theory of mind and emotion understanding and in their contributions to the resolution of variance in hierarchical regression models with ToM and EU as outcome variables: IS vocabulary, sentential complementation with IS verbs, and the use of ISL in the narrative of a picture book.

In these analyses, age and the PPVT, a measure of receptive vocabulary, were entered in a first block into the model, to account for general maturation and language development, and only then the ISL variables were introduced to assess their contribution over and above the basic cognitive and linguistic development represented by age and the PPVT.

Age and the PPVT predicted > 50% of the variance in ToM in both cultures, and they were the only valid predictor variables for Korean children. In contrast, they predicted only < 15% of the variance in emotion understanding, which had shown higher individual differences between children in both cultures.

Of the IS vocabulary variables, only the vocabulary of ‘Cognition & Evidentiality’ of German children significantly contributed to their variance in theory of mind performance. This was not the case for Korean children. Vocabulary of ‘Emotion, Expression & Social relations’, although bivariate correlations were positive, did not show contributions to performance in the Emotion Understanding Interview over and above age and general language.

The combined score of sentential complementation with IS verbs from parent reports and children’s narratives explained a substantial amount of variance in emotion understanding of both German and Korean children, in fact, about the same amount as age. On the other hand,

it was no significant predictor for theory of mind over and above age and the PPVT, although exhibiting positive correlations with it.

The general quantity of use of ISL in the narrative, as seen in children's ratios of IS clauses per total clauses, contributed significantly to variance in emotion understanding for Korean children, and marginally for German children, too. The ratio of causal and contrastive IS clauses produced accounted for 7% of variance in the theory of mind scores of German children, and for 14% of variance, i.e., more than age, in Korean children's emotion understanding scores.

What do these patterns mean and how can they be explained?

### **Influences of ISL on emotion understanding**

First of all, emotion understanding differs widely between individual children, with a comparably low explanatory contribution of age and almost none of receptive vocabulary (PPVT) in the regression analyses. Two components of ISL then contribute to emotion understanding, with some differences in weight of contribution between the two language/culture groups: the use of ISL in a picture book narration, measured in ratios of general and causal and contrastive IS clauses, and the productivity with constructions of IS verbs combined with sentential complements.

Exactly what competencies are expressed by using a lot internal state language in the picture book narration that could have an influence on performance in the EUI?

First, the production of IS clauses shows children's general ability to represent and formulate emotional scenes or scripts in language, and, of course, presupposes the ability to identify or infer emotions and internal states from the pictures or plot of the story. Moreover, in both German and Korean children, the use of IS tokens from the category of emotions increased substantially over the age groups. While the mere ability to produce emotion vocabulary, as measured in the IS Word Checklist, was not able to explain variance in emotion understanding, the frequency of its use, e.g., as part of a narration and in causal and contrastive relationships, seems to be more strongly related to the respective understanding.

In addition, the use of ISL in telling a story, and especially its use in constructions of causality, contrast, or in complex constructions expressing the type of internal state in the matrix verb and the mental content it relates to in a complement clause, are an integral part of narrative competence in terms of the tracking and linguistic representation of the mental and emotional states of multiple referents both over time and in relation to each other and to the line of actions and events in the story. Children who are good in identifying, representing and

tracking emotions of characters in a story with appropriate labels and constructions, might do the same kind of representing and tracking internal states of self and others more frequently in general, and thus show a greater ability to understand and express typical causes of their emotions, social consequences of their emotional displays, or the relation of emotions to regulating actions in the EUI.

Especially the competence with causal constructions might contribute to many aspects of the understanding tested in the EUI, but all complex linguistic constructions investigated — causal, contrastive, and sentential complementation— have in common that they offer templates for the relation of two representations —of an internal state with a cause or consequence or its internal representational content, in a match or mismatch with overt action, or for relating or contrasting internal states of two different persons. In any case, the use of such devices is a clear indicator of related representational abilities, but might additionally have a training effect in practicing and fostering complex representation and reasoning of this kind.

An interesting finding of the regression analyses was the strong contribution of complementation with IS verbs to emotion understanding, which had previously only been discussed in a possible contribution to theory of mind, with which the relationship here was not strong enough to make IS complementation a valid predictor of variance in ToM.

What exactly might this contribution be?

Besides IS verb complement clause constructions offering representational means for mental states and their contents, thus relating two simultaneous representations, the meanings of the IS verbs used might contribute important concepts. Verbs that were asked about in the parent report included ‘want’, ‘say’, ‘know’, and ‘think’. Their reported usage examples were complex linguistic representations of intentions, speech acts, and cognition, often in interactive contexts of ongoing dialogue and the “negotiation” of commands, plans, and commitments, or moral judgments and subjective opinions. In the narrative, emotions also appeared as matrix predicates, as did different speech verbs, and hearer-sensitive markers of subjectivity/uncertainty, in Korean represented by ‘seem’-constructions, and in German by adding ‘I believe’. All of the uses that were reported or observed for the IS predicates with clausal complements seem to belong to scripts of interactions where mental states of different persons are contrasted and related, either explicitly, as in the “negotiations” of the parent report examples, or implicitly, as when the child takes into account that the hearer’s perspective might differ from her own and uses a subjectivity/uncertainty marker to attenuate her statement. Similar abilities were shown by children who scored high in the EUI, e.g., by

contrasting and relating the inner states of self and others when justifying their emotional display strategies or their reactions to emotions of a friend. Both the relation of self and others' inner states and a comparison of two different representations (i.e., effectively, four representations of states-of-affaires) seemed to be at play when some of the older children described their regulation strategies in contrast with other behavioral possibilities.

The final regression models explained about 24% of variance in German children's, and 30% of variance in Korean children's emotion understanding, suggesting that there are a variety of other factors not measured in the present study that account for the rest of the great individual differences found in this measure. As the interview tested children's conscious reflection on emotions, including their awareness and/or memory of situations causing their emotions, strategies and justifications of their display and behavior, it seems obvious that children who frequently engage in such reflections, for example through conversations in the family, will find it easier to answer these questions than those for whom such talk or reflections are a rare or even new experience, even if their productive skills with internal state language are well developed and come to use in other contexts like narratives and book reading. Besides age and internal state language abilities, such experiential familiarity and practice with reasoning and talking about emotions in a conversational context might make a crucial difference to children's performance in the interview. Studies by Dunn and colleagues have shown relationships between family conversations about emotions and social causality and children's emotion understanding (Dunn et al. 1991, Brown & Dunn 1996). Further, a recent training study with Italian children found a positive influence of active and reflective conversations in the kindergarten about emotional meanings encountered in stories promoting children's understanding of emotions (Grazzani Gavazzi & Ornaghi 2011). Future studies could further assess such contributions, maybe differentiating between specific styles of "emotion talk" that are beneficial to different degrees for children's developing consciousness and understanding of emotions, as well as adaptive strategies to cope with their own and others' emotions.

### **Influences of ISL on theory of mind**

#### *Cultural differences in the contribution of ISL in the regression analyses*

While the correlational patterns and resulting regression models for emotion understanding of German and Korean children were highly similar, the contribution of ISL variables to the explanation of theory of mind scores was very different, just as theory of mind development itself differed substantially between the two cultures.

Not only were Korean children in mean about one year older when passing knowledge-ignorance and false-belief tasks. The sequences in which German and Korean children mastered different test questions about ignorance and false belief also differed between the two cultures. In the regression analyses, for German children a strong contribution to variance in ToM was found for the use of causal and contrastive IS clauses in the narrative and for productivity with vocabulary of ‘Cognition & Evidentiality’, whereas no ISL relations with ToM were found for Korean children.

Interestingly, the “jump” in ToM scores of German children from age 3 to 4 exactly paralleled a similar “jump” in IS vocabulary and the proficiency with sentential complement clauses with ‘say’ and ‘know’ around the same time. This pattern, again, was not seen for Korean children, who exhibited gradual increases in all measures with an early proficiency and moderate increase in the ISL measures and a low proficiency in ToM at 3 years with a steep increase over age (see Fig. 5.1.01).

Can it be that ISL is connected and “helpful” to the development of theory of mind in one language, but not another?

#### *Language requirements of theory of mind tasks*

But before getting to the differences between German and Korean children in the contribution of ISL to ToM, a closer look is needed into the specific requirements of classical ToM tasks in terms of language and cognitive processing. For instance, why are the patterns of relationships found in the regressions so different between ToM and emotion understanding? As has been discussed previously, these two measures seem to tap quite different skills in young children. But which role in this difference does language play?

For performance in the EUI, some measures of productive ISL have been shown to play a role. For the ToM tasks, on the other hand, receptive language, as measured by the PPVT, explained the greatest amount of variance of all language variables.

Indeed, this might be due to differences in the format and affordances of the different tasks.

The most important difference between the EUI and the ToM test battery in terms of language is that in the case of the EUI, as well as in the picture book narration, children have to concentrate on what Slobin has termed “thinking for speaking” (Slobin 1996). They have to focus their attention and arrange their thoughts in a way that they can verbalize them in the linear order imposed by language and with the linguistic means that are available to them, i.e., the words and constructions they have already mastered in their first language.

In the ToM tests, however, the main task of the children and the focus of their attention is “listening for understanding” (see also Slobin 1996, Endnote 10) and “representing for remembering”. They have to listen to, understand and remember a story vignette, in fact, several of them, which differ only in some aspects, and afterwards are confronted with a series of syntactically complex questions. This means that their receptive language abilities are asked for: first to build representations of the story in memory, which is aided by the dolls and props and the acting-out of the main events, and then to decode and interpret the test questions correctly and to retrieve the right information from the memorized representations. Abu-Akel and Bailey (2001) found that reducing the “symbolic load” of the task and using more “indexical” language can enhance children’s performance, and indexical versions of the same task and test questions are consistently passed before symbolic versions, which require more abstract representations.

When the child is confronted with a complex question such as

What<sub>i</sub> does E. think t<sub>i</sub> is inside the can?

it does not need much linguistic skill to formulate the answer “peanuts”, a single word, but it does to pick out the right referent out of multiple event representations the child has to hold in mind simultaneously with the representation of the question—for example\*:

E. see [previous state: can [peanuts]]

E. not see [present state: can [stones]]

Q: E. think [can [?]]

In the ‘memory for complements’ tasks of de Villiers (de Villiers & de Villiers 2000, de Villiers & Pyers 2002), understanding of questions of the same format as in ToM tasks, but without having to understand or represent a false belief, was assessed, using both *say* and *think* as matrix verbs. She consistently found that the ability to interpret questions of this structure develops a few months prior to the ability to pass ToM tasks. While the interpretation that the availability of this linguistic format is the only way children can actually represent a false belief is questionable, the mastery of complement syntax is clearly helpful for passing false belief tasks (Milligan et al. 2007, Lohmann & Tomasello 2003).

The second important understanding needed is that the word “think” refers to E.’s belief, which will under normal circumstances only be informed by what E. has seen herself.

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\* This is just a simplified bracketed representation of the essential information needed to answer the test question. What the child is actually representing in her mind will probably not only differ in format from the simple version here, but also include much more of the information of the story vignette, e.g., about the second character and the actions around the exchange of contents and so forth, from which she has to retrieve the correct referent.

If the question can be interpreted like this, the child is able to retrieve “peanuts” from her representation of the state that E. has seen (i.e., the ‘previous state’ representation above) versus what she has not witnessed (the ‘present state’ representation).

Desire-false belief-emotion tasks are still harder for children, and one level higher on the Guttman scale of Chapter 4.2.1, because the child also has to understand and track the temporal order of events for the crucial question “Before she opens the can...” and suppress his natural excitement about the outcome of the deception.

This means that a child, when confronted with the question

Before E. opens the can, is she happy or sad?,

starts with an expectation about what will happen next like

E. shocked [ can [CHANGED!]],

which she has to put aside to process something like

(a) E. want [peanuts]

(b) E. see [previous state: can [peanuts]]

(c) E. not see [present state: can [stones]]

(d) “before” = previous state

(e) => E. think [can [peanuts]]                      (b, c, d)

=>=> E. happy [can [peanuts]]                      (a, e).

Besides the “extra-level” of processing complexity of this task compared to the simple false-belief task, as the child needs to logically infer both E.’s mental representation of the contents and her emotional reaction, and besides the requirement to suppress the excitement and impulse to talk about the deception, it is necessary that the child understand the word ‘before’ and the construction of the question. In fact, Clark (1971) has shown that ‘before’-sentences are quite hard for young children in terms of “listening for understanding”, especially when the ‘before’-clause precedes the main clause, which reverses the natural sequence of the two events.

This further illustrates that the more complex a theory of mind task is constructed, the more receptive language skills are required for a child to be able to pass the test.

Obviously, the child needs language skills to understand the test question, but, this is argued, in a second step, language skills help the child to keep all required representations in mind, process them, and come up with a representation that matches the test question and contains the constituent that equates the WH-word in the question, i.e., the right answer, which can then be retrieved and uttered.

A last type of linguistic skills are necessary to pass false-belief tasks, which are pragmatic skills of interpreting the type of discourse employed in the task and the experimenter's intention when asking the test questions. Frequently, the issue has been raised that children, to pass the task, have to suppress an impulse to tell the real, i.e., current, location of the object that the story character is searching for. This is the reason why, for example, variations of reducing "the pull of the real" have been introduced to the task (Carpenter et al. 2002). Mikkel Hansen has successfully argued that pragmatically "normal" discourse would in fact focus on what is relevant for the character's goal, i.e., the deception that has taken place, and on the information that is needed or important to go on with actions towards that goal, i.e., the revelation of the current location of the desired object (Hansen 2010).

A second possible, equally pragmatic interpretation of the test question in the change-of-location task "Where does she think the X is?" is responding what the character will think the location is after not having found the wanted object in the first place. A child, as well as adult, could simply take the fact that the character will not be able to retrieve the object in the location where she left it as common ground between himself and the experimenter and, therefore, assume the question to refer to a hypothesis or guess of the character, for example, in respect to the next actions that might follow in the story, like going on searching for the object in other places. In this case, pragmatic interpretations would lead to a different interpretation of the temporal reference of the test question.

In summary, to be able to pass classical false-belief tasks, children need the following linguistic skills:

- (a) well-developed general receptive language for comprehension of story and questions,
- (b) discourse-pragmatic language skills through which the child comes to interpret the experimenter's questions as test questions that have to be answered literally, not pragmatically, and to control her "pragmatically normal" conversational impulses,
- (c) an understanding of temporal terms and the correct interpretation of the temporality in the test question, and
- (d) understanding of the mental state meanings of the verbs 'know' and 'think' in combination with sentential complements, along with their distinctive levels of certainty.

And finally, proficiency with complex constructions that relate two different representations additionally helps children to keep in mind and process the many representations of the sequential states of the story vignette, of the character's mental states, and of the test question.

*Linguistic factors facilitating false-belief task performance*

Turning again to the differences between German and Korean children's mastery of false-belief tasks, not much can be said about the linguistic requirements (a)–(c) as reasons for Korean children's later age of passing the tasks. For both languages, the general receptive language skills measured in the PPVT could explain a similarly great amount of variance in ToM scores; and the pragmatic and temporal interpretations should be equally "hard" for children of both languages or, at least, children's interpretations cannot be tested or differentiated in this respect from the present data.

But there are differences in children's acquisition of 'know' and 'think', both in terms of the acquisition and usage in constructions with coordinated and embedded complement clauses and in terms of the typical meanings represented in the uses of these verbs that were reported for German and Korean children. The following discussion will therefore attempt a closer assessment of aspect (d).

From the parent report data, no difference between the two languages is seen concerning the onset of productivity with 'know' and 'think', 'know' even being used by more Korean (95%) than German 3-year-olds (65%). But German children are somewhat earlier productive with complement clauses combined with those verbs.

German children's parent report data showed that over 75% of the 3-year-olds are already producing sentential complements with 'say', and the same proportion of children of the 4-year-olds is productive with complement clauses of 'know'. Over half of the German 4-year-olds are also beginning to use 'think' with complement clauses. These acquisition indices of productivity with 'say' and the two mental verbs (the defined 50% and 75% boundaries) are passed by Korean children somewhat later: sentential complementation with 'say' passes 75% at age 4, but 'know', passing 50% at 4, stays below the 75% criterion even in the 5-year-old group. Moreover, sentential complementation with 'think' does not pass 50% productivity in all age groups. These facts could lead to the hypothesis that the syntax of sentential complementation is accountable for German children's earlier passing ToM tasks (de Villiers & de Villiers 2000).

However, Korean children are quite competent with clausal complementation with a variety of mental state verbs and constructions, as can be seen from their narratives, in which they also used more of these constructions than German children overall. So can IS verb complementation really be the decisive factor for the cultural difference?

In a first step, the role of complement clause constructions should be clarified, since studies confirming their influence on ToM task performance seem to suggest a role that is simply related to the syntax and not the particular verbs. The training with ‘memory for complements’ of Hale and Tager-Flusberg (2003), for example, was successfully enhancing children’s false belief understanding, although using only the verb ‘say’, and Lohmann and Tomasello (2003) did not find any difference in their highly effective ‘full training’ condition between the use of ‘say’ only or the use of ‘know’ and ‘think’; and their ‘sentential complement’ condition, which also had a positive influence on ToM performance, trained children on a number of different verbs of perception, speech, and mental state with complement clauses.

On the other hand, Perner et al. (2003), as well as the present study, could show that although German children are proficient with tensed sentential complements of ‘want’ even much earlier, they still do not pass false belief tasks before age 4. So it is not the syntactic frame alone that gives children a cognitive understanding and processing tool for solving ToM tasks. My suggestion is that verbs of representation, i.e., that indicate an ‘aboutness’ like ‘say’, ‘know’, and ‘think’, together with marked complement clauses indeed present a useful format that can help the cognitive representation and processing needed for false belief tasks, but that it is the acquisition of the whole construction, including the semantic features of the verb and the complementizer, and its typical meaning as a generalization or cognitive schema of similar situations that is supportive – not syntax alone. The notion of constructions\* , which acknowledges the pairing of form and function/meaning on all linguistic levels, seems to be better suited to capture the supportive characteristics of language.

Complex syntax acquired, specifically any complex construction simultaneously relating or contrasting two states of affairs, will train the child’s overall processing capacity and cognitive ability of multiple simultaneous representations. This might also explain the predictive power of the use of causal and contrastive IS clauses for German children’s theory of mind. De Villiers and Pyers (2002) had separated the influence of complement clauses from other complex syntax, for which they mention relative clauses and if–then clauses as typical examples, but they did not take the meanings and functions of such constructions into account. From the perspective followed here, relative clauses do not relate two states of affairs in a meaningful relationship, as they are elaborations on a noun phrase. If–then clauses, just as causal and, especially, contrastive constructions, do highlight relationships between two states of affairs—and if one of these two is an internal state, as in our measure

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\* For theoretical introductions to constructions in linguistic theory, see Goldberg (1995, 2003) and Croft (2001).

of causal/contrastive IS clauses in the narrative, this should equally express as well as train children's understanding of internal states in their relationships and possible contrasts to reality states or minds of other people. Complement clause constructions, on the other hand, are almost exclusively combined with IS verbs, so the semantics simply come along with the frame. Again, we have to conclude that meaning is the crucial ingredient.

In a next step, therefore, it should be considered how the meanings of mental state verbs are acquired, especially those that are not of simple conversational function, but genuinely express a mental representation of some sort.

Papafragou et al. (2007) have used some well-thought-out experiments with both children and adults to tap the factors supporting the meaning acquisition of mental verbs. They find that situational contexts of deception, misconception, false beliefs or other sorts of mismatch between someone's mental representation and reality are the indispensable experiential ground that triggers the activation of mental concepts in both adults and children. If such exceptional experiences are not present, there is no need to invoke or consciously consider the beliefs or thoughts of persons or characters in stories. And even if such contexts are present, people still tend to focus most of all on actions and intentions rather than mental representational states.

This first observation of Papafragou et al. fits well with Katherine Nelson's (1996) conception of the experiential grounding and action-orientation of human cognition and its development, which is taken to be based on event and action schemes that lay the basis from which higher cognition emerges. Representational language and cognition is an add-on to these basic forms of processing and memory, but it does not replace them.

Papafragou et al. further found that providing linguistic contexts of complement clause constructions along with scenes of deception or misconception triggered mental state interpretations of the meanings of nonsense verbs in adults and also children. In fact, each of the two contexts, i.e., situational contexts of a false belief or misconception and linguistic contexts of sentential complement embedding marked by *that*, could invoke such mental state verb interpretations on their own, the linguistic context even being a somewhat stronger trigger, but the combination of both cues had by far the strongest effect.

Overall, the findings of Papafragou et al. support the contextual conception of word learning formulated by Montgomery (2002):

„The word learning task the child faces is not finding a referent, but rather learning the appropriate role a mental verb plays in characteristic situations or events.“

The perspective here is that instead of a mapping of words onto referents, in the case of mental verbs, and probably most verbs in general, children will acquire them by mapping constructions (including the verb) with situations.

Taken together, this means that children will come to acquire the “genuine” meanings of mental verbs, i.e., their meaning of denoting a mental representation, from encounters of these verbs in situations that draw the attention to mental states, e.g., when involving misrepresentations, contradictions, or contrasts of mental state and reality or of the mental states of different persons, and in utterances using constructions that consistently pair with similar situations of the kind. The key words for this acquisitional process are, in consequence, frequency and consistency of such situation–construction pairings involving the verb, both of which will help the child to build generalizations of both the construction as relating to certain kinds of experience and of the verb as standing for a certain relation in this construction, i.e., a mental state that is ‘about’ something, namely the content which is expressed in the complement clause.

So three things have to come together: situations drawing attention to mental states, specific constructions that consistently pair with such mental state references and thus provide a ready-to-use template for ‘listening for understanding’ and ‘thinking for speaking’ in such contexts, and verbs that express a specific relation in the situation/construction, namely the representation (mentally or verbally) of a state of affairs, which does not match reality.

All these factors are present in training studies that have been successful in enhancing children’s performance on theory of mind tasks. The ‘memory for complements’ training uses stories of misrepresentations along with the target constructions and lets the child practice the parsing of questions with sentential complements to retrieve the misrepresented content of the representational verb. The training of Lohmann and Tomasello (2003) even differentiated the contribution of context and sentential complements by comparing groups of children trained with experiences of deceptive objects in combination with discourse highlighting different perspectives without using mental verbs and complements, i.e., contrasting the names one would call the objects before and after revelation of their deceptive appearance both from the child’s perspective as well as from the perspective of a third person represented by a hand puppet (the ‘discourse only’ condition), experiences with deceptive objects together with the same discourse using ‘say’ or ‘know’ and ‘think’ with sentential complements to highlight the shifts in representation (the ‘full training’ condition), and a group trained with sentential complements with different verbs without revealing the deceptive characteristics of the objects or highlighting the possibility of different perspectives (the ‘sentential complement’

condition). The findings show that deceptive experience highlighted by accompanying discourse about names one could call the objects (which also invokes a level of representational ‘aboutness’ that can differ with respect to the perspective one is taking) has a small effect, sentential complementation training a somewhat bigger effect of its own, and the ‘full training’ has a very large effect in helping children pass appearance–reality ToM tasks. This pattern of factors facilitating ToM understanding directly parallels the factors found by Papafragou et al. (2007) to facilitate the meaning acquisition of mental verbs. An accompanying ‘no language’ condition that revealed the deceptive characteristics of the objects by signs of surprise, but without invoking a level of possible or differing representations, had no effect on children’s ToM performance.

That theory of mind tasks require an understanding of ‘aboutness’ relations of language, symbols, or mental states, is moreover supported by recent work of Perner and colleagues (Iao et al. 2011), who found similarity of acquisition and training transfer between tasks of false belief and false signs. On this account, what children acquire around age 4 is “an ability of representational understanding that is not restricted to mental states”. Still, in terms of the meaning acquisition of mental verbs, the acquisition of such an understanding, helped by facilitating discourse and/or situation-construction pairs, would describe the crucial step when children discover the meanings of mental verbs as “inner states of representation”, stepping beyond the simple level of conversational uses.

Once a generalization has been built in that construction, verb-type, and situational features have been mapped, each of these three should have the potential to trigger the others, both in ‘listening for understanding’ and ‘thinking for speaking’, so that the convergence of all of them in the classical false-belief tasks and test questions should help those children in cognitive processing and retrieving the right referent in response that posses such a ready-to-use template or generalization.

Turning again to our data of German and Korean, we find that for German children the similarities of complement clause constructions as a distinctive “argument structure” for mental or representational states do converge, as in English, and might serve as such a template. Even though IS verb complementation was not predictive for ToM as a variable in the regression analysis, it was positively correlated to it, and the time points of acquisition do also converge. Maybe a receptive measure of complement understanding would have been more revealing as predictor than the production alone.

For Korean children, in contrast, this state of generalization might not be achieved, due to the fact that the constructions they acquire with different verbs of communication and mental

states have a much greater structural variety. Especially, looking back at the production examples provided by the Korean parents and the variety of constructions produced by children in the narratives, we find that besides the difference that the Korean verb *alta* ('know') typically takes the nominalizer *-(nu)n kes* as complementizer for embedded clauses, whereas *(mal)hata* ('say') and *sayngkak hata* ('think') take the complementizer *-ko*, *alta* can also appear with clauses marked by *-ci* and does in some children's utterance examples, while *sayngkak hata* also appears with *-(nu)n kes* or *-ci*, *malhata* or *hata* is often omitted in constructions of reported speech, and, to give another example, the predicate 'have fear' (*kep nata*) was combined with a clause marked by *-(u)lkkapwa*. In contrast, all German IS verbs, also the emotion predicates, were combined, if not with a WH-complement, with a complement clause marked by *dass*. This variety of forms on the Korean side might probably prevent children from forming early generalizations of pairs of situations of mental states or 'aboutness' with an associated construction template, so that the "normal" input they receive does not suffice to have the training effect found in Papafragou et al. (2007) or the training studies mentioned. The consequence might be that while German children receive help from their knowledge of language in solving theory of mind tasks, leading to a "jump" in performance from 3 to 4, when they make the relevant steps in language acquisition and probably form those useful generalizations, Korean children might rely on cognitive means alone in processing the task, thus leading to the gradual and uniform development over the three age groups seen in the data, which is related solely to age and general language.

However, this hypothesis needs to be further explored and tested.

In addition to the complicated role of context-verb-construction associations, another observation has to be explained. If we look at the single verbs, in both languages, the use of complement clause constructions with 'know' was mastered prior to the use of the constructions with 'think'. If mental verb use with complementation is a crucial prerequisite to ToM, children of both languages should accordingly understand knowledge-ignorance before false belief and this sequence should therefore be reflected in their Guttman scales of passing the respective test questions. But whereas German children do find KI test questions easier than FB questions, no reliable sequence was found for passing KI and FB questions in Korean children, for whom both question types seem to be of similar difficulty.

From classical studies like those of Moore et al. (1989), we know that English-speaking children start differentiating the meanings of *know* and *think* as expressing different degrees of certainty from around 4 years of age, becoming increasingly more competent during the 5<sup>th</sup> year. This differential understanding also matches in time and significantly correlates with

children's passing of theory of mind tasks (Moore & Furrow 1991). Two further findings from theory of mind studies are relevant, namely the finding that, at least in English- and German-speaking children, the understanding of ignorance precedes the understanding of false belief (Hogrefe et al. 1986, Wellman & Liu 2004, Kristen et al. 2006), and that including a question about knowledge–ignorance into a second-order false-belief task preceding the test question facilitates children's false-belief performance (Coull et al. 2006). The latter authors conclude that the understanding of knowledge is simpler than that of belief, and that focusing children's attention on ignorance helps their understanding and processing of false belief.

In a last step, therefore, it should be considered how children acquire and differentiate the meanings of 'know' and 'think' as specific types of mental representation that are distinguished by their certainty and factivity, and how this understanding might relate to developing concepts of knowledge–ignorance and the uncertain, non-factive representational character of belief.

Previous research suggests that the linguistic input that children receive influences their acquisition of mental verbs, their distinctions of the meanings of different verbs, as well as false-belief and related mental understanding. Positively, mothers' use of cognitive verbs and especially of explanatory, causal, and contrastive talk about cognitive states during book reading predicts children's performance on theory of mind tasks (Adrián et al. 2007, Slaughter et al. 2007), and specific characteristics of maternal language in mother-child naturalistic interactions, like frequent use of *know* in single clause utterances and questions, can explain some of the variance in children's mental verb distinctions and also false-belief understanding (Howard et al. 2008). Negatively, frequency of *think* in the input in high-certainty contexts like *I think you should put on your shoes* can hinder children's subsequent performance on distinctions of *know*, *think*, and *guess* (Naigles 2000).

So the frequency of mental verbs in the input as well as the consistency with which they appear with their canonical mental state meaning and associated certainty degree, can provide or hinder possibilities for children to get a grasp on those meanings and the mental state concepts entailed.

But a further factor seems relevant, both for meaning acquisition and mental state understanding. Peskin and Astington (2004) enriched story books with mental state verbs like *know*, *think*, *wonder*, *figure out* and similar in a reading intervention study. But although the stories were full of situations where characters did not see what was going on behind them or acted on false beliefs, thus fulfilling the context criterion, and provided the mental verbs in appropriate constructions and with canonical certainty, the children from the intervention

group only used a lot more mental verbs after the training, but did not grasp the verbs' meanings and were even outperformed by the control group on theory of mind tests. How could that be? Looking more closely at the story manipulations and comparing these with the successful training conditions in other studies, it seems that children need further linguistic clarifications to understand mental verb meanings, e.g., the relationships that seeing something leads to knowing it, not seeing something leads to ignorance of it, and that ignorance of changes in states of affairs lead to false beliefs.

Reading of stories rich in mental state language has been shown to be far more effective in facilitating children's understanding of both mental verbs and mental states when accompanied or followed by related explanations or discussions (Slaughter et al. 2007, Ornaghi et al. 2011). More specifically, the scripts of the training conditions of Lohmann and Tomasello (2003) are perfect examples for how the links between perception and representation can be clarified and established. The highly effective 'full training' condition included among many other facilitating elements sentences like 'It looks like an X, so you must think/say it is an X', explaining the causal link of appearance/perception to one's mental or verbal representation. A further sentence was 'So at first you thought/said it was an X, but now you know/say it is a Y', explaining the possibility of a change of representation after gathering new information and contrasting the two representations with temporal references (at first–but now), in the mental verb variant even contrasting 'think' and 'know' in their relations to reality. Interestingly, even the "pure syntax" 'sentential complement' condition, which did not reveal the deceptive characteristics of the objects presented and also did not contrast representations of first–now or of the child and a character that was introduced, included elements that established links between perception and knowledge. An example can be seen in the following part of the training script, where a puppet named Ernie touches a candle and the sentential complement clause 'Ernie feels that the candle burns really hot' with the perception verb 'feel' is introduced and then followed by 'Does Ernie know that candles can be dangerous? How does he know that?', and after the child's response, 'Right! He was just feeling how hot it burns. / He was just feeling how hot it burns, right? So he knows, right?'.

Bringing these insights back to the discussion of verb meaning and the development of mental state understanding, one could summarize that a number of linguistic context factors are helpful in advancing children's understanding of the representational meanings and specific characteristics of certainty and factivity of mental verbs and of mental states in general. Sentential complementation provides a ready frame or 'argument structure' for representation

of a state of affairs that might help establishing an understanding of representation; discourse contrasting representations of different people, with reality, or along changes over time should promote the understanding of (false) belief; and discourse clarifying causal links between perception and representation should help in building an understanding of knowledge and ignorance; while direct contrasts of ‘think’ and ‘know’ should foster the acquisition of their canonical certainty distinction.

All of these pieces of information might work together in children’s development of a lexicon and understanding of the mind, the more of which converge the easier it should be for the child to linguistically and conceptually re-construct the mental domain. While research has singled out some of the factors and shown their positive impact on ToM to certain degrees, it is still a challenge to separate these factors in empirical designs, and often further information is included that was not the primary focus of the investigation. This has frequently been argued about in the ToM research community’s discussions about supposed measures of syntax or semantics. However, in the “real world”, factors do not come separated, and the inseparable connection of form and meaning in the notion of constructions is a first step towards an ecologically and psychologically more valid perspective on pieces of language in discourse and the mind.

Returning to the differences in the relationships of language and theory of mind in German and Korean children, since similar factors seem to be both facilitating the meaning acquisition and understanding of mental verbs and the cognitive achievements needed for performance on classical theory of mind tasks, a closer look at the meanings German and Korean children seem to represent with the verbs ‘know’ and ‘think’ might give us hints towards further reasons for the differences in ToM performance between the two groups of children.

For German children, the lexicon for ‘Cognition & Evidentiality’, holding both ‘know’ and ‘think’ along with other mental verbs and adverbs, predicted variance in ToM, suggesting that German children who acquired more of the respective terms are also more advanced in the process of building a semantic field that connects and differentiates their meanings. This acquisition of differential meanings might equip children with concepts to reason about ignorance and false belief and to “understand from listening” the according test questions of KI and FB that contain the verbs ‘know’ and ‘think’. Before such a meaning differentiation is established, for example, when the terms are only encountered in conversational uses in the ambient language, or expressing inconsistent levels of certainty, this might hinder the mapping of words and concepts needed for the ToM task. Unfortunately, the data of the present study allow no judgments or inferences about the input that children receive,

especially not for Korean, so that we have to speculate about children's meaning representations and differentiations from the production examples that were collected in the parent reports.

Generally, it was found that for both languages, words for cognitive states, epistemic stance and similar terms were acquired roughly about the same time and children did also not differ in the proportions of words acquired from these categories of the IS Word Checklist. The frequency of usage examples that showed these terms in conversational uses rather than with genuine mental state reference was also similar between the two languages, although for Korean children the relation to age in the emergence of mental state meanings was a little bit clearer.

The only difference found, besides the variety of constructions with different complementizers mentioned above, was in the concepts that seemed to underlie the uses of 'know' and 'think' in children's productions of these verbs with complementation constructions of different complexity levels.

German children's uses of *wissen* ('know') and *denken* ('think') – at least in the more-than-conversational uses – more closely adhered to the conceptions of states of representations that have been (knowledge) or can be (belief) checked against reality that Western thought and folk psychology typically relate with these words. They appeared in present tense with complement clauses that in the case of *wissen* contained repetitions of shared knowledge of speaker and hearer, e.g., of previous discourse turns, and in the case of *denken* expressed someone's subjective judgment or opinion, or even false belief. Use of the complementizer *dass* seemed to be a further means or cue to invoke a sense of 'factivity', stressing the subjective certainty of the subject or the contrast of this person's representation to that of another.

The concepts of *alta* ('know') and *sayngkak hata* ('think') embedded in Korean children's uses of the verbs seemed to entail different construals of these mental states, as they seemed to highlight processes and products of mental activity rather than representational states. When combined with embedded complement clauses, these verbs frequently occurred with past tense markings, which are better interpreted as indicating perfective aspect, and referred to changes of mental state in the senses 'I came to know, I learned' and 'I came to think'.

*Sayngkak hata*, often referring to processes of deciding, finding a solution, planning, or thinking something up, does, from this conception, not entail the possibility of a 'false belief'. Even opinion uses of the verb were rare, probably showing that the kind of 'thinking' that is covered by the verb *sayngkak hata* usually does not invoke a reference frame of "truth".

The further fact that Korean children made no difference between the action prediction (FB DO) and thought versions (FB THINK) of the false-belief test questions would make sense in the case that Korean children followed a pragmatic interpretation of the test questions. If Korean children take the word ‘think’ in the question to mean ‘think up’ or ‘conclude after reflection’, which their own frequent uses of *sayngkak hata* would allow, they could interpret the questions as “where will M. figure out to search next”, already presupposing that the object cannot be found in the first place, and answer with a “creative solution” for the character’s further actions. This can neither be substantiated nor excluded from the present data and would need further experiments with respective controls.

But also *alta* does not entail the notion of truth/falsity in the same extent as ‘know’ does in German or English. In most uses reported, the constructions around the verb construed an assimilation, an active acknowledging or learning of something new. In this sense it also seems to refer more to a mental process than to a mere state of representation. What might also be of importance is the fact that Korean possesses a separate verb for ignorance, *moluta*, so that the meanings for ‘know’ and ‘be ignorant of’ are not simply contrasted by negation, but children have to reconstruct this opposition in meaning on the basis of the verbs’ uses, which might be not as straightforward. Moreover, *alta* differs from *wissen* in that it extends to lower levels of factivity and certainty. It extends from factual knowledge to familiarity, which cannot be contrasted with reality, and it was used in the picture book narration by a 5-year-old child with past tense and another nominal complementizer, *-cwul* – a specific construction in which *alta* even takes on the meaning of a mistaken belief. Depending on how often Korean children encounter these uses of *alta* in the language around them, and generally considering the variety of constructions and possible complementizers of the verb, it might be questionable whether they represent a generalized meaning of *alta* over all its uses — and if they do, it will probably not neatly match with a concept of knowledge as true or informed representation of reality. They might instead simply learn different constructions in each of which the verb plays a specific role. If that is the case, it could be one factor contributing to the similar difficulty of KI and FB questions for Korean children.

Again, no final claims or conclusions can be drawn from the present data. Definitely, more research on the acquisition of mental verbs and related constructions in Korean is needed, including tests on children’s interpretations and differentiations of verb meanings. In addition, further ToM task studies, preferably training studies, with well-thought-out conditions and controls to separate different factors could be very valuable to understand whether and how the linguistic influences discussed in this chapter work in non-European languages.

From the present perspective, it seems that German children find characteristics in the lexicon and related constructions of the mental realm they acquire around the 4<sup>th</sup> birthday that in their convergence help them to re-construct an explicit, representational understanding of states of ignorance and of mismatches of belief and reality over the next year, and that also help them, when confronted with a theory of mind task, to understand the task and test questions and to process and retrieve the appropriate information. This facilitating role of language for false-belief task performance might be less strong, if this convergence of multiple linguistic cues is not given. Language might even be obscuring if the meanings and functions of mental verbs and constructions in the ambient language have a greater variety and variability, or if different aspects of mental states and processes are highlighted in the meanings of verbs and constructions than those emphasized by false-belief tasks, making the interpretation of task and questions less straightforward for these children.

Montgomery (2002: 379) writes: “In the end, the semantic development of mental verbs is the product of the social context and pragmatic purposes toward which the verbs are used by children, the peculiar syntactic properties of various mental verbs, and the relevant cognitive developments.”

Accordingly, future studies on theory of mind should address cognitive development, the acquisition of linguistic constructions, and pragmatic influences in their mutual relationship, if we really want to understand the age-related shifts and cultural differences in preschoolers’ performance on classical false-belief tasks.

### 5.3 On the influence of cultural differences on children's linguistic and conceptual development in the psychological domain

This last part of the discussion takes its focus on the cultural differences found in the specific routes and characteristics of German and Korean development of internal state language and understanding.

The astonishing similarities in the development of language and understanding of the internal/psychological domain that were the topic of Chapter 5.1 could best be described as shared hierarchical sequences of developmental stages, progressing along general dimensions of abstraction and complexity. A further general finding was that the shared sequential stages are reached by individual children at quite different time points, showing the dependence on and variety of factors – both individual and social – that can influence language acquisition and cognitive development. In Chapter 5.2 it was discussed how specifics of the language children are exposed to and acquire can enhance the rate of progression from one stage to the next, in this specific case from the understanding and tracking of desires and simple emotional reactions to the understanding and combinatorial processing of representational mental states like knowledge and belief.

However, cultural specifics, too, can modulate development. In the present study, most differences found between the two cultures were examples of differing attentional foci, construals, and related behavioral strategies that can be attributed to an early “relationship orientation” or “social bias” of Korean children.

#### **Attentional foci and habitual construals: independent and interdependent lenses on self and environment**

Most obviously, Korean children’s early “social bias” can be seen in the acquisition and use of internal state language.

At 3 years, Korean children have more active vocabulary in the semantic category of ‘Social feelings & relationships’ than German children. Moreover, Korean children acquire words for social relationships and feelings, especially self-reflective emotions, up to a year earlier than German children. The fact that Korean mothers also provided more usage examples for this semantic field, and also for ‘Social behavior’ and ‘Morality & norms’, further underscores the dominance of caregivers’ attentional focus on the interpersonal domain, which might both contribute to the frequency of respective terms in the input from which Korean children get an early grasp on these words and to the tendency to judge child utterances expressing social

themes as especially important and, thus, worth reporting. Similar differences in reported uses were seen in some categories, in which children showed similar progress in lexicon acquisition. For words of the category ‘Emotion’, for example, typical and frequent utterance examples given for Korean children were constructions, where the child reported his or her feeling as caused by the social behavior of another, thereby embedding it in an interpersonal context. German children’s most frequently reported utterances were simple expressions of their subjective internal state. Even if an interpersonal context had been present for German children’s emotion utterances, either the children did not deem it worth to linguistically express it, or their mothers did not deem it worth reporting. To give another example, while children of both cultures are early productive with words for evaluations, reported utterances for German children typically express their own preferences and evaluations, whereas those for Korean children frequently showed the children’s inquiry about or indirect reports of others’ judgments about them, which is an indirect expression of their early care for their social face or popularity (or, if not yet conscious, at least an imitation of such talk that shows experimenting with and practicing of related cultural scripts). Many other subtle differences recur in the usage reports of German and Korean children’s speech that add to the impression that the cultural “gestalts” of independence and interdependence are already emerging in the talk of preschool-aged children, especially when related to the psychological realm.

The cultural differences found in internal state language are also visible at the conceptual level, i.e., in children’s “thinking for speaking” in their narration of the socio-emotional picture book story and in the scripts and values that surface in the emotion understanding interview.

In the picture book narrations, it was found that even when looking at and narrating the content of the same pictures, German and Korean children often followed different attentional foci in construing the events for their narration. While Korean children attended to and verbalized the social circumstances, describing more interpersonal actions, attitudes, and relationships, German children focused more on the independent internal states of the story characters, describing their subjective perceptions and feelings. These tendencies were also reflected in the quantitative numbers of internal state tokens used from the respective semantic categories.

A further difference between the two groups of children was seen in the predominant use of causal connectors in Korean narrations as compared to a predominant use of temporal connectors by the German sample. Whether this is a mere reflection of linguistic differences

in typical strategies of cohesion, or whether it expresses a deeper difference of culturally shaped attentional bias cannot be known from the present data.

Although they use more internal state language overall than German children in their narratives, Korean children use much fewer emotion words and also fewer words of emotion expression. This might additionally reflect what has been mentioned in Chapter 2.1, that it is not common for Koreans to talk about others' feelings and thoughts, which are considered private. However, emotions are very important for Koreans and need to be empathically assessed and considered in interactions. Yet, the focus is on the relationality and interpersonality of emotions and the way they nurture or hinder harmonious relationships. This is reflected in the high numbers of words for social actions, feelings, and relationships, which are used in the Korean narratives.

The reluctance or unfamiliarity to refer to another's internal feelings might as well be one reason why Korean children in the emotion understanding interview, when asked to name the feelings behind facial displays, tend to refer more often to the expression, i.e. laughing or crying, than to the emotion for HAPPY and SAD. The emotion word for ANGRY, *hwanata*, on the other hand, which is predominantly used by Korean children, is literally translated as 'to emit fire', which already involves a focus on action and expression and therefore does not violate the "interpretation boundary" for another's internal state.

Considering this background, it might also be unusual for Korean children in the theory of mind tasks to be asked to openly verbalize someone's internal state, even though they are trained to anticipate and infer others' internal states in everyday interactions, because these are usually not openly referred to. But the main focus for Korean children seems to be on right social action: what can and should I do to the other in this situation? Being asked to talk about and verbally express the internal states of the characters in the ToM vignettes, instead of acting on them in the situation, might confuse them on what the task is actually about.

This is certainly not the single reason why Korean children pass the theory of mind tasks at a much later age than German children, but it might be one cultural aspect contributing to a cluster of factors – cultural as well as linguistic – that influence cognition and/or performance.

Besides the age differences in passing the scaled stages of theory of mind test questions, different subscales were extracted for German and Korean children's sequential mastering of test questions for knowledge–ignorance and false belief (see the discussion in Chapter 5.2).

Wellman et al. (2006), who did a scaling study of theory of mind tasks with Chinese children, could also find cultural differences, as compared with US American children, in the order of

passing test questions concerning knowledge and belief. They had included an additional task that was not part of the present test battery, which concerned the understanding that different persons can have differing beliefs about the same object. This task, called ‘diverse beliefs’, was passed by US American children before knowledge–ignorance, which was passed before a classical contents false belief task. Chinese children, however, mastered the knowledge–ignorance task first, and then diverse, and finally false belief. Wellman et al. (2006) try to explain this difference in acquisitional sequence by different emphases put on the concepts of knowledge and belief in caregivers’ early child-rearing goals and attitudes. They refer to studies mentioning the importance of knowledge acquisition in Chinese culture and epistemology as opposed to Western epistemology centering around truth and belief (Nisbett 2003, Li 2001), and American parents’ goal to teach their children about individual differences in people’s beliefs. Further, they cite findings on caregiver–child conversations in which Chinese parents’ elaborations and comments focused more on “knowing” (Tardif & Wellman 2000) and those of US American parents’ focused more on “thinking” (Bartsch & Wellman 1995).

Differences in child-rearing attitudes might also contribute to some of the differences found between German and Korean children in this study. Yet, Koreans place a similar value on knowledge acquisition as the Chinese, by virtue of a shared history of Confucianist thought and traditions, but they do not pass knowledge–ignorance tasks early, but instead at about the same time as false belief.

Another possibility, not mentioned by Wellman et al. (2006), is that specifics of language acquisition have a strong influence on children’s ability and timing of passing different ToM test questions. As has been discussed in Chapter 5.2, the meaning acquisition and differentiation of mental verbs, and the availability of a ‘mental-state argument structure construction’, both of which are dependent on characteristics like frequency and consistency in the input that allow for early generalizations, might influence children’s cognitive development of the respective concepts, or mask conceptual skills children possess already but are unable to show due to linguistic comprehension problems – pragmatic, semantic, or structural – in the respective tasks.

The Mandarin semantics of mental verbs is organized differently from Korean, with separate lexemes for know-how/ability, familiarity, and factual knowledge, for example, and Mandarin complement clauses follow a clear format with strict word order and without any complementizers. These linguistic characteristics, especially the clear semantic differentiation of factual knowledge, might also contribute to Chinese children’s early mastering of

knowledge–ignorance questions, and, above that, to the fact that Chinese children pass ToM tasks at about the same age as English-speaking children, and thus at a younger age than Korean children, despite their cultural similarities.

In the unexpected contents task, where children were required to express their own previous false belief about the contents of a deceptive container as well as to anticipate the false belief of their friends, who have not seen the real contents, German children were earlier able to correctly express the others' false belief than they were to express their own. Korean children, however, did not show a clear sequence in which of both test questions was passed first, but seemed to find self- and other-related questions of similar difficulty. This finding is not easy to interpret. The relative easiness of the other-question for German children might lie in the fact that it involves the mental simulation of actively deceiving the other children. Theory of mind tasks where children are actively involved as agents in deceptions have previously been shown to facilitate children's understanding and reduce the difficulty of the task (Chandler et al. 1989). One possible explanation for Korean children's pattern might, again, be their reluctance or unfamiliarity of linguistically expressing others' internal states, confounding this facilitating task feature and leading to the mixed picture of acquisitional sequence seen.

In any case, it still has to be further investigated whether and how this cultural boundary on talking about others' internal states is present for Korean children and influencing their behavior in different tasks.

A specific conclusion from the present cross-cultural viewpoint is that classical theory of mind tasks, although often taken as indicating social understanding par excellence, are in fact much more cognitive and logical in nature, involving processing capacities and skills for the simultaneous holding, combining and comparing of multiple different representations and the informational pieces contained therein. Children performing well on these tasks possess skills in abstraction and perspective taking, but not necessarily something like an empathic stance towards other people or a prosocial attitude. This is first of all underscored by the Korean children in the present study, who show an early appreciation of other people's judgments and expectations, an orientation to and need of harmonious relationships, and related other-oriented attitudes and prosocial strategies in coping with interpersonal feelings and conflicts, but, on the other hand, have difficulties with classical theory of mind tests. Research with Western children has also not been able to show clear relationships between false-belief understanding and prosocial behavior or other social skills (Dunn 1995, Lalonde & Chandler 1995). In Lalonde and Chandler's (1995) study, especially, false-belief task performance was

positively correlated with a list of what they call ‘intentional’ items of social competence, but did not correlate with a second list of competencies labeled ‘social conventions’. Upon close inspection, their ‘intentional’ list describes items of self-conscious or self-affirmative behavior and engagement in pretend play, games and conversations, while the ‘social conventions’ list describes many amicable, yielding, and polite behaviors, which would be prime examples for the social competencies that are typical for Korean children. The correlational pattern of false-belief understanding with more independent rather than interdependent behavioral orientation might be a point worth exploring in further research.

Although classical theory of mind tasks can well be conducted with Korean children and also enable the investigation of some specific cognitive abilities of perspective-taking, abstraction, and combinatorial processing, as mentioned before, the task format of classical theory of mind tests does not match with the kind of abilities that are trained and valued by Korean culture. The task is “strange” in the sense that children have to suppress their helping and action orientation for a simple representation and (verbal or gestural) expression of another’s internal state. Further, Korean children are not able to show their social skills in ToM tasks, because they are not about norms or conventions, and also not about the preservation or restoring of harmonious relationships, but instead require logical skills, memory, and the ability to infer the singular and subjective – not interdependent or relational – mental representation of a character.

The research results found by Vinden (2001) on Korean American and Anglo-American children’s theory of mind might help to integrate the previous arguments into a more coherent picture. She used a task format in which children were actively involved in exchanging container contents and asked about their true beliefs first; the discourse and interactions were structured more naturally with emphases on people’s intentions or perceptions (in the appearance-reality task); with shorter clauses and repetitions of questions; and providing two answer options each rather than asking open questions. These characteristics led to Korean American children performing similar to Anglo-American children at age 3 and 4, and even outperforming the latter at age 5. This shows that if the requirements of abstraction and complex language comprehension are reduced and Korean children are provided a richer interactive and action- and intention-oriented context, and if they are given clear instructions and response options that help them understand what the task is about, i.e., the experimenter is expecting of them, they have a less hard time solving false belief tasks and can bring their social skills of inferring others’ internal states better to the fore.

Vinden further found evidence that large-scale cultural differences like parenting attitudes showed quite different relationships with theory of mind in Korean American and Anglo-American samples. For Anglo-American children, whose mothers put more value on parenting encouraging the child's autonomy, a parenting style emphasizing control and conformity was negatively related to theory of mind (note the parallels to the correlational pattern for children's social behavior and ToM found by Lalonde and Chandler 1995). For Korean children, whose mothers were generally more focused on control and conformity than those of Anglo-American children, no relationships of parenting and theory of mind could be found. Vinden concludes, "These results suggest that the same developmental endpoint can be reached in different cultures by different means, and that what constitutes 'good parenting' depends on a complex of attitudes and behaviors that can only be understood in their sociocultural context" (p. 793).

Taken together, the most realistic view on the development of theory of mind would be one that acknowledges both socio-cultural interactive contexts, including discourse, as the primary ground in which children learn about the mind and the perspectives of other people, and the additional cognitive options and flexibility for memory, reflection, and context-detached processing of these offered by a structured semantic network of mental state verb meanings and generalized construction-situation pairs for mental states and their content, i.e., the representational help of linguistic resources. Katherine Nelson (1996, 2007) embraces such a viewpoint, but has only been formulating it from a theoretical perspective and did not focus on specific details of cultural or linguistic differences, for example. By providing and reviewing new cross-linguistic data, the present study gives support to her general ideas and adds further detail to the understanding of the concrete roles of culture and language.

Contrary to the theory-of-mind task battery and the related Guttman scale, no differences between German and Korean children could be seen in the pace of development along the stages of the extracted scale of emotion understanding.

However, the qualitative differences between children's responses to single questions of the interview are striking. They offer a close insight into the social orientations of independence and interdependence, as they are instantiated in these two specific cultural varieties, and their early presence in preschool children's conceptions of and talk about their experiences around basic emotions.

Already on the first stage of the shared developmental scale of interview question responses, i.e., in the expression strategies or display behavior mentioned by the children, such cultural

differences were visible. A significantly larger proportion of Korean children, already from age 3, said to mask negative emotions like sadness and anger before others. Moreover, Korean children gave twice as many justifications for their display strategies than German children and referred in these significantly more often to social reasons, as opposed to self-related ones, than the German children. German children explained their expression strategies with their subjective desires and evaluations, or, when referring to the other, with an attempt to communicate their feeling or letting that person see or know. Korean children, in contrast, most frequently referred to the other person's evaluation of their display as reason for the chosen strategy, but mentioned also group- or norm-related justifications. A further interesting difference is that while German children would either show or mask their expression for both parents and peers, or show it to parents, but not peers, Korean children make quite unique statements about whom they show which emotion and whom they don't, covering many of the possible combinations of sharing it with or hiding it from mom, dad, and/or peers. This seems to indicate that Korean children have an early sensitivity to how specific people react to specific behaviors or displays of them, and adjust their expressions accordingly (or at least try to – as we don't know whether and how often they actually manage to control their facial display in real situations).

This sensitivity in reading others' reactions might also be a reason why Korean children made close to no errors in recognizing and labeling the negative facial expressions of sadness and anger, whereas some of the younger German children misinterpreted negative expressions conflating sadness, anger, and/or fear.

Clear cultural differences were also seen in children's descriptions of emotional and action reactions to the negative emotions of a friend. Korean children almost exclusively reported an overall prosocial reaction pattern, with empathic feelings and a prosocial action. Only single children said that, becoming themselves angry when their friend is mad, they vent their anger, because the emotion is just too strong or the other did something morally bad. Of German children, between 30–45% of the children for each emotion would respond to act prosocially, while the same percentage would show a dissociated reaction pattern, i.e., be unaffected by the friend's negative emotion and leave the friend behind to play by themselves or with other friends. Mixed patterns were also reported by German children, about 20% for each emotion; for a sad friend, this was mostly an independent reaction pattern, meaning that the child, although emotionally unaffected by the sadness, would react prosocially; for an angry friend, it was mostly a mirroring/aggressive response pattern, meaning that the child himself became angry and reacted aggressively or with retaliation.

Moreover, among the different prosocial actions children mentioned to engage in when their friend is sad or angry, German children often relied on caregivers, e.g., a preschool teacher, for regulation, whereas Korean children mentioned a great variety of harmony restoring behaviors in the case of sadness, and many children replied to employ ‘prosocial communication’ in the case of anger.

Children’s responses to the questions about reactions to a friend in the interview seem to parallel in some points the observations made by Kornadt (2011) on aggression in German and Japanese children and adolescents. Kornadt reports that Japanese children use more proactive communication as reaction strategy to frustration by another, while German children tend more to react aggressively. Moreover, he finds that Japanese children are not simply suppressing equally strong aggressive action tendencies, but actually tend to cognitively appraise these situations differently from German children in the first place, in that they do not simply blame the other, but reconsider if they did not themselves contribute to the frustrating outcome, trying to maintain the other’s face and the value of the relationship.

In the causes and eliciting situations that children described for their emotions, Korean children mentioned more social causes overall, while German children named more self-oriented causes. Behaviors of others such as sharing, helping, and giving someone priority, which are related to Korean values of harmonious relationships, were described by Korean children as eliciting happiness, and the self-willed behavior of friends was frequently mentioned as reason for sadness. Similar descriptions were absent from German children’s responses, probably because self-willed behavior is seen as more or less normal and “healthy” by German mothers (Kornadt 2011), so that children also do not attach a negative value to it. The self regulation strategies of German children for negative emotions often involved seeking a caregiver for help. Sometimes they mentioned substitution or avoidance strategies. Korean children’s regulation strategies, on the other hand, were frequently aimed directly at the person that caused their emotion, either by simple display or expression, or by ‘prosocial communication’.

Finally, although the cognitive stages of developing emotion understanding are generally the same for German and Korean children, there are not only considerable differences in the amount of social references and justifications, but also in the development from 3 to 6 in terms of social focus and references.

For German children, a general increase over age was seen in naming social causes of emotions and making social references in their justifications of expressions and reactions, with a tendency from primarily self-orientation with 3 years, over increasing other- or relationship-orientation from 4 years, to the beginning emergence of group-orientation at age 5. Giving a crude sketch of this development, one might say in a review of children's interview responses that German 3-year-olds are primarily focused on parents and caregivers as "gatekeepers" to their own goals and wishes, with about age 4 they discover the reciprocity of relationships as a source for happiness, sharing, fun, and conflict, and 5-year-olds are distinguished by a rising awareness of the self-in-the-group.

For Korean children, other-orientation was high and dominant over all age groups, yet, while norm-related justifications decreased with age, such related to the group increased.

The value and experience of harmonious relationships seems to be strong from a very early age, so that children attune their behaviors, but also emotional well-being to the close others around them. That the strong relationship-orientation of Korean children is not a superficial norm, but deeply internalized, can best be seen from the fact that not only the behaviors and justifications they report are oriented at harmonious relationships, but also their feelings in response to a friend's negative display are clearly affected, so that whatever harmony-restoring action they do on the other will also regulate themselves.

Yet, the regulation of displays and negative emotions still has to be learned. 3- and 4-year-olds would often mention that a facial expression or behavior –either of themselves or of the friend that is talked about in the interview– is "not pretty" or "strange", using moral judgments, which are probably used by mothers to teach the children appropriate displays and politeness. While younger children might indeed be primarily operating on norms, older children increasingly often gave social-instrumental reasons for their strategies. This seems to be an expression of their beginning reflection of social norms –beyond simple obedience– and their conscious adaptation to them balancing others' expectations and the demands of harmonious relationships with their private goals and needs.

How do the cultural differences described come about? From the present findings it can only be speculated – but the observed pattern of progression along the extracted scale of development seems to indicate that from the early event representations in which children learn emotion-reading and related reaction strategies, they build behavioral schemes for successful interactions in their specific socio-cultural environment. These form the basis and content of every psychological understanding they will develop in succession. For Korean children, this means that they start from learning when mother or others are pleased or praise

them for showing a “pretty” face, and when they are not pleased, i.e., experiencing the positive and negative social consequences of certain types of behavior. This goes on in the preschool, where they learn how to be included and find happiness in group activities, as well as that “strange” behavior can cause them to get excluded from that source of sharing and good feelings. These experiences become internalized and form motivations that guide further behavioral strategies and learning.

If German mothers, on the other hand, frequently ask their children about their desires and wishes, explain their regulations of the child with reference to their own wishes, aims, or principles, and assist the child in different circumstances to reach her independent goals, this will equally leave traces in the child’s behavior schemes and, consequently, motivational system, and results in the pattern seen that German children focus on their own evaluations of experiences and, in case of difficulty or conflicts, seek caregivers to assist them.

When children then reach the point where they become able to reflect upon their own and others’ feelings and behaviors in a more context-independent fashion – and probably on a higher level of consciousness – they do not change their behavioral strategies and internalized motivations, but simply learn to express and explain them, and go on to refine their strategies through reflection.

This interpretation fits well with a Vygotskian account of development (Vygotsky 1978), and parallels the descriptions of the differences between independent and interdependent social orientations, self concepts, and related socialization practices described in Chapter 2.1.

In the end, both German and Korean children acquire a theory of mind, i.e., an understanding of mental states of self and others, increasing processing capacities for the representation of multiple perspectives and causal and contrastive relations of these, as well as abilities of conscious reflection of emotional experiences and related behaviors. However, the contexts, contents, and goals of that development are shaped by their respective ‘communities of minds’ and the concrete interactional experiences, including discourse, they make in these.

## 6 Conclusion & Outlook

Returning to the bird's eye view that was aimed at in the Introduction and looking in summary at what the findings revealed about how children tap the realm of the psyche building linguistic and cognitive resources to grasp and represent it, a complex and differentiated picture of development emerges, which goes beyond universalist and constructivist, or "exoticist" viewpoints.

The common stages and sequences found between German and Korean children both in language acquisition and cognitive development seem to point to universal trajectories of development in the preschool years between 3 and 6, in which certain concepts and abilities build up on other, previously acquired ones in a stable sequence. Upon closer view, these "universals" come down to a shared increase in both abstraction and complexity – both of linguistic meanings and constructions, and of representational and computational abilities. At the same time, a gradual shift takes place, as children between age 4 and 6 enter a new stage that enables and fosters possibilities of context-independent concepts and mental manipulations. Again, this new level is reached both in language and cognition: as children figure out the sense-relations in the systems of semantic categories of words for emotions and cognitive and epistemic states and master the complex structures of causal, contrastive, and complement clause constructions, they also build and refine concepts for emotions and mental states such as knowledge and belief, and become able to consciously track and reflect causal relations, contrasts, and the contents of their own and others' minds.

While the common stages and sequences relate to the *structure and nature* of children's cognitive abilities and concepts, the *time points* when stages are mastered and the *contents* of children's representations and understanding are influenced by cultural and linguistic peculiarities.

In the domain of internal states, cultural differences between German and Korean children's representations all concern the role and relationship of self and other and can be tracked to differences in values and social orientations of independence and interdependence in their specific instantiations in these two cultures. In the linguistic and cognitive data, they appear as habitual foci of attention and interpretations and construals of socio-emotional situations.

The contribution of language to developing cognition takes place on two levels—first, as medium of cultural learning in the interactions and discourse the child engages in with significant others, then, as representational tool that gets increasingly helpful to cognition.

This second function is developed and trained by means of the first—through ‘listening for understanding’ and ‘thinking for speaking’ in the cultural and interactional contexts of the family and kindergarten.

What seems to happen during the period between 4 and 6 years, is that words and constructions which are at first pragmatically used in specific interactive contexts get, in a stepwise process, aligned with concepts and event-schemes or scripts for emotions and mental states, which are equally at first bound to specific experiential contexts and relations.

Meanings seem to play the key role in this building of word-concept and construction-event scheme connections, which, as they become generalized, are of increasing assistance in cognition and enable the context-independent and flexible representation and computation mentioned as major achievement in that age period.

As far as the current data could provide insight into this relationship, two different types of linguistic contributions to children’s conceptual development of internal state understanding could be found. In both languages, emotion understanding was facilitated by the general use of complex constructions expressing internal states together with their intentional content in complement clauses or with their causes and consequences using appropriate connectors. Theory of mind, on the other hand, was influenced by linguistic variables independent of age only for German children, for whom the use of internal state language expressing causal connections and the productivity with cognitive and evidential vocabulary could predict part of the variance in theory of mind.

Although, from these results, internal state language indeed seems to play a facilitating and maybe forming role for concepts of internal states like emotions and false beliefs, fine-grained relationships seem to exist between particular linguistic features and cognitive representational abilities that lead to specific patterns of language–cognition relationships for children acquiring different languages.

Cross-linguistically, the acquisition and use of complex linguistic constructions seems to train children’s simultaneous representation and meaningful relation of two or more states of affairs. In the domain of mind and emotion, such are causal, contrastive, and ‘aboutness’-relations—simple, combined, or interlaced: e.g., of events and emotions (be happy [for

receiving a present]; fear [that X might happen]), intentions and actions (climb a tree [because one wants [to escape a predator]]), mental states and reality (falsely belief [that X contains A] whereas really [it contains B]), or of the internal states of different people (A thinks [Z] and B thinks [not Z]; C is sad [that D is angry [because she said [W]]]).

The language-specific relationships observed seem to be due to the semantics of the labels and constructions available to the child and their “fit” with the specific concepts or representational abilities required for a specific task.

These results call for further, more detailed investigations into these relationships, as they could not be realized in this first exploratory approach that followed a more descriptive and global perspective. Remaining questions have to be addressed with further experiments singling out specific linguistic factors and possibly related cognitive abilities.

My aim to build a broad descriptive basis of developing internal state language and understanding in two different cultures that integrates previously loosely related fields of inquiry and lays the ground for successive projects has, in the end, been fulfilled, as the specific observations made necessitate further experiments and/or qualitative longitudinal studies focusing on single linguistic or cultural factors and steps in development.

One important implication of the present findings for other research in the field is that the theory of mind tasks themselves— the classical false-belief tasks and also the related false-belief emotion task—need to be the object of closer investigations.

First, their language use and comprehension requirements have to be analyzed in more detail. Moreover, they do not measure competencies like social empathy, which is often blindly assumed by researchers using them in all types of correlations with social skills, emotion, and the like. The results of this study make clear that the tasks measure something much more specific, not so easily expandable to all sorts of social cognition. Although different people or characters are involved in the task, passing or failing it seems to have to do with logical-combinatorial processing and with specific concepts of representational knowledge and belief, not a more general ability to anticipate or empathically adjust one’s behavior to others’ internal states. The latter competence is clearly shown by Korean children in their understanding of the picture story and their sometimes sophisticated answers in the emotional understanding interview, although many of them still fail false belief tasks at the same age.

A second aim for theory of mind research in the future should thus be to reach a fine-grained differentiation of specific subskills of a globally developing theory of mind, distinguishing, for example, between belief representations, social-interactive mind-reading, and empathy, and integrating such subskills into a more comprehensive theory. This also entails further exploration of the relationships of implicit/perceptual, interactive, and reflective abilities, as they are currently discussed in the debate on infant theory of mind.

Finally, developmental psychology, and theory of mind research in particular, has to look deeper into language—linguistic constructions, semantics and use—to be able to interpret developmental findings, especially, when language is the tool of assessment or the major medium providing input for children’s representations and concept formation, which is both the case for theory of mind.

Knowledge about and assessment of the linguistic development of lexicon, grammar, and use in a particular domain, together with knowledge about cross-linguistic variation, should be part of every serious investigation in cognitive development.

In my view, the key to understanding the human mind—which is the shared aim of philosophy and psychology—lies in serious empirical research of the intricate relationships of cognition, language, and culture—and child development in cross-cultural and cross-linguistic perspective is the primary context where these forces can be observed at play and disentangled.

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## Appendix

### Scoring Manual for the Emotion Understanding Interview (EUI) – in German language

#### Punktekodierung für das EUI

Frage	Inhalt	Punktwertung
<b>1</b>	<b>Erkennen &amp; Benennen</b> Was meinst du, wie dieses Kind sich gerade fühlt?	1 direkte, eindeutige Antwort, die die ausgedrückte Emotion mit einem Label wiedergibt „gut“, „schlecht“ zugelassen (richtige Valenz) bzw. Koreanisch 좋아, 안 좋아
		0.5 eindeutige Antwort erst auf Nachfragen, Hilfestellung oder nach Selbstkorrektur Benennen von Situation („Hat seine Mama des allein gelassen?“)
		0 keine Antwort, „weiß nicht“, unpassendes Label, z.B. falsche Valenz
<b>2</b>	<b>Allgemeiner Auslöser</b> Was macht dich ___? Wann bist du ___?	1 klares, eindeutiges Benennen einer Ursache (Ding, Person, Situation) z.B. „Süßigkeiten“, „Oma Reni“, „wenn einer mich haut“
		0.5 Antwort erst, wenn Kind erinnert werden muss, dass es <u>doch</u> einmal traurig oder wütend war oder auf Nachhaken mit „was wäre wenn“ Benennen einer Ursache, die nicht direkt nachvollziehbar ist, aber dennoch mit genannter Emotion verbunden zu sein scheint: „um halb acht“, „das Kind“ (m. Zeigen auf Foto)
		0 keine Antwort, „weiß nicht“, durchgehendes Leugnen, die Emotion je zu haben
<b>3</b>	<b>Konkreter Auslöser</b> Kannst du was erzählen, wo du dich schon mal ___ gefühlt hast? z.B. in der Kita? Was war da?	1 Nennen einer eindeutigen Situation mit klarer Verbindung Situation -> Gefühl
		0.5 eindeutige Benennung erst auf Nachfrage, Hilfestellung oder „Erinnerung“ leichte Verschiebung oder Unklarheit: a) Schmerz -> Trauer b) Gleiche Ursache für Trauer und Wut
		0 keine Antwort, „weiß nicht“, Leugnen, die Emotion je zu haben, unpassende Geschichte ohne Emotionsbezug
<b>4</b>	<b>Ausdruck &amp; Teilen</b> Wenn du ___ bist, zeigst du das anderen? ..., zeigst du dein ___ Gesicht? Mama? Papa? den anderen Kindern i. d. Kita?	1 direkte, eindeutige Antwort ‚ja / nein‘ zu Eltern <u>und</u> Peers Nicken und Kopfschütteln auch, wenn eindeutig

		0.5	direkte, eindeutige Antwort ‚ja / nein‘ zu Eltern <u>oder</u> Peers bzw. zu beiden auf Nachfrage, Hilfestellung, Zögern oder Selbstkorrektur bzw. auf „wenn du ___ wärst, würdest du das dann zeigen wollen?“ „kann das nicht sehen“ (Ursache in der Kita genannt -> Eltern bzw. andersrum)
		0	keine Antwort, „weiß nicht“, Leugnen, die Emotion je zu haben
<b>5</b>	<b>Ausdruck &amp; Teilen – Begründung / Reflexion</b>	1	klare, zum genannten Ausdrucksverhalten kohärente Begründung, für Eltern <u>und</u> Peers auch: „weil ich (nicht) mag/will“
	Warum zeigst du das (nicht)?	0.5	klare, zum genannten Ausdrucksverhalten kohärente Begründung, für Eltern <u>oder</u> Peers
		0	keine Antwort, „weiß nicht“, Begründung oder Aussage, die sich nicht auf genanntes Ausdrucksverhalten beziehen lässt Redundanz: „weil ich ___ bin“; „nur so“
<b>6</b>	<b>Selbstregulierung / Bewältigungsstrategie eigener Emotion</b> (folgt auf Frage 3)	1	klare Antwort bezogen auf Situation/Emotion, die Verstärkung oder Regulierung (bzw. den Versuch) der Emotion zum Ausdruck bringt
	Was hast du dann gemacht, als ___ ?	0.5	Antwort, die lediglich Ausdruck der Emotion bestätigt, z.B. „gelacht“, „geweint“ Benennen einer nur indirekt oder unklar regulierenden/verstärkenden Handlung
		0	keine Antwort, „weiß nicht“, Antwort ohne Bezug zu genannter Situation/Emotion
<b>7</b>	<b>Empathie / Gefühlsreaktion auf fremde Emotion</b>	1	direkte, klare Benennung einer Emotion auch: „gut“, „schlecht“, „nicht so gut“ „unempathische“ Emotionen, d.h. gegensätzlich oder „normal“, wenn bewusste emotionale Distanzierung zum Ausdruck kommt
	Wenn (Freund/in) ___ ist, wie fühlst du dich dann?	0.5	klare Benennung erst auf Nachfragen, Hilfestellung, Selbstkorrektur „unempathische“ Emotionen, d.h. gegensätzlich oder „normal“, wenn zögernd oder unsicher geäußert
		0	keine Antwort, „weiß nicht“
<b>8</b>	<b>Bewältigungsstrategie fremder Emotion (Regulationshandlung)</b>	1	direktes, eindeutiges Benennen einer Handlung, die klar auf die Situation/Emotion beziehbar ist und den Versuch einer Verstärkung oder Regulation o.a. Strategie ausdrückt
	Wenn (Freund/in) ___ ist, was machst du dann?	0.5	eindeutiges Benennen erst auf Nachfrage oder Hilfestellung, leichte Unklarheit Nennen von Emotionsausdruck
		0	keine Antwort, „weiß nicht“

<p><b>9</b></p>	<p><b>Bewältigungsstrategie fremder Emotion - Begründung/Reflexion</b>          Warum machst du das?</p>	<p>1 klare, auf die genannte Handlungsstrategie bezogene Begründung</p> <p>0.5 klare Begründung erst auf Nachfrage oder Hilfestellung          Begründung, die nur indirekt Emotion u. Handlung in Beziehung setzt</p> <p>0 keine Antwort, „weiß nicht“          Redundanz. „weil er/sie ___ ist“</p>
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## LEBENS LAUF

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Mitgliedschaft in der Graduiertenschule des Exzellenzclusters "Languages of Emotion" / Promotionsprojekt im Fach Linguistik an der Freien Universität Berlin	2008–2012
Sprecherin der Graduiertenschüler im Clustervorstand (2008–2010)	
Direktaustauschstipendium der Stanford University	2010–2011
Promotionsstipendium der Studienstiftung des deutschen Volkes	2008–2010
Erwin-Stephan-Preis der Technischen Universität Berlin für den Magisterabschluss	2007
Magistra Artium in Allgemeiner Linguistik (Hauptfach), Philosophie (Nebenfach) an der Technischen Universität Berlin und Sinologie (Nebenfach) an der Freien Universität Berlin	2004–2006
Titel der Magisterarbeit: 'Die Suche nach der vollkommenen Sprachtheorie. Traditionen grammatischer Beschreibung im Vergleich.' Betreut von: Prof. Dr. Peter Erdmann	
Studium der Sinologie und Japanologie, koreanische Sprachkurse an der Freien Universität Berlin	2002–2004
Sprachstudium Chinesisch an der Beijing Language and Culture University, Peking	2001–2002
Abitur am Faust-Gymnasium, Staufen im Breisgau	2001



## Erklärung

Hiermit versichere ich, die vorliegende Arbeit selbstständig und ohne Verwendung anderer als der angegebenen Hilfsmittel erstellt und verfasst zu haben.

Die vorliegende Arbeit war nicht Gegenstand eines früheren Promotionsverfahrens.

Berlin, den 06. Oktober 2012

Cora Kim