Fachbereich Philosophie und Geisteswissenschaften

der Freien Universität Berlin

What language tells us about emotional development in middle childhood

Inauguraldissertation
zur Erlangung des Grades eines
Doktors der Philosophie (Dr. phil.)
Doctor of Philosophy (Ph.D.)

am Fachbereich Philosophie und Geisteswissenschaften
der Freien Universität Berlin

vorgelegt von
Dipl.-Linguistin
Luna Beck

Berlin, 2013

Erstgutachterin: Prof. Dr. Gisela Klann-Delius, Freie Universität Berlin

Zweitgutachter: Prof. Dr. Michael Eid, Freie Universität Berlin

Tag der Disputation: 12. November 2013

Table of Contents

Dank 6

Zusammenfassung 7

Summary 11

1 /// Introduction 15
1.1 Emotional competence 18
1.2 Emotion knowledge 20
1.3 Emotion concepts 25
1.4 The relation of language and emotion in development 31
1.5 Overview of the present dissertation 36

2 /// The relationship between language and emotional competence in middle childhood 42
2.1 Introduction 43
2.2 Method 50
2.3 Results 56
2.4 Discussion 65

3 /// What easily accessible emotion words tell us about the structure of the emotion lexicon in middle childhood 72
3.1 Introduction 73
3.2 Method 76
3.3 Results 81
3.4 Discussion 87

4 /// Explicit knowledge of shame and pride in school-age children 96
4.1 Introduction 97
4.2 Method 104
4.3 Results 107
4.4 Discussion 119

5 /// General discussion **131**
5.1 Summary of the results 132
5.2 Language and emotion in development: In search of common ground 141
5.3 Polarity: An organizing principle in the emotion domain 146
5.4 How shame and pride are conceptualized 151
5.5 Limitations 158
5.6 Conclusion 160

References **162**

List of Tables **195**

List of Figures **196**

Curriculum Vitae **196**

Erklärung **198**

How do words refer to sensations?

—There doesn't seem to be any problem here; don't we talk about sensations every day, and give them names? But how is the connection between the name and the thing named set up? This question is the same as: how does a human being learn the meaning of the names of sensations? For example, of the word “pain”. Here is one possibility: words are connected with the primitive, the natural, expressions of sensations and used in their place. A child has hurt himself and he cries; and then adults talk to him and teach him exclamations and, later, sentences. They teach the child new pain-behaviour. So you are saying that the word “pain” really means crying? On the contrary: the verbal expression of pain replaces crying, it does not describe it.

Wittgenstein (2009, § 244)

Dank

Herzlicher Dank gilt Gisela Klann-Delius, die nicht nur meine wissenschaftliche Arbeit, sondern auch mich persönlich gefördert und begleitet hat. Unsere Gespräche werden mir fehlen.

Besonderer Dank gebührt Michael Eid für die Zweitbegutachtung meiner Dissertation, insbesondere jedoch für seine methodische Unterstützung.

Michael Bamberg, Bill Charette, Claudia Crayen, Georg Hosoya, Matt Johnson, Irina Kumschick, Judith Levy, Maike Luhmann, Natalie Schuez, Carolyn Saarni, Martin Schultze und Sherri Widen danke ich für den fachlichen Austausch und wertvolle Hinweise.

Zudem danke ich Adele Goldberg für die Aufnahme in ihr Einstein Visiting Fellow-Team und die Einladung zu einem Forschungsaufenthalt nach Princeton.

Von ganzem Herzen danke ich Judith Daniels – für ihren Schatz an Erfahrungen und die Zeit, diesen mit mir zu teilen.

Meiner Frau Britta und unserer Lilly bin ich überaus dankbar für ihr Verständnis, ihr Lachen und ihre wundervolle Liebe, die wesentlich zum Gelingen dieser Arbeit beigetragen haben.

Zusammenfassung

Der Erwerb sprachlicher und emotionaler Kompetenz stellt eine notwendige Grundvoraussetzung für die gesunde kindliche Entwicklung dar. Obgleich Charakteristika sprachlicher und emotionaler Kompetenz im Kindesalter unabhängig voneinander bereits gut untersucht wurden, gab es bisher kaum Studien, die das Zusammenspiel beider Kompetenzen in der Entwicklung erforschten. Trotz empirischer Hinweise auf Wechselwirkungen in der frühkindlichen Entwicklung zwischen diesen komplexen, facettenreichen Konstrukten wurde deren Beziehung in späteren Entwicklungsetappen noch nicht hinreichend untersucht. Bisherige empirische Studien berücksichtigten zudem zumeist lediglich ein bis zwei Komponenten sprachlicher und emotionaler Kompetenz. Eines der Ziele dieser Dissertation ist es daher, das Zusammenspiel multipler Komponenten beider Kompetenzen in der mittleren Kindheit zu untersuchen.

Da das Emotionslexikon eine der bedeutendsten Schnittstellen zwischen sprachlicher und emotionaler Kompetenz darstellt und dessen Entwicklung lediglich für das Vorschulalter hinlänglich erforscht wurde, untersuche ich in dieser Arbeit das produktive Emotionslexikon im Grundschulalter. Weiterhin widmet sich diese Dissertation dem konzeptuellen Wissen von Grundschulkindern bezüglich der sozialen Emotionen Scham und Stolz. Bisher ist wenig darüber bekannt, wie und in welchem Ausmaß in der mittleren Kindheit komplexe Emotionen bereits konzeptualisiert sind. Bei der Untersuchung des Emotionslexikons wie auch des kindlichen Wissens über Emotionen nutze ich Sprache – im Sinne der kognitiven Linguistik – als eine Lupe, mit deren Hilfe die Konzeptualisierung von Begriffen sowie konzeptuelle Strukturen analysiert werden können.

Studie 1 hatte zum Ziel, die Beziehungen verschiedener Facetten sprachlicher und emotionaler Kompetenz im Grundschulalter zu untersuchen. Korrelationsanalysen bestätigten positive Beziehungen zwischen der Mehrheit der Facetten sprachlicher und emotionaler Kompetenz. Die engste Beziehung zeigte sich

zwischen den semantisch-lexikalischen Fähigkeiten auf der sprachlichen Seite und dem deklarativen Emotionswissen auf Seiten der emotionalen Kompetenz. Eine konfirmatorische Faktorenanalyse deutete zudem darauf hin, dass die Entwicklung sprachlicher und emotionaler Kompetenz durch einen allgemeinen Faktor auf einer höheren Ebene eng miteinander verknüpft ist. Die Ergebnisse der Studie 1 liefern somit zusätzliche empirische Evidenz für eine enge Beziehung zwischen sprachlicher und emotionaler Kompetenz in der kindlichen Entwicklung.

Studie 2 untersuchte das produktive Emotionslexikon von Grundschulkindern. Ziel war es, quantitative Charakteristiken einfach und zuverlässig abrufbarer Emotionswörter zu bestimmen und die konzeptuelle Struktur der Kategorie der Emotionen zu erforschen. Die Probanden wurden dazu gebeten, alle Emotionen zu nennen, die ihnen einfielen (*free-listing task*). Die Antworten der Kinder wurden mit denen Erwachsener verglichen. Die Ergebnisse deuten darauf hin, dass Kinder im Grundschulalter dem Oberbegriff *Gefühle* sicher Emotionswörter zuordnen können. Jedoch unterscheiden sich Kinder von Erwachsenen darin, dass sie über weniger sicher und schnell abrufbare Emotionswörter verfügen und die konzeptuelle Struktur ihrer Kategorie der Emotionen simpler ist. Den Großteil der Nicht-Emotionswort-Antworten der Kinder machten Ursachen und Folgen von Emotionen aus, die sich beide deutlich auf emotionale Situationen beziehen. Dies deutet darauf hin, dass die Konzeptualisierungen von Emotionen anfänglich auf persönlichen Erfahrungen beruhen. Die Ergebnisse einer hierarchischen Clusteranalyse (ADDTREE Analyse) lassen zudem annehmen, dass Polarität ein basales Ordnungsprinzip innerhalb der Kategorie der Emotionen darstellt.

Studie 3 ging der Frage nach, wie Kinder im Grundschulalter die komplexen Emotionen Scham und Stolz konzeptualisieren. Mit Fokus auf deklarativem Emotionswissen wurden jene Wissenskomponenten der Konzepte von Scham und Stolz erhoben, auf die die Kinder leicht zugreifen und die sie verbalisieren können. Dafür wurden die Kinder – und zum Vergleich auch erwachsene Probanden – aufgefordert, die Begriffe Scham und Stolz zu erklären. Die Inhaltsana-

lyse der Erklärungen ergab, dass Kinder im Alter von sieben bis neun Jahren zwar bereits über Konzeptualisierungen der sozialen Emotionen Scham und Stolz verfügen, sich diese jedoch von denen Erwachsener unterscheiden. Im Gegensatz zu Erwachsenen betten Grundschulkinder ihre Erklärungen von Scham und Stolz in situationale Kontexte mit komplexen Handlungssequenzen ein. Zudem beinhalten die kindlichen Erklärungen noch immer Referenzen zur Anwesenheit beobachtender Personen beim Erleben von Scham und Stolz. Die Kinder erklärten die beiden Emotionen überwiegend mittels Angabe von Ursachen und Auslösern. Dieses Ergebnis bestätigt frühere Befunde und liefert weitere Evidenz für die zentrale Rolle von Kausalität in der kindlichen Entwicklung des Emotionswissens. Schließlich deuten auch die Ergebnisse der dritten Studie darauf hin, dass die Emotionskonzepte der Kinder anfänglich auf persönlichen Erfahrungen emotionsauslösender Ereignisse beruhen.

Zusammengenommen stützen die Ergebnisse der drei Studien die Annahme einer engen Beziehung zwischen Emotion und Sprache in der kindlichen Entwicklung. Insbesondere die Kombination verschiedener Facetten sprachlicher und emotionaler Kompetenz ergänzt die bisher wenig umfassende Literatur zum Zusammenspiel beider Kompetenzen in der Entwicklung. Diese Forschung ist von besonderer Bedeutung für die Weiterentwicklung entwicklungspsychologischer Theorien sowie der Ableitung von Interventionen zur Förderung sprachlicher und emotionaler Fähigkeiten. Die vorliegende Arbeit trägt weiterhin zur bestehenden Literatur über die spätere emotionale Entwicklung bei, indem sie wertvolle Einblicke in die konzeptuelle Struktur der Emotionskategorie und die Konzepte sozialer Emotionen in der mittleren Kindheit gibt. So wird gezeigt, dass Kinder im Alter von sieben bis neun Jahren wissen, dass es Emotionen gibt und sie zum Oberbegriff *Gefühle* Emotionswörter produzieren können. Zudem verfügen die Kinder in diesem Alter über explizites Emotionswissen, sogar in Bezug auf komplexe Emotionen. Sie sind in der Lage, die sozialen Emotionen Scham und Stolz verbal zu erklären. Ihre Erklärungen sind jedoch oft charakterisiert

durch idiosynkratrische, vermutlich autobiografische Situationsbeschreibungen.

Zusammengefasst zeigt diese Dissertation verschiedene Arten auf, in denen Sprache zum Erwerb und zur Repräsentation von konzeptuellem Emotionswissen beiträgt. Insgesamt widersprechen die Ergebnisse der vorliegenden Studien einer amodalen, modularen Sicht auf Sprache. Vielmehr indizieren sie einen erfahrungs- und gebrauchsbasierten Ansatz von Sprache, bei dem Sprache und Emotion sich – zumindest partiell – in Wechselwirkung miteinander entwickeln.

Summary

The acquisition of language and emotional competence is of key importance for a healthy development. While previous research has yielded a wealth of knowledge regarding the developmental aspects and characteristics of either language competence or emotion competence, these competences have rarely been studied conjointly. Though there is some evidence that emotional competence and language competence are related in early development, the precise nature of the relationship between the two constructs, especially in later development, is still an open question. Extant studies almost exclusively focused on the preschool age and considered only a select few components of both constructs. To fill this gap, this thesis aimed at examining the relationship of language competence and emotional competence during middle childhood by considering multiple facets of both competences. As children's emotion lexicon is one of the key interfaces between language and emotional competence and research on the development of children's emotion lexicon almost exclusively focused on early preschool years, I investigated school-age children's productive emotion lexicon. Further, due to a lack of research on later emotional development, little is known about children's conceptualizations of complex emotions. I addressed this issue by investigating children's declarative, conceptual knowledge of the two self-conscious emotions pride and shame. For these two purposes, language was used as a lens through which the process of conceptualization and knowledge representation, i.e. the conceptual structure, within the emotion domain can be examined.

Study 1 assessed relations between various facets of language competence and emotional competence in a sample of school-age children. Bivariate correlation analyses confirmed positive relations between the majority of facets of language competence and emotional competence. In detail, lexical-semantic and reading abilities – in the realm of language competence – and declarative emo-

tion knowledge – in the realm of emotional competence – were found to be most closely related. A confirmatory factor analysis further indicated that the development of language competence and emotional competence are likely to be closely linked on a higher order level. According to the results of the first study, there may be a general ability factor that influences the development of the facets of emotional competence and language competence. In sum, the findings of Study 1 provide novel and strong evidence for a close relationship between language abilities and emotional competence in child development.

Study 2 examined school-age children's productive emotion lexicon as compared to adults by determining quantitative characteristics of easily and reliably accessible emotion words and examining the conceptual structure of the emotion category. The measure consisted of a free-listing task in which subjects were asked to name as many emotion words as they knew. The findings indicated that though children in middle childhood have well established a superordinate category of emotion, their emotion lexicon does not match that of adults' in terms of its semantic structure and easily and reliably accessible emotion words. Most of children's non-emotion word responses were causes and consequences of emotions that both clearly relate to emotional experiences, indicating that children's conceptualizations of emotions are situated in personal experiences. The valence terms *good* and *bad* still are central in the conceptualization of the emotion category in middle childhood. Also, polarity turned out to be a basic organizing principle in the conceptual structure within the emotion domain.

Study 3 explored school-age children's conceptualizations of shame and pride by assessing those knowledge components that can be easily accessed and linguistically expressed by school-age children. Using a free-description task, children, and for comparison adults, were asked to describe shame and pride. Based upon content analysis of subjects' explanations of shame and pride, Study 3 revealed that children's conceptualizations of these two self-conscious emotions already are developed, but not yet fully established as in adults. Contrary to

adults, children embedded their explanations of shame and pride in situational contexts, involving complex settings and action sequences. In addition, children still referred to an audience in describing shame and pride. The most central finding was the predominance of causes in children's conceptualizations of the two self-conscious emotions. The present study confirms previous findings and contributes additional evidence for the centrality of causes in children's developing understanding of emotions. The results of Study 3 thus also suggest that children's emotion concepts are situated in personal experiences.

Together, the present three studies underscore the close relationship between language and emotion in development. In school-age children, lexical-semantic abilities and emotion knowledge are especially strongly related. At middle childhood, children know well about the existence of a category of emotion. However, without any other contextual cues than the superordinate name, only few emotion words come easily to their minds. Further, children around seven to nine years of age have acquired explicit knowledge of the self-conscious emotions shame and pride. They are able to verbally define these two social emotions, though their definitions seem often to be characterized by idiosyncratic, autobiographical scripts. All in all, the findings support the assumption – held by cognitive linguists – that language and emotion are highly intertwined and provide empirical evidence for the complex nature of this relationship in the realm of language and emotional competence. The combination of various facets of language competence and emotional competence adds to the sparse literature on the interplay of both competences in development which is of special importance for evolving developmental theories as well as for deriving interventions to improve verbal or emotional abilities. This thesis further contributes to the literature on children's later emotional development by providing valuable insights into the structure of the emotion category and the content of social emotion concepts in middle childhood. More specifically, the results of Study 2 and Study 3 support the assumption that concepts are grounded in actual experience. They also indi-

cate that there are various ways in which language contributes to the acquisition and representation of conceptual emotion knowledge. In conjunction, the findings of the current thesis argue against an amodal, modular view of language; they rather speak for an experiential, usage based approach to language, in which language and emotion co-develop, at least to some degree, in a mutually dependent manner.

1 /// Introduction

When we think of babies, most of us imagine them loudly weeping or infectiously giggling. Almost from the start, infants are emotional beings. But just like learning to talk, it takes some years until children learn all the skills that enable them to understand, verbally express, and regulate their own emotions, and further, to perceive and understand other's emotions (Saarni, 1999).

Once older children have acquired broad emotion knowledge, they will easily identify emotions in other people's faces equally effortlessly as a skilled reader reading a word. However, for children as well as adults, it is not that easy to explain what an emotion is. In fact, answering that question represents a major challenge to researchers of all emotion-related disciplines. Although the nature of emotions has been debated for hundreds of years now — with prominent thinkers such as Plato, Darwin, and William James — the term emotion is still one of the fuzziest concepts in research (Izard, 2010; Solomon, 2008). Just recently, the journal "Emotion Review" published a special section on *Defining Emotion* (2010, Vol. 2, and 2012, Vol. 4), in which leading experts of their fields attempted to define *emotion* — still presenting several different views. However, given the great diversity of disciplines and perspectives in emotion research, it is comprehensible that there is no simple and definitive answer to the question. It may be partly due to this definition problem that emotions have been long since predominantly neglected in several research areas, including linguistics and psychology. Only in the last three decades has there been an increase in empirical research on emotions. Despite this so-called emotional turn and though the stages of emotional development have often been described, relatively little is known about the particular conditions of this developmental process. From a psycholinguistic perspective, this especially applies to research on the role of language in emotional development. An integrated perspective that combines both linguistic and psychological views, methods and theories could be beneficial in developmental emotion research.

Expanding and integrating existing perspectives in emotion research is one of the main aims of this thesis. This thesis is devoted to the study of the relation of language and emotion in child development. The general question of whether and how language and emotion might be interrelated in child development is a central one as its answer could further change the rather disjointed view on language and emotion that has predominantly been shared for a long time. It also could raise some new questions about an integrated representation and processing of language and emotion.

In particular, I will focus on the relation of language competence and emotional competence in an oft-ignored developmental stage, namely middle childhood. To date, only limited research has adequately addressed the question as to how language competence and emotional competence interact in children's development. I will add to the current literature by considering various facets of both competences and applying a confirmatory factor analysis.

This research is based on tenets of cognitive linguistics (for an overview see Evans and Green, 2006). Rejecting the traditional generative view that language is innate and an encapsulated module, separated from other cognitive functions (Chomsky, 1965; Fodor, 1983), cognitive linguists consider language as part of cognition. Language is no longer seen as isolated and autonomous, but rather as related to the way we experience and perceive the world around us. In this view, it is proposed that language is embodied, meaning that both language learning as well as language use can be seen as constituted of declarative and procedural knowledge that individuals gained through cognitively processing their particular experiences. According to Mandler (2004), a distinction between declarative (conceptual) and procedural knowledge has to be made when investigating language. Declarative knowledge refers to what one explicitly knows and is accessible to consciousness and verbally describable, while procedural knowledge refers to the predominantly non-conscious knowledge of how to do things. Procedural knowledge is sensorimotor knowledge that we can only think

and speak about by using declarative, conceptual knowledge (Mandler, 2004).

In this thesis, the focus is on declarative, conceptual knowledge of emotion assessed by language. As such, my research is based on the cognitive linguistics assumption that most parts of conceptual structure are encoded by language (Evans & Green, 2006) and that meaning construction relies mainly on language use (Tomasello, 2009). In other words, language is used here as a lens through which the process of conceptualization and knowledge representation, i.e. the conceptual structure, within the emotion domain can be investigated.

In the first study of this thesis I will empirically tackle the question of whether and how language competence and emotional competence generally relates to one another. In a second study I will investigate children's emotion lexicon as in the cognitive linguistic approach words are seen as entry points to the structure of conceptual knowledge. The third study will deal with the question of what we can learn about children's conceptualizations of emotions by investigating their explicit knowledge of self-conscious emotions. Before reporting the research, the remainder of this introduction presents a concise overview of the state-of-the-art in the field of developmental emotion and language research, followed by a broad outline of the studies that comprise this thesis.

1.1 Emotional competence

Reviewing literature on emotional development, one consistently encounters the term (emotional) competence. Differing from generative linguistics (Chomsky, 1965), developmental psychology, however, uses the term competence in the sense of an umbrella term that comprises both (declarative) knowledge and skills. Knowledge here refers to the declarative knowledge that developed out of recurring experiences and that has been condensed into concepts. Skills refer to the sensorimotor processes where knowledge is put into use.

According to Denham (1998), emotional competence broadly refers to the ability to understand, express, and regulate emotions. Saarni (1999) illuminated emotional competence in considerable detail. She identified that it encompasses at least eight specific facets: (1) the ability to be aware of one's emotional state; (2) the ability to recognize others' emotions, based on situational and expressive cues; (3) the ability to use the culture-specific vocabulary of emotions; (4) the ability for empathic and sympathetic involvement in others' emotional experiences; (5) the ability to realize that inner emotional state does not always need to correspond with outer expression, both in oneself and in others; (6) the ability to adaptively cope with aversive or distressing emotions by using self-regulatory strategies; (7) being aware that relationships are largely defined by how emotions are communicated with regards to emotional immediacy and emotional reciprocity; and finally (8) the ability to be emotional self-efficacious, that means knowing that one has emotions and accepting one's own emotional experiences.

Most of these emotional abilities are required in order to behave and react appropriately in social interactions, and, in general, to form and maintain relationships (Denham & Burton, 2003; Denham, 1998; Saarni, 1999). Thus, learning to understand and deal with one's own and others' emotions, is — besides language acquisition — one of the key developmental tasks during childhood. Children's emotional competence is related to their school adjustment and academic success (Denham et al., 2012; Garner & Waajid, 2008; Izard et al., 2001; Leerkes, Paradise, Brien, & Calkins, 2008; Shields et al., 2001; Trentacosta & Izard, 2007). More importantly, emotional competence has been identified to have an important influence on social competence and social functioning. Children with greater emotion knowledge, for instance regarding identifying or understanding others' emotions, are likely to interact more successfully on a social level (Garner, 1996; Schultz, Izard, & Ackerman, 2000). Also, children with good emotion knowledge show more prosocial behavior and also are more positively rated by peers and teachers (Denham et al., 2003; Ensor, Spencer, & Hughes,

2011; Izard et al., 2001).

As with language competence, the significance of emotional competence becomes particularly evident when it is lacking. Poor emotional competence puts children at risk for internalizing and externalizing problems (Denham et al., 2002; Ensor et al., 2011; Schultz, Izard, Ackerman, & Youngstrom, 2001), aggression (Denham et al., 2002, 2003), and less peer acceptance (Smith, 2001).

1.2 Emotion knowledge

When we look at Saarni's (1999) list of emotional abilities, we see that many of these facets belong to the knowledge side of emotional competence rather than to the skill side. Not surprisingly, emotion knowledge is a standard term in the literature where it is described as enabling individuals to recognize and identify one's own and others' emotions and to understand and label aspects of emotional experiences, such as the causes and consequences, emotion expressions, and feeling states (Denham, 1998; Izard, 2001; Morgan, Izard, & King, 2009). Predictably, the command of emotion knowledge is associated with the development and maintenance of relationships, in particular social functioning, prosocial behavior, and likeability, but also school adjustment and academic success (e.g., Denham et al., 2012; Denham, McKinley, Couchoud, & Holt, 1990; Izard et al., 2001; Miller et al., 2005; Shields et al., 2001; Trentacosta & Izard, 2007; see Trentacosta & Fine, 2010, for a review).

Acknowledging its significance, I set out to trace important aspects of the developmental trajectory of emotion knowledge from early years beyond middle childhood. From the age of two years, toddlers are increasingly aware of causes of emotions and can often infer basic emotions such as happiness, fear, and sadness from (information about) emotion eliciting situations (Bretherton & Beeghly, 1982; Denham & Couchoud, 1990; Denham, Zoller, & Couchoud, 1994; Russell & Widen, 2002). With increasing emotional experience, preschoolers also

expand their knowledge of emotions by knowledge about consequences, including for example behavioral reactions and facial expressions (Widen & Russell, 2011; Widen, 2004). For instance, from the age of three to four years on, preschoolers can correctly recognize and label facial emotion expression of basic emotions such as sadness, anger, and fear (Bullock & Russell, 1984; Widen & Russell, 2003, 2008). Further, two-year-olds already begin to develop an advanced understanding of cognitive influences, such as thoughts, beliefs, and intentions on emotional experience (Lagattuta, Wellman, & Flavell, 1997; Lagattuta & Wellman, 2001; Wellman & Lagattuta, 2000).

By the age of four to five years, children are able to understand that in different individuals varying emotions may arise in the same situation, depending on their desire, thoughts, and goals (Denham & Couchoud, 1990; Harris, 1989). Harris, Johnson, Hutton, Andrews, & Cooke (1989) demonstrated that even from three years on, children take into account that emotions can be affected by desires and beliefs. Hence, there are first indications of a mentalistic understanding of emotion in preschool age (Banerjee, 1997).

There is also considerable empirical evidence that preschoolers between three and six years begin to appreciate and understand the relationship between memory and emotion elicitation as well as emotion regulation. Studies by Lagattuta and colleagues (Lagattuta et al., 1997; Lagattuta & Wellman, 2001) showed that young preschoolers, from age three to four years, already come to understand how remembering past situations can elicit emotions in presence. In a study by Lagattuta and Wellman (2001), for instance, some three-year-olds and most five-year-olds were able to explain why a person that was reminded of a negative event in the past could feel sad or mad in a currently positive situation.

Between approximately four and six years of age, preschoolers begin to understand that the outward expression of emotion by others can be discrepant from their actually experienced emotion (Gardner, Harris, Ohmoto, & Hamazaki, 1988; Joshi & MacLean, 1994; Saarni, 1979). Gross and Harris (1988) reported

that six-year olds, contrary to four-year olds, even appreciate that a deceptive emotional display can mislead others to a false belief in their attribution of emotional states. Thus, until the end of preschool years children have acquired considerable knowledge of the various conditions of causes and consequences of emotions. However, there is still a lot of important development of emotion knowledge to come in middle childhood. This applies especially to the knowledge of more complex emotions, such as self-conscious emotions (e.g., shame). To date, there is little recent literature addressing either the aspect of the developing understanding of complex emotions or the further development of emotion knowledge beyond preschool age.

During middle childhood, important cognitive developments coincide with significant changes in children's social relationships that together entail the enhanced development of more complex emotions (Bhana, 2010; Colle & Del Giudice, 2011; Collins, 1984; Gifford-Smith & Brownell, 2003). The cognitive changes during middle childhood involve increased abilities in introspection, self-reflection, self-evaluation, perspective-taking, and meta-cognition (Flavell, Green, & Flavell, 2000; Flavell, Green, Flavell, Harris, & Astington, 1995; Harter, 2012). Based on the increasing internalization of culture-specific rules and standards, children become better in anticipating how significant others, such as their parents and peers, may emotionally react to their behavior (Harter, 2012).

One of the most important social changes is children's transition to primary school, which is accompanied by more competitive interactions with peers in academic, social, and athletic areas. Peers play an increasingly important role in middle childhood and supersede the parents' role in influencing children's socio-emotional experiences and developments (Isabella & Diener, 2010; Kerns, Tomich, & Kim, 2006; Parker & Gottman, 1989). In particular, social acceptance by peers and the avoidance of rejection by others are central needs during this developmental period (Gifford-Smith & Brownell, 2003; Newman & Newman, 2011). Social comparison is a newly acquired socio-cognitive ability in middle

childhood. From seven to nine years on, children are increasingly able to evaluate themselves on the basis of comparison between their achievements and individual characteristics with those of their peers (Damon & Hart, 1991; Ruble, Boggiano, Feldman, & Loebl, 1980).

Taken together, these socio-cognitive progresses in middle childhood are conducive to the broadening and deepening of emotional knowledge. For instance, while younger children have difficulties in understanding that one can experience more than one emotion at the same time, older children at the age of eight or nine years acknowledge that one can feel two emotions simultaneously (Harter & Buddin, 1987; Saarni, 1999). Larsen, To, and Fireman (2007) demonstrated that the conceptual understanding of mixed emotions develops primarily in middle childhood. School-age children have a better understanding of mixed emotions; they understand that one may have multiple and even ambivalent emotions and are also more likely to actually experience mixed emotions during emotionally complex situations themselves (Fischer, Shaver, & Carnochan, 1990; Harris, Olthof, & Terwogt Meerum, 1981; Harter & Whitesell, 1989; Larsen et al., 2007). Further, the ability to recognize and identify facial emotions was found to substantially increase between six and ten years of age (Durand, Gallay, Seigneuric, Robichon, & Baudouin, 2007).

The acquisition of specific cognitive and social abilities is imperative for the development of knowledge of self-conscious emotions such as shame and pride. Although children already experience self-conscious emotions in the preschool period, it is not before the first school years that they do finally acquire explicit knowledge of them (e.g., Brody & Harrison, 1987; Harris et al., 1987; Harter & Whitesell, 1989). Understanding of self-conscious emotions relies on cognitive prerequisites such as self-reflection and theory of mind as well as the increased familiarization with culture-specific social standards and rules. While children aged four to five years are not able to specify appropriate causes for self-conscious emotions, older children, around the age of seven to ten years,

demonstrate advanced knowledge about the specific causes of, for instance, shame and pride (Harris et al., 1987; Harter & Whitesell, 1989; Kornilaki & Chlouverakis, 2004). Nonetheless, beyond causes of shame and pride, school-age children's conceptualizations of self-conscious emotions have not been investigated thoroughly.

Of course, one cannot describe the development of emotion knowledge without referring to the acquisition of emotion language. It is well known that by age two, as soon as they begin to talk, children also start to refer to their own and others' emotional states (Denham, 1998; Izard & Harris, 1995; Kauschke & Klann-Delius, 1997). They do not only speak about present emotions but also about past and even possible future emotions, often focusing on the causes of emotions (Bloom & Beckwith, 1989; Wellman, Harris, Banerjee, & Sinclair, 1995). Initially, toddlers' emotion vocabulary contains only a small set of positive (e.g., good) and negative emotional states (e.g., sad). Around the third year of life children's emotion vocabulary becomes more and more differentiated. For instance, more than 50% of the 3-year-olds also refer to emotions using words like happy, mad, angry, and surprised (Bretherton & Beeghly, 1982; Ridgeway, Waters, & Kuczaj, 1985). The development and further differentiation of children's emotion vocabulary is less well known. To my knowledge, there is only one recent study investigating school-age children's level of acquisition of the emotion lexicon. Baron-Cohen et al. (2010) reported that children from four to 12 years of age develop remarkably in emotional vocabulary comprehension: Between the ages of four to six only 41 emotion words were understood by more than 75% of children. The amount of emotion words being understood doubled in seven and eight olds. Also between nine and 12 years of age, the number of understood emotion words doubled, up to almost 300. While children's receptive emotion lexicon doubled in size every two years between preschool age and the end of middle childhood, there was no more remarkable increase between 12 and 16 years. Thus, there is an impressive development in children's ability to understand emo-

tion terms beyond preschool age. However, further studies on this important aspect of emotion knowledge are clearly required.

In summary, previous research shows that there is extensive and important elaboration of emotion knowledge between preschool years and the end of middle childhood. Children significantly expand and establish their knowledge regarding labels, external and internal causes, behavioral consequences, and facial expressions of emotions. They also begin to internalize culture-specific moral standards and emotional displays. From my linguistic point of view the question arises of how emotion knowledge is conceptualized and expressed in language.

1.3 Emotion concepts

Having defined competence in section 1.2, I have already mentioned that declarative knowledge is encoded in concepts. By definition, the term concept refers to declarative knowledge about objects and events that is commonly accessible to thought and language (Mandler, 2004). Concepts enable individuals to quickly recognize and categorize objects, events, ideas and also to talk about things and ideas that are not present or visible (Murphy, 2004). In the realm of cognitive science, it is assumed that concepts predominantly derive from percepts (Evans & Green, 2006; Mandler, 2004). Accordingly, children's first concepts such as APPLE or BALL are grounded in their everyday perceptual and motor experiences (Bloom, 2000; Tomasello, 2009). Language, especially word learning is closely related to concept acquisition, as concepts are mostly tied to linguistic symbols so that concepts are often defined as words and their conceptual meanings (Bergen & Feldman, 2008; Evans & Bergen, 2007). According to the cognitive linguistic view, concepts are schematic representations of experiences. When concepts are used in processing language, mental simulations are performed based on encoded schematic representations that are grounded in

modality-specific experiences (Barsalou, 1999, 2008; Bergen & Feldman, 2008). Barsalou (2008) defines simulations as reenactments of perceptual, motor, and introspective states that are acquired during experience with the world, body, and mind.

For emotion concepts this means that for the most part they are acquired through experience of emotional situations. Emotions such as fear or sadness are tied to certain situations in which individuals experience specific emotional states. At the early stages, children's emotion concepts are likely to be limited to a few unique personal experiences. With accumulating actual experiences of emotions, in particular of several causes, consequences etc. for one and the same emotion, more and more sophisticated, generalized, and, in other words, abstracted concepts of emotions are built (Bennett, Bendersky, & Lewis, 2005; Russell, 1991a). Thus, the initially broad and situated knowledge becomes increasingly generalized into emotion concepts that include several knowledge components such as labels, situational contexts, actions and behaviors, facial expressions, subjective feelings, and bodily states (Fehr & Russell, 1984; Niedenthal, 2008; Russell, 1991a; Shaver, Schwartz, Kirson, & O'Connor, 1987).

According to Niedenthal (2008) there are at least three knowledge components that emotion concepts should reliably contain. Causes meaning situational antecedents or elicitors of emotions, are some of the main features of emotion concepts. Further, knowledge of consequences (behavioral actions that arise in response to a given emotion) is also an important component of emotion concepts. Finally, they should also contain knowledge about inner feelings and bodily states of an emotional experience.

From my linguistic point of view, I would also add labels to this list of conceptual essentials as only they enable individuals to refer to concepts and to communicate about them with others. According to Russell and Widen (2002), emotion labels are indeed an essential conceptual component. They showed children of three to four years in age were better able to describe causes of emo-

tions when they were given an emotion label than when they were shown a corresponding facial expression.

The question of how emotion concepts are represented has been a debated issue for the last three decades (e.g., Clore, Ortony, & Foss, 1987; Conway & Bekerian, 1987; Fehr & Russell, 1984; Johnson-Laird & Oatley, 1989; Russell, 1991b; Shaver et al., 1987; Wierzbicka, 1992). Approaches that attempt to explain emotion concepts are required to account for at least the three pieces of knowledge components in the representation of concepts as identified by Niedenthal (2008), namely (1) causes; (2) consequences; and (3) introspective feelings and bodily states. Extant approaches included classical semantic, dimensional, prototype, and more recently, embodied views. Two of these approaches will be introduced here in detail, as they have greatly influenced the view on emotion representation and the empirical methods employed in emotion research.

Prototype approach

The prototype approach was initially proposed and developed by Eleonor Rosch (Rosch, 1973). Departing from the classical definitional view that concepts are best defined by necessary and sufficient features, Rosch suggested that categories are organized around a best example, the so-called prototype, and mostly have fuzzy boundaries. The prototype is seen as the ideal exemplar of a category as it comprises the most representative features of the category. Other exemplars of the category do not have to share all features of the prototype – membership to a category is acquired as a matter of degree of resemblance with the prototype. Rosch further assumed that concepts are represented by a set of interrelated features, wherein no feature is considered as necessary or sufficient to define the concept. Features of one category are likely to overlap with closely related categories, so that the boundaries between concepts are not assumed to be strict. Several researchers have applied Rosch's prototype approach to the

domain of emotion knowledge (e.g., Fehr & Russell, 1984; Russell, 1991b; Shaver et al., 1987). For instance, Shaver and colleagues (1987) examined the conceptual representation of emotion concepts relying on the prototype theory. In this study, adult subjects were asked to sort 135 cards, each containing one English emotion term, into piles that, in their opinion, grouped words with similar meanings. Participants' sorts were analyzed using hierarchical cluster analysis that revealed three main levels in the structure of the emotion terms. The highest level contained the broad differentiation between negative and positive emotions. The next level included terms that appeared to be basic. These labels represented love, joy, anger, sadness, and fear. On a third level there were several subordinate categories representing gradations of the five basic categories. Shaver and colleagues concluded that their results provided support for Rosch's prototype theory of natural concepts showing that a large number of emotion terms are semantically associated to a minor number of emotions. Interestingly, the five basic categories identified by Shaver and colleagues approximately corresponded to the emotion terms that according to findings by Bretherton and Beeghly (1982) are those terms that are primarily learned in early childhood.

In their study, Shaver and colleagues also asked 120 adult subjects to describe actually experienced and typical emotional experiences of the five basic emotions joy, anger, fear, sadness, and love. Results showed that knowledge about emotions is construed in emotion scripts that indeed contain the three types of information described above (causes, consequences, and introspection as represented by appraisal and subjective feelings). Inter alia based on these findings the prototype approach – as a progression of Rosch's approach – assumes that emotion knowledge is represented in form of emotion scripts that typically comprise prototypical elements (Fehr & Russell, 1984; Russell, 1991b; Shaver et al., 1987).

Grounded Cognition Theory

More recently, and in line with cognitive linguistic tenets, emotion concepts have been defined as more flexible and heterogeneous conceptualizations that do not derive from symbols in an amodal semantic system, but rather from reenactments of modality-specific states that have been experienced in actual emotion eliciting situations. In this embodied view, it is assumed that cognition in general is grounded in the sensory, perceptual, and motor systems, distributed across several brain regions (Barsalou, Kyle Simmons, Barbey, & Wilson, 2003; Barsalou, 1999; McRae & Jones, 2013).

Particularly, abstract concepts such as emotions are grounded in sensory-motor simulations of situations and, in addition, introspective experience of internal states (Barsalou & Wiemer-Hastings, 2005). Pulvermüller (2013) recently supported this view by arguing that learning the meaning of emotion words is initially grounded in emotion-expressing action. In particular, Pulvermüller (2013, p. 9) states that: “The manifestation of emotions in actions becomes the crucial link between word use and internal state, and hence between sign and meaning.” Thus, according to the grounded cognition view, emotion knowledge is not a distinct description of an emotion as in the prototype approach. Rather, the knowledge about an emotion is assumed to be grounded in actually perceived emotional states, which do not necessarily have to be accessible to conscious experience (Niedenthal, 2008).

The grounded cognition theory predicts that embodied motor, sensory, and, in particular, introspective experiences build the basis of emotion concepts. In this view, mental simulations are performed when emotion concepts are activated through actual experience or linguistic information (Barsalou, 1999, 2008; Niedenthal, Winkielman, Mondillon, & Vermeulen, 2009). In other words, emotion concepts are situated conceptualizations that are internally reenacted (Barsalou et al., 2003; Barsalou, 2008). As situated conceptualizations also comprise diverse situational elements such as behavior, expressions, and introspections

(Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005), this approach can also account for many components of emotion knowledge such as causes and consequences.

Some empirical evidence supports the assumption of emotion concepts being embodied. Studies have shown, for instance, that processing emotional information has an impact on posture. Oosterwijk, Rotteveel, Fischer, and Hess (2009) reported that when subjects generated disappointment-related words, they changed their posture by decreasing their heights. In another experiment, Niedenthal and colleagues (2009) demonstrated that reading emotion words involves modal reenactment as processing of emotion words leads to the activation of facial muscles that are specific to emotion expression. When subjects were asked to focus on the type rather than the content of emotion words, no activation of facial muscles was observed. Further, when facial expressions were hindered, subjects' accuracy in an emotion judgment task decreased.

Recently, Havas, Glenberg, Gutowski, Lucarelli, and Davidson (2010) showed that hindered frowning movements, which are usually used to express negative emotions, affect processing of negative emotions. In that study, subjects were asked to read happy, sad, and angry sentences. All subjects had undergone cosmetic Botox injections in the corrugator muscle for the reduction of frown lines. Botox suppresses frowning movements and thus also inhibits individuals' facial expressions. Remarkably, processing of sad and angry sentences was slowed after Botox injections in the corrugator muscle, whereas reading of happy sentences was not affected. The study provides evidence for the embodiment approach as the results showed that comprehension of emotional language involves mental simulations that rely on the same neural systems used in actual emotion experiences. There are several other recent studies supporting the effect of facial activity on emotion processing and vice versa (e.g., Bayer, Sommer, & Schacht, 2010; Dimberg & Petterson, 2000; Flack, 2006; Larsen, Norris, & Cacioppo, 2003). Taken together, there is substantial and increasing evidence

suggesting that emotion concepts are embodied and grounded in the modalities and bodily states.

Although the theory of grounded cognition is until now not universally recognized and even questioned by alternative recent accounts (Bedny, Caramazza, Pascual-Leone, & Saxe, 2012; Mahon & Caramazza, 2008), in my opinion, this approach is attractive from a developmental view, as it directly links children's actual experiences and the acquisition of their concepts (James & Maouene, 2009). This assumption fits with views of usage-based approaches to language acquisition proposed by some developmental scientists since the early nineties (Levy & Nelson, 1994; Nelson & Kessler Shaw, 2002). Thus, the theory of grounded cognition can be considered fruitful as it provides explanatory power to different fields of research. In terms of my research, I want to keep in mind the specific predictions made by the grounded cognition theory that conceptualizations are dynamic, depending on contexts, and that knowledge of concepts is not predefined but rather varies between individuals as a function of their experiences (Barsalou, 1999).

1.4 The relation of language and emotion in development

As outlined earlier, language can be considered as an integral part of cognition as most conceptual structure is encoded by language (Evans & Green, 2006). Thus, the symbolic function of language provides one condition of a close relation between language and emotional development in children. For instance, learning new emotion words was shown to boost children's recognition of other people's facial emotions (Russell & Widen, 2002; Widen & Russell, 2008). Also, children's emerging acquisition of mental verbs increases their understanding of others' minds (Astington & Filippova, 2005).

Interestingly, there is also some empirical evidence showing that emotion can also have an impact on language development. For instance, Tomasello and

colleagues demonstrated that already 18- and 24-month-old children's sensitivity toward emotional cues assists word learning (Tomasello & Barton, 1994; Tomasello, Strosberg, & Akhtar, 1996). In particular, Tomasello and colleagues found that infants learned novel words by determining the referential intention of the speaker by using his or her (non-linguistic) emotion expression of joy vs. disappointment (Tomasello & Barton, 1994; Tomasello, Strosberg & Akhtar, 1996). In the study by Tomasello and Barton (1994), using a nonsense-word, an adult announced to 24-month-olds his or her intention to find an object (e.g., "Let's find the toma!"). The adult then searched through buckets that included five nameless objects. In one condition the adult always immediately found the target object. In another condition the adult first rejected two objects, with obvious, but non-verbal disappointment, before finding the target object. In both conditions finding the target was accompanied by non-verbal expression of joy. As children learned the novel noun in both conditions — indicating that children correctly identified and interpreted the speaker's disappointment and joy — the study demonstrated that children's ability to detect emotional cues can assist their lexical learning.

This conclusion was supported by recent findings by Berman and colleagues suggesting that around four years of age, children use vocal affect cues to identify the referents of new words and speaker's referential intentions (Berman, Chambers, & Graham, 2010; Berman, Graham, Callaway, & Chambers, 2013). Berman, Chambers, and Graham (2010) reported that four-year-olds correctly resolved referential ambiguity by relying on vocal affective cues. In this study, children of three and four years of age were presented with pictures of an intact, or a broken object, and a distractor. Children were asked to look at one of the objects. In the test trials the instruction (e.g., "Look at the doll!") varied in negative, neutral, and positive vocal affect. Four-year-olds were more likely to choose a broken toy as referent when the speaker's voice sounded negative. Results suggested that four-year-olds, but not yet three-year-olds are sensitive to vocal affect information in disambiguating referents. Taken together, the-

se studies suggest that emotions, in particular the ability to correctly understand emotional cues, might assist language learning. Further studies are needed to shed more light on this important issue.

Besides the symbolic function, the interactive function of language also offers numerous possibilities of an interrelation between language and emotion knowledge as language is a means to express emotions, to perform speech acts, to invoke experiential frames and to inform (Evans & Green, 2006). Particularly through conversations about emotions, children learn about labels, causes, consequences, and evaluations of their and others' emotions (Boiger & Mesquita, 2012; Cervantes & Callanan, 1998; Denham & Auerbach, 1995; Fivush, Haden, & Reese, 2006; Kousta, Vigliocco, Vinson, Andrews, & Del Campo, 2011). Several studies revealed that conversations between caregivers and children predict children's understanding of emotions and influence knowledge about culture specific rules and standards (e.g., Bailey, Denham, & Curby, 2013; Cervantes & Callanan, 1998; Denham & Auerbach, 1995; Denham, Cook, & Zoller, 1992; Garner, Jones, Gaddy, & Rennie, 1997; Laible, 2004; Martin & Green, 2005; Ontai & Thompson, 2002). Laible (2004), for instance, showed that the degree of elaboration of the maternal discourse is positively related to children's development of emotion knowledge. Further evidence for a causal relation between adult-child conversation and children's emotion knowledge came from work by Bergen, Salmon, Dadds, and Allen (2009). They trained mothers to talk to their three- to five-year old children about autobiographical memories in a high-elaborative and emotion-focused manner. In particular, mothers were asked to reminisce by discussing emotions, providing detailed descriptions, and asking their children elaborative Wh-questions (e.g., why, when, and who). Tested six months later, children showed significantly greater emotion-cause-knowledge than children of the control group whose mothers had not been encouraged to reminisce in an elaborative and emotion-focused style. Moreover, children who are informed about dangers are likely to include this information in their emotion

scripts, indicated by the finding that verbally mediated information, in the future, may induce emotions and emotional behavior in specific situations, even if the children never have experienced such a situation before. For instance, Field and Lawson (2003, 2008) have revealed that when children have been provided with frightening pieces of information about novel animals, this information is a viable pathway for children's development of fear leading children to increased fear beliefs and even avoidance behavior. Thus, one can conclude, that the development of children's emotion concepts is grounded in both experiential and linguistic information.

In terms of the relation between language abilities and emotional competence, there is evidence for a close link in child development. This is especially indicated by children with language impairment who are likely to have emotional difficulties as well (Lindsay & Dockrell, 2000; McCabe & Meller, 2004; Redmond & Rice, 1998; Spackman, Fujiki, & Brinton, 2006). Children with language impairment tend to have less emotional knowledge than peers with typical language development. They have been shown to have difficulties in inferring and anticipating emotional reactions (Brinton, Spackman, Fujiki, & Ricks, 2007; Ford & Milosky, 2003). In addition, Nelson, Welsh, Trup, and Greenberg (2011) demonstrated a very close relationship between the degree of language delay and emotion recognition skills in four-year-old impoverished children.

A relation of language and emotional competence is tacitly assumed in psychology which shows up in the fact that it is common practice for researchers who investigate the impact of emotional competence on social or academic development to control for language proficiency (Bohnert, Crnic, & Lim, 2003; Izard et al., 2001; Schultz et al., 2001; Trentacosta & Izard, 2007). However, although it is quite a common sense that language skills have an impact on emotional abilities, this impact has yet to be investigated systematically and thoroughly. To date, language proficiency was treated as covariate, mainly represented by one facet of language competence (e.g., lexical, narrative or syntactical abilities),

without any theoretical derivation of the selected verbal skill. It remained unclear whether the ability chosen was the best representative for language competence. This previous and present procedure calls into question the comparability of extant developmental emotion studies using different verbal abilities as language covariate.

Extant studies that more explicitly investigated the relation between selected measures of language competence and emotional competence provided valuable first insights into their interrelation. However, they almost exclusively focused on preschool age and considered only few components of both constructs. Cutting and Dunn (1999), for instance, examined the relationship between emotional competence – represented by facial emotion recognition and emotion situation knowledge – and language competence – represented by receptive vocabulary and narrative ability – in a sample of 128 four-year-olds. The authors found significant positive correlations between the four different emotional and language components. Also Bosacki and Moore (2004) reported a close link between receptive vocabulary and emotion knowledge in three-year-olds. Moreover, preschoolers' performance in grammar was found to be positively related to facial emotion recognition in a study by Ruffman et al. (2003). Pons et al. (2003) reported a high correlation between preschool and school-age children's grammatical ability and their emotion understanding. Despite these findings, what is still lacking is an empirical determination of the complex interplay between language competence and emotional competence that compares several facets of both competences at once in one sample, covering an older age range.

1.5 Overview of the present dissertation

This research is interdisciplinary in character combining interests, theories, and methods from the fields of linguistics and psychology. This dissertation serves two main purposes. First, I will examine the relationship of language competence and emotional competence in the oft-overlooked developmental stage of middle childhood by considering various facets of both competences. Although much is known about language competence and emotional competence independently, less is known about how they interact with one another. Both competences are complex, multifaceted constructs, consisting of a number of components (Saarni, 1999; Tomblin & Zhang, 2006). While it has been found that emotional competence and language competence are related in child development, the precise nature of the relationship between the two constructs is still an open question. To date, no systematic empirical investigation of the multifaceted link between emotional competence and language competence has been conducted. The research presented in this thesis aims to fill that void.

The second main objective is to investigate school-age children's conceptualizations within the emotion domain by relying on language as a window to the mind (Evans, in press). In particular, assuming that lexical terms are access points to the conceptual structure, I will investigate children's emotion lexicon. Further, I will analyze children's conceptual knowledge of two self-conscious emotions: shame and pride.

In this research, I will focus on school-age children, as little attention has been devoted to emotional development beyond preschool years despite evidence that essential cognitive, linguistic and emotional changes occur during middle childhood – and beyond (Burnett, Thompson, Bird, & Blakemore, 2011; Dockrell & Messer, 2004; Entwisle & Alexander, 1998; Flavell, Flavell, & Green, 2001; Seidner, Stipek, & Feshbach, 1988). This thesis aims to address the lack of research and knowledge we have on this population.

The present dissertation consists of three separate studies presented in

separate chapters. **Chapter 2** is devoted to the investigation of the general relationship between language competence and emotional competence in middle childhood. **Chapter 3** presents a study of school-age children's emotion lexicon, while **Chapter 4** explores children's knowledge of the two self-conscious emotions shame and pride, based on verbal reports. **Chapter 5** finally concludes this thesis with a general discussion as well as implications and suggestions for future research. The next sections present the specific aims and methods for each study in more detail.

Study 1 /// Relationship between language competence and emotional competence

Study 1 examines relations between multiple components of language competence and emotional competence in a sample of 210 school-age children. As mentioned above, language competence and emotional competence comprise multiple facets. However, the specific interrelations of several facets of both competences have yet to be sufficiently studied.

Previous studies in developmental psychology examining the relation between emotional competence and academic or social competence have often tried to eliminate the variance in the realm of language development by using a measure of one sub-construct (e.g., narrative ability) as a covariate of no interest. However, in most cases, the selection of this covariate does not seem to have been based on theoretical considerations but rather on the availability of research instruments to measure the variance. Implications derived from these studies as well as comparability across studies is thus limited by the inclusion of different covariates. In order to enable a data-driven selection of meaningful covariates for future studies, the empirical investigation of comparative explanatory value is required. Moreover, there are many studies on the development of emotional competence that neglected to consider a potential impact of facets of children's language abilities on their emotional abilities such as labeling facial expressions.

Without detailed information of the interplay between emotional competence and language competence the validity of some studies on emotional competence is debatable. Besides the practical relevance of this research, the findings of this study could further question the often still-separated view on language and emotion rather supporting an integrated view on language and emotion representation and processing.

This study is the first to determine the interplay between language competence and emotional competence in middle childhood by examining the relationships among multiple measures of both competences. In this study, five measures represented language competence: (1) receptive vocabulary; (2) verbal fluency; (3) literacy; (4) narrative structure; and the (5) narrative use of evaluative devices. Four measures represented emotional competence: (1) productive emotion vocabulary; (2) declarative emotion knowledge, (3) awareness of mixed emotions; and (4) facial emotion recognition. The collection of measures covers a broad range of relevant emotional and linguistic abilities that are still developing at middle childhood. Based on previous research on younger children, it was predicted that language competence and emotional competence would be positively related in middle childhood. Specifically, I was interested in determining which of the selected components of language competence and emotional competence contributed most to this relation. In addition, I sought to determine whether there was an overall general factor of ability for the two competences. The data was analyzed by means of bivariate and partial correlations as well as confirmatory factor analysis.

Study 2 /// What easily accessible emotion words tell us about the structure of the emotion lexicon in middle childhood

In the definition by Saarni (1999), the command of a vocabulary of emotion is described as one of eight major abilities of emotional competence. Hence, children's emotion lexicon is one of the most important interfaces between language and emotional competence. Surprisingly, research on the development of children's emotion lexicon almost exclusively focused on early preschool years. There is currently no literature on content and structure of school-age children's productive emotion lexicon. Therefore, in Study 2, the mid-childhood emotion lexicon was closely scrutinized. School-age children's productive emotion lexicon was assessed by determining quantitative characteristics of easily and reliably accessible emotion words and examining the conceptual structure of the emotion category, compared to that of adults.

The measure consisted of a free-listing task in which subjects are asked to name as many emotion words as they know. Free-listing tasks have already been successfully used to investigate the structure of the emotion lexicon of several cultures, but only for adults (Fehr & Russell, 1984; Marx, 1982; Moore et al., 1999; Romney et al., 1997; Schrauf & Sanchez, 2008; Zammuner, 2011). This study is the first to apply this method in children. Primary objectives were to determine the range and distribution of easily and reliably accessible emotion words in school-age children and to examine the conceptual structure of the emotion lexicon in middle childhood. Further, in regard to valence, I asked whether the valence distinction *good-bad* and a preponderance of negative emotion words are evident in school-age children's emotion lexicon. In addition, children were compared to adults.

To answer the research questions, descriptive statistics were used to characterize the range and frequency distributions of emotion words in children and adults. For valence analysis for each individual, the difference of the number of listed positive emotion words and the number of listed negative emotion words

was calculated, with a negative value representing the preponderance of negative emotion words. A one-sample t-test was used to test whether there was a significant preponderance of negative or positive emotion words. Further, ADDTREE analyses (Corter, 1982; Sattath & Tversky, 1977), a type of hierarchical cluster analysis, were conducted to examine the conceptual structure of the emotion lexicon in adults and children on the basis of their freely listed words. ADDTREE analyses have often been used to build a graphical representation of the conceptual structure of semantic categories. This is the first study that uses this method to investigate the conceptual structure of the emotion category.

Study 3 /// Explicit knowledge of shame and pride in school-age children

While the development of the more basic emotion concepts has received considerable attention, research has yet to examine children's emotion knowledge of complex, self-conscious emotions. I sought to address this issue by investigating children's declarative, conceptual knowledge of the two antagonistic self-conscious emotions pride and shame, compared to adults. Using a free-description task, seven- to nine-year-old children were asked to describe these two emotions. Specifically, I examined what components of school-age children's conceptualizations of shame and pride have been well established at the beginning of middle childhood. To accomplish this, I assessed what kind of information can be easily accessed and linguistically expressed by school-age children. Also, a sample of adults was included in this study for comparative purposes. It was predicted that school-age children would have acquired at least a moderate amount of explicit, expressible knowledge regarding shame and pride.

Specifically, based on previous literature, it was further predicted that causes of emotions would be a significant knowledge component of children's shame and pride conceptualizations. In general, based on earlier research, it was assumed that children's knowledge of pride would be more established than that of shame. Finally, as explicit knowledge of self-conscious emotions is only just

establishing in the first school years (e.g., Brody & Harrison, 1987; Harris et al., 1987; Harter & Whitesell, 1989), I expected the children to perform differently in this task compared to adults. I applied a free description task, presenting this task as a guessing game to the children. The essential feature and particular value of this task is that there were no specific questions or vignettes provided, so that children were uninfluenced in accessing their emotion knowledge. The obtained data were analyzed using content analysis and by conducting several statistical analyses.

2 /// The relationship between language and emotional competence in middle childhood

---

Beck, L., Kumschick, I.R., Eid, M., & Klann-Delius, G. (2012). *Relationship between language competence and emotional competence in middle childhood*. Emotion, 12(3), 503-514. http://dx.doi.org/10.1037/a0026320

2.1 Introduction

Research on children's emotional competence has received considerable attention in the last decade due to its relevance for school adjustment and success (Denham et al., 2012; Izard et al., 2001; Shields et al., 2001; Trentacosta & Izard, 2007) and, in particular, social functioning (Garner, 1996; Schultz et al., 2000). Emotional competence is a multidimensional construct that comprises several skills. The ability to use the vocabulary of emotion is one of eight skills which Saarni (1999) considers essential in constituting emotional competence. Children's ability to use emotion-descriptive language is linked to one of the core components of emotional competence: self-efficacy. Children who are competent in using emotion-related language are more socially efficacious than children with average emotion language development (Saarni, 1999). All in all, it is generally accepted that language competence has a positive influence on emotional competence. Indeed, it is common practice for researchers who investigate the impact of emotional competence on academic or social development to control for language proficiency (Bohnert et al., 2003; Izard et al., 2001; Schultz et al., 2001; Trentacosta & Izard, 2007).

Although it has been demonstrated that emotional competence and language competence are clearly connected, little is known about the precise relationship between the two constructs. Language competence and emotional competence are both complex, multifaceted constructs, consisting of a number of components (Saarni, 1999; Tomblin & Zhang, 2006). Language competence incorporates the two broader domains of linguistic and pragmatic competence. Linguistic competence comprises knowledge of linguistic forms within the subdomains phonology, morphology, and syntax, as well as knowledge of meaning in the semantic subdomain (Astington & Filippova, 2005). Pragmatic competence enables people to communicate in a socially adequate way and includes the application of conversational rules, speech act rules as well as discourse patterns

and cohesive devices resulting in the appropriate use of language in different social contexts (Ninio & Snow, 1996).

Emotional competence refers to the ability to understand, express, and regulate emotions (Denham, 1998). The concept of emotional intelligence (Salovey & Mayer, 1990) is similarly defined. However, this concept is grounded in intelligence research and personality psychology (Salovey, Detweiler-Bedell, Detweiler-Bedell, & Mayer, 2008), focusing on the individual. The concept of emotional competence takes child development and its interactional context into account. In the developmental model of emotional competence, the individual is embedded within social and cultural contexts which both influence the development of emotional competence (Saarni, 1999).

Although much is known about these two competences in isolation, less is known about how they relate to one another. To date, no systematic empirical investigation of the multifaceted relationship between emotional competence and language competence has been conducted. However, there are some studies that corroborate the assumption of a relationship between language and emotion in development. In addition, there are several empirical studies that have investigated some of the subcomponents of language competence in relation to emotional competence. We will briefly review this literature here.

The empirical findings on the general association between language and emotion in child development show that language has an impact on emotion.

Early discourse with caregivers, for instance, influences children's emotional development. Frequency, style, and the content of parent-child discourse including emotional references and explanations are positively related to children's emotion understanding and regulation (Fivush, 2007; Kuebli, Butler, & Fivush, 1995; Laible & Song, 2006; Laible, 2004; Ontai & Thompson, 2002; Sales & Fivush, 2005). Nelson (1996) reported that toddlers' verbal interaction with caregivers contributes to emotional development as children learn about feelings, intentions, and desires from linguistic representations of others. Furthermore,

specific progress in language learning seems to foster emotional abilities. For example, children's emerging acquisition of mental verbs increases their understanding of others' minds (Astington & Filippova, 2005). Learning new emotion words was shown to boost children's recognition of other people's facial emotions (Russell & Widen, 2002; Widen & Russell, 2008).

At the same time, there are arguments proposing that emotion has an impact on language. For instance, Bloom (1998, p. 120) states that the "core of development that brings an infant to the threshold of language in the second year of life is the convergence of emotion, cognition, and social connectedness to other persons". Language learning takes place within a social context where children's intentions seem to trigger language development: According to Bloom's intentionality model (Bloom, 2000; Bloom & Tinker, 2001), early language learning is driven by children's intention to share their feelings and thoughts. The potential contribution of emotion to language learning was also suggested by Tomasello and colleagues; they demonstrated that 18- and 24-month-old children's sensitivity toward emotional cues assists word learning (Tomasello & Barton, 1994; Tomasello et al., 1996).

Taken together, this work suggests that in early development, there is a bidirectional relation between language and emotion. This broader relation may also affect the interplay of linguistic and emotional competence in the further development of children. Indeed, studies that investigated the specific relationship between children's language competence and emotional competence support the notion that both competences are associated in preschool children (Bosacki & Moore, 2004; Cutting & Dunn, 1999; Pons, Lawson, Harris, & De Rosnay, 2003; Ruffman, Slade, Rowlandson, Rumsey, & Garnham, 2003). Cutting and Dunn (1999) examined the relationship between emotion understanding and language competence as aspects of social cognition in 4-year-olds. Emotion understanding was measured by tests of facial emotion recognition and emotion situation knowledge. Language competence was assessed by tests of receptive vocabu-

lary and narrative ability. The authors found positive correlations between the four different emotional and language components. Language explained more variance of emotion understanding than age and family background. Moreover, preschoolers' performance in syntax was positively correlated to facial emotion recognition in a study by Ruffman et al. (2003). A close link between receptive vocabulary and emotion knowledge in 3-year-olds was found by Bosacki and Moore (2004), with a stronger effect for boys. Finally, for the age range between 4 and 11 years, Pons and colleagues (2003) reported a high correlation between children's grammatical ability and their emotion understanding.

Supportive evidence for a close link between language competence and emotional competence also comes from children with language impairment. Research indicated that children with language difficulties are likely to have emotional difficulties (Lindsay & Dockrell, 2000; McCabe & Meller, 2004; Redmond & Rice, 1998). Children with language impairment tend to have less emotional knowledge than peers with typical language development. They have been shown to have difficulties in inferring and anticipating emotional reactions (Brinton et al., 2007; Ford & Milosky, 2003). In addition, Nelson, Welsh, Trup, and Greenberg (2011) demonstrated a very close relationship between the degree of language delay and emotion recognition skills in 4-year-old impoverished children.

Although all these studies provide evidence that language competence and emotional competence are related in child development, we know little about their complex interplay. As discussed above, these constructs are multifaceted. To date, it is not known how strong the correlations of different components of language competence and emotional competence are in different periods of development. Previous work on this topic has largely focused on a limited number of components. For example, the emotion understanding assessment of Pons and colleagues (2003) did include facial emotion recognition and awareness of mixed emotions as different components; however, only one point maximum was

assigned for each component. Therefore, the results of the study offer no implications for the contribution of each emotional component to the relationship with language competence (in this case grammatical ability). Similarly, the assessment of language competence was based on only one or two components of expressive or receptive language in the aforementioned studies on the link between language competence and emotional competence. For that reason, Pons et al. (2003) pointed out the possibility that the correlations that were found may be limited to only the few components that had been considered so far.

Summarizing the main findings in the literature, we found that preschoolers' grammatical ability is related to facial emotion recognition and emotion understanding; receptive vocabulary is linked to emotion knowledge and facial emotion recognition; narrative ability is associated to facial emotion recognition and emotion knowledge (Bosacki & Moore, 2004; Cutting & Dunn, 1999; Pons et al., 2003; Ruffman et al., 2003). Thus, in the recent literature we find some clues, but no clear picture about the possible multiple relations among the separable components.

At this point a further gap in the research on language competence and emotional competence deserves mention: So far, empirical studies predominantly focused on the preschool age. Unfortunately, little is known about the relationship between language competence and emotional competence in later developmental stages such as middle childhood. This age group coincides with the transition from Kindergarten to grade school, which has been noted to be an especially sensitive period for social-emotional development (Entwisle & Alexander, 1998). Further, middle childhood is marked by crucial developmental advances (Collins, 1984). For instance, during this phase children experience remarkable changes in their emotional vocabulary (Baron-Cohen et al., 2010). Facial emotion recognition was found to substantially increase between 6 and 10 years of age (Durand et al., 2007). In addition, Larsen, To, and Fireman (2007) showed that the conceptual understanding of mixed emotions develops primarily in middle childhood.

Likewise, many aspects of language competence develop significantly in school-age children. For instance, lexical-semantic abilities increase throughout school age in breadth and depth (Nippold, 1988). Especially in the first school years, considerable lexical learning takes place (Dockrell & Messer, 2004). Moreover, literacy, a milestone in child development, is acquired during the first school years and plays an increasingly important role in children's everyday lives as it enables children to independently follow their personal interests and enlarge their knowledge (Nippold, 1988). Pragmatic skills such as narrative ability also expand in later language development. It is not until school age that children are able to produce sophisticated stories with a complete, adultlike narrative structure (Peterson & McCabe, 1983; Scott, Healey, & Norris, 1995) Competent storytellers are moreover characterized by the use of evaluative devices (McCabe & Peterson, 1984). Evaluative devices (e.g., mental and emotional states, character speech) reflect the narrator's interpretation of the story and mark his or her perspective by evaluating important events in the story (Bamberg & Reilly, 1996; Labov & Waletzky, 1967). The ability to provide evaluative devices increases substantially in school-age children (Aldrich, Tenenbaum, Brooks, Harrison, & Sines, 2011; Bamberg & Damrad-Frye, 1991; Peterson & McCabe, 1983). These developmental changes in language competence and emotional competence imply that it is worthy to consider the period after the transition from Kindergarten to grade school in developmental studies on emotion and language as well.

The present study

This study is the first to determine the interplay between language competence and emotional competence in middle childhood by examining the relationships among multiple measures of language competence and emotional competence. The collection of measures does not represent an exhaustive set of components of each construct. It covers, however, a broad range of relevant emotional and linguistic abilities that are still developing at the age range taken into

consideration here. For comparability with previous work in this research area we chose emotion domains and language domains that have already been shown to be related to language competence and emotional competence respectively. These are facial emotion recognition (e.g., Cutting & Dunn, 1999; Ruffman et al., 2003) and emotion knowledge (e.g., Bosacki & Moore, 2004; Cutting & Dunn, 1999; Pons et al., 2003) on the emotion side as well as receptive vocabulary (e.g., Bosacki & Moore, 2004; Trentacosta & Izard, 2007), narrative ability (e.g., Cutting & Dunn, 1999), and verbal fluency (e.g., Bohnert et al., 2003) on the language side.

In addition, to heuristically explore further possible relationships among components of language competence and emotional competence, we also selected domains that are likely to be related, but have not been considered yet. These include emotion vocabulary, literacy, evaluative devices, and awareness of mixed emotions. With respect to emotion vocabulary, it is of special interest to determine whether children's command of an extensive emotion vocabulary is strongly associated to the general lexical ability. Literacy is likely to be linked to emotional competence as a source of emotion knowledge because emotions are often labeled and explained in children's literature (Hogan, 2011). The use of evaluative devices in narratives may be related to emotional competence because they are mainly expressions of internal states like emotion and intention (Bamberg & Damrad-Frye, 1991). Awareness of mixed emotions indicates an increasing flexibility of emotion knowledge, which might be due to advanced language competence.

Based on previous research on preschool children, we predicted that language competence and emotional competence would be positively related in middle childhood. Specifically, we were interested in determining which of the selected components of language competence and emotional competence contribute most to this relation. In addition, we sought to determine whether there was an overall general factor of ability for the two competences.

2.2 Method

Participants and procedure

Two hundred and ten seven- to nine-year-old children participated in this study (*M* = 7.91 years, *SD* = 0.70): 61 seven-year-olds (38 girls and 23 boys), 106 eight-year-olds (63 girls and 43 boys), and 43 nine-year-olds (27 girls and 16 boys). Children were recruited from primary schools in the outskirts of Berlin, Germany, and represent a primarily middle-class urban community sample. The vast majority of the participants were White (98%), a minority of four children were of Asian and African descent. Ninety-four percent of the children were monolingual German speakers, 6% had first languages other than German (e.g., Vietnamese or Lingala).

All children participated in two test sessions, each lasting up to 90 minutes. The first test session included measures of emotional competence. The second test session, devoted to the language measures, was held at least seven days following the first session, but occurring at approximately the same time of the day. Within each test session, the order of tests was fixed to minimize potential interference effects between similar tasks. Because there is a limited availability of standardized German tests for children this age, the majority of the tests were developed by the authors. During pre-studies, all tests were checked for feasibility, validity and reliability. We constructed and used only tests that were appropriate for children of this age and linguistically undemanding. Tests were individually administered by a trained examiner in a quiet classroom at the children's school.

Measures

Measures of emotional competence

Productive emotion vocabulary. Via an emotion listing task (adapted from the Kusche Affective Interview — Revised, Kusche, Beilke, & Greenberg, 1988) we assessed children's emotion vocabulary. Children were asked to list as many

emotion words as they knew, and were prompted with 'anymore?' when they stopped spontaneously listing words. Prompting continued until the child said 'no'. One point was assigned for each correct answer; repetitions were not counted. The score was the total number of appropriate emotion words. Interrater reliability was computed on 40 randomly selected listings; Cohen's kappa was $\kappa = .96$.

Declarative emotion knowledge. To assess children's explicit knowledge of emotion-related experience and expression, we constructed a measure composed of five scenarios describing events that elicit the basic emotions joy, sadness, surprise, fear, and anger (e.g., *"Peter comes home from school. His mother tells him that his grandpa just died."*). The five vignettes were read to the children. Each vignette was followed by corresponding questions concerning five components of the elicited emotion. The first question addressed the label of the emotion (e.g., *"How does Peter feel?*"). If no or a wrong response was given, the experimenter offered the correct answer: *"Could he be feeling sad?"* The second question concerned the cognitive aspect of emotion (e.g., *"What does Peter think when he is sad about his grandpa's death?"*). Children were then asked to describe the bodily sensations and expressions of that specific emotion (e.g., *"What bodily sensations does Peter have when he is feeling sad*?"; "*How does Peter's face or body look like when he is feeling sad?"*). The last question addressed the action tendencies accompanying that emotion (e.g., *"How does Peter react to the death of his grandpa? What does he intend to do because he is sad?"*). One point was given for each correctly answered item. Points were summed to obtain a score reflecting declarative emotion knowledge, ranging from 0 to 25. Internal consistency (Cronbach's alpha) of this measure was $\alpha = .82$.

Awareness of mixed emotions. Children's ability to attribute more than one emotion to the same situation was investigated by a vignette-based meas-

ure. We constructed seven vignettes representing events that evoke mixed emotions (e.g., "*Lisa spent her holidays with her favorite grandma and had a wonderful time with her. Today is the day of her departure. Her grandma takes her to the train station. Before the train departs, the grandma gives Lisa a present that she has been wanting for a long time.*"). In terms of validity, the vignettes were presented as short stories via loudspeakers, read by a professional speaker. Children were requested to attribute the emotional states of the story characters by choosing one or more of a number of given emotion labels (e.g., *"Please mark how Lisa is feeling in this situation. You may mark more than one answer if you think that Lisa feels more than one feeling."*). A multiple-choice item with five emotion word response options was provided on the screen for each story. Children could click on one or more options without any feedback. One point was given when children chose the two appropriate emotions. If children selected the two correct options and an additional incorrect answer, no point was assigned. The score ranged from 0 to 7 (α = .47). Because the coefficient alpha of this scale is lower than for the other scales, we checked whether this might be due to the fact that the items are binary. Therefore, the reliability was also tested on the basis of the one-parameter logistic test model that fitted the data well (Andersen likelihood ratio – χ^2 (6) = 5.7, p = 0.47; Martin-Loef - χ^2 (11) = 10.584, p = 0.48). The model-based estimated reliability coefficient is .61.

Facial emotion recognition. We developed a computer-based test to assess children's ability to recognize facial emotions as an index of emotion expression knowledge. The test was validated and demonstrated good reliability (α = .70) in a sample of 62 adolescents (Kumschick, 2007). Children were shown photographs of the faces of six children displaying seven different emotions (joy, anger, fear, surprise, pride, sorrow, and disgust). All in all, 28 photographs were presented in random order and without time limit. Children were asked to match the facial expression with one of seven given emotions. One point was assigned

for each correct label choice. The score was the total number of correct labels, with a maximum of 28. In this study, internal consistency was $\alpha = .74$.

Measures of language competence

Narrative structure. The picture book *A Boy, a Dog, a Frog, and a Friend* (Mayer & Mayer, 1971) consisting of a sequel of 28 pictures was presented to the children. This book is one of a series of picture books by Mercer Mayer that has often been used in studies on narrative discourse. A particularly complex plot containing multiple episodes characterizes this story about the adventures of a boy and his friends, a dog and a frog. The three characters go fishing at a pond. Suddenly the boy has a turtle on his fishing line. A series of confrontations and surprising twists and turns follows. The story concludes with a happy end scene with all the characters going home together as friends. After having looked through the book once, children were asked to tell the story to the research assistant. Children were told that the story was unknown to the listener, and they were allowed to look at the pictures while telling the story. The narratives were recorded and transcribed verbatim. Only complete and intelligible utterances were included for analysis. Transcriptions were double-checked by a second examiner.

Following Bamberg and Marchman (1990) and as in the studies of Reilly and colleagues (Reilly, Bates, & Marchman, 1998; Reilly, Losh, Bellugi, & Wulfeck, 2004), we examined the completeness of the episodic structure of children's narratives by checking for the presence of 25 basic story components. The target components were identified in collaboration with M. Bamberg (personal communication, November 2009). Particularly, these included elements that are mandatory for a coherent story structure and a comprehensible plot. It was coded, for example, whether the children's stories contained a setting that provides necessary background information (e.g., the introduction of the characters). Further, the mentioning of the characters' goals (e.g., fishing, bury the turtle), actions (e.g., the turtle bites the dog, the turtle steals the fishing pole), consequences,

(e.g., the boy falls into the water, the dog is in danger), resolutions (e.g., the three friends are back on the shore, the turtle is alive), and the final outcome (e.g., the four friends going home together) was coded. For the presence of each element one point was assigned, with a score ranging from 0 to 25 (α = .76). Interrater reliability was computed on 20 randomly selected narratives; Cohen's kappa was κ = .87.

Evaluative devices. Children's narratives were also coded for use of linguistic evaluative devices. Coding categories were adapted from Bamberg and Damrad-Frye (1991) and Reilly, Klima, and Bellugi (1990) and included: frames of mind (e.g., *he thought*); causality (e.g., *because*); hedges (e.g., *maybe*); negatives (e.g., *they did not know why*); character speech, onomatopoeia, and sound effects (e.g., *and the child said: "be quiet!"*; *the dog shouts: "Woof-woof".*); as well as intensifiers and attention-getters (e.g., *and the boy is very angry*.; *and then it happened!*). As a first step toward analysis, stories were coded for length as measured by number of propositions per narrative. A proposition is syntactically defined as a verb and its arguments and semantically represents a single event. For analyses, a total score for use of evaluative devices was calculated by summing up the frequencies of occurrences. Finally, to control for story length, evaluative devices were analyzed as a proportion of the total number of propositions for each narrative. Interrater reliability was computed on 20 randomly selected narratives; Cohen's kappa was κ = .90.

Literacy. We assessed children's reading comprehension abilities with the German standardized Reading Comprehension Test for Grades 1–6 (Lenhard & Schneider, 2006). Children completed, individually and in the same order, three time-limited subtests of the computerized test version including reading comprehension at the word, sentence, and text level. Before testing, we ensured that all children had sufficient experience in operating a computer. At word level, children

are asked to click on one of several words in a list, that matches a visually presented target item. The distractors resembled the target phonemically and graphemically. At sentence level, children were presented with a sentence with a lexical gap. One of five possible words fit into the gap in the sentence. As in the first subtest, the distractors resembled the target phonemically and graphemically. At text level the child read short texts and had to answer multiple-choice questions afterwards. The tasks represent different levels of text comprehension. The first difficulty level deals with the discovery of isolated information embedded in texts. On a second level, making anaphoric references is required. And finally, for answering some of the questions, the child had to form inferences. Children received one point for each correct answer. Due to the time constraints of the subtests, the number of given items varied between children. Because of this the time-limited test design, Cohen's Kappa could not be calculated. However, the internal consistency reported by Lenhard and Schneider (2006) varies between $\alpha = .92$ and $\alpha = .97$. In a subsample of 105 children, retested after two months, we examined the test-retest reliability and found a coefficient of $r = .94$.

Verbal fluency. Semantic verbal fluency captures the degree of semantic differentiation and level of executive function. In this task children were asked to name as many animals as possible within 60 seconds. The total score was the number of correct responses named within one minute. Repetitions were not counted. Interrater reliability was, computed on all cases, $\kappa = .90$.

Receptive vocabulary. To assess children's receptive language, a German adaption of the Peabody Picture Vocabulary Test (Dunn & Dunn, 2004) was used. The adaptation was based on the original pictures and scoring rules, however, some items were deleted due to obsoleteness. Children were asked to determine which of four presented pictures best represented a spoken word. One

point was given for each correct answer, with a maximum score of 88. Internal consistency was α = .83.

Data analyses

Two sets of analyses were performed. First, we conducted bivariate correlational analyses between measures of language competence and emotional competence. Second, we used confirmatory factor analysis (CFA) to test the hypothesis that there were two general factors for emotional competence and language competence and to analyze the correlation between the general factors. All analyses were done with the computer program Mplus (Muthén & Muthén, 2010).

2.3 Results

Univariate statistics

Means, standard deviations as well as measures of skewness and kurtosis for all variables are depicted in Table 2.1. The measures of univariate skewness and kurtosis test the hypothesis that the variables are normally distributed. This hypothesis has to be rejected for some variables. Although the skewness and kurtosis values are not very large in most cases, we used the robust maximum likelihood estimator MLR that is robust to nonnormality for all further analyses.

Table 2.1. Measures of language competence and emotional competence: Mean, standard deviation, skewness, and kurtosis

Measure	*M*	*SD*	Skewness	Kurtosis
Measures of Emotional Competence				
1. Productive Emotion Vocabulary	2.70	1.98	0.55**	-0.03
2. Declarative Emotion Knowledge	18.26	3.78	-0.91**	1.54**
3. Awareness of Mixed Emotions	3.43	1.57	-0.06	-0.70*
4. Facial Emotion Recognition	18.66	4.06	-0.25	-0.32
Measures of Language Competence				
5. Receptive Vocabulary	59.80	8.80	-0.49*	-0.52
6. Verbal Fluency	13.19	6.20	0.10	-0.18
7. Literacy	56.83	20.24	0.08	-0.62
8. Narrative Structure	18.99	3.85	-1.19**	2.22**
9. Evaluative Devices	0.51	0.17	0.30	0.13

Note. The analysis was performed using the computer program Mplus. To test for skewness and kurtosis, listwise deletion was activated. $N = 151$. * $p < .05$, ** $p < .01$.

Bivariate correlations

The bivariate correlations of the nine variables are presented in Table 2.2. Specifically, the analyses revealed primarily significant positive correlations between emotional and language measures confirming our expectation of positive relationships between emotional competence and language competence. There were no negative correlations. We found the closest relations between receptive vocabulary and declarative emotion knowledge as well as receptive vocabulary and awareness of mixed emotions ($r = .45$ and $r = .44$). Moreover, receptive vocabulary correlated moderately with productive emotion vocabulary ($r = .33$) and facial emotion recognition ($r = .32$). Literacy and narrative structure correlated significantly with all of the emotional measures as well. Thus, we conclude from

the bivariate correlations that, in general, emotional competence is related to language competence in middle childhood. Especially receptive vocabulary and literacy are strongly related to components of emotional competence.

Table 2.2. Correlations between measures of language competence and emotional competence

Measure	1	2	3	4	5	6	7	8	9
Measures of Emotional Competence									
1. Productive Emotion Vocabulary	–								
2. Declarative Emotion Knowledge	.43**	–							
3. Awareness of Mixed Emotions	.26**	.29**	–						
4. Facial Emotion Recognition	.20**	.22**	.34**	–					
Measures of Language Competence									
5. Receptive Vocabulary	.33**	.45**	.44**	.32**	–				
6. Verbal Fluency	.12	.24**	.12	.15*	.24**	–			
7. Literacy	.21**	.33**	.33**	.35**	.41**	.24**	–		
8. Narrative Structure	.17*	.29**	.30**	.19**	.28**	.17*	.31**	–	
9. Evaluative Devices	.11	.28**	.23**	.16**	.14*	.16*	.12	.23**	–

Note. The correlations were estimated and tested using the robust maximum likelihood estimator for missing data provided by the computer program Mplus using all available information. $N = 210$. Correlation coverage: between .85 and 1.00. * $p < .05$, ** $p < .01$.

Partial correlations

Because our subjects differed in age and gender and these factors are likely to be correlated with language competence and emotional competence, the correlations between language competence and emotional competence might be inflated due to common age and gender effects. In order to scrutinize this assumption we also estimated the partial correlations between the nine variables controlling for age and gender. The correlations between the nine language competence and emotional competence variables and age as well as gender are reported in Table 2.3. There are significant, positive correlations between age and productive emotion vocabulary, awareness of mixed emotions, literacy, and narrative structure showing that older children have higher competences with respect to these variables. Significant, negative correlations between gender and awareness of mixed emotions and evaluative devices were found indicating that male children score lower on these variables. The partial correlations between the nine emotional competence and language competence measures do not differ greatly from the zero-order correlations proving that the relationships between these two competences are not mainly due to common effects of age and gender. Nevertheless, we controlled for these significant age and gender effects in the further analyses.

Table 2.3. Partial correlations between measures of language and emotional competence, controlling for age and gender

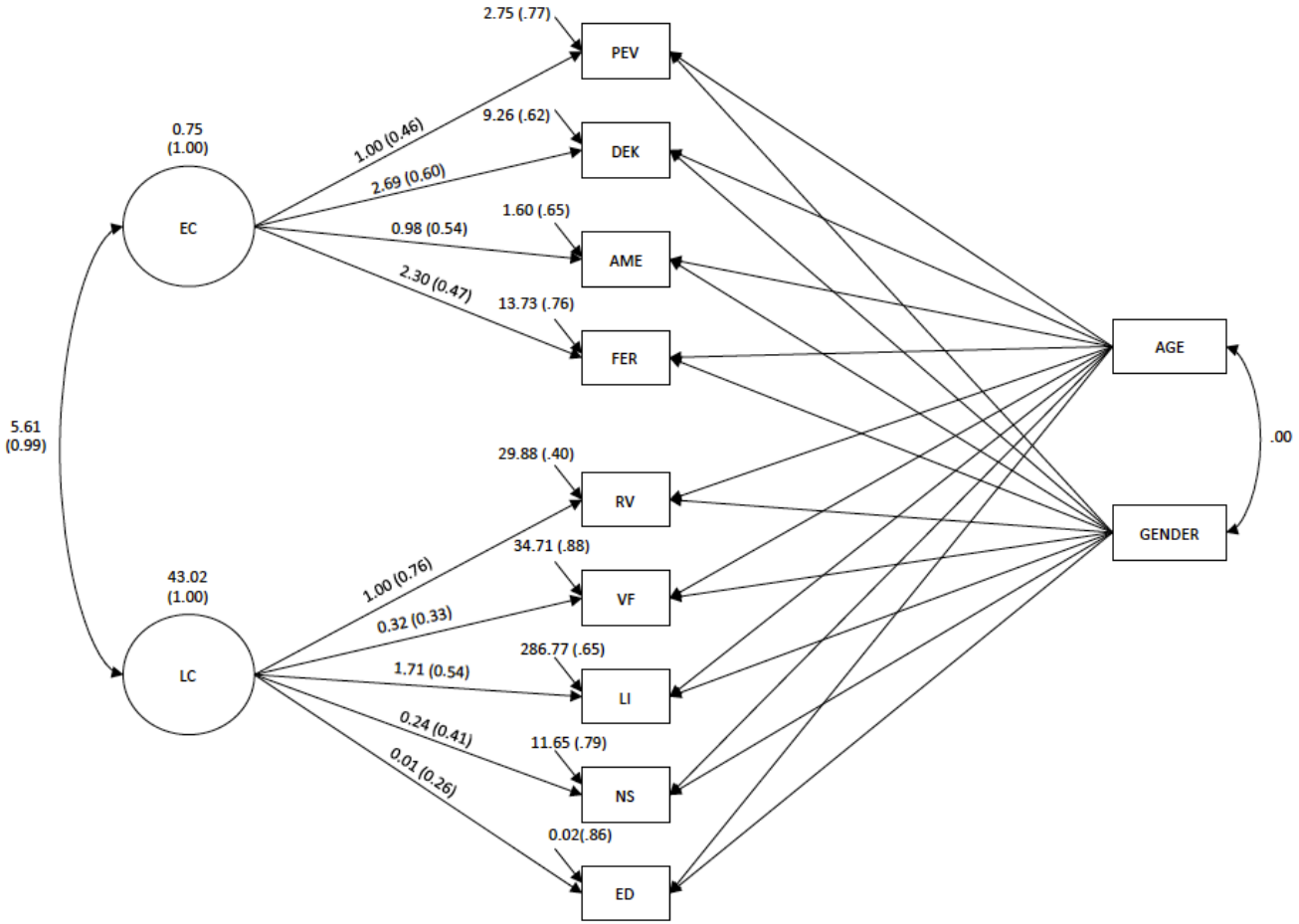
Measure	1	2	3	4	5	6	7	8	9	Age
Measures of Emotional Competence										
1. Productive Emotion Vocabulary	–									
2. Declarative Emotion Knowledge	.42**	–								
3. Awareness of Mixed Emotions	.24**	.26**	–							
4. Facial Emotion Recognition	.20**	.21**	.32**	–						
Measures of Language Competence										
5. Receptive Vocabulary	.34**	.46**	.47**	.35**	–					
6. Verbal Fluency	.11	.23**	.1	.14*	.26**	–				
7. Literacy	.18**	.30**	.28**	.34**	.44**	.22**	–			
8. Narrative Structure	.15*	.27**	.26**	.17*	.29**	.15*	.27**	–		
9. Evaluative Devices	.11	.26**	.19**	.12*	.17*	.14*	.09	.21**	–	
Correlations with Variables to be controlled for										
Age	.14*	.13	.20**	.04	.03	.06	.24**	.19**	.05	–
Gender	.02	-.08	-.14*	-.17*	.11	-.11	-.09	-.10	-.26**	0

Note. The correlations were estimated and tested using the robust maximum likelihood estimator for missing data provided by the computer program Mplus using all available information. $N = 210$. Correlation coverage: between .85 and 1.00. * $p < .05$, ** $p < .01$. Coding of gender: 0 – female, 1 – male.

Confirmatory factor analysis

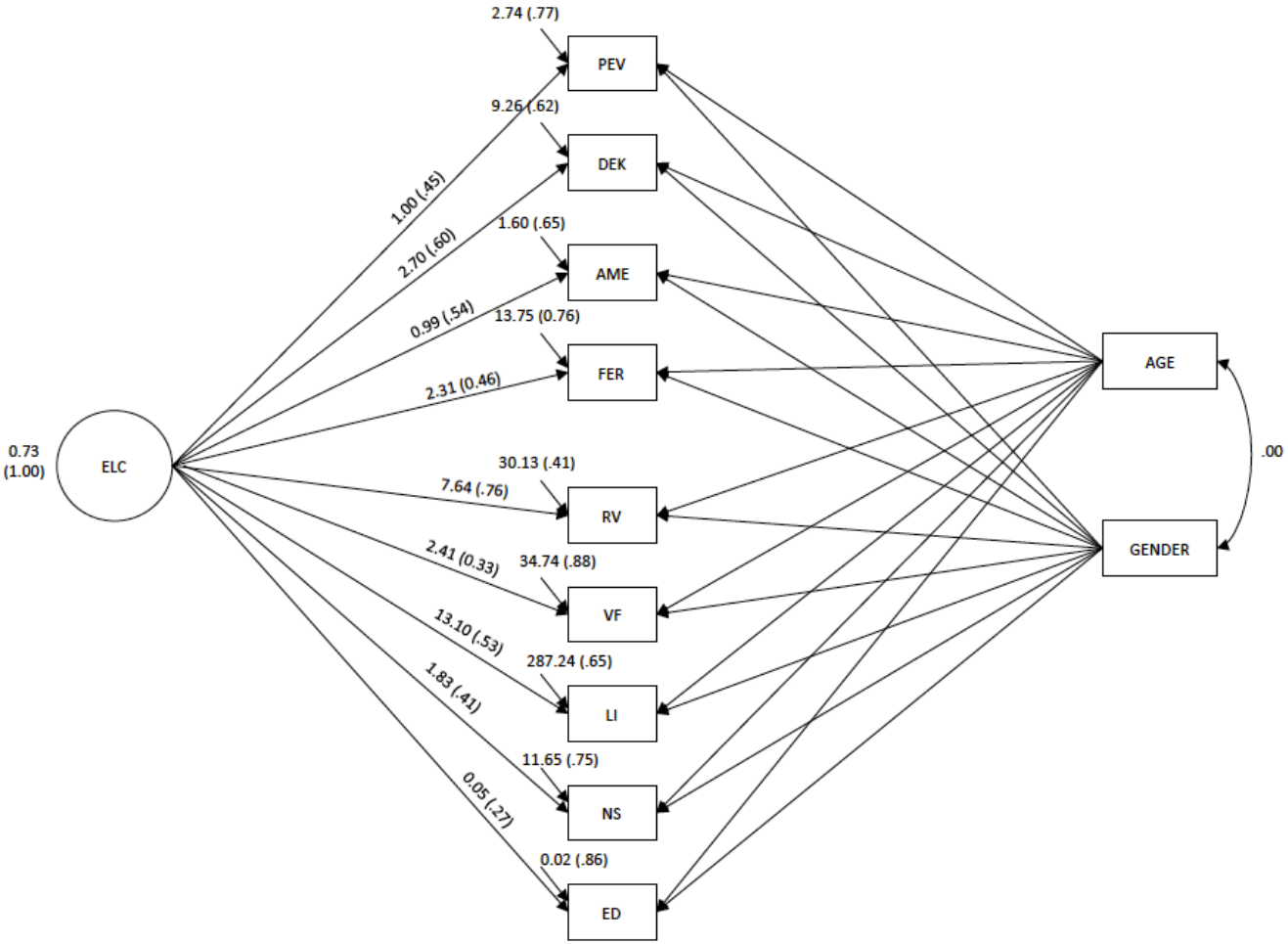
To test the hypothesis of two general competence factors we tested the model depicted in Figure 2.1. In this model, effects due to age and gender are controlled for on the right-hand side of the model. The two factors on the left-hand side of the model explain the partial correlations between the observed variables. The model fits the data very well (see Figure 2.1). All observed variables have significant loadings. The observed variable declarative emotion knowledge has the highest standardized loading on the emotional competence factor (.60), and the observed variable awareness of mixed emotions has the second highest loading (.54). According to their estimated loading parameters, these two variables are the best indicators of the factor emotional competence defined in this model. However, the two other competences also have substantive loadings. Concerning the factor language competence, the observed variable receptive vocabulary has the highest standardized loading (.76), followed by literacy (.54). These two variables are the best indicators of the factor language competence (see Figure 2.1). The observed variables verbal fluency and evaluative devices have comparably low standardized loadings (.33 and .26, respectively). The correlation between the two factors is very high (r = .99) indicating that they measure the same factor. Therefore, a model with one general factor also fits the data very well. The one-factor model has a lower AIC value (9044.43) than the two-factor model (9046.41), showing that it should be preferred to the two-factor model. All observed variables have significant estimated loading parameters on this general factor. Of these, receptive vocabulary (.76) and declarative emotion knowledge (.60) have the highest values and are the best indicators of this general ability.

Figure 2.1. Model with two factors. $\chi^2(26) = 36.11$, $p = .09$. RMSEA = .04, CFI = .97.



Reported are the unstandardized and standardized (in parentheses) parameter estimates. The regression coefficients for age and gender are not reported. The standardized regression coefficients are almost identical to the correlations of age and gender with the dependent variables reported in Table 2.3. The correlation between age and gender is not significant. All other parameter estimates differ significantly from 0.
EC = emotional competence; LC = language competence; PEV = productive emotion vocabulary; DEK = declarative emotion knowledge; AME = awareness of mixed emotions; FER = facial emotion recognition; RV = receptive vocabulary; VF = verbal fluency; LI = literacy; NS = narrative structure; ED = evaluative devices.

Figure 2.2. Model with one general factor. $\chi^2(27) = 36.16$, $p = .11$. RMSEA = .04, CFI = .97.



Reported are the unstandardized and standardized (in parentheses) parameter estimates. The regression coefficients for age and gender are not reported. The standardized regression coefficients are almost identical to the correlations of age and gender with the dependent variables reported in Table 2.3. The correlation between age and gender is not significant. All other parameter estimates differ significantly from 0. ELC = emotion language competence; PEV = productive emotion vocabulary; DEK = declarative emotion knowledge; AME = awareness of mixed emotions; FER = facial emotion recognition; RV = receptive vocabulary; VF = verbal fluency; LI = literacy; NS = narrative structure; ED = evaluative devices.

2.4 Discussion

Previous research has shown that language competence is associated with emotional competence in the early stages of child development. However, we do not know much about the strength and the nature of this relationship and whether it is limited to preschool age. The current study investigated relations between multiple components of language competence and emotional competence in a sample of school-age children. Our findings provide substantial support for a positive link between language and emotion, while helping to elucidate the mechanism that links them. The bivariate correlation analyses resulted in positive relations between most single variables of language competence and emotional competence. Moreover, the CFA revealed that the two competences are closely linked on a higher order level. According to the analyses presented here, there appears to be one general ability factor that influences the different facets of emotional competence and language competence.

One could suspect that the high correlation between language competence and emotional competence may result from the use of language in resolving the tests of emotional competence. However, from a theoretical and a methodological point of view it is important to distinguish test construction from test analysis. Our test construction was based on strong theoretical assumptions about the construct under consideration. The measures of language competence and emotional competence were developed independently from each other by groups of linguists and psychologists. Determining how strongly the measures are correlated was an empirical question and the aim of the study. The correlations between the nine different measures range between 0.10 and 0.45 and show that they share between 1% and 20% of common variance on the bivariate level. This clearly demonstrates that we have distinct measures and that the space of language competence and emotional competence is multidimensional. However, on the general level, the two competences are strongly related showing that there is a general ability that has an influence on the evolution of language

competence and emotional competence and that they are strongly intertwined on that general level. This is an important result showing that it is necessary to consider the different measures separately but that it is, in addition, fruitful to consider the general level as well.

Based on these results, we can conclude that a close relationship between language competence and emotional competence is still present in middle childhood. Taken together, literature on children's early and preschool development and our work on school-age children suggest that relations between language and emotion exist over the entire process of childhood development. As measurements and samples differed in existing studies, we can hardly make assumptions about specific developmental changes in the size of the relations. Nonetheless, we venture some tentative observations: The pattern of correlations between facial emotion recognition and receptive vocabulary in this sample of school-age children was comparable to that in the preschool sample of Cutting and Dunn (1999). Also the relation between emotion knowledge and receptive vocabulary (r =.45) was just as strong as in studies with 3- and 4-year-olds (Bosacki & Moore, 2004; Cutting & Dunn, 1999). However, the magnitude of correlations between narrative ability and facial emotion recognition as well as emotion knowledge was higher in preschoolers (Cutting & Dunn, 1999) than in this school-age sample. From these findings we may infer that the relations between receptive vocabulary and facial emotion recognition and also between vocabulary and emotion knowledge seem to be close and stable in children's development beyond preschool age. This does not seem to apply to the relation between narrative ability and emotional skills, which was found to be closer in young children. Because differences in these results may be due to differences in the methods and measures used, they need to be interpreted carefully. Longitudinal studies would be very valuable to examine the stability and change of the relationship between language competence and emotional competence in child development.

Thus, discovering the subcomponents most closely linked constituted a major goal of the present research. Our correlation analyses revealed that receptive vocabulary and literacy, and emotion knowledge and awareness of mixed emotions were most closely related. This was also confirmed by the CFA; these variables have the highest standardized loadings on the general emotion-language competence factor. Can we conclude that vocabulary and literacy belong to those aspects of language competence that play the most important roles in emotional development in middle childhood?

Receptive vocabulary is the component most often used as an index of language ability. As in the current study, there has always been a close relationship between receptive vocabulary and emotion knowledge (Bosacki & Moore, 2004; Cutting & Dunn, 1999; Izard et al., 2001; Trentacosta & Izard, 2007). Knowledge comprises the concepts that an individual has built up in his or her experiences with the world; most of these concepts are linguistically represented (Mandler, 2004b). Labels, as measured with receptive vocabulary tests, represent this repertoire of verbal concepts. Thus, a large and differentiated vocabulary indicates that sizable parts of the conceptual system are verbally encoded. Children with high lexical abilities might be good in general conceptualizing. Because emotional competence, particularly emotion knowledge, also includes the conceptualizations of emotions, we can infer from the lexical differentiation an equally strong conceptualization in the domain of emotions. In child development, both, language and emotion may share common ground concerning conceptualization: Emotion knowledge is rooted in children's emotional experiences that need to be generalized and conceptualized in the course of development (Mandler, 2004b). According to usage-based approaches (Tomasello, 2009), language, particularly linguistic meaning, is also grounded in experience. On this basis, emotional competence and language competence may be highly interrelated, as their development is both contingent on learning and categorizing through one's experience. All in all, there are two competing explanations for the

phenomenon of these closely related components: Either language promotes emotional competence via the process of lexical-semantic conceptualization—or emotional competence and language competence both rely on a common mechanism of conceptualization. Our data cannot reveal which of these alternatives is more likely.

Unlike vocabulary, literacy has not been assessed so far, because previous studies focused on preliterate preschoolers. We included literacy because of its special importance in middle childhood. The newly acquired ability to read and write fluently facilitates children's self-directed knowledge acquisition (Nippold, 1988). Literacy is thereby closely related to the development of lexical-semantic knowledge because its acquisition requires knowledge of a wide variety of words and meanings; in order to comprehend texts and infer meanings of unknown words, children must know the majority of words in the text. Reading activities further facilitate the process of new word learning and the consolidation of lexical-semantic representations. Some researchers even suggest that the amount of reading, rather than oral language, is the major contributor to individual differences in children's vocabularies (Cunningham & Stanovich, 1998). Schild, Röder, and Friedrich (2011) found that the process of literacy acquisition alters the neural processing of spoken words and that neural lexical access is more precise in beginning readers than in preliterates.

Altogether, it seems possible that literacy is associated with emotional competence via the mutually influencing relationship with lexical-semantic knowledge. For future studies, it would be interesting to test this hypothesis via longitudinal mediation analyses. However, one could think of another conceptual link between literacy and emotional competence. Literature, especially fiction, offers children the opportunity to participate in the experiences, conflicts, and motives of others. Through reading children gain "otherwise unavailable insights into the ways emotions are produced, experienced, and enacted in human social life" (Hogan, 2011, p. i). In children's literature, emotions are often labeled and

emotional reactions explained. Moreover, Astington and Peskin (2004) showed that even in the absence of lexical labels, children's literature promotes conceptual understanding. Simply by trying to make sense and constructing one's own interpretation of a stories' plot, children acquire a deeper understanding of internal concepts. Thus, reflecting on the emotions of story characters—based on causal explanations of usually invisible inner states or the construction of emotional concepts—could be one source of better emotional understanding and, finally, the development of emotional competence.

In short, based on a shared conceptual system, language seems to serve as a main medium by which emotional competence is constructed. However, this is perhaps only one of multiple possible links between language and emotion. Unfortunately, based on the present analyses we cannot infer causality. It is also conceivable that emotional competence still has an impact on language development in middle childhood. Children with good emotional competence have more peer relations and receive more peer acceptance (Smith, 2001); therefore, they may get more opportunity for verbal interaction and thus language learning.

Another explanation for the strong relationship between vocabulary and emotion knowledge may be the potential contribution of children's intelligence. Picture vocabulary tests are often used as an index of verbal intelligence. However, to our knowledge, there is only one developmental study examining the contribution of intelligence on emotional competence. Although Albanese, De Stasio, Di Chiacchio, Fiorilli, and Pons (2010) found significant relations between nonverbal intelligence and emotion understanding in children aged 3 to 10 years, the authors admit that the magnitude of the correlations was modest. However, the contribution of intelligence remains an important open issue and should be addressed in future studies.

Limitations and future directions

There are at least two limitations to the present study. First, although our study is unique in that it considered a wide range of language competence and emotional competence components, our investigation did not encompass the entire range. Due to time constraints concerning testing, we had to limit ourselves in the selection of measures. Further, we decided to use tests that demonstrated good reliability in pre-tests. Therefore, quite important components such as emotion regulation and other communicative skills were not included in the current test battery. In future studies, these and other components of the broad spectrum of emotion and language should be considered, too.

Second, the measurement of emotional competence required at least some language ability as all tests included verbal content in some way. For the emotional assessment we, therefore, used linguistically undemanding and age appropriate tests. However, it is desirable to investigate the relationship between language and nonverbal components of emotional competence (e.g., observation of emotion expression and emotional behavior in adequate contexts). For more relevance and ecological validity, language competence could be assessed also in terms of communicative-pragmatic aspects in diverse social contexts (like classroom discourse, peer instruction, etc.).

Our findings also underlie the importance of differentiating linguistic subcomponents, which is especially relevant for future work attempting to control for language as a possible confounding factor. Thus, we recommend that future work exercises caution when choosing a single component to represent an entire competence, as this can critically influence the overall results.

Another suggestion for future research is to conduct further studies in clinical populations, for instance, in children with language impairment, pragmatic disabilities, or emotional disabilities because emotional and language problems often co-occur (McCabe & Meller, 2004; Redmond & Rice, 1998). Improving the understanding of the relationship between language competence and emotional

competence in these vulnerable populations could improve our understanding of the relation between emotional competence and language competence: Moreover, this could lead to the development of early and effective interventions, which has enormous clinical and social relevance. This is of particular importance because early language problems have been shown to be associated with poor social-emotional adjustment in toddlers (Irwin, Carter, & Briggs-Gowan, 2002). It seems that language impairment poses a risk for children's emotional development. Early intervention can possibly reduce emerging emotional difficulties. All in all, early language interventions may preventively counteract not just communicative, but also emotional and finally social difficulties. Consequently, the exact knowledge of the interplay between language and emotion is especially important for designing adequate interventions. Finally, longitudinal studies are needed to further delineate the complex and causal relationship of language competence and emotional competence in child development. This knowledge may have important implications for the educational practice.

Conclusion

The present work has demonstrated that language competence and emotional competence interact with one another in complex ways and has provided insight into the nature of this relationship. Given the strong influence these components have on each other, and the important influence they have on the individual, a greater understanding of this relationship may have important, yet unappreciated implications. For example, such knowledge can be extremely useful to language pathologists: Knowing which aspects of language best facilitate emotional growth can help to customize therapeutic interventions. In general, insight into this relationship has the potential to inform both clinical and educational practices, leading to the development of more effective and more comprehensive interventions in childhood.

3 /// What easily accessible emotion words tell us about the structure of the emotion lexicon in middle childhood

---

Beck, L., Kumschick, I.R., Klann-Delius, G., Eid, M., Wagner, V. (2013). *What easily accessible emotion words tell us about the structure of the emotion lexicon in middle childhood.* Manuscript submitted for publication.

3.1 Introduction

While the production of first emotion words is quite well documented, the further development of the emotion lexicon beyond preschool-age is less well examined (Bretherton & Beeghly, 1982; Denham, 1998; Izard & Harris, 1995; Ridgeway et al., 1985). However, recently Baron-Cohen, Golan, Wheelwright, Granader, and Hill (2010) reported that the comprehension of emotion words improved seven-fold from preschool age to the end of middle childhood. As comprehension and production of words develop closely linked, with comprehension preceding production (Bates, Dale, & Thal, 1995; Bornstein & Hendricks, 2012), one can assume that there is also significant development in the productive emotion lexicon in middle childhood, but that remains to be investigated. This assumption is in line with Saarni (1999), who argues that children's development of the emotion lexicon especially continues throughout middle childhood as school-age children's emotion language is characterized by more variety, nuance, and complexity than that of preschoolers.

Importantly, the early period of mid-childhood, coinciding with the transition from kindergarten to grade school, is a remarkably sensitive period for lexical and socioemotional development (Dockrell & Messer, 2004; Entwisle & Alexander, 1998). Beck, Kumschick, Eid, and Klann-Delius (2012) established that the development of emotion knowledge and lexical abilities are closely related in the first school years. It seems very likely that especially the acquisition of a differentiated emotion lexicon is particularly important for the further development of emotion knowledge. However, there is little literature on the developmental status of school-age children's emotion lexicon and much less is known about the structure and characteristics of children's emotion lexicon at that age range. Therefore, in the present study we investigated the structure of school-age children's emotion lexicon, based on free-listings.

One aspect that would deserve greater attention in this context is the dimension of valence, due to its importance from early childhood on. According to

Widen and Russell (2003), infants' initial conceptual system of emotion is simple and bisected by the dimension of valence into *good* for positive emotions and *bad* for negative emotions. During preschool years, these two valence categories become gradually differentiated into emotion categories like happiness, anger, and surprise (Widen & Russell, 2003, 2008, 2010a), but their importance in mid-childhood remains unclear. The distinction between *good* and *bad* appears to be an important factor in child development. Reviewing the literature on socio-emotional development, Vaish, Grossmann, and Woodward (2008) deduct the existence of a negativity bias in early childhood. *Negativity bias* refers to the observation that negative emotions dominate over positive ones, so that "events that are negatively valenced will have a greater impact on the individual than positively valenced events of the same type" (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001, p. 323). There is research indicating that negative emotions outnumber positive ones in preschool children's discourse (Dunn & Brown, 1993; Lagattuta & Wellman, 2002). Whether the early negativity bias or the preponderance of negative emotions in children's discourse is reflected in the structure of school-age children's emotion lexicon remains to be determined. For adults, a prevalence of negative valence in the productive emotion lexicon was found in speakers of English, Spanish and Italian by Schrauf and Sanchez (2004) and Zammuner (2011). Concerning valence, two key questions arise: First, are *good* and *bad* still essential concepts in school-age children's emotion lexicon? And second, do children, like adults, display a negativity bias in their productive emotion lexicon?

The present study

In the present study, we aimed to study school-age children's productive emotion lexicon with three primary objectives. These were (1) to determine the range and distribution of easily and reliably accessible emotion words in school-age children; (2) to examine the semantic structure of the emotion lexicon in mid-

dle childhood; and (3) in regard to valence, to assess whether the valence distinction *good-bad* and a preponderance of negative emotion words are evident in school-age children's emotion lexicon.

The measure consisted of a free-listing task, in which subjects are asked to name as many emotion words as they know. Free-listing tasks have often and widely been used in various developmental studies to investigate children's semantic structure of specific categories such as animals or body-parts (e.g., Crowe & Prescott, 2003; Grube & Hasselhorn, 1996; Jarrold, Hartley, Phillips, & Baddeley, 2000; Kail & Nippold, 1984; Morizet, Depezay, Masse, Combris, & Giboreau, 2011). There are three key assumptions about free-listing which led us to employ this methodological approach in the present study. First, the number of listed items gives an indication of the level of knowledge within the category (Brewer, 1995). Although free listing is not likely to assess all the items an individual knows in a semantic category exhaustively (Brewer, Garrett, & Rinaldi, 2002), free listing reveals those words that are most accessible, and therefore are active and solid representatives of the specific semantic category (Zammuner, 2011). Second, first mentioned exemplars of a category can be interpreted as the most frequently used and most psychologically salient ones as they are most likely to be accessed (Schrauf & Sanchez, 2004, 2008; Zammuner, 1998). Third, in free-listing tasks, subjects tend to mention semantically similar items adjacently (Brewer et al., 2002). This semantic clustering can be analyzed in terms of the underlying semantic structure of the particular category (e.g., Crowe & Prescott, 2003). Because of these features, in combination with its easy and rapid execution, we consider the free-listing task as a reasonable technique to investigate children's emotion lexicon.

In previous studies on children's references to emotions, only the use of "proper" emotion labels (e.g., *sad* or *joy*, but not *death* or *struggle*) has been explored. However, Widen and Russell (2010) point to the possibility that children might not have adult-like categories for emotions. Structural differences may exist

in the mental representations of semantic categories between children and adults, which can be assessed by analyzing “errors”. Also, in previous free-listing studies, “errors” were not taken into account. Incorrect answers were mostly ignored as random. Nonetheless, Zammuner (2011, p. 454) recently emphasized that “the distinction between 'errors' and 'proper' emotion words is both necessary to adequately describe ‘proper’ emotion labels in lexicon usage, and useful to better understand – on the basis of the information errors supply – the conceptual organization of emotion knowledge”. Thus, we assume that children’s “incorrect” responses may reveal significant aspects of the nature of children's emotion lexicon. Therefore, we analyzed “errors” in children’s emotion listings to gain further insight into children's idea of emotions and the structure of their emotion lexicon. To this end, errors were defined as words belonging to another category than emotion, in the following called non-emotion word responses.

Further, in order to evaluate whether, respectively to what degree, children's emotion lexicon is adult-like, we needed to compare children’s and adults’ emotion listings. For this aim, we used free-listing data from another study (Wagner et al., submitted for publication), which were collected with a similar design.

3.2 Method

Participants

172 children participated in this study (*M* = 7.90 years, *SD* = 0.70): 51 7-year-olds (17 boys and 34 girls), 87 8-year-olds (32 boys, 55 girls), and 34 9-year-olds (12 boys, 22 girls). All children spoke German as their first language. They were recruited from primary schools in the outskirts of Berlin, Germany, and represent a primarily middle-class urban community sample. The adult sample came from another study by (Wagner et al., submitted for publication). Of 214 adult participants, seven were excluded due to nonresponse and careless responding. Thus, a total of 207 (*M* = 22.16 years, *SD* = 2.97; 75 women, 132 men)

monolingual German-speaking undergraduate students at the Freie Universität Berlin, Germany, served as the adult sample.

Procedure

Children were asked to name as many emotion words as they knew (Instruction: *Nenne mir bitte alle Gefühle, die du kennst.* [Please list all emotions that you know.]). No time limit was set for completion of this task. Children were prompted with: *Any more?* Prompting continued until the child said: *No.* The examiner wrote down the children's responses. The adult participants were asked to write down as many emotion words as they knew (Instruction: *Bitte listen Sie alle Emotionen auf, die Ihnen einfallen. Schreiben Sie diese Emotionen bitte als Substantive auf.* [Please list all emotions that you know. Please use nouns]). After a two-minute period, participants were asked to stop writing.

Coding

To determine which of the participants' free-listing responses should be coded as a member of the emotion category, we referred to established studies investigating the structure of the emotion lexicon. These are: (1) Johnson-Laird and Oatley (1989); (2) Morgan and Heise (1988); (3) Ortony, Clore, and Foss (1987); and (4) Shaver, Schwartz, Kirson, and Connor (1987). They all focus on the English emotion lexicon; however, because there are no elaborated studies on the German emotion lexicon, these studies served as guide for the determination of emotion words. Words that were listed in at least one of these studies as emotion terms were considered as members of the emotion category and, therefore, as correct responses of the free-listing task in this study. In addition, the terms *good* and *bad* were taken into account. In accordance with Widen and Russell (2003), we considered these valence terms as precursors of emotion words and coded them within the emotion word category.

Other responses that – according to the criterion above – were not coded as emotion words were classified into one of seven non-emotion word response categories. The codes were determined inductively by meaningful grouping of occurring non-emotion word responses in the data: (1) emotion-related words (e.g., friend); (2) causes and consequences of emotions (e.g., quarrel); (3) sensory perception (e.g., to taste); (4) cognitive conditions (e.g., attentive); (5) physical states (e.g., awake); (6) personality traits (e.g., helpful); and (7) other words and phrases (e.g., paper). Interrater reliability, computed on all cases, was $\kappa = .78$.

Following Johnson-Laird and Oatley (1989), we grouped tokens into types when there were several morphological variants of the same concept. This procedure allowed us to analyze and present the data as economically as possible. Instead of analyzing all morphological variants of one underlying root, we transferred words denoting the same emotion into one randomly selected morphological form. This procedure sometimes involved a change of word class. For example, the noun *anger* and the adjective *angry* were both coded as the type *angry*. Thus, even though adults listed mostly nouns, due to the morphological unification, we report mostly adjectives in the results section.

Because languages do not always provide adequate one-to-one correspondences between emotion words (Durst, 2001; Russell & Sato, 1995), we report the closest English translation. When there are two or more German translation options for an English term, we report the original German word in parentheses. Two bilingual native speakers of American English checked all translations. Where several translations were available, we chose the one which was most appropriate according to a bilingual English native speaker. (For the original German emotion types and their translation see Table 3.1).

Data Analysis

One-way analyses of variance were conducted to compare children and adults on list length variables. Descriptive statistics were used to characterize the frequency distributions of emotion words and non-emotion word responses in children and adults. As word frequency might influence production frequency in free-listing tasks, the Kendall's tau-b correlation coefficient was used to test for a relationship between word frequency of emotion words and their number of occurrences in the listings. We also examined a possible influence of word frequency on the number of occurrences of the emotion words in the first three positions of listings. The frequency-norms are based on the German DWDS corpus (accessible via http://dlexdb.de; Heister et al., 2011).

In order to determine the ratio of negative vs. positive emotion words we calculated, for each individual, the difference of the number of listed positive emotion words and the number of listed negative emotion words. A difference score of 0 indicates that an individual has mentioned as many negative as positive emotions. A negative value represents the preponderance of negative emotion words, a positive value the preponderance of positive emotion words. We tested the null hypothesis that the mean difference score in the population of children equals 0 by a one-sample *t*-test.

ADDTREE analyses (Corter, 1982; Sattath & Tversky, 1977) were conducted to examine the conceptual structure of the emotion lexicon in adults and children on the basis of their freely listed words. ADDTREE analyses belong to hierarchical cluster analyses, which are used to group individual items into meaningful and interpretable clusters. ADDTREE analyses can especially be used to build a graphical representation of the conceptual structure of semantic categories, as shown for animals and body parts in Crowe and Prescott (2003) and Jarrold et al. (2000). As a first step, we selected the target items based on the frequency criterion suggested by Corter (1982). Emotion words that occurred in more than 20% of all listings in each group were considered as target items for

the ADDTREE analyses. We used the FLUENT program (Prescott, Newton, Mir, Woodruff, & Parks, 2006) to calculate estimates of the normalized interitem distances. These depend on the number of item co-occurrences, that is, the extent to which pairs of items (such as love–fear) occur in individuals' lists. The paired items do not need to be adjacent, but they have to occur in the same list. For any target item (e.g., love), the number of co-occurrences with all other target items is calculated. For the calculation of normalized interitem distances in the current study, we used the alpha-beta(0.5)-metric devised by Crowe and Prescott (2003). This metric avoids distortion that can result from a small number of responses (as is common in children's free-listings) by including parameters of within-list proximity and across-list similarity (for a detailed description and formulas, see Crowe and Prescott, 2003). The normalized inter-item distances are then used as input to the ADDTREE/P program that calculates a hierarchical cluster analysis of the given distance matrices (Corter, 1982).

As output we obtain a dendrogram, a graphical representation in form of a tree structure that is composed of nodes (horizontal lines) and arcs (vertical lines). External nodes represent the items. Conceptually related items are clustered in the same branches of the tree by internal nodes. The distinctiveness of a cluster and the degree of similarity within a cluster are indicated by the length of the horizontal branches, with the longest length indicating the lowest similarity. The degree to which an item represents the specific semantic category is indicated by its distance to the root of the tree. The ADDTREE analysis output also includes two goodness-of-fit measures, a Stress value and an R-squared value, ranging between 0-1 (Stress value 0 = best fit; R-squared value 1 = best representation of the data).

3.3 Results

Frequency distributions of listed responses. The mean list length (including correct and incorrect responses) was *M* = 4.78 (*SD* = 2.22) for children, and *M* = 8.02 (*SD* = 3.03) for adults. A one-way ANOVA revealed a significant main effect of age group, *F* (1, 377) = 136.49, (*p* < .001). Adults provided significantly more responses than children.

Frequency distributions of listed emotion words. Altogether, children listed a total of 52 and adults a total of 121 diverse emotion words (here and in the remainder of this section, the term emotion words is used for types, as described above). In the child sample, 15 emotion words were named only once. In the adult sample this was the case for 86 emotion words. On average, children named *M* = 3.29 (*SD* = 1.84) emotion words. In the adult sample, the mean number of emotion words was *M* = 7.06 (*SD* = 2.72). A one-way ANOVA revealed that adults named significantly more emotion words than children, *F* (1, 377) = 239.49, (*p* < .001).

Frequency distributions and percentages of the emotion words listed by children and adults are presented in Table 3.1. *Sad* and *happy* were listed most frequently by children, followed by the valence terms *bad* and *good*. Almost 70% of all children named *sad* and around 30% of the children listed the second most emotion word *happy* (fröhlich). Most of the emotion types named by children were less frequent than in the adult sample. Further, the valence terms were listed in total by one third of all children, and not at all by adults. Children who named *good* and/or *bad*, only mentioned a few other emotion words, these were, in descending order, *sad*, *happy* (fröhlich), *joy* as well as *fear*, *happy* (glücklich), and *angry* (wütend). As with the children, *sad*, *joy*, *love*, *angry* (wütend), *fear,* and *happy* (glücklich) were named most often and by at least 50% of adult subjects. Adults listed more than 50 emotion words (e.g., hope, disgust) that were not listed by the children.

Most frequently listed emotion words occupied initial listing positions. In children's data, the six labels *sad* (42% of first positions), *good* (13%), *bad* (12%), *love* (7%), *happy* (glücklich; 6%), and *happy* (fröhlich; 4%) covered more than 80% of all first positions. The same six words also covered 80% of the second positions (happy [fröhlich] 23%; sad 21%; bad 13%; good 11%; happy [glücklich] 7%; and love 6%) and more than 40% of the third positions in children's listings. There was more variety of emotion words in position 3 than in the two initial positions. Seventeen distinct emotion words occurred in the first and second position. In the third position, 28 distinct emotion words occurred; half of them covered 80% of the third position.

Also in the adult listings, the most frequently named labels occurred in early positions. The six most frequent emotion words in the adult sample, *joy*, *angry* (wütend), *sad*, *love*, *hate*, and *fear*, covered more than 80% of the first and second position, and more than 60% of the third position. Compared to children, there was much more variety in the distribution of emotion words in the early positions. More than thirty distinct emotion words occurred in each of adults' first, second and third position, respectively.

Word frequency effects. The correlations between word frequency of emotion words and their number of occurrences in the listings were all significant, at the $p < .01$ level, with correlation coefficients ranging from .24 (adults) to .31 (children). Word frequency was also significantly correlated with the number of occurrences of the emotion words in the first three positions, at least at the level of $p < .05$ (Kendall's tau-b between .17 and .41.). These positive correlations indicate that emotion words with a high word frequency are named more often and in early positions in free-listings.

Table 3.1. Frequencies (N) and percentages (%) of emotion words in children and adults

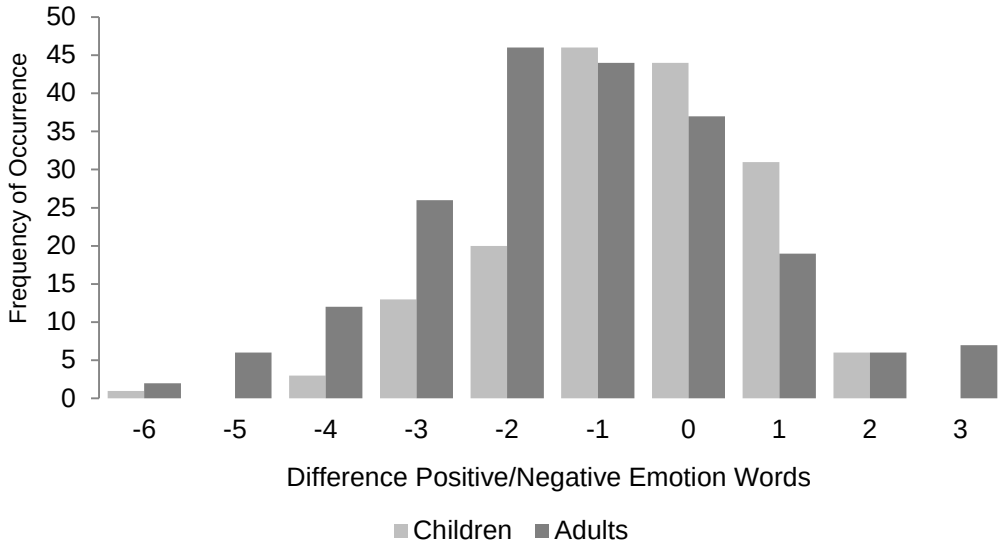
Emotion Word	Children (*N* = 172)		Adults (*N* = 207)	
	N	%	N	%
Traurig (sad)	119	69	154	74
Fröhlich (happy)	56	33	24	12
Schlecht (bad)	40	23	0	0
Gut (good)	36	21	0	0
Wütend (angry)	34	20	132	64
Freude (joy)	32	19	151	73
Liebe (love)	28	16	143	69
Angst (fear)	25	15	103	5
Glücklich (happy)	25	15	59	29
Sauer (mad)	22	13	0	0
Aufgeregt (excited)	14	8	16	8
Einsam (lonely)	10	6	12	6
Ärger (anger)	7	4	19	9
Langeweile (boredom)	5	3	15	7
Mut (brave)	5	3	9	4
Hass (hate)	4	2	128	62
Neidisch (envious)	4	2	23	11
Zufriedenheit (contentment)	0	0	31	15
Zornig (angry)	0	0	26	13
Lust (lust)	0	0	22	11
Verzweifelt (desperate)	0	0	22	11
Stress (stress)	0	0	20	1
Zuneigung (affection)	0	0	20	1
Eifersüchtig (jealous)	0	0	15	7
Enttäuscht (disappointed)	0	0	14	7
Hoffnung (hope)	0	0	13	6
Leidenschaft (passion)	0	0	13	6
Depression (depression)	0	0	10	5
Frustration (frustration)	0	0	11	5
Neugier (curiosity)	0	0	11	5
Sehnsucht (longing)	0	0	11	5
Angespannt (tense)	0	0	9	4
Ekel (disgust)	0	0	8	4
Euphorie (euphoria)	0	0	8	4
Nervös (nervous)	0	0	9	4
Abneigung (dislike)	0	0	6	3
Furcht (fear)	0	0	7	3
Geborgenheit (feeling of security)	0	0	7	3
Gierig (greedy)	0	0	6	3
Gleichgültigkeit (indifference)	0	0	6	3
Heiterkeit (cheerfulness)	0	0	6	3
Mitgefühl (compassion)	0	0	6	3
Scham (shame)	0	0	7	3
Überraschung (surprise)	0	0	6	3

Note. Reported emotion words are word types as described in the method section. Items listed by less than three percent of children and adults were omitted.

Distribution of positive and negative emotion words. Figure 3.1 displays the frequencies of children's and adults' individual differences between the number of listed positive and negative emotion words. The graph shows, for children and adults, a tendency to name more negative than positive emotion words. We tested the null hypothesis that the mean difference score in the population of children equals 0 by a one-sample *t*-test ($\alpha = 0.05$). The null hypothesis had to be rejected. The difference between the sample mean and the population mean (-0.581) is significant ($p < 0.001$). The value of Cohen's *d* (*d* = -0.422; two-sided 95% confidence interval: [-0.578; -0.266]) indicates a medium-sized effect.

Also for the adults, the null hypothesis that the population mean difference score equals 0 had to be rejected ($p < 0.001$). Compared with the children, the difference between the sample mean and the population mean is larger (-1.217). Cohen's *d* (*d* = -0.672; two-sided 95% confidence interval: [-0.823; -0.521]) indicated a large effect size, showing that adults have a significantly stronger negativity bias than children (Welch-Test: $t = -3.882$, $df = 374.154$, $p < .001$).

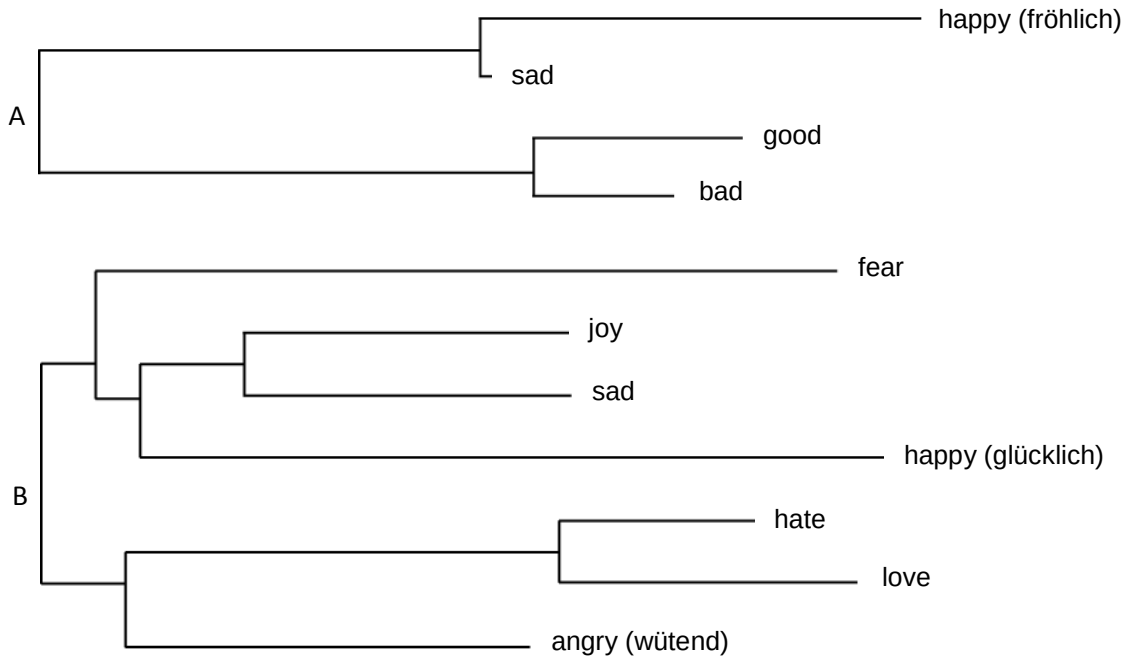
Figure 3.1. Frequencies of individual differences between positive and negative emotion words in children and adults



Semantic structure of the productive emotion lexicon. ADDTREE analysis resulted in two models with very good fit and representation of the data for both samples, with the child sample reaching optimal data description criteria. Figure 3.2 shows the dendrogram obtained by ADDTREE analysis of emotion words for children (stress = 0.00, r^2 = 1) and adults (stress = 0.07, r^2 = .88). Based on the criterion that only those items listed by at least 20% of the subjects would be included in the analysis, four items were selected. The tree for the children has two branches. One of these contains the antonymous pair *sad* and *happy* (fröhlich). The cluster of these two is closest to the root of the tree suggesting that of all listed emotion words, they are the most psychologically salient for the emotion lexicon in school-age children. The second cluster contains the antonymous valence terms *good* and *bad*. Thus, in this age group, these two items also characterize children's emotion lexicon to a high degree.

The tree for the adults is more complex than the children's tree as it clusters into several subbranches. One main cluster contains the items *fear*, *joy*, *sad,* and *happy* (glücklich). As in the children's tree, an antonymous pair of *sadness* (traurig) and *happiness* (Freude) – here further enhanced to a triplet by *happy* (glücklich) – is closest to the root of the tree and can be interpreted as most salient in adults' emotion lexicon. *Happy* (glücklich) and *fear* have the longest nodes, indicating that their similarity within this cluster is much lower than that of *joy* and *sad*. The second cluster contains the triplet of *hate*, *love,* and *angry* (wütend), within which the antonymous pair *hate* and *love* forms a subcluster. This second cluster is characterized by the fact that all three emotions are directed toward others, whereas the emotions in the first cluster are self-directed only. In comparison, the children's tree lacks emotions that are related to other persons. This result supports a recent finding indicating that children tend to focus mainly on their self and their own emotions (Kucirkova & Tompkins, 2013). However, the trees of the children and adults are similar in that antonymy seems to be an organizing factor in their semantic representation of emotions.

Figure 3.2. ADDTREE Analysis dendrograms for emotion words in children (A) and adults (B)



Non-emotion word responses. Participants' non-emotion word responses were coded into seven categories: (1) emotion related words; (2) causes and consequences of emotions; (3) sensory perception; (4) cognitive conditions; (5) physical states; (6) personality traits; and (7) other words and phrases. Table 3.2 presents the relative frequencies of these categories in children and adults. The largest category in both age groups (children 69%, adults 88%) was emotion words, indicating that adults as well as children have knowledge of a category of emotion they can quickly access. However, both children and adults listed some non-emotion word responses as well.

In children, the largest proportion of non-emotion word responses, namely nine percent, consisted of naming causes and consequences of emotions. Emotion-related words made up eight percent of children's responses. Seven percent of all listed items were related to sensation (4% sensory perception) and the body (3% physical states). The proportion of responses that are not related to emotions or inner states is, at six percent, quite large (4% other words and phrases, 2% traits). The smallest category is that of cognitive conditions (1%).

Table 3.2. Percentages of response categories in children and adults

Category	Children	Adults
Emotion Words	69%	88%
Causes and Consequences	9%	2%
Emotion-related Words	8%	4%
Sensory Perception	4%	0%
Other Words and Phrases	4%	0%
Physical States	3%	3%
Traits	2%	3%
Cognitive Conditions	1%	1%

Comparing children and adults, we found that adults clearly list a higher percentage of proper emotion words than children. Adults' non-emotion word responses were distributed only in five categories. Their responses did not contain sensory perceptions and items belonging to the category of other words and phrases. Emotion-related words form, with 30%, the largest proportion of adults' non-emotion word responses. In children, emotion-related words also amounted to 25% of their non-emotion word responses. The categories of physical states, traits, and cognitive conditions were similarly infrequently distributed in children and adults concerning their relative frequencies.

3.4 Discussion

In the present study, we examined the semantic structure of school-age children's emotion lexicon as assessed by a free-listing task. In interpreting the results, it is important to keep in mind that free-listing tasks do not assess the full magnitude of lexicalized members of a given category (Brewer et al., 2002).

We assessed those emotion words that most easily come to mind and are very likely to be the most salient representatives of the emotion category. In general, our findings indicate that children, at the age of seven to nine years, have acquired knowledge of a category of emotion: When presented with the superordinate term *emotion*, most children were able to classify emotion words into the given category.

The results also indicate that children, at the beginning of middle childhood, do not have an adult-like emotion lexicon: First, on average, children significantly named less emotion words than adults and listed more words that do not belong to the emotion category. Second, children and adults differ clearly in terms of type diversity as adults listed a wider range of various emotion types by naming a great number of emotion types that the children did not mention at all. Third, in children as well as in adults the terms *sad*, *joy*, *love*, *angry* (wütend), and *fear* and *happy* (glücklich) are the most frequent ones. But, in children's listings there is a clear dominance of the term *sad*, being the only item mentioned by more than 50 percent of the children. *Sad* is also the most frequent label in the adults' listings, however, there are five more items that were also named by at least half of the adult sample. In the children sample, only the four items *sad*, *happy* (fröhlich), *good*, and *bad* were named by more than 20% of the children. These four items are likely to be the most prototypical members of children's emotion lexicon as these labels were named most often and, additionally, most frequently in first listing position. In summary, in terms of our first objective, we conclude that the number of easily and reliably accessible emotion words is still low in school-age children.

This result is further confirmed by our ADDTREE analyses that map conceptual representations on the basis of item frequencies and co-occurrences (Corter, 1982; Sattath & Tversky, 1977). What one immediately notices is the paucity of items that were included in the analysis. Using the recommended criterion by Corter (1982) of a relative frequency of 20%, only four items of children's

listings remained for analysis. This small number of items with high relative frequencies is certainly due to the fact that children generally listed few emotion words. On average, children only named *M* = 3.29 (*SD* = 1.84) emotion words. In a free-listing study of Crowe and Prescott (2003) on the conceptual category structure of animals and body parts, children of a comparable age group (age range of seven to eight years) listed on average *M* = 12.29 (*SD* = 4.55; animals), respectively *M* =13.02 (*SD* = 5.1; body parts) items. In relation to these threefold longer list lengths, the number of considered ADDTREE items increased (20 for animals, 19 for body parts). Accordingly, the generated tree for children's conceptual structure of emotion is characterized by simplicity. The tree has only two branches with two binary clusters, *happy–sad* and *good–bad*. In contrast, children's trees mapping the conceptual structure of animals and body parts are quite more sophisticated, having several branches with complex clusters (see Crowe & Prescott, 2003).

This finding raises the question of whether the emotion category is so hard to acquire that children need a longer period of time to develop sophisticated conceptual structures of emotions. This explanation seems to be reasonable considering evidence that abstract words are harder to understand and acquire than concrete words (Gleitman, Cassidy, Nappa, Papafragou, & Trueswell, 2005; Schwanenflugel, 1991). However, taking a look at adults' ADDTREE analysis of emotions, we see that this tree also is characterized by simplicity, especially in comparison with children's compound trees for animals and body parts as, for instance, in Crowe and Prescott (2003) or Jarrold et al. (2000). Therefore, children's simple conceptual structure of emotions is not only conditioned by a longer-lasting acquisition process. Rather, the simplicity of the conceptual structure of emotions may be due to the fact that abstract words are differently organized than concrete words like animals and body parts.

There is consensus that abstract and concrete entities are considered to be distinct because there is a processing advantage for concrete words over ab-

stract words in variety of cognitive tasks (e.g., Jessen et al., 2000; Kounios & Holcomb, 1994; Paivio, 1991). The most recent account suggests that the abstract–concrete distinction is based on a qualitative difference in the organization of concrete and abstract concepts (Crutch & Warrington, 2005; Crutch, 2006). According to this view, abstract concepts are primarily organized by associative links to other concepts while concrete concepts are organized in terms of semantic similarity. The organization of concepts into taxonomic categories, in which similarity is the main structural principle, is therefore most suitable for concrete entities. As seen in Crowe and Prescott (2003), exemplars of a concrete category are indeed clustered, thus organized, in terms of semantic similarity (e.g., habitat or environmental context in animals).

Looking at the conceptualizations of our abstract concepts of emotions (Figure 3.2), we see that not similarity but rather polarity is an important organizing principle. In children as well as adults, clusters are characterized by antonymous relations like happy–sad or love–hate. This is an intriguing finding supporting a recent account on the representation of abstract concepts. Crutch, Williams, Ridgway, and Borgenicht (2012) demonstrated in a study on types of semantic relationship among abstract words that polarity is the most important information in discriminating the meaning of abstract concepts. Thus, polarity is likely to be a central semantic attribute of abstract words, as is also suggested by our data.

Further insight into how emotions are conceptualized was provided by non-emotion word responses children listed in the free-listing task. The bulk of children's non-emotion word responses, namely, causes and consequences of emotions and emotion-related words, are clearly and closely related to emotion. Also, most other non-emotion word responses referred to some kind of inner or mental states like sensory perception, physical states, and cognitive conditions. These results could be interpreted as providing evidence that abstract concepts are grounded in sensory-motor simulations of situations and introspective experience of internal states as suggested by Barsalou and colleagues (Barsalou,

Santos, Kyle Simmons, & Wilson, 2008; Barsalou & Wiemer-Hastings, 2005). In other words, the conceptualization of abstract words is likely to depend largely on the characteristics of the situations in which they occur. Thus, thinking of the superordinate term emotion elicits members of the emotion category as well as information about, for instance, causes and consequences of emotions and associated emotion-related words. In conclusion, it seems probable that, besides polarity, the conceptualization of emotions is also organized to some extent in thematic and associative relations.

It should be noted that the large number of sensory perceptions in children's responses may arise from language-specific characteristics of the German word for emotion, namely, *Gefühle*. Although the term *Gefühle* clearly refers to emotions, the German verb *fühlen* (to feel) has two different meanings. On the one hand, it is used to express the experience of emotions. On the other hand, the verb *anfühlen* (to feel) expresses sensory impressions. The relatively high proportion of sensory perceptions in children's *errors* could indicate that some children understand the term G*efühle (emotion/feeling),* which refers exclusively to internal states, in both interpretations of the verb *fühlen (to feel)*, which refer to feeling as well as sensing.

With respect to the question of whether the valence terms *good* and *bad* are still used by school-age children to refer to emotions, our data clearly indicate continuing usage. *Good* and *bad* belong to the emotion labels the children named most frequently and in early positions, characteristic for prototypical and salient category members (Schrauf & Sanchez, 2004, 2008). The finding that children who named *good* and/or *bad* listed only a few further emotion words is in line with research by Widen and Russell (2003). They predict, based on findings obtained from free labeling of facial expressions, that the differentiation of the two broad categories *good* and *bad* to refined adult-like emotion concepts proceeds in a systematic manner with the labels *happy* and *sad* emerging as first emotion words used reliably and, for the time being, as representative of other emotions

by young children to refer to facial emotions. Indeed, we found that children who named *good* and/or *bad* were indeed most likely to also name only *sad* and/or *happy* in the free-listing task. Of course, we do not suggest that school-age children naming only these labels do not use other emotion words in their everyday lives. In particular, we assume that production and comprehension of emotion words in children's discourse is more conversational and not yet fully conceptual. As emphasized above, the free-listing task captured more strictly the conceptualization of emotions, since it requires children to have a conscious knowledge of the representatives of a given category—without any situational or discursive hints and restraints. Thus, although children actually use and comprehend a wider range of emotion words, in terms of conscious emotion knowledge, they may only be able to name those labels they have acquired early and used already for a long period to refer to their inner affective states. Thus, our findings reveal that the valence terms are not only precursors for emotion labels in young children as described by Widen and Russell (2003). In school-age children they still considerably shape the conceptualization of the emotion category. This will clearly change in the further course of development, as adults do not name *good* and *bad* as members of the emotion category at all. What may account for the crucial role of valence terms in child development?

The importance of valence and polarity in young and also school-age children may be due to evolutionary functions. It may be important for children to be able to quickly evaluate and name their feelings for things, events, and persons as good or bad. According to Cacioppo and Berntson (1999), individuals indeed have an affect system to quickly discriminate hostile from hospitable events and to promptly decide whether approach or withdrawal is adaptive. They assume that activation of positivity and negativity already takes place at earlier affective processing stages. The affective discrimination into good and bad may therefore occur always as a processing step before an emotion is further differentiated and named (Cacioppo & Berntson, 1999). Thus, the possible evolutionary

significance of always coarsely appraising the significance of stimuli appear to be one reason why the valence terms are still salient “emotion words” in school-age children.

The need to separate positive and negative information has led to two phenomena: a negativity bias and a positivity offset (e.g., Cacioppo & Berntson, 1999; Norris, Larsen, Crawford, & Cacioppo, 2011). The negativity bias helps to consider and avoid detrimental situations by more processing of negative information. Vaish et al. (2008), for instance, reviewed a lot of evidence for a negativity bias in children and assumed that such a bias serves important social-emotional and social-cognitive functions in child development. The positivity offset, on the other hand, causes individuals to stay motivated in order to approach stimuli instead of avoiding them. Norris, Larsen, Crawford, and Cacioppo (2011) demonstrated that individuals exhibit both a positivity offset and a negativity bias presented with affectively evocative stimuli. The strength of each positivity or negativity is related to the pleasantness and strength of the stimulus: Individuals are more likely to respond more positively to mildly emotional stimuli. However, confronted with very negative stimuli, individuals react more strongly than to matched positive events. Referring to the negativity bias and concerning its impact on emotion words, Schrauf and Sanchez (2004) argued that negative emotion labels predominate over positive ones because the cognitive processing triggered by negative emotions is more detailed and systematic than the cognitive processing triggered by positive ones. The authors assume that, due to the negativity bias, there is a common cognitive constraint that affects every language. Our results are in line with this prediction. As already evidenced for English, Spanish (Schrauf & Sanchez, 2004), and Italian (Zammuner, 2011), we also found a significant predominance of negative emotion words in children’s and this even much larger in adults’ German emotion lexicon. Thus, although in terms of the positivity offset, most people are happy most of the time (Diener & Diener, 1996), the negativity bias seems to have a greater impact on the conceptualiza-

tion of emotion. Future research will be necessary to determine, which exact valence parameters of emotional experience shape the conceptualization of emotion in individuals' lexicon.

One limitation of the present study should be noted. The adult sample came from another free-listing study (Wagner et al., submitted for publication). Due to the study objective, the adult participants were asked to list nouns in a two-minute period. Our children's instruction did not include any limitation concerning word class or execution time. One could assume that this variation in the study design could probably account for distorted results.

However, especially aiming at assessing terms that easily come to mind, it is a common procedure to restrict the execution time in free-listing tasks. A two-minute time period for adult participants was already used in previous free-listing studies (e.g., Schrauf & Sanchez, 2004; Smith, Furbee, Maynard, Quick, & Ross, 1995; Thompson & Juan, 2006). Considering only the first few minutes ensures that the items listed belong to the salient members of the given category. Further, concerning word class, there is evidence that adults, in contrast to children, anyway prefer to use nouns when referring to emotions (Vieillard & Guidetti, 2009). Therefore, we assume that the different instructions for children and adults have had no distorting effect on the results.

Conclusion

In sum, our findings add to the literature on children's development of emotion language as well as the structure of the emotion lexicon in general. To the best of our knowledge, this is the first study that examined the structure of the emotion lexicon in middle childhood. The results of this study emphasize that even though school-age children have established a category of emotion, they have not yet acquired a mature emotion lexicon. This applies to both quantitative and qualitative aspects of the emotion lexicon: The number of easily and reliably accessible emotion words is relatively low in school-age children. The underlying

conceptual structure of their emotion category is unsophisticated. Further, we found a significant preponderance of negative emotion words in German children's and adults' productive emotion lexicon. Surprisingly, the valence terms *good* and *bad* still considerably shape the conceptualization of the emotion category in middle childhood. Also, polarity turned out to be an important organizing feature in the conceptual structure of the emotion lexicon. Thus, further work is needed to shed more light on children's emotion lexicon in terms of additional languages and age ranges. It is also worthwhile that future research extends our findings by assessing children's emotion lexicon in its entirety. This will clearly require other methods like analyses of speech corpora of children's everyday discourse with peers and caregiver or parent checklists. This is of special relevance for developmental psychologists as well as emotion researchers. When conducting studies on or developing measures of children's emotion understanding and processing, it is essential to know which emotion words children have already acquired and readily accessible and how their emotion lexicon is constructed.

4 /// Explicit knowledge of shame and pride in school-age children

---

Beck, L., Klann-Delius, G., Eid, M. (2013). *Explicit knowledge of shame and pride in school-age children.* Manuscript submitted for publication.

4.1 Introduction

Conceptualizing social emotions such as shame and pride is an essential building block of socioemotional progress in school-age children. From the very start, children are emotional beings, but it takes a considerable amount of time until they gain explicit knowledge regarding social, self-conscious emotions such as pride and shame. In fact, this is not achieved until the first school years that children do finally acquire explicit knowledge of self-conscious emotions (e.g., Brody & Harrison, 1987; Harris et al., 1987; Harter & Whitesell, 1989). This period of middle childhood is marked by consolidation and extension of cognitive, social, and emotional capabilities (Collins, 1984). More importantly, the first school years are also characterized by significant social changes influencing children's emotional development (Bhana, 2010; Colle & Del Giudice, 2011; Gifford-Smith & Brownell, 2003). While parents are most important in young children's social worlds, peers begin to play an increasingly significant role in middle childhood and start exerting a profound influence on the socioemotional experiences and developments of their age-mates (Isabella & Diener, 2010; Kerns et al., 2006; Parker & Gottman, 1989). Social acceptance by peers and the avoidance of rejection by others are central needs during this developmental period (Gifford-Smith & Brownell, 2003; Newman & Newman, 2011). The increasing focus on acceptance is accompanied by a growing importance of individual performance and social comparison. Whereas young children do not yet pay much attention to social comparison, from the first school years on, children develop a growing ability to evaluate themselves on the basis of comparison between what they themselves are able to do and the performances of peers (Damon & Hart, 1991; Ruble et al., 1980).

At this point in time, self-conscious emotions start playing an essential role. It is assumed that self-conscious emotions have important regulatory and socially adaptive functions. In particular, shame and pride are considered to support the maintenance and even increase of the social status and the avoidance of

rejection. These self-conscious emotions ensure social acceptance and the fulfillment of the fundamental need to belong by reinforcing appropriate and valued social behavior (Baumeister & Leary, 1995; Tangney & Dearing, 2002; Tracy & Robins, 2004, 2007).

Thus, middle childhood is an important developmental stage, in which shame and pride play increasingly important roles with regard to adequate social behaviors; however, it is also not before middle childhood that explicit knowledge of these self-conscious emotions emerges (Lewis, 2000). As complex cognitive abilities such as self-evaluation and theory of mind as well as some extent of socialization experiences are prerequisites for its development, it takes some years until children eventually gain profound knowledge of self-conscious emotions. In the realm of self-conscious emotions, conceptualized knowledge is of special interest as it not only needs to incorporate emotion specific causes and behaviors, but also culture-specific social norms and standards. Therefore, in the present study, we aimed at investigating the explicit knowledge regarding shame and pride in school-age children. Before specifying the research questions of this study, we will describe in more detail what is known about shame and pride and their development until middle childhood.

Shame is an unpleasant, complex emotion that individuals experience when they evaluate their actions and behavior as failures regarding their standards, social rules, and goals within the domains of competence, performance, or morality (Lewis, 2002; Tangney, 1995; Tracy & Robins, 2004). Pride is a pleasant, complex emotion that individuals experience when they evaluate their actions and behavior as successful regarding their goals, standards, and social rules (Lewis, 2002; Tangney, 1995; Tracy & Robins, 2004). The evaluation either depends on externally generated standards by being praised by significant others or by internally generated standards, which have been internalized beforehand (Lewis, Alessandri, & Sullivan, 1992).

Shame and pride are members of the family of self-conscious emotions, which also comprises other social emotions such as embarrassment, envy, and

guilt (Lewis, 2000). What makes these emotions inherently self-conscious is that their elicitation and experience requires the individual to be aware of him- or herself, to have built up a stable self-representation, and to be capable of self-reflection and self-evaluation (Eisenberg, 2000; Lewis, 2000).

Due to the range of these cognitive prerequisites and the need to know culture-specific social standards and rules, self-conscious emotions are considered to be much more complex than the more basic emotions such as fear or surprise (Tracy, Robins, & Lagattuta, 2005). Self-conscious emotions begin to arise only from the second year of life, while the more basic emotions emerge in the first year of life (Lewis, 2000; Tracy et al., 2005). However, the early behavioral expression of shame and pride has to be distinguished from the cognitive conceptualization of these emotions, which can later be verbalized (Harter, 2012). Children aged 4 to 5 years are not able to provide good descriptions of or adequate causes for shame and pride (Harter and Whitesell, 1989). Seven-year-olds are still not able to distinguish between situations that elicit pride versus happiness (Kornilaki & Chlouverakis, 2004). But starting from around 7 or 8 years of age, children supply appropriate knowledge of situations that elicit self-conscious emotions (Harris et al., 1987). However, knowledge about shame seems to be especially hard to acquire. Children between 5 and 10 years still only have partial knowledge about shame (Berti, Garattoni, & Venturini, 2000). For instance, preschoolers attribute shame as a direct consequence of an inappropriate behavior, yet independent from moral and standards (Donati & Levorato, 1999). Only from the age of nine to ten years do children correctly differentiate between shame and guilt (Ferguson, Stegge, & Damhuis, 1991; Olthof, Schouten, Kuiper, Stegge, & Jennekens-Schinkel, 2000).

Convergently, the acquisition of labels for self-conscious emotions takes place later than the acquisition of the labels for more basic emotions. Toddlers start to refer to pride later than they talk about emotions such as happiness and sadness (Bretherton & Beeghly, 1982). In a study by Ridgeway, Waters, and

Kuczaj (1985), investigating children's acquisition of emotion-descriptive language until the age of six, shame and pride are not mentioned. In a study by Ridgeway, Waters, and Kuczaj (1985), investigating children's acquisition of emotion-descriptive language until the age of six, shame and pride are not mentioned. In a study with Italian school-age children, Donati and Levorato (1999) found that third graders sometimes used the emotion word *shame* according to appropriate situations, although they more often rather used the less complex emotion word *fear*. In seventh graders, the use of the term *shame* then increased, whereas the use of *fear* decreased. Thus, the ability to verbally label oneself as either proud or ashamed, is considered to be an important part of emotion knowledge, emerges relatively late.

The development of knowledge of self-conscious emotions is not only contingent on the acquisition of certain cognitive and linguistic abilities, but likewise dependent upon socialization experiences in interpersonal relationships (Harter & Whitesell, 1989; Harter, 2012). Self-conscious emotions inherently involve social relationships between the self and others (Lagattuta & Thompson, 2007). In particular, first experience and development of self-conscious emotions is highly driven by parents' reactions to their children's behavior (Lagattuta & Thompson, 2007). There is empirical evidence that parenting style has an impact on children's early socioemotional development (Kelley, Brownell, & Campbell, 2013; Mills, 2003). Caregivers, and later also other significant others such as peers and teachers, socialize children's moral and social standards by evaluating children's behavior, particularly achievements and failures. These evaluations from an external audience are gradually transformed into stable self-evaluations that build the basis for the elicitation of self-conscious emotions (Schore, 1998; Tracy & Robins, 2004). Evaluations become internalized in the course of a developed theory of mind, that is, when children are able to take the perspective of others and to view themselves through the eyes of others (Harter, 2012; Lewis, 2000). It therefore takes some developmental time until children become more

and more independent from an audience and external standards as they depend further on their own internalized norms. Subsequently, children experience pride and shame, even when there is no audience present (Lagattuta & Thompson, 2007).

This development was confirmed by findings by Harter and Whitesell (1989) who asked children from four to eleven years of age to attribute an emotion to the protagonists of vignettes who committed either a transgression or succeeded in a gymnastic feat. In one condition, the protagonist was alone, in a second a parent was observing. Six- and seven-year old children attributed pride to the achievement situation and shame to the transgression situation, but only when a parent was present. Only from age eight the presence of a parent was no longer required to attribute shame or pride to a protagonist in the shame and pride eliciting vignettes. Harters and Whitesells (1989) results show that in preschoolers an audience is required for the emergence of shame and pride, while in school-age children the audience has mainly been internalized. However, the results of Harter and Whitesell (1989) do not establish whether significant others are still an integral part of school-age children's emotion concepts. It is therefore worthwhile to investigate this question using a different method than providing vignettes.

Regarding explicit emotion knowledge, there is limited data on which elements of emotion concepts are already well established in middle childhood and whether some elements may be more significant than others. It is interesting to investigate whether there are any elements that are mandatory or prevalent in children acquiring knowledge of emotion concepts. Extant literature suggests that at least causes of emotion may be essential in children's development of emotion concepts. Russell (1990) as well as, more recently, Widen and Russell (2011) reported a cause superiority effect in preschool children's emotion concepts. Russell (1990) asked four- and five-year-old children to imagine either a cause or a consequence of a given basic emotion label. The children provided causes to

emotions more easily than consequences. In the study by Widen and Russell (2011), preschool children were better at naming an adequate emotion when they were presented with causes than with consequences. Thus, causes may belong to those elements of emotion concepts that are acquired early and that are already well established in preschoolers. The question arises of whether causes are equally significant in older children's concepts of self-conscious emotions.

In sum, contrary to the more basic emotions such as sadness or anger, self-conscious emotions emerge later in children's emotional development as they are dependent on several cognitive capacities and socialization processes (Mills, 2005). In particular, explicit knowledge of self-conscious emotions emerges considerably later within the first school-years (Harris et al., 1987). Reviewing the literature, several open questions arose with respect to school-age children's knowledge of self-conscious emotions. Therefore, we sought to answer the following questions in this study:

What components of school-age children's conceptualizations of shame and pride have been well established at the beginning of middle childhood? In other words, what kind of information can be easily accessed and linguistically expressed? Are significant others still represented in children's concepts of self-conscious emotions? Does children's knowledge of shame and pride differ qualitatively? Finally, a sample of adults was included as a comparison in the present study to answer the question whether children's explicit knowledge of pride and shame differ from that of adults.

Given the literature review above, we hypothesized that school-age children would have acquired at least a moderate amount of explicit, expressible knowledge regarding shame and pride. Following Russell (1990) and Widen and Russell (2011), we assumed that causes of emotions would be a significant element of children's shame and pride conceptualizations. In terms of significant others, we hypothesized that children's concepts of shame and pride would, contrary to that of adults, to some degree still contain an audience. However, as

middle childhood coincides with increasing internalization processes, we also expected that there would be a decrease of the presence of an audience from younger to older children. In general, based on results of, for instance, Donati & Levorato (1999) we assumed that children's knowledge of pride would be more established than that of shame. Finally, as explicit knowledge of self-conscious emotions is just establishing in first school years (e.g., Brody & Harrison, 1987; Harris et al., 1987; Harter & Whitesell, 1989), we expected the children to perform differently in this task compared to adults.

To properly address our questions, we extended previous research on children's knowledge of self-conscious emotion concepts by applying a free description task. We presented this task as a guessing game in which children had two attempts to freely describe an emotion label to an experimenter who then had to guess the label. The essential feature and particular value of this task is that — contrary to the tasks used in previous studies on emotion knowledge (e.g., Bosacki, 2007; Donati & Levorato, 1999; Salmon et al., 2013; Widen & Russell, 2010) —, is that there were no specific questions or vignettes provided, so that children were unbiased and uninfluenced in accessing their emotion knowledge. Further, the characteristics of the task as a guessing game with a real co-player were expected to motivate the children to mention the most important facts and features of the given concepts. In this way, the data obtained were very likely to give insight into established and readily accessible conceptual elements of school-age children's emotion knowledge.

4.2 Method

Participants

Participants were 166 school-age children (*M* = 7.90 years, *SD* = 0.70): 50 7-year-olds (18 boys and 32 girls), 83 8-year-olds (31 boys and 52 girls), 33 9-year-olds (13 boys and 20 girls). 111 children were in the second grade (44 boys and 67 girls) and 55 children were in the third grade (18 boys and 37 girls). All children spoke German as their first language. They were recruited from primary schools in the outskirts of Berlin, Germany, and came from middle-class socioeconomic backgrounds. Also, twelve (*M* = 22 years, *SD* = 2.37; 6 women, 6 men) monolingual German-speaking undergraduate students attending the Freie Universität Berlin, Germany, served as the adult comparison sample.

Procedure

The task was introduced as a game so that the children were motivated to participate and would not feel under pressure or evaluated. The task was individually administered by a trained examiner in a quiet classroom at the children's school. Children were told that they were about to play a guessing game. As this task was part of a series of tasks within a larger study on children's emotional competence and language competence, children were told that this time children and experimenter would swap roles, so that now the experimenter had to find the right answer. The subsequent instruction was as follows: *After you put the headphones on, you will hear a word that I do not hear. You should not say aloud the word that you have heard, but describe it to me. I will have to figure out what you have heard.* Using this procedure, especially the embedding in a guessing game and the presentation of the target items via headphones, we wanted to ensure that children were encouraged to describe what they think are the important elements defining the word they have heard.

Independent of the accuracy of the child's description, the experimenter always provided two guesses, and the second one was always correct. Also,

children were rewarded regardless of performance. The tasks were tape-recorded and transcribed verbatim by the experimenter. Twelve adults completed the description task as a pencil and paper group task during a seminar at the Freie University, Berlin.

Data analysis

Data were analyzed using content analysis to identify significant categories that were derived inductively from themes that emerged recurrently across children's data. In particular, two coders created coding categories for themes that did not belong in any of the a priori coding categories, which were derived from previous studies of conceptual emotion knowledge (e.g., Harter & Whitesell, 1989; Shaver et al., 1987; Widen & Russell, 2011) such as (1) superordinate; (2) cause of emotion; (3) behavioral response to an emotion; and (4) audience. Coders finally revised all categories, when possible, by combining them to increase clarity and to optimize the economics of the coding schema. All emotion descriptions were coded dichotomously for the mention of each of the emotion specific coding categories. Table 4.1 shows the coding categories and an example for each drawn from children's transcripts. Interrater reliability was computed on 60 randomly selected responses; Cohen's kappa was $\kappa = .93$.

Statistical analyses were computed using SPSS Version 21.0 for Windows. (SPSS Inc., Chicago, IL, USA). Frequencies for content categories were calculated by summing the number of children who mentioned each category. Independent t-tests and chi-square tests were used to test for group differences regarding the number of times each category was identified. McNemar's tests were used to identify the most prevalent categories for each emotion.

Table 4.1. Coding categories of pride and shame descriptions with examples drawn from children's responses

Category	Example
Superordinate	An **emotion,** sometimes you feel that when you got a good grade.
Equal valence emotion	You feel **bad** and you are **angry**.
Acknowledgment	When you win at the Olympics, for example. All **the people clap**.
Being punished	I've done something wrong and I'm afraid that I **get punished.**
Being laughed at	When you get told off and then the others **laugh at you**.
Cause	
Achievement	That is when you **have achieved something** very difficult.
Getting a present	When you receive a **present for your birthday** that you had wished for.
Having an advantage	When you have **something that no one else has**, then you are…
Done something wrong	When you have **done something that you were not allowed to do**.
Lying	When you said something **that is not tru**e.
Failure	When you have **not succeeded**.
Behavioral response	
Boasting	You have won. You also **boast** a lot, when you have won.
Facial and body expression	You win a competition, and you **stick out your chest** and say: "I'm very good!"
Blushing	You are angry. You **blush**, because you broke something.
Withdrawal	It is an emotion. You want to **keep silent and are a bit reserved**.
Crying	You are sad because you did it all wrong. You **withdraw and you start to cry**.
Let others know	When you make something great and then **tell that to anyone**.
Smiling	You get a present and then you **smile.**
Inner speech	And then you think: "**Yes, I am the best.**"
Audience	
Everybody	You did something and **everybody** envies you for that.
Peers	When you have got a Nintendo and you show it to **the friends**, so that they envy you..
Mother	When you have done something bad. And then your **mother** discovers it.
Teacher	You have got a very good grade. The **teacher** praises you.
Father	A boy was running a race and he came in second. And **the dad** was happy for him.
Parents	When you got in trouble and **the parents** scold with you, what do you do then?
Don't know	I **don't know** the word.

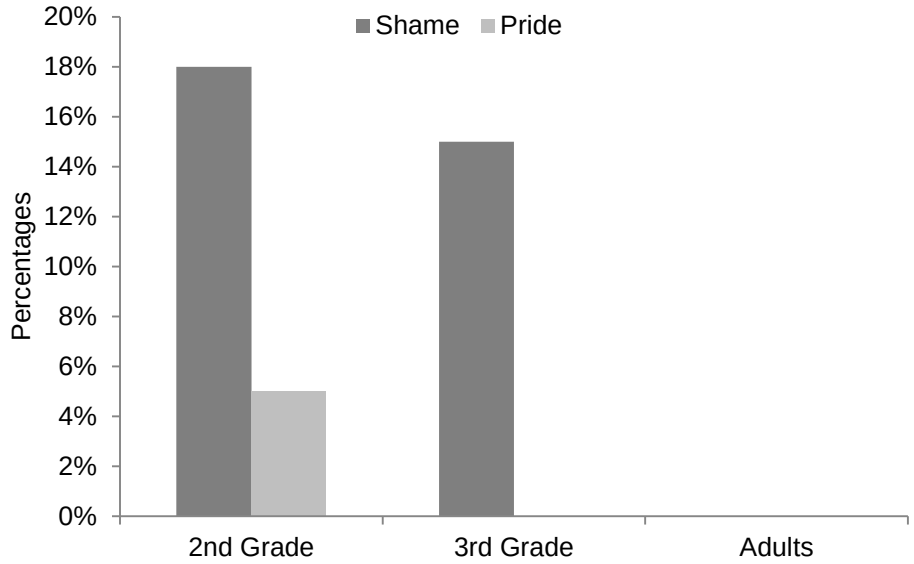
4.3 Results

Descriptive Statistics

On average, children provided *M* = 2.04, and *M* = 1.92 content categories, in their descriptions of pride and shame, respectively. For pride, this roughly corresponds to the average amount of information that adults provided; *M* = 2.25; *t*(22.54) = -1.37, *p* = ns. For shame, adults provided significantly less information than children; *M* = 1.42; *t*(18.53) = 2.29; *p* < .05. Regarding the range, there are large differences between children and adults. Children provided at maximum five (pride) and six (shame) types of information, while adults did not provide more than 3 (pride) and 2 (shame) diverse types of information per description.

The highest frequencies of “don't know” responses were found for shame. Twenty-eight children (17%) did not know the word shame or how to describe it. Concerning pride, only few second graders (5%), did not know how to describe the given emotion term. In third grade, all children were able to provide knowledge of pride, while 15% were not able to provide a description of shame. Also, all adults provided knowledge of shame and pride. Thus, concerning shame, conscious, expressible knowledge is not yet present in all children aged seven to nine years.

Figure 4.1. Percentages of don't-know-answers in descriptions of shame and pride as a function of age



Frequencies for content categories were calculated by summing the number of children who mentioned each category. Table 4.2 shows frequency and percentages of the content categories obtained from children's and adults' descriptions of shame. Children explained shame mainly by reference to *causes* (55%) of shame and by mentioning another *emotion with equal valence* (46%) such as *angry* (19%) or *sad* (21%). The cause for shame most often mentioned was that someone has *done something wrong* (34%; e.g., *You did something wrong and someone has caught you.*). Also, references to *failure* (7%; e.g., *When you are sad, because you got a bad grade.*) and to *lying* (5%; e.g., *When you have said something that was not true.*) were named, but to a lesser degree. Further, there is an equal representation of references to *behavioral responses to emotions* (25%), to an *audience* (22%) and to the information that shame belongs to the *category of emotion* (superordinate, 22%; *e.g., It is an emotion.)*. The most often mentioned *behavioral response* to shame was *withdrawal* (14%; *e.g., One prefers to withdraw.)*. References to *facial and body expression* (6%; e.g., *Then you pull a face.*), *blushing* (5%; e.g., *One get a very red face.), crying (*4%; e.g.

Maybe one starts to cry.), and *regret (*2%*; e.g., He wished it had not happened.)* were also mentioned. The remaining categories involved characteristics that are implicitly related to the theme *audience* such as *being punished* (16%; e.g., *One has to stand in the corner.)* and *being laughed at* (7%; e.g., *The others laugh at you.*). Thus, taking all references related to an audience together, more than one third of the children (39%) mentioned the possible presence of others as an inherent feature of shame. In sum, shame was commonly described as a consequence of having done something wrong that was witnessed by others, and results in an unpleasant feeling and the wish to hide or disappear.

For adults, however, a different pattern emerges. In general, adults' explanations of shame comprised fewer diverse characteristics. The vast majority of the features named by adults fell into two categories: Firstly, adults commonly referred to *causes* of shame (83%), wherein *having done something wrong* was the only cause that adults mentioned. Secondly, in their explanation of shame adults focused the information that shame belongs to the *category of emotion* (58%). Adults mentioned only three further content categories. References to *behavioral responses* to emotions *(17%, each regretting)*, to *being punished (8%)*, and to *being anxious (8%)* were very infrequently named in addition to the main characteristics *causes* and *category emotion*. Also, adults did not refer to an audience in their descriptions of shame. In summary, adults commonly explained shame as being an emotion that arises when one has done something wrong.

Table 4.2. Frequencies (N) and percentages (%) of content categories in descriptions of shame by children and adults

Category	Children (*N* = 166)		Adults (*N* = 12)	
Shame	*N*	*%*	*N*	*%*
Superordinate	37	22	7	58
Equal valence emotion	76	46	0	0
Being punished	26	16	1	8
Being laughed at	11	7	0	0
Cause	91	55	10	83
Done something wrong	56	34	10	83
Lying	8	5	0	0
Failure	11	7	0	0
Behavioral response	41	25	2	17
Withdrawal	23	14	0	0
Facial and body expression	10	6	0	0
Blushing	9	5	0	0
Crying	6	4	0	0
Regret	4	2	2	17
Audience	37	22	0	0
Mother	10	6	0	0
Peers	9	5	0	0
Everybody	5	3	0	0
Teacher	5	3	0	0
Parents	5	3	0	0
Father	0	0	0	0
Don’t know	28	17	0	0

Frequencies and percentages for all content categories that were mentioned in descriptions of pride by children and adults are depicted in Table 4.3. Describing pride, the vast majority of children referred to *causes* of pride (86%) and mentioned another *emotion word with equal valence*, in particular *being happy* (45%). Within the *achievement* category two broader themes emerged frequently that covered more than 80% of the achievement codings, and also more than 70% of all causes mentioned. Most children stated that pride arises after having *won a competition* (40%), or having *got a good grade* in school (25%). Although less frequently, children also explained that one feels pride, when one *receives a present* (6%; e.g., *When you get the toy that you've always wanted.*) and *when one has an advantage* or got something better (5%; e.g., *If you get a better present than your sister did.*). Children also based their descriptions of pride, to equal distributions, on *behavioral responses* to pride (18%), the presence of significant others as an *audience* (17%), and references to some kind of *acknowledgment* (18%) such as *getting a cup* (10%) or *applause* (3%). Within the content category *behavioral responses* no predominant behavior was evident. Children relatively equally often referred to *facial and body expressions* (4%; e.g. *Then you walk around fully upright.*), to *boasting* (5%; e.g., *Some are boasting then.*), to *inner speech* (5%; e.g., *Then you think, "Haha, I'll show you!"*), to *let others know* about a success (3%; e.g., *Then one tells it to anyone*.), and finally to *smiling* (2%; e.g., *One smiles a lot.*).

As with shame also in descriptions of pride there were some elements related to an audience such as *acknowledgment*. However, in the case of pride it was partly associated with an active effort by the subject experiencing pride to gain an audience through boasting or letting others know. Taking all references related to an audience together, more than half of the children (51%) mentioned being witnessed by others as an inherent feature of pride. In sum, the children commonly described pride in terms of an achievement that was witnessed or even acknowledged by others, and that results in a pleasant feeling. As with

shame, adults' descriptions of pride showed less variation among content categories. All adults referred to achievement as a cause of pride. In addition, one third of adults mentioned that pride is an emotion. A quarter of adults' descriptions contained references to acknowledgment or emotions with equal valence. However, adults did not provide behavioral responses to pride and they also did not refer to witnessing others in their descriptions of pride. In summary, adults commonly described pride as being an emotion that is experienced when one has achieved something.

Table 4.3. Frequencies (N) and percentages (%) of content categories in descriptions of pride by children and adults

Category	Children (*N* = 166)		Adults (*N* = 12)	
Pride	*N*	*%*	*N*	*%*
Superordinate	24	14	9	75
Equal valence emotion	75	45	3	25
Acknowledgment	30	18	4	26
Cause	142	86	12	1
Achievement	128	77	12	1
Receive a present	10	6	0	0
Advantage	8	5	0	0
Behavioral response	30	18	0	0
Facial and body expression	7	4	0	0
Let others know	5	3	0	0
Boasting	9	5	0	0
Inner speech	8	5	0	0
Smiling	3	2	0	0
Audience	29	17	0	0
Everybody	7	4	0	0
Peers	7	5	0	0
Mother	9	5	0	0
Teacher	1	0	0	0
Father	2	1	0	0
Parents	4	2	0	0
Don’t know	5	3	0	0

Essential elements of shame and pride concepts

With respect to their frequencies, there are content categories that are likely to be conceptually central. For shame as well as pride in children and adults these are by far the *causes* of the respective emotion, that is in terms of shame *having done something wrong*, and for pride *having achieved something*. In fact, children referred significantly more often to causes than to all other mentioned elements of shame or pride (McNemar test, $p < .001$), except for emotions with equal valence in shame (McNemar test, p = ns).

The second most frequently mentioned category among children is the subjective feeling of the given emotion represented by basic negative emotions such as *sad* in the case of shame, and by positive emotions such as *happy* in the case of pride. In children's descriptions of shame as well as pride, this concept element was named significantly more often than other elements ($p < .000$), except references to causes.

The predominance of these two elements, causes and emotions with equal valence, is also evident from Figure 3.2, depicting the co-occurrences of elements among children's descriptions of pride and shame, broken down by number of elements per description. Across all different combinations, *causes* and *equal valence emotions* are most often combined; occurring together in more than 25% of all definitions of shame, and in 37% of all children's definitions of pride.

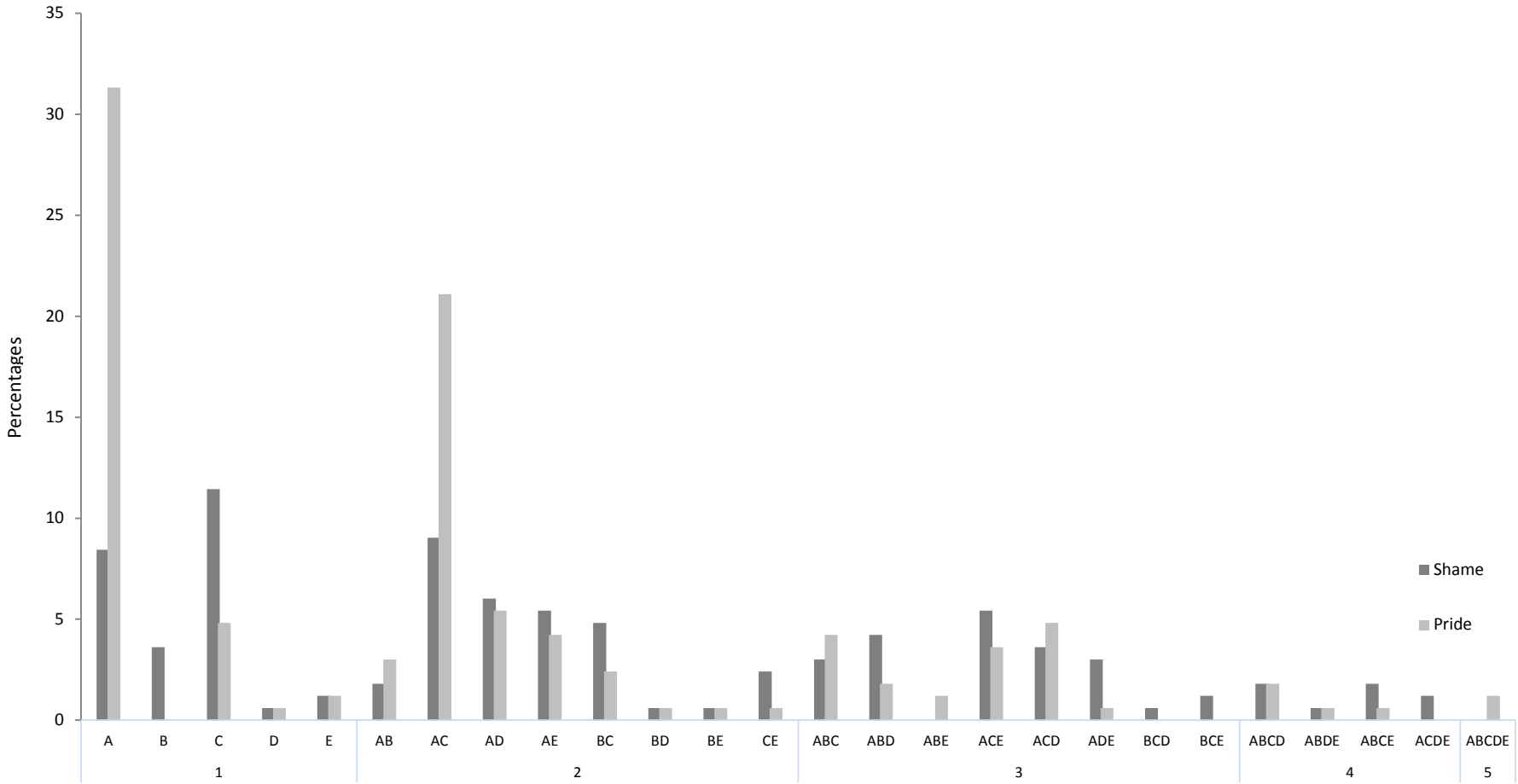
More importantly, when only one feature was provided, it most often was an emotion word with equal valence in the case of shame. For pride, however, when only one element was named, it most often was the reference to causes of pride. Other elements such as audience or superordinate were mentioned as the sole content information by only one percent of the children for both pride and shame.

What about the composition of concepts of shame and pride? Do we find common combinations of elements in individuals' descriptions of shame and

pride? Figure 4.2 also shows that less complex descriptions consisting of only one or two features of the target emotion are predominant, covering more than 50% of all responses. Only around 20% of children's descriptions of shame or pride included three emotion features. A combination of four or five features together is found in less than 5% of all descriptions of shame and pride. The distribution of content categories in the particular combinations partly varied in part depending on the emotion given.

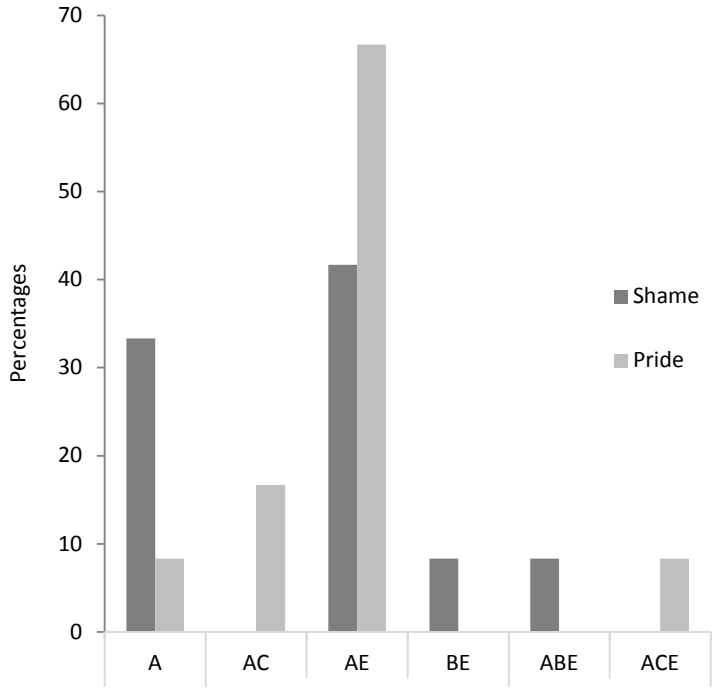
It is particularly striking that more than 30% of children's descriptions of pride only consisted of a cause for pride. Moreover, more than 50% of all pride explanations are covered by responses that contained either only a cause or a cause and, in addition, an emotion word with equal valence. In terms of shame, however, there is no prevalence of particular combinations. Rather, there is much more diversity in the combination of types of information used.

Figure 4.2. (Co-)Occurrences of the content categories cause, behavioral response, equal valence emotion word, audience, and category emotion in children's descriptions of shame and pride, broken down by number (1–5) of elements per description. A = cause; B = behavioral response; C = equal valence emotion; D = audience; E = superordinate.



Again, a different pattern emerges for the sample of adults. As Figure 4.3 depicts, only six diverse combinations of information types were used by adults to describe shame and pride. Further, there was a predominance of two elements: references to causes and the information, that shame and pride belong to the superordinate category of emotion. The co-occurrence of references to these two elements covered already more than 40% for shame, and almost 70% of adults' pride responses. In adults, only references to *causes* of both shame and pride occurred as a solely used element. The co-occurrence of references to *causes* and *emotions with equal valence* that was most often used by children only occurred in adults' descriptions of pride. Thus, children and adults differed considerably in the distribution and combination of pride and shame elements.

Figure 4.3. (Co-)Occurrences of the content categories cause, consequence, equal valence emotion word, audience, and category emotion in adults' descriptions of shame and pride broken down by number (1–3) of elements per description. A = cause; B = behavioral response; C = equal valence emotion; D = audience; E = superordinate.

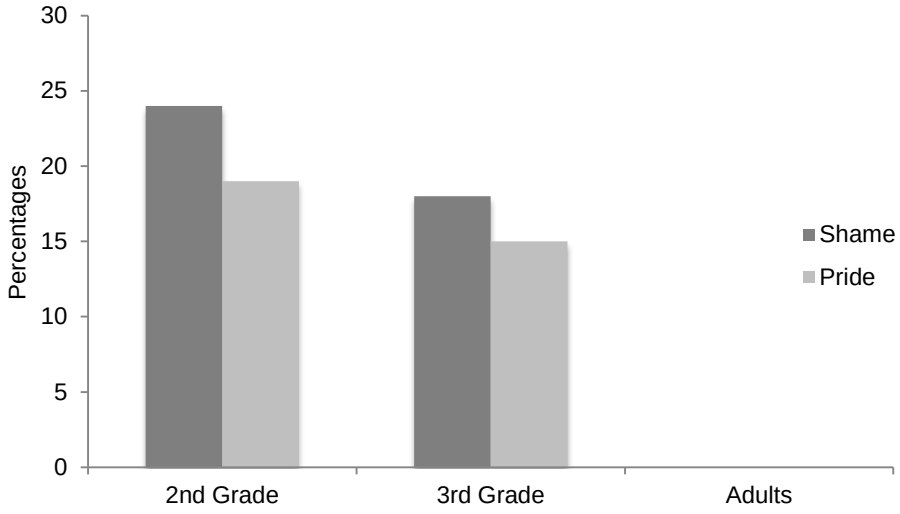


Presence of an audience

We predicted that children would refer to an audience when describing shame and pride. As expected, significant others were frequently mentioned by children. With a mean score of *M* = .22 for shame and *M* = .17 for pride, the presence of an audience was named as often as the information that shame or pride belongs to the category of emotion. We further examined which significant others predominantly occurred in children's responses. With a distribution of each around 5%, for both emotions, *mother*s and *peers,* were most often mentioned as audience. To a less degree, children also referred *everybody*, *teacher* and more generally to *parents*. *Fathers* were not explicitly represented in children's description of shame. Convergently, only two children mentioned a *father* when describing pride.

In particular, we hypothesized that there would be a decrease of the presence of an audience from younger to older children. Although Figure 4.4 shows that the proportion of references to significant others slightly decreased from second grade to third grade in our sample, this change was not statistically significant; $\chi^2 = (1, 166) = 0.80$, p = ns for shame; $\chi^2 = (1, 166) = 0.49$, p = ns for pride. Adults, finally, did not refer to an audience at all.

Figure 4.4. Frequency distribution of references to an audience in descriptions of shame and pride by children and adults



4.4 Discussion

The present study aimed at investigating the conceptual knowledge regarding social, self-conscious emotions in school-age children. In particular, using a free description task, our study provided detailed information on children's explicit, verbally expressible knowledge concerning shame and pride. As hypothesized, the majority of the children aged seven to nine years had acquired explicit knowledge with regards to shame and pride, indicated by their ability to describe these self-conscious emotions.

Content analyses revealed that children's conceptualizations of shame and pride are already quite well established and centered around few conceptual elements such as causes of and behavioral responses to emotions, audience references as well as superordinate information and other emotion words with equal valence. The vast majority of children referred to causes (e.g., *having done something wrong* for shame, and *having achieved something* for pride), and the feeling state of the given emotion represented by referring to other emotion words with equal valence (e.g. *sad* for shame, *happy* for pride) when explaining shame and pride. Children referred significantly more often to these two conceptual elements than to all other mentioned elements of shame and pride.

Causes of emotions and the feeling component (represented by mentioning emotion words with equal valence in children) were most established and central in children's conceptualizations of both self-conscious emotions in middle childhood and can thus be assumed to be essential emotion knowledge. A further finding supports this assumption: In subjects who provided only one element, this was predominantly the use of emotion words with equal valence for shame and causes for pride. For both emotions, the other elements such as audience or superordinate information were very rarely mentioned as the only conceptual information. Thus, we conclude that causes of shame and pride as well as the feeling component are the most essential elements in school-age children's concepts of

the self-conscious emotions shame and pride.

The predominance of causes in our study is consistent with findings by Russell (1990) and Widen and Russell (2011) who suggested that they are an essential and early acquired element of children's conceptualizations of emotions. In fact, it has been shown that two-year old toddlers already start to refer to causes of emotions in their discourse (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). Thus, it is not surprising that our results indicate that school-age children know quite well that there is a cause that elicits specific emotions. The special role of causes in children's conceptual development has already been underlined by the finding that maternal explanations of causes of emotions have been shown to be a better predictor of children's emotion knowledge than the overall frequency of emotion talk (Van Bergen & Salmon, 2010). In a broader sense, children are known to actively seek causal information and even apply specific conversational strategies to obtain it (Bartsch, Campbell, & Troseth, 2007; Frazier, Gelman, & Wellman, 2009). Further, Booth (2009) showed that word learning in young children is positively influenced by the availability of causal information. Thus, it appears that the cause superiority effect described by Widen and Russell (2011) is not specific to the conceptualization of emotions, but rather represents a general characteristic of cognitive development (e.g., Mascalzoni, Regolin, Vallortigara, & Simion, 2013; Oakes & Cohen, 1990).

In descriptions of pride, two broader themes accounted for almost three quarters of all pride causes recorded. Most children stated that pride arises after having won a sport competition, or having got a good grade in school. Harter and Whitesell (1989), who performed a content analysis of 4- to 11-year-olds' descriptions of shame and pride, obtained very similar results. As in our experiment, the vast majority of children in their study referred to situations related to athletic or academic competence. This prevalence of the two topics in children's conceptualizations of shame and pride is not surprising, given that particularly the school environment provides a wide range of important occasions for cognitive, physical,

and socioemotional tasks and provides clear definitions of what is considered right and wrong or good and bad. Children are continuously compared, judged, and evaluated on the basis of how well they perform tasks in school (Charlesworth, Wood, & Viggiani, 2008; Swain, 2003), which might explain why sports and school settings are prototypically represented as causal contexts for the occurrences of shame and pride in school-age children.

However, a significant proportion of children did not make reference to any kind of achievement, but explained that pride occurs when one received a present, had an advantage over others, or was given something better than others. These causes deviate from the conventional definition of pride that emphasizes the personal contribution to a pride eliciting success (e.g., Lewis, 2002; Tangney, 1995; Tracy & Robins, 2004), thus indicating that in some children aged seven to nine years pride is not conceptually well distinguished yet from happiness. This finding is in line with studies by Graham (1988), Harter and Whitesell (1989), and Thompson (1987) who also found that it was not before eight to ten years of age that children were able to differentiate between situations that elicit pride versus happiness. When pride and shame are not conceptually well distinguished yet, children tend to attribute pride to situations with positive outcomes regardless of whether one was personally responsible for the specific achievement or success. Thus, although most children were able to provide adequate causes of pride, there were still some children whose conceptualizations of pride were not yet appropriate.

In descriptions of shame, there was a greater variability in children's causes for shame, so that, contrary to the causes of pride, no predominant themes emerged. Most children simply said that shame occurs when one does something wrong without further determining the situational context. Other causes mentioned were misconduct such as lying, failure (e.g., when one gets a worse grade than others), weakness (e.g., crying in front of friends), and embarrassing mishaps (e.g., peeing in one's pants). This finding further supports the

assumption that shame is first conceptualized as a consequence of general undesirable behaviors in children (Donati & Levorato, 1999; Tangney & Dearing, 2002; Tracy & Robins, 2004).

Concerning causes of shame, our findings differ from the outcome of a previous investigation. American children, aged four to eleven years, who were asked to name causes for shame in a study by Harter and Whitesell (1989) predominantly named active social transgressions against others such as damage to someone else's property or harm to another person. In this study, other causes for shame, such as lack of competence or weakness, were rarely mentioned. This raises the question for future research of whether there are language-specific differences in children's conceptualizations of prototypical shame causes. Although purely based on personal experience, we suggest that explicit references to shame are quite infrequent in German children's everyday life as is it nowadays frowned upon to request children to be ashamed in situations. It is possible that American caregivers in the 1980s (when the study by Harter and Whitesell (1989) was implemented) more frequently used phrases such as „Shame on you!" or „You should be ashamed!" as reaction to social transgressions so that these situations became prototypical and early conceptualized. However, these are speculations. Unfortunately, there is only little literature on the relation between the frequency and contexts of use of emotion terms in children's verbal input and the development of their emotion concepts. It would be worthwhile for cross-linguistic studies to investigate language-specific aspects and properties.

The predominance of emotion words with equal valence only emerged for children's descriptions of shame and pride, but not adults'. Children frequently referred to being sad or angry in explaining shame, and to being happy in explaining pride. They thus seem to be aware that shame and pride are internal, affective states. Adults, however, rarely mentioned a subjective feeling state, instead the vast majority of adults referred to the superordinate category emo-

tions. It appears that this feeling component gives way to referring to the superordinate category with further linguistic development. The ability to provide adequate definitions in general develops gradually from the early school years through adulthood (Benelli, Arcuri, & Marchesini, 1988). Initially, children rely on a descriptive and narrative style in defining words. Based on their increasing experience with the canonical, more formal way of defining that is predominantly taught in school and commonly provided in dictionaries; older children and adults tend to provide abstract definitions. These are typically characterized by a superordinate term (Benelli, Belacchi, Gini, & Lucangeli, 2006). Hence, it may be that the predominance of superordinate terms in adults' descriptions does not necessarily need to be an indication of different conceptual representations. After all, asserting that shame and pride belong to the category of emotion as well as referring to semantically equal emotion words implies that there is a conceptual awareness of the affective content of shame and pride.

Although to a much lesser extent, children also based their descriptions of shame and pride on further conceptual elements. One such element consists of the behavioral responses of feeling shame and pride. In terms of reactions to pride, children mentioned facial and body expressions such as puffing out one's chest, boasting, letting others know, and inner speech. The most frequently mentioned behavioral response to shame was withdrawal. Children's conceptualized behavioral responses to shame and pride match those described in the theoretical literature (Lewis, 2000; Tangney & Dearing, 2002).

One question in this research was whether significant others are still represented in children's concepts of self-conscious emotions. As the literature review suggested that significant others are crucial to the development of self-conscious emotions at least until middle childhood, we predicted that school-age children would refer to an audience when describing shame and pride. As expected, significant others were still mentioned by school-age children. Even when a bystander was not explicitly mentioned, there frequently were implicit references to an audience, for instance when children stated that one is likely to be

punished in shame experiences, or that one is acknowledged by receiving a medal or trophy in pride eliciting situations. We thus conclude that significant others are not only essential in building conceptualizations of self-conscious emotions by providing culture-specific social standards and norms, but they also become an integral part of concepts of self-conscious emotions themselves, at least until the first years of middle childhood.

In detail, for both emotions, children most often referred to their mothers and peers. Regarding the literature on caregivers' impact on children's socioemotional and self-development (Alessandri & Lewis, 1993, 1996; Belsky, Domitrovich, & Crnic, 1997; Lagattuta & Thompson, 2007), it is not surprising that mothers are an essential element in school-age children's conceptualizations of shame and pride. Also, the frequent occurrence of peers as significant others corroborates research emphasizing the increasing importance of peers on children's socioemotional experiences and developments in middle childhood (Gifford-Smith & Brownell, 2003; Isabella & Diener, 2010; Kerns et al., 2006; Newman & Newman, 2011; Parker & Gottman, 1989). After children enter school, social comparison increases as children interact in more competitive situations, such as academic and athletic activities (Ruble & Frey, 1991). Thus, peers seem to function as important reference points for children's evaluation of their own achievements or failures and as such form an inherent part of their emotion concepts.

Interestingly, there was a large discrepancy between the occurrence of mothers and fathers. Fathers were severely underrepresented in children's description of pride and shame. This finding is in line with a previous study by Dunn and Hughes (1998) showing that children very rarely referred to their fathers as sources of emotional experiences such as happiness. This raises the question of whether this finding is due to variation in maternal and paternal parenting practices. Indeed, there is empirical evidence that fathers and mothers differ in their parenting behaviors and values (e.g., Lamb, 1997; Lewis & Lamb, 2003; Parke,

2002). In particular, fathers generally are less available for children and interact less with them (Lewis & Lamb, 2003). Thus, mothers may have a central role in children's conceptualization of emotions such as shame and pride as they are the ones who predominantly monitor, appraise, and evaluate children's positive and negative behavior in their first years of life. Unfortunately, we cannot discuss specific impacts of fathers on children's emotional development as existing studies investigating parental influences on children's socioemotional development have focused almost exclusively on maternal parenting practices (Harter, 2006). For future research, it would be worthwhile investigating contributions of the specific interpersonal relationships to children's developing conceptualizations and knowledge of social emotions.

Concerning significant others, we also hypothesized that there would be a decrease of the presence of an audience from younger to older children. Although there was a slight decrease from second to third grade in our sample, this change was not statistically significant. However, our hypothesis is true for a wider age range: Children and adults clearly differed in mentioning an audience, as children frequently referred to other people as bystanders of a shame or pride eliciting situation, whereas adults did not refer to an audience at all. As the literature suggests, it is not until first school years that children know that one feels shame or pride even in the absence of an observing other (Harter & Whitesell, 1989). Our findings further support that children, aged 7 to 9, may have only partially internalized the culture-specific norms and standards against which their behavior is (self-)evaluated, so that the presence of significant others still plays an important role in their experience and conceptualization of social emotions.

With regard to the question of whether there are substantial differences between children's knowledge concerning shame and pride, our results suggest that the knowledge of pride is established earlier than that of shame. This is evident in the finding that the highest frequencies of "don't know" responses were found for shame. While almost all children were able to immediately provide a

description of pride, more than 15 percent of the children stated that they did not know the word shame – or how to describe it. Thus, it is evident that some children aged 7 to 9 years still have poor explicit knowledge concerning conceptual elements of shame, including the emotion label. This result further supports previous findings, for instance by Berti et al. (2000) and Donati and Levorato (1999), suggesting that it takes children a comparatively longer time to establish explicit knowledge of shame. Consequently, there must be something about shame that makes it inherently more difficult to establish. One explanation could be that shame is conceptually more complex than pride, for instance because it has to be conceptually distinguished from another self-conscious emotion, namely guilt (Donati & Levorato, 1999; Ferguson, Stegge, & Damhuis, 1991; Olthof et al., 2000).

As a further explanation we propose a possible influence of frequency on the establishment of explicit conceptual knowledge. Unfortunately, we have no empirical indication of how often children experience pride or shame until middle childhood. However, one can assume that at least conversations about pride experiences outweigh conversations about children's experiences of shame. Especially through conversations about emotions with their caregivers children learn about the labels, causes, and consequences of emotions (Denham & Auerbach, 1995; Fivush et al., 2006). But, is shame just as often topic of conversations as pride? Consistent with the literature (e.g., Lewis, 2000), we found that pride is accompanied by the wish to tell others, whereas shame leads to concealment, withdrawal, and the wish to hide. Thus, it is more than likely that children engage in less communication about shame experiences with others. This assumption is supported by word frequency data (accessible via http://dlexdb.de; Heister et al., 2011) for the German language, indicating that the term pride is six times more frequent than the term shame. Given that, besides experiential information, language provides the information from which one builds explicit conceptual knowledge (Vigliocco, Meteyard, Andrews, & Kousta, 2009), it is quite conceiva-

ble that less talk about shame could be one reason why it is harder for children to acquire explicit knowledge of shame.

Comparing children and adults, we found that in first school years the descriptions of shame and pride of children differ in various aspects from those of adults. Adults' explanations of shame comprised less overall information and showed less diversity and variety in content categories for shame and pride. The vast majority of adults' descriptions comprised two features, namely causes of shame and pride and their superordinate category term, while references to behavioral responses or to an audience were rarely mentioned by adults. Both groups referred most often to the causes of emotions, indicating that these are the most prototypical and essential conceptual elements across both age groups, at least concerning the self-conscious emotions shame and pride.

Unlike the children, adults second most frequently made reference to the superordinate category term of shame and pride. As described above, one possible explanation of these differences regarding the nature, amount, and variability of information between the age groups could be that adults and children use different approaches to explaining. We observed that most children embedded their explanations of shame and pride in situational contexts, involving complex settings and action sequences. This type of description is per se associated with more information. Adults, however, provided formal definitions, characterized by a high degree of generalization and a reduction to essentials. We assume that it could be due to children's narrative explanation style that children included more elements in their descriptions, including the reaction of others to the emotion eliciting cause (e.g., punishment for shame, acknowledgment for pride). We hypothesize that the generalization and conceptualization of shame and pride is conditional to the increased occurrence of shame and pride eliciting experiences. In addition, the frequent exposure to formal definitions during schooling and by reading of non-fiction literature, children get more and more used to the formal way of describing terms. Thus, it is possible that not the emotion concepts them-

selves differ between adults and children, but their pragmatic ability to express their knowledge linguistically.

Future research on children's emotion knowledge should therefore also acquire data on verbal, for instance, children's lexical and narrative abilities in order to enable a differential analysis of results. The ability to verbalize emotion knowledge requires explicit representations of emotion concepts, but also and equally important linguistic competence to adequately express the explicit knowledge. Of course, this caveat applies also to our study. Children's verbal abilities may and probably will have influenced the results. In this as well as in most studies on children's emotion knowledge, researchers rely on tasks that inherently require the child to understand or provide linguistic information (Lewis, 1991). In addition, up to now, it was rarely taken into account that most tasks used to investigate children's emotion knowledge are offline tasks, with no actual emotion eliciting stimuli, but only language in the form of emotion labels or vignettes as retrieval cues for semantic representations. However, it is difficult to design methodological alternatives, especially nonverbal approaches. As one caveat, we note that it is important to take into account that in this study children's knowledge was not exhaustively measured. Because a language-based task was employed, findings remain limited to children's verbally accessible emotion knowledge. However, we emphasize that tasks that require language nonetheless have a great potential to shed light on children's emotion knowledge. Since most conceptual knowledge is assumed to be linguistically encoded (Mandler, 2004a), semantic knowledge is mainly accessible to consciousness and therefore linguistically expressible (Dienes & Perner, 1999). In our view, a free description task, as used in this study, is an appropriate means of investigating explicit conceptual knowledge. Contrary to previous studies on emotion understanding (e.g., Donati & Levorato, 1999; Dunn & Hughes, 1998; Harter & Whitesell, 1989), children in our study were not asked to explain specific features, for instance causes or consequences, of emotions. Rather, children were

free to describe whatever they thought would best describe shame and pride. As this procedure allows us to examine which elements of children's emotion scripts are most established and quickly and easily accessed, we conclude that the elements identified as most essential in our data are very likely to be central aspects of children's emotion concepts, at least in terms of self-conscious emotions such as shame and pride.

Further, another caveat is warranted. Concepts of social emotions such as shame and pride inherently include social concepts comprised from culture-specific social norms, rules, and values as internalized standards of evaluation (Lewis, 2000). Cultural studies have shown that there are remarkable differences in emotional appraisals and behaviors (for an overview see Mesquita & Frijda, 1992). This applies especially to self-conscious emotions (e.g., Eid & Diener, 2001; Furukawa, Tangney, & Higashibara, 2012; Mesquita & Karasawa, 2004). Thus, it is highly likely that concepts of self-conscious emotions differ, maybe even considerably, among children in different cultures (Russell, 1991). This may make it difficult to generalize our results to other cultures. More developmental cross-cultural studies are needed to further elucidate the impact of culture-specific aspects on children's knowledge regarding self-conscious emotions.

A limitation of our study was the small sample size in the adult group. In addition, for economic reasons, the mode of the task differed between oral for children and written for adults. Children were engaged in a guessing game setting and interviewed face to face, whereas adults completed a pencil-and-paper form. For more clarity, future research should attempt to use larger adult samples and to administer exactly the same method.

The current study adds to the literature on children's later development of emotion knowledge, which is an important component of emotional competence (Denham, 1998), by examining school-age children's conceptual knowledge of shame and pride. Our results generally indicate that children have already established some explicit knowledge of shame and pride in middle childhood. The

most central finding was the predominance of causes and semantically equal emotion words in children's conceptualizations of the two self-conscious emotions. The present study confirms previous findings and contributes additional evidence on the centrality of causes in children's developing understanding of emotions. The persisting relevance of a witnessing audience in school-age children's understanding of shame and pride was another key finding. Improving our knowledge of conceptually central elements of children's emotion concepts at that age could inform interventions for children with socioemotional difficulties. This is particularly true for social emotions as limited emotion knowledge poses the risk of less social acceptance and lower social functioning.

5 /// General discussion

The purpose of the present dissertation was twofold. First, I aimed to examine the relationship of language competence and emotional competence in middle childhood by considering various facets of both competences. Second, using language as a window into the process of conceptualization and knowledge representation, I investigated children's emotion lexicon and their conceptual knowledge of the self-conscious emotions shame and pride. For these purposes, three studies were conducted. The period of middle childhood was selected for study because there is currently limited understanding of emotional development beyond preschool years, although children undergo remarkable cognitive, socioemotional and linguistic advancements beyond preschool age. Below, the findings of the three studies will be summarized and discussed. Furthermore, implications for theory and practice will be derived.

5.1 Summary of the results

In Chapter 2, the general relation between various facets of language competence and emotional competence was examined. While previous investigations have produced a wealth of knowledge regarding the developmental aspects of either language competence or emotion competence, these factors have rarely been studied conjointly. To elucidate the interplay of competence development in these two realms, an interdisciplinary approach combining multiple linguistic and emotional measures was used. Although the collection of measures did not represent the entire set of components of each construct, it covered a broad range of relevant emotional and linguistic abilities. In detail, five measures represented language competence: (1) receptive vocabulary; (2) verbal fluency; (3) literacy; (4) narrative structure, and (5) the narrative use of evaluative devices. Four measures represented emotional competence: (1) productive emotion vocabulary; (2) declarative emotion knowledge; (3) awareness of mixed emotions, and (4) facial emotion recognition. Based on previous research on pre-

school children, I predicted that language competence and emotional competence would be positively related in middle childhood. Particularly, I aimed at determining which of the selected components of language competence and emotional competence contribute most to this relation.

The analysis of bivariate correlations primarily revealed significant positive correlations between emotional and language measures. There were no negative correlations. This is in line with the hypothesis that there is a meaningful relationship between emotional competence and language competence. The highest correlations emerged between receptive vocabulary and declarative emotion knowledge as well as receptive vocabulary and awareness of mixed emotions (r = .45 and r = .44), each indicating that the expansion of children's lexicon goes hand in hand with advanced abstract and expressible knowledge regarding emotions.

Moreover, children's lexical ability correlated moderately with productive emotion vocabulary (r = .33) and facial emotion recognition (r = .32), pointing to its role in the development of basal, socially relevant skills in the realm of emotion recognition and expression. Literacy and narrative structure correlated significantly with all of the emotional measures as well. Thus, in conjunction, the data indicate that emotional competence is meaningfully related to language competence in middle childhood. Especially receptive vocabulary and literacy are strongly related to components of emotional competence.

As the subjects of the study differed in age and gender, I tested whether these factors were correlated with language competence and emotional competence. Significant, positive correlations between age and productive emotion vocabulary, awareness of mixed emotions, literacy, and narrative structure emerged, indicating an age effect with respect to these variables. Similarly, a gender effect was established, in that male children scored lower on awareness of mixed emotions and evaluative devices

Due to these overlaps in variance, partial correlations between the nine

emotional competence and language competence measures controlling for age and gender were computed. The resulting partial correlation coefficients did not differ greatly from coefficients derived from zero-order correlations, proving that the relationships between these two competences are not mainly due to common effects of age and gender. Nevertheless, age and gender effects were controlled in all further analyses.

In order to test if the empirical data are indeed best explained by two independent latent variables representing emotional competence and language competence, a confirmatory factor analysis was carried out. While the model fits the data very well, it was not the only viable factor model. As the two factors were very highly correlated with each other, a one-factor solution emerged as a slightly better alternative. In the two-factor model, the factor emotional competence was best represented by the observed variables declarative emotion knowledge and awareness of mixed emotions. On the factor language competence, the variables receptive vocabulary and literacy loaded the highest. When considering the one-factor solution, all measured variables demonstrated significant factor loadings on this general factor. The two variables receptive vocabulary and declarative emotion knowledge had the highest values and are thus the best single indicators of this general ability.

As children's lexical ability had emerged as the language variable explaining the most variance, the development of the emotion-specific subset of the verbal lexicon was further studied in the study presented in Chapter 3. While previous studies have often acknowledged the importance of language ability for the development of emotional competence in general, these studies did not explicitly establish the level of lexical development in the realm of emotions. In particular, when considering middle childhood no empirical investigation of the emotion lexicon was available. I therefore followed up on the results of Study 1 by measuring the extent of the emotion lexicon actively available to children aged seven to nine years. The measure consisted of a free-listing task, in which children and adults

were asked to name as many emotion words as they knew. As expected, children at the target age range showed a significantly more limited emotion vocabulary than adults, with a mean list length of four to five instead of eight words. Across subjects, children listed a total of 52 and adults a total of 121 diverse emotion words. The terms *sad* (traurig) and *happy* (fröhlich) were listed most frequently by children, followed by the valence terms *bad* (schlecht) and *good (gut)*. Only seven emotion words were listed more than ten times in total. Compared to adults, children thus altogether mentioned fewer emotion labels. Adults listed more than 50 emotion words (e.g., hope [Hoffnung], disgust [Ekel]) that were not listed by the children. Interestingly, those children who named *good* and/or *bad*, on average only mentioned few other emotion words such as *sad* (traurig), *happy* (fröhlich), and *angry* (wütend). As expected, word frequency was significantly correlated with the number of occurrences of the emotion words in the first three positions, indicating that emotion words with a high general word frequency are early acquired and readily available to free recall.

When analyzing the distribution of valence, a clear dominance of negative over positive emotions words emerged for both the child and adult samples. While there was a medium-sized effect for the predominance of negative valence in children, the adult sample exhibited a clear dominance with a large effect size.

In order to examine the conceptual structure of the emotion lexicon in adults and children on the basis of their freely listed words, hierarchical cluster analyses were carried out for both samples. In children, two meaningful clusters were identified. The first cluster contained the antonymous pair *sad* and *happy* and was closest to the convergence zone, suggesting that of all listed emotion words, they were the most psychologically salient for the emotion lexicon in school-age children. The second cluster contained the antonymous valence terms *good* and *bad*. Thus, in this age group, these two items also characterize children's emotion lexicon to a high degree.

Not surprisingly, the tree for the adults was more complex than the chil-

dren's tree as it clustered into several subbranches. One main cluster contained the items *fear* (Angst), *joy* (Freude), *sad* (traurig), and *happy* (fröhlich). As in the children`s tree, an antonymous pair of sadness and happiness is closest to the root of the tree and can be interpreted as most salient in adults' emotion lexicon. The second cluster contained the triplet of *hate* (Hass), *love* (Liebe), and *anger* (Wut).

Concerning the non-emotion word responses that were mentioned, seven categories were established: (1) emotion-related words; (2) causes and consequences of emotions; (3) sensory perception; (4) cognitive conditions; (5) physical states; (6) personality traits, and (7) other words and phrases. In children, the largest proportion of non-emotion word responses consisted of naming causes and consequences of emotions, followed by emotion-related words and items related to sensations. The smallest category was that of cognitive conditions. In contrast, adults' non-emotion word responses were distributed only in five categories, as their responses did not contain sensory perceptions and items belonging to the category of other words and phrases. Emotion-related words formed the largest proportion of adults' non-emotion word responses instead of causes and consequences of emotions as described in children.

In sum, the results of Study 2 showed that school-age children's emotion lexicon does not match that of adults' in terms of its semantic structure and easily and reliably accessible emotion words. Further, there is a predominance of negative emotion words in children and adults. Surprisingly, the valence terms *good* and *bad* still considerably shape the conceptualization of the emotion category in middle childhood. Also, polarity turned out to be an organizing feature in the conceptual structure within the emotion domain.

The number of non-emotion word responses that children mentioned (e.g., causes or consequences of emotions), indicated that other conceptual emotion information, such as the cause of an emotion, were sometimes rather available than an emotion label. Thus, it becomes evident that emotion words

make up only one of several pieces of information of the conceptual emotion knowledge that is acquired by children and activated by the category term *emotion*. As the emotion knowledge was established as the most important single variable indexing the emotion competence in the factor model in Study 1, a follow-up of this result with an in-depth and specific investigation of children's emotion knowledge in this age range proved valuable and necessary. Since the understanding and conceptualization of complex, social emotions require the highest level of emotion knowledge and are therefore still in the process of conceptualization, a focused analysis of the emotions pride and shame were undertaken in the third study of this thesis, presented in Chapter 4.

Using a free-description task, this study investigated school-age children's explicit knowledge of the social emotions shame and pride, compared to adults. For this purpose, children and adults were asked to describe shame and pride. Children provided a similar amount of information regarding pride as the adults, but significantly more than adults for shame. However, there was a considerably greater range in the child than the adult sample, with children providing a maximum of five (pride) and six (shame) types of information, while adults did not provide more than 3 (pride) and 2 (shame) diverse types of information per description. The highest frequencies of “don't know” responses were found for shame in second and third graders. Conversely, very few second graders did not know how to describe the term pride and all children in third grade were able to provide knowledge of pride. Thus, conscious and expressible knowledge concerning shame is not yet present in all children aged seven to nine years, while knowledge concerning pride is readily available in the vast majority of children in this age range.

When explaining shame, children mainly made references to causes of shame and by mentioning another emotion with equal valence such as *angry* or *sad*. Further, there was an equal representation of references to behavioral responses to emotions, to an audience, and to the information that shame belongs

to the category of emotion. The most often mentioned behavioral response to shame was withdrawal. Facial and body expressions, blushing, crying, and regret were also mentioned. Finally, children commonly described shame as a consequence of having done something wrong that was witnessed by others and results in an unpleasant feeling and the wish to hide or disappear. In the adult sample, explanations of shame comprised fewer diverse characteristics as the vast majority of the features fell into two categories: Firstly, adults commonly referred to causes of shame, but the only cause mentioned by adults was *having done something wrong*. Secondly, adults referenced the superordinate information that shame belongs to the category of emotion. Notably, adults did not refer to an audience in their descriptions of shame at all. In summary, adults commonly explained shame as being an emotion that arises when one has done something wrong, without the implication of an observer of this undesired behavior, while children often mentioned an audience as an integral component of shame-eliciting situations.

When explaining pride**,** the vast majority of children referred to causes or mentioned another emotion word with equal valence. Two broader themes frequently emerged that covered most of the causes mentioned. Most children stated that pride arises after having *won a competition* or having *got a good grade*. Children also based their descriptions of pride to equal extent on behavioral responses to pride, the presence of significant others as an audience, or references to some kind of acknowledgment such as *getting a cup* or *applause*. Within the content category of behavioral responses no predominant behavior was evident. As with shame, some were elements related to an audience such as *acknowledgment* in children's descriptions of pride. Taking together all references related to an audience, more than half of the children mentioned being witnessed by others as an inherent feature of pride. This was also partly due to an active effort on the children's behalf when experiencing pride to gain an audience through *boasting* or *letting others know*. Finally, the children commonly described

pride in terms of an achievement that was witnessed or even acknowledged by others, and that results in a pleasant feeling.

As with shame, adults' descriptions of pride showed less variation among content categories. All adults referred to *achievement* as a cause of pride and one third indexed pride as an emotion. One quarter of adults' descriptions contained references to *acknowledgment* as well as emotions with equal valence. However, adults did not provide behavioral responses to pride and they also did not refer to being witnessed by others in their descriptions of pride. In summary, adults commonly described pride as being an emotion that is experienced when one has achieved something, while children placed a greater emphasis on the acknowledgment of this achievement through an audience.

With respect to their frequencies, there are content categories that are likely to be conceptually central. For shame as well as pride in children and adults, this applies especially to causes of emotion. In fact, children significantly more often referred to causes than to all other mentioned elements of shame and pride, except for emotions with equal valence in shame. The category second most frequently mentioned among children is the subjective feeling of the given emotion represented by basic negative emotions such as *sad* in the case of shame, respectively by positive emotions such as *happy* in the case of pride. In children's descriptions of shame as well as pride, this concept element was significantly more often named than other elements with the exception of references to causes references to causes. When only one feature was provided this tended to be an emotion word with equal valence in the case of shame, but a reference to causes in the case of pride.

With regard to the composition of shame and pride concepts, less complex descriptions consisting of only one or two features are predominant in both children and adults. It is particularly striking that more than one-third of children's descriptions of pride only consisted of a cause for pride. Additionally, more than half of all pride explanations consisted of responses containing either only a

cause or a cause plus an emotion word with equal valence. In terms of shame, however, there is no prevalence of particular combinations. Rather, there is much more diversity in the combination of types of information used. Thus, in this age range, conceptualizations of pride seem to have reached a level of unified generalization whereas the conceptualizations of shame appear to still be idiosyncratic, grounded in personal experiences. The fact that only six combinations of information types were used by adults to describe shame and pride is indicative of this generalization process being completed in adults. In particular, two conceptual elements were noticeably predominant, comprising references to causes and the information that shame and pride belong to the superordinate category of emotion. The co-occurrence of references to these two elements covered already more than 40% for shame and almost 70% of adults' pride responses. In adults, only references to causes of both shame and pride occurred as a solely used element. The combination of references to causes and emotions with equal valence, which was predominant in children, only occurred in adults' descriptions of pride, but not shame. Thus, children and adults differed considerably in distribution and combination of pride and shame elements.

As predicted, children often referred to an audience when describing shame and pride. We therefore examined which significant others predominantly occurred in children's responses. For both emotions, *mother*, *peers,* and *everybody* were most often mentioned as audience. Children also referred to *teachers* and *parents*. Interestingly, *fathers* were rarely represented in children's description of shame and pride. While I had hypothesized that there would be a decrease of the presence of an audience from younger to older children, this hypothesis was not readily supported by my data as only a slight tendency towards less references to mothers was noted.

In sum, Study 3 revealed via content analysis of children's explanations of shame and pride, that children's conceptualizations of these two self-conscious emotions already are already present, though not established to the degree we

find in adults. For the description of shame and pride, children most often referred to causes of emotions and emotion words with equal valence. Contrary to adults, school-age children's descriptions of shame and pride still referred to an audience. In sum, the findings suggest that causes of emotions and feeling states are the essential components of school-age children's conceptual knowledge of shame and pride. Results further indicate that knowledge of pride is earlier established than that of shame.

5.2 Language and emotion in development: In search of common ground

Due to the lack of studies, we did not know much about the strength and the specific nature of the relationship between language competence and emotional competence and whether there is still an association between both competences beyond preschool age. Therefore, Study 1, presented in Chapter 2, investigated relations between multiple components of language competence and emotional competence in a sample of school-age children. The findings of this study provide new and stronger evidence for a close relationship between language abilities and emotional competence in child development. The bivariate correlation analyses corroborated positive relations between most single variables of language competence and emotional competence. Moreover, the results of the confirmatory factor analysis indicated that the development of language competence and emotional competence are best understood as intertwined, mutually dependent processes that are closely linked on a higher order level. In other words, is it likely that there is a general ability factor that influences the different facets of emotional competence and language competence.

One intuitive explanation for the significant correlation between language competence and emotional competence that may come to mind is that this finding is due to a research artifact, as language is inherent in assessment tasks of

both language and emotional measures. However, from a theoretical and a methodological point of view, test construction must distinguished here from test analysis. The test construction was based on discipline-specific theoretical assumptions about the construct under consideration. The correlations between the nine different measures indicate some variation, ranging between r = .10 and r = .45 and thus showing that they share between 1% and 20% of common variance on the bivariate level. Hence, we can affirm that we have assessed distinct measures, picked out of the multidimensional space of language and emotional competence. The different levels of bivariate correlations are an important result as they especially underscore that it is not arbitrary which of the facets of language competence one selects as co-variate variable.

Nevertheless, on the general level, the two competences are strongly related suggesting that there may be a general ability that has an impact on the advancement of both competences. Intuitively, one might think children's intelligence causes the relationship between children’s vocabulary and emotion knowledge. After all, it is common practice to use picture vocabulary tests as an index of verbal intelligence. However, there is scant evidence to support this claim. I am aware of only one developmental study examining the contribution of intelligence on children’s emotional competence. Albanese, De Stasio, Di Chiacchio, Fiorilli, and Pons (2010) reported significant relations between non-verbal intelligence and emotion understanding in children aged three to ten years. The authors admit that the magnitude of the correlations was only modest. Still, the contribution of intelligence remains an important open issue and should be addressed in future studies.

From a cognitive linguistics point of view, it seems also likely that the broad domain of cognition may be the one that relates language and emotion in development. Supporting this assumption, recent research by Salisch, Haenel, and Freund (2013) indicated that non-verbal cognition contributes to emotional development as cognitive abilities explained a significant portion of the variance

of children's emotion understanding. Through empirical evidence, it has been confirmed that cognition also contributes to language development (Tomasello, 2009). Thus, cognition is the prime candidate for the role of the higher level that links the two competences. This assumption demands further investigation, especially as the relation between language, emotion, and cognition is still the subject of a heated and continuing debate. Especially, longitudinal studies are warranted to examine aspects of the stability and change of the interplay between cognitive, language and emotional abilities in child development.

It is important to note that the current analyses do not allow inferring causality. Though there is extensive empirical evidence showing that language deficits are likely to entail social-emotional difficulties (Lindsay & Dockrell, 2000; McCabe & Meller, 2004; Redmond & Rice, 1998; Spackman, Fujiki, & Brinton, 2006), it is conceivable that emotional competence also has an impact on language development. To date, there is no empirical evidence demonstrating that emotional deficits cause language difficulties. However, this may be due to the fact that these deficits can be difficult to measure because they are most likely to occur on the pragmatic level. Individuals with less emotional competence may have difficulties to communicate in a socially adequate way that requires the application of conversational and speech act rules. Studies that adequately address this issue are pending.

Concerning the interrelatedness of subcomponents lexical-semantic and reading abilities in the realm of language competence, and declarative emotion knowledge and awareness of mixed emotions in the realm of emotions were found to be most closely related. Although often separately examined, awareness of mixed emotions can be considered as a sub-set of declarative emotion knowledge. The close positive relationship between children's vocabulary and their emotion knowledge corroborate the findings of previous studies (Bosacki & Moore, 2004; Cutting & Dunn, 1999; Izard et al., 2001; Trentacosta & Izard, 2007). As outlined in Chapter 1, conceptual knowledge comprises the concepts

that an individual has built up based on his or her recurring experiences with the world. Most of these concepts are encoded by language (Evans & Green, 2006; Mandler, 2004). In particular, labels are linked to form-meaning pairings that together constitute semantic representations. Children's command of labels – that are mainly associated with concepts – is measured with receptive vocabulary tests. It is therefore very likely that children with a rich lexicon, as indicated by good receptive vocabulary abilities, are good at general conceptualizing. As outlined earlier, also the acquisition of emotion knowledge is built up on conceptualizations. Thus, one main interface between language ability and emotional competence, in particular, emotion knowledge may be the underlying process of conceptualization. This interpretation supports the basic assumption of the cognitive linguistic view on the special role of conceptualizations generated by means of general cognitive functions.

How does this interpretation fit with the further result that children's reading ability and emotion knowledge are also closely related? This finding confirms the assumption that conceptual knowledge is grounded in both experiential and linguistic information. Literature is a means by which children can gain "otherwise unavailable insights into the ways emotions are produced, experienced, and enacted in human social life" as in children's books, emotions are often labeled and even explained (Hogan, 2011, p. i). Furthermore, by reading stories children acquire a deeper understanding of internal concepts by constructing their own interpretation of a stories' plot (Astington & Peskin, 2004). Hence, reading further facilitates the process of meaning making and enhances emotional knowledge. The emerging ability to read in school-age children opens new, language mediated options for them to gain knowledge about internal states and emotions.

In sum, based on a shared conceptual system and underlying processes of conceptualizations, language seems to be one main resource from which emotional knowledge is constructed. This relation may not be the only possible link between language and emotional competence, but according to my findings it is

likely to be the strongest. Clearly, longitudinal research is necessary to further establish the complex and likely dynamic relationship of language competence and emotional competence in child development.

As a useful extension of the current research, it would be very interesting to examine the relation between language and emotional competence in children whose development is delayed or impaired in these areas, for instance in children diagnosed with specific language impairment or autism. It was already observed that children with language impairment are likely to have emotional difficulties as well (Brinton et al., 2007; Lindsay & Dockrell, 2000; McCabe & Meller, 2004; Nelson et al., 2011; Redmond & Rice, 1998; Spackman et al., 2006). Further, in children who were primarily diagnosed with emotional and/or behavioral problems, often moderate to severe language problems were also found (Benner, Nelson, & Epstein, 2002; Ruhl, Hughes, & Camarata, 1992; Sanger, 1994). However, systematic and thorough investigations are warranted in this field to determine the developmental association between language and emotion in more detail. Furthermore, research in this area could contribute to the development of early and effective interventions. As there is some evidence that language impairment poses a risk for children's emotional and subsequently social development (Irwin et al., 2002), research in this area is not only of clinical but also of social importance.

Our findings have potential implications for practice as it provided knowledge of the facets of both competences that are closely related in development. Considering this knowledge could help to align interventions that target both verbal and emotional abilities. For instance, in cases of language impaired children, knowing that lexical-semantic abilities are positively associated with emotion knowledge calls for language therapy interventions that include, at least to some degree, emotional contents such as naming emotions. This assumption is in line with a statement by Kölliker Funk (2006) who suggested that therapy in language impaired children should focus not only the individual language abilities

but also emotional communication.

5.3 Polarity: An organizing principle in the emotion domain

While the first study has provided more general insight into the nature of the relationship between children's language competence and their emotional competence, the second study specifically addressed children's emotion lexicon. As, according to cognitive linguists, lexical items are points of access to conceptual knowledge (Evans & Bergen, 2007), I have specifically examined the productive emotion lexicon in school-age children to further shed light on the conceptual structure of the emotion domain at that age.

In particular, I have determined those emotion concepts that most easily come to mind and are therefore very likely to be conceptually central. The findings showed that children in middle childhood have well established a superordinate category of emotion. Most children were able to classify emotion words into the given category. However, school-age children do not have an adult-like emotion lexicon. They named less emotion words, listed a narrower range of various emotion types, and mentioned more words that do not belong to the emotion category than their adult counterparts.

Most of the children's non-emotion word responses were causes and consequences of emotions that both clearly relate to emotional experiences. Also the other non-emotion word responses referred to some kind to inner or mental states such as sensory perception. These findings could be interpreted as support for the assumption that individuals are likely to have concrete situations in mind when thinking of abstract concepts and that especially emotions are situated and grounded in sensory-motor and introspective experiences (Barsalou et al., 2008; Barsalou & Wiemer-Hastings, 2005).

Surprisingly, the number of easily and reliably accessible emotion words is low in school-age children. However, note that the emphasis is on *easily and*

reliably accessible. Necessarily, it should be taken into consideration that the method chosen in this study was not suitable to exhaustively assess children's command of productive emotion lexicon. After all, it is already well documented that the production of emotion words starts at around two years of age (Denham, 1998; Izard & Harris, 1995) and that toddlers already make use of various emotional labels like *scared*, *mad,* and *surprised* (Bretherton & Beeghly, 1982; Ridgeway et al., 1985). Nonetheless, our finding that only a small number of emotion words is easily available when there are no further situational cues should be considered in the design of further empirical studies and tests that require children to know and express emotion words without situational context. Clearly, further research is needed to shed more light on older children's emotion lexicon with methods that rely more on natural interactions, such as analyses of speech corpora of children's everyday discourse with peers and caregiver or parent checklists.

In the age range under consideration, seven to nine years of age, only the four items *sad*, *happy*, *good,* and *bad* were named by more than 20% of the children. One can conclude that these four items are very likely to be the conceptually most central members of children's emotion lexicon as these labels were named most often and most frequently in first listing positions. This finding is further supported by the ADDTREE analysis that was used to map the conceptual structure on the basis of item frequencies and co-occurrences (Corter, 1982; Sattath & Tversky, 1977). The generated tree for children's conceptual structure of emotion is characterized by simplicity. The tree has only two branches with two binary clusters, *happy–sad* and *good–bad*. In contrast, children's trees mapping the conceptual structure of animals and body parts are more sophisticated, having multiple branches with complex clusters (see Crowe & Prescott, 2003).

Why do children need a longer period of time to develop sophisticated conceptual structures of emotions, compared, for instance, to their elaborated conceptual structure of animals at that age range? Is the emotion category espe-

cially hard to acquire? One explanation could by that emotions, unlike animals or body-parts, are not concrete entities. There is some evidence that abstract words such as surprise or freedom are harder to understand and acquire than concrete words such as chair or knife (Gleitman et al., 2005; Schwanenflugel, 1991). Another possible explanation, however, is that children in their everyday life are more often involved in conversations about animals and body-parts than about emotions. Already, and especially for young children there are many picture books that teach children about animals and the human body, but almost none about emotions. In any case, it is reasonable that children do not name as many emotions as animals.

Surprisingly, however, adults' tree representing the conceptual structure of emotions is also characterized by simplicity. Thus, one can assume that children's simple conceptual structure of emotions is not only caused by a long lasting acquisition of emotion concepts. There must be a further reason why both children's and adults' conceptual structure of emotions is much simpler than that of body-parts or animals. Notably, there is some evidence that abstract and concrete words are distinct entities. In a variety of cognitive tasks, a processing advantage for concrete words over abstract words has been found (e.g., Jessen et al., 2000; Kounios & Holcomb, 1994; Paivio, 1991). A recent account by Crutch (Crutch & Warrington, 2005; Crutch, 2006) suggests that the abstract-concrete distinction is based on a qualitative difference in the conceptual organization of concrete and abstract concepts. In this view, abstract concepts are mainly organized by associative links to other concepts while concrete concepts are rather organized by semantic similarity (i.e., likeness of meaning). The results of the ADDTREE analyses indicate that indeed antonymy is the organizing principle as in children's as well as adults' clusters can be characterized by antonymous relations like *happy–sad* or *love–hate*. Antonymy is defined as binary opposition between two words. Antonyms are also characterized by similarity as they belong to the same conceptual dimension, however, they are different in that they are di-

rect opposites (Paradis & Willners, 2011). The finding that antonymy is an important organizing principle supports a recent account on the representation of abstract concepts. Crutch, Williams, Ridgway, and Borgenicht (2012) demonstrated in a study on types of semantic relations among abstract words that antonymy, specifically polarity, is the most important information in discriminating the meaning of abstract concepts. Also Paradis and Willners (2011) review empirical evidence of psycholinguistic studies that indicate a conceptual basis of antonyms. It seems likely that antonymy is not an abstract, theoretical construct, but rather a principle that results from cognitive processing such as comparing actual experiences. Of course, this also applies to concrete entities. However, the representational difference between abstract and concrete entities may lie in the different significance of organizing principles. For abstract concepts, their interrelatedness in an associative neural network may be most important in their conceptual representation whereas concrete concepts are assumed to be mainly categorically organized based on shared features and functions (Crutch & Warrington, 2005). The assumption of a conceptualization whose organization is conditioned by cognitive functions fits very well with the cognitive linguistics approach.

In the second study I also pursued the question of whether the valence terms *good* and *bad* are still used by school-age children to refer to emotions. This question has been answered in the affirmative. The results revealed that *good* and *bad* are (still) central concepts in the emotion category as they belong to the emotion labels that the children named most frequently and always in early positions. This additional finding that children who named *good* and/or *bad* listed only a few further emotion words supports an approach by Widen and Russell (2003). They suggest that the two words *good* and *bad* are the starting point of the development of an emotion category and that the further differentiation of the two broad categories proceeds in a systematic manner with the labels happy and sad emerging as first emotion words and being used, for the time being, as rep-

resentative of other emotions by young children.

In accordance with this prediction, the school-age children who named *good* and/or *bad* indeed added only *sad* and/or *happy* to their list of emotions. The findings suggest that the valence terms are not only precursors for emotion words in young children as described by Widen and Russell (2003). In school-age children *good* and *bad* impressively shape the conceptualization of the emotion category. However, their occurrence and thus their significance will decrease in the further course of development indicated by the finding that adults do not name *good* and *bad* when asked to list emotions.

Strikingly, the importance of *good* and *bad* points in the direction of a special role of antonymy respectively polarity in children's conceptualizations of emotion. I propose this finding may be due to evolutionary functions. It may be essential for children to quickly evaluate things, events, and persons as good or bad. This assumption is in line with an approach by Cacioppo and Berntson (1999), who suggest that individuals have an affect system to quickly discriminate hostile from hospitable events and to promptly decide whether approach or withdrawal is adaptive. According to their view, activation of positivity and negativity already happens at early affective processing stages. Thus, it might be that the discrimination into good and bad is already made before an emotion is further recognized (Cacioppo & Berntson, 1999). It seems reasonable, that its evolutionary significance entails the special role of polarity in child development. Thus, I suggest that the existence of an unconscious quick and dirty pathway for immediate evaluation has an impact on children's conceptualizations of emotions.

The finding of a significant predominance of negative emotion words in children's, and even more pronounced in adults' German emotion lexicon supports the presence of a negativity bias. The negativity bias is assumed to assist the recognition and avoidance of detrimental situations by greater processing of negative information. Vaish et al. (2008) reviewed empirical evidence for a negativity bias in children and presumed that such a bias serves important social-

emotional and social-cognitive functions in child development.

Also Schrauf and Sanchez (2004) found a significant predominance of negative emotion words in English and Spanish speaking individuals. They argued that negative emotion words predominate because the cognitive processing of negative emotions is more detailed and systematic than the cognitive processing of positive emotions. The authors go so far as to assume that there is a common cognitive constraint that affects every language. Thus, though most people are happy most of the time (Diener & Diener, 1996), negativity is likely to have a greater impact on the conceptualization of emotion.

5.4 How shame and pride are conceptualized

A more comprehensive understanding of children's conceptualizations of emotions was achieved by the third study that investigated conceptual knowledge of the self-conscious emotions shame and pride in school-age children. The results revealed that children's conceptualizations of shame and pride are quite well established at the beginning of middle childhood.

The vast majority of children mentioned adequate causes (e.g., *having done something wrong* for shame, and *having achieved something* for pride), and the feeling state of the given emotion represented by referring to other emotion words (e.g. *sad* for shame, *happy* for pride) in their explanations of shame and pride. The knowledge components *causes of emotions* and *feeling state* (as represented by mentioning emotion words with equal valence) were central in children's conceptualizations of both self-conscious emotions in middle childhood as indicated by their frequencies and the finding, that only these two pieces of information were used exclusively in the descriptions by many subjects.

The predominance of causes in the data supports findings by Russell (1990) and Widen and Russell (2011) who suggested that causes are an essential and early acquired component of children's conceptualizations of emotions.

Interestingly, in Study 2, where children were asked to list emotions, most of the children's non-emotion word responses were causes of emotions, further indicating the conceptually close relation between emotions and their causes. The fundamental role of causes in children's conceptualizations of emotions has already been underlined by the finding that maternal explanations of causes of emotions have been shown to be a better predictor of children's emotion knowledge than the overall frequency of emotion talk (Van Bergen & Salmon, 2010).

However, on the other hand there is evidence that the cause superiority effect as described by Widen and Russell (2011) is not specific to the conceptualization of emotions, but rather represents a general characteristic of conceptual development. In general, children actively seek for causal information and apply specific conversational strategies to obtain it (Bartsch et al., 2007; Frazier et al., 2009). Further, general word learning in young children is positively influenced by the availability of causal information (Booth, 2009). Thus, it can be assumed that it is part of children's overall cognitive development to focus selective attention to causal relations.

Interestingly, the thematic analysis of the causes of pride revealed that two broader causal themes dominated children's explanations of pride. Most children stated that pride is elicited by having won a sport competition, or having received a good grade in school. The prevalence of athletic and academic competence in our pride data corroborates earlier findings by Harter and Whitesell (1989), who obtained similar results in a content analysis of 4- to 11-year-olds' descriptions of pride. School settings, including physical education, may be predominantly represented as causal contexts for the occurrence of shame and pride in school-age children as they provide frequent and recurring occasions to be compared, judged, and evaluated on the basis of how well they perform tasks (Charlesworth et al., 2008; Swain, 2003).

Although most children were able to provide adequate causes of pride, there were also some children whose conceptualizations of pride were not yet

appropriate. These children explained that pride is elicited when one received a gift, had an advantage over others or was given something better than others. As these causes deviate from the conventional definition of pride presupposing a personal contribution to a pride eliciting success (e.g., Lewis, 2002; Tangney, 1995; Tracy & Robins, 2004). This finding is in line with research by Graham (1988), Harter and Whitesell (1989), and Thompson (1987) showing that before the age of eight to ten years children tend to attribute pride to situations with positive outcomes regardless of whether one was personally responsible for the specific achievement or success. Thus, the beginning of middle childhood is a period in which pride is not yet distinguished from happiness.

Contrary to the causes of pride, no predominant themes emerged in children's descriptions of shame. Most children stated that shame arises when one has done something wrong without further determining the situational context. Some of the specified causes given can be assigned to themes such as misconduct, weakness, and embarrassing mishaps. Together, these causes support the idea that shame is first conceptualized as a consequence of general undesirable behaviors (Donati & Levorato, 1999; Tangney & Dearing, 2002; Tracy & Robins, 2004).

In terms of behavioral responses to shame and pride, children most often named appropriate ones such as stretching out the chest for pride or withdrawal for shame. Thus, in contrast to causes, children's conceptualized behavioral responses to shame and pride match those described in the theoretical literature (Lewis, 2000; Tangney & Dearing, 2002).

Another important finding was that significant others were frequently mentioned by children and, hence, can be considered an integral part of concepts of self-conscious emotions in the first years of middle childhood. Notably, for both emotions, children most often referred to their mothers and peers. The finding that mothers are an essential element of children's conceptualizations of shame and pride fits with the literature on caregivers' great impact on children's socio-

emotional and self-development (Alessandri & Lewis, 1993, 1996; Belsky et al., 1997; Lagattuta & Thompson, 2007).

Surprisingly, there was a large discrepancy between the occurrence of mothers and fathers in children's descriptions of shame and pride. Fathers were clearly underrepresented. This finding is consistent with a previous study by Dunn and Hughes (1998) also showing that children very rarely referred to their fathers as sources of emotional experiences. This discrepancy may be explained by empirical evidence that fathers and mothers in western cultures differ in their parenting behaviors and values (e.g., Lamb, 1997; Lewis & Lamb, 2003; Parke, 2002). As fathers generally are less available for children (Bergmann, Wendt, von Klitzing, & Klein, 2012; Lewis & Lamb, 2003) and mothers predominantly monitor and evaluate children's positive and negative behavior in their first years of life, mothers may be granted with a central role in children's conceptualization of shame and pride.

Also, the frequent occurrence of peers in children's descriptions of shame and pride indicates that these form an inherent part of their emotion concepts. This finding corroborates research that emphasizes the increasing importance of peers on children's socioemotional experiences and developments in middle childhood (Gifford-Smith & Brownell, 2003; Isabella & Diener, 2010; Kerns et al., 2006; Newman & Newman, 2011; Parker & Gottman, 1989).

Taken together, these findings also indicate that children, aged 7 to 9, may have only partially internalized the culture-specific norms and standards against which their behavior is (self-)evaluated, as significant others still shape their conceptualizations of social emotions. That this will clearly change is evident in the finding that adults did not refer to an audience at all. For future research, it would be worthwhile to further investigate contributions and conditions of specific interpersonal relationships to children's developing conceptualizations of self-conscious emotions. This is especially interesting in the light of findings from attachment research that emphasize the importance of the quality of relationships

in the development of children's emotional knowledge (Laible & Thompson, 1998; Laible, 2007).

Comparing children's knowledge of shame and pride, our results suggest that children's knowledge of pride is more established than that of shame at age 7 to 9. Some children have poor explicit knowledge concerning conceptual elements of shame, including the emotion label. As this finding is consistent with previous ones (e.g., Berti et al., 2000; Donati & Levorato, 1999), one can conclude that it takes children a comparatively longer time to establish explicit knowledge of shame than pride. One possible explanation for this might be that shame is conceptually more complex than pride, for instance because it has to be conceptually distinguished from another self-conscious emotion, namely guilt (Donati & Levorato, 1999; Ferguson, Stegge, & Damhuis, 1991; Olthof et al., 2000). However, another possible explanation for this could be the influence of frequency on the establishment of conceptual knowledge as one can assume that at least conversations about pride experiences outweigh conversations about shame. According to the literature and evidenced by our data, pride is accompanied by the wish to tell others, whereas shame leads to concealment and withdrawal (Lewis, 2000). Thus, it is very conceivable that children hear and talk more about pride than shame. Support for this hypothesis comes from word frequency data (Heister et al., 2011), indicating that the term pride is six times more frequent in everyday language than the term shame. Considering that – as outlined in chapter 1 – conversations about emotions assist children to gain knowledge of emotions (Boiger & Mesquita, 2012; Cervantes & Callanan, 1998; Denham & Auerbach, 1995; Fivush et al., 2006; Kousta et al., 2011), less communication about shame could be one reason why it takes children longer to acquire explicit knowledge of shame. Notably, it would be worthwhile for cross-cultural studies to investigate language-specific and culture-specific aspects and properties of the relation between the frequency of emotion terms in children's verbal input respectively everyday language and the development of their emo-

tion concepts.

When comparing children with adults, we found that adults' explanations of shame and pride showed less diversity and variety in content categories. Moreover, while most children embedded their explanations of shame and pride in situational contexts, involving complex settings and action sequences, adults provided rather formal definitions, characterized by a high degree of generalization. Following the cognitive linguistics and grounded theory approach to conceptual meaning construction, I assume that the rich diversity of children's explanations mirrors that, at first, first conceptual knowledge is situated in and thus shaped by individual experiences. According to Barsalou and colleagues, conceptualizations of emotions on the one hand depend on the characteristics of the situations in which they occur, and on the other hand, on the situation-associated introspective experience of internal states (Barsalou et al., 2008; Barsalou & Wiemer-Hastings, 2005; Yeh & Barsalou, 2006). In this view, generalized concepts of emotions are necessarily based on recurring experiences of emotion-eliciting situations. Children at the beginning of middle childhood may not yet have a generalized conceptualization of shame and pride as they have yet to experience sufficient frequent conversations pertaining to these emotions.

It would be very interesting to transfer the debate on the acquisition and representation of emotion concepts to the field of neuroscience. Neuroscientific methods for the investigation of semantics of emotions could usefully supplement cognitive and behavioral methods. In general, abstract concepts are thought to be linguistically encoded and preferentially stored within the left perisylvian language network (Binder, Desai, Graves, & Conant, 2009; Wang, Conder, Blitzer, & Shinkareva, 2010). However, Moseley, Carota, Hauk, Mohr, and Pulvermüller (2012) also found substantial and widespread motor cortex activation to emotion words in subjects who passively read emotion words. This finding indicates that motor systems might contribute to the semantic representation of emotion words (Pulvermüller, 2013). The question remains whether sensory systems are also

involved in the embodiment of emotion concepts. Undoubtedly, this is a challenging subject for future research. However, as the neurosciences are moving away from strictly localization-based approaches to complex network analyses (e.g., Liao et al., 2011; Rubinov & Sporns, 2010), the formation and integration of emotion concepts might become increasingly open to neuroscientific investigation. As shown previously regarding other large scale brain networks (Fair et al., 2008; Gao et al., 2009), it might be possible to trace the development of neural networks subserving emotion concepts across several developmental stages between early childhood and late adolescence. To further explore the probably embodied and situated nature of emotion concepts, developmental neuroscience research might profit from multimodal integration by employing further noninvasive techniques such as near-infrared spectroscopy and event-related potentials in conjunction with functional magnetic resonance imaging in order to achieve high resolution simultaneously in space and time.

However, as these techniques rely on experimental paradigms activating emotion concepts repeatedly, future research first needs to focus on developing experimental tasks suitable to elicit brain activation specifically tied to emotion concepts in children, without eliciting the overbearing brain activation elicited by actual emotion induction. The main weakness of neuroimaging approaches, however, will limit the applicability of these methods to the study of developmental processes: They necessitate averaging across larger samples of individuals. While correlative approaches might capture some of the developmental variance, the analysis of individual data sets is not feasible and therefore large portions of developmental variance will be lost. Ideally, neuroscientific approaches will therefore be conjointly used with linguistic and psychological methods in order to identify the neural correlates of emotion concepts.

5.5 Limitations

Several limitations to the studies in this thesis need to be acknowledged. Regarding Study 1, our investigation did not encompass the entire range of verbal and emotional abilities, although we aimed at considering a wide range of both. Several reasons accounted for the limited selection of measures: On one hand, we had to constrain the number of tasks in order to not overburden the children. It already took two sessions of about one hour each to perform the selected tasks. It already took two sessions of about one hour each to perform the selected tasks. On the other hand, for fulfillment of quality criteria, we decided to use only tests that demonstrated good reliability in pre-tests. Therefore, quite important abilities such as emotion regulation or grammar were not included in the current test battery. Second, although having broadly followed prior research in the determination of relevant facets of both competences, I must now acknowledge that some of the facets chosen are not truly independent, but rather overlap themselves as in the case of declarative emotion knowledge and awareness of mixed emotions.

For all three studies one could argue that the emotional tasks required at least some language ability as they all included the need to understand or express language, so that children's verbal abilities may have influenced the results. In the realm of emotional measures, I have attempted to use linguistically undemanding tests. Nonetheless, it cannot be completely excluded that the performances in emotional tasks have been influenced by their limited understanding of the task instruction or difficulties in verbally expressing their emotion-related knowledge. However, it is inevitable that in this as well as in most other research on children's emotion knowledge, researchers rely on tasks that inherently require the child to understand or provide linguistic information (Lewis, 1991). Thus, it is important to keep in mind that children's knowledge of emotions or any other domain may not be exhaustively assessed when language-based tasks are employed. This potential artifact can only be avoided when nonverbal

components of emotional competence are considered (e.g., observation of emotion expression and emotional behavior in adequate contexts).
Nonetheless, it can be assumed that in normally developed children the tasks in this research have a great potential to shed light on children's declarative conceptual knowledge, as vast conceptual knowledge is linguistically encoded.

An additional point to note is that all measures were situation-independent and therefore restricted to decontextualized knowledge. It could well be that due to the situational cues of everyday situations, children would show much more emotion knowledge and other verbalizations than in our "cold" tasks. As this limitation applies to most of the empirical studies in emotion research, efforts should be made to develop more ecologically valid measures.

Again, observations of socioemotional interactions and behaviors, occurring in real life contexts, could be one approach to follow. Especially in the case of children, natural emotional everyday speech should be considered. As shown for instance by Bretherton and Beeghly (1982), spontaneous speech in natural settings is – despite low controllability – a good and valid way to assess children's emotion language.

Furthermore, after having discussed the results of our research, we ascertained that it would have been desirable to consider intelligence measures as well. Being able to at least estimate the contribution of children's intelligence to the interplay of language and emotion in development, would help to more precisely determine the relation of language and emotional competence. This is especially important as studies on the relation of emotional abilities and intelligence are largely lacking.

Finally, as minor limitations of Study 2 and Study 3, it should be acknowledged that the sample sizes in the adult group were small. In addition, for economical reasons in both studies the mode of the task differed between children and adults. In terms of more validity, future research should attempt to use larger adult samples and to administer exactly the same method.

5.6 Conclusion

As the acquisition of emotional competence is a requisite ingredient in healthy development, children's emotional competence and knowledge need to be recognized, acknowledged and emphasized more in both theoretical and empirical investigations of child development. Accordingly, Camras and Shuster (2013) as well as Weisfeld and Goetz (2013) called for further developmental investigations. Therefore, expanding and integrating the existing perspectives on emotion research by focusing on language and the relationship between language and emotion in child development was the specific aim of this thesis.

To this end, theories and methods from the fields of linguistics and psychology were combined to elucidate different aspects of emotional development in middle childhood. Based on the tenets of cognitive linguistics, which allow for the assumption of a close relationship between language and emotion, language is no longer constructed as wholly isolated and autonomous. This perspective was supported by the findings of the present research, which indicate that language competence and emotional competence are highly intertwined and provide empirical evidence for the complex nature of this relationship. One of the main strengths of this work is the large sample, which represents the hitherto understudied population of school-age children. Further, the combination of multiple different measures of language competence and emotional competence adds to limited literature on the influential role of language proficiency in emotional development. In terms of its practical significance, establishing the relationship between language acquisition and the development of emotion competence is important for developmental theories as well as for designing language as well as for emotional interventions.

The current research also enhances our understanding of children's subsequent emotional development by examining school-age children's conceptual structure and knowledge within the emotion domain. The present findings contribute to the growing literature suggesting that concepts are grounded in actual

experience. However, they also point to numerous ways in which language contributes to the acquisition and representation of conceptual emotion knowledge. In that way, the results of the present thesis are of special relevance for developmental psychologists as well as emotion researchers. When conducting studies on or developing measures of children's emotion understanding and processing, it is essential to know which emotion words children have already well established and how their conceptualization of emotions is constructed. Further, improving our understanding of essential knowledge components of children's emotion concepts at middle childhood and beyond could inform interventions for children with socioemotional difficulties. This is particularly important for social emotions as limited emotion knowledge poses the risk of less social acceptance and lower social functioning.

In conjunction, the current findings speak against an amodal, modular view of language; they rather argue for an experiential, usage based approach to language, in which language and emotion do not develop independently from each other. Rather, the development of language and emotional competence is interrelated and particularly associated at the interface of lexical-semantic abilities and emotion knowledge. Further, the present findings contribute to the debate concerning the nature of conceptual representations of emotions by providing valuable insights into the structure of the emotion category and the content of social emotion concepts in middle childhood. Although these findings are largely descriptive in nature, they provide important implications for future research, which is clearly needed to further elucidate the acquisition and representation of emotion concepts. In summary, this study succeeds in taking another step towards delineating the complex relationship of language, emotion, and cognition.

References

Albanese, O., De Stasio, S., Di Chiacchio, C., Fiorilli, C., & Pons, F. (2010). Emotion comprehension: The impact of nonverbal intelligence. *The Journal of Genetic Psychology*, *171*(2), 101–15. doi:10.1080/00221320903548084

Aldrich, N. J., Tenenbaum, H. R., Brooks, P. J., Harrison, K., & Sines, J. (2011). Perspective taking in children's narratives about jealousy. *The British Journal of Developmental Psychology*, *29*(1), 86–109. doi:10.1348/026151010X533238

Alessandri, S. M., & Lewis, M. (1993). Parental evaluation and its relation to shame and pride in young children. *Sex Roles*, *29*(5), 335–343. doi:10.1007/BF00289427

Alessandri, S. M., & Lewis, M. (1996). Differences in pride and shame in maltreated and nonmaltreated preschoolers. *Child development*, *67*(4), 1857–1869. doi:10.2307/1131736

Astington, J. W., & Filippova, E. (2005). Language as the route into other minds. In B. F. Malle (Ed.), *Other minds: How humans bridge the divide between self and others*. New York, NY: Guilford Press.

Astington, J. W., & Peskin, J. (2004). Meaning of use: Children's acquisition of the mental lexicon. In J. M. Lucariello, J. A. Hudson, R. Fivush, & P. J. Bauer (Eds.), *The development of the mediated mind: Sociocultural context and cognitive development* (pp. 59–78). Mahwah, NJ: Psychology Press.

Bailey, C. S., Denham, S. A., & Curby, T. W. (2013). Questioning as a component of scaffolding in predicting emotion knowledge in preschoolers. *Early Child Development and Care*, *183*(2), 265–279. doi:10.1080/03004430.2012.671815

Bamberg, M., & Damrad-Frye, R. (1991). On the ability to provide evaluative comments: Further explorations of children's narrative competences. *Journal of Child Language*, *18*(03), 689–710. doi:10.1017/S0305000900011314

Bamberg, M., & Marchman, V. (1990). What holds a narrative together. The linguistic encoding of episode boundaries. *Papers in pragmatics*, *4*, 58–121. Retrieved from http://elanguage.net/journals/index.php/pip

Bamberg, M., & Reilly, J. (1996). Emotion, narrative, and affect: How children discover the relationship between what to say and how to say it. In D. I. Slobin, J. Gerhardt, A. Kyratzis, & J. Guo (Eds.), *Social interaction, social context and language. Essays in honor of Susan Ervin-Tripp* (pp. 329–341). Norwood, NJ: Erlbaum.

Banerjee, M. (1997). Hidden emotions: Preschoolers' knowledge of appearance-reality and emotion display rules. *Social Cognition*, *15*(2), 107–132. doi:10.1521/soco.1997.15.2.107

Baron-Cohen, S., Golan, O., Wheelwright, S., Granader, Y., & Hill, J. (2010). Emotion word comprehension from 4 to 16 years old: A developmental survey. *Frontiers in Evolutionary Neuroscience*, *2*, 109. doi:10.3389/fnevo.2010.00109

Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, *22*(04), 577–660. doi:10.1017/S0140525X99002149

Barsalou, L. W. (2008). Grounded cognition. *Annual review of psychology*, *59*, 617–645. doi:10.1146/annurev.psych.59.103006.093639

Barsalou, L. W., Kyle Simmons, W., Barbey, A. K., & Wilson, C. D. (2003). Grounding conceptual knowledge in modality-specific systems. *Trends in cognitive sciences*, *7*(2), 84–91. doi:10.1016/S1364-6613(02)00029-3

Barsalou, L. W., Santos, A., Kyle Simmons, W., & Wilson, C. (2008). Language and simulation in conceptual processing. In M. De Vega, A. M. Glenberg, & A. C. Graesser (Eds.), *Symbols, embodiment, and meaning* (pp. 245–283). Oxford, England: Oxford University Press.

Barsalou, L. W., & Wiemer-Hastings, K. (2005). Situating abstract concepts. In D. Pecher & R. Zwaan (Eds.), *Grounding cognition: The role of perception and action in memory, language, and thought* (pp. 129–163). New York, NY: Cambridge University Press.

Bartsch, K., Campbell, M. D., & Troseth, G. L. (2007). Why else does Jenny run? Young children's extended psychological explanations. *Journal of Cognition and Development*, *8*(1), 33–61. doi:10.1080/15248370709336992

Bates, E., Dale, P. S., & Thal, D. (1995). Individual differences and their implications for theories of language development. In P. Fletcher & B. MacWhinney (Eds.), *The handbook of child language* (pp. 96–151). Oxford: Blackwell.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497. doi:10.1037//0033-2909.117.3.497

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*(4), 323–370. doi:10.1037/1089-2680.5.4.323

Bayer, M., Sommer, W., & Schacht, A. (2010). Reading emotional words within sentences: the impact of arousal and valence on event-related potentials. *International Journal of Psychophysiology*, *78*(3), 299–307. doi:10.1016/j.ijpsycho.2010.09.004

Beck, L., Kumschick, I. R., Eid, M., & Klann-Delius, G. (2012). Relationship between language competence and emotional competence in middle childhood. *Emotion*, *12*(3), 503–14. doi:10.1037/a0026320

Bedny, M., Caramazza, A., Pascual-Leone, A., & Saxe, R. (2012). Typical neural representations of action verbs develop without vision. *Cerebral cortex*, *22*(2), 286–93. doi:10.1093/cercor/bhr081

Belsky, J., Domitrovich, C., & Crnic, K. (1997). Temperament and parenting antecedents of individual differences in three-year-old boys' pride and shame reactions. *Child development*, *68*(3), 456–466. doi:10.2307/1131671

Benelli, B., Arcuri, L., & Marchesini, G. (1988). Cognitive and linguistic factors in the development of word definitions. *Journal of Child Language*, *15*(3), 619–635. doi:10.1017/S0305000900012599

Benelli, B., Belacchi, C., Gini, G., & Lucangeli, D. (2006). "To define means to say what you know about things": The development of definitional skills as

metalinguistic acquisition. *Journal of Child Language*, *33*(01), 71. doi:10.1017/S0305000905007312

Benner, G. J., Nelson, J. R., & Epstein, M. H. (2002). Language skills of children with EBD: A literature review. *Journal of Emotional and Behavioral Disorders*, *10*(1), 43–56. doi:10.1177/106342660201000105

Bennett, D. S., Bendersky, M., & Lewis, M. (2005). Antecedents of emotion knowledge: Predictors of individual differences in young children. *Cognition & Emotion*, *19*(3), 375–396. doi:10.1080/02699930441000201

Bergen, B., & Feldman, J. (2008). Embodied concept learning. *Handbook of cognitive science: An embodied approach* (pp. 313–332). San Diego: Elsevier.

Bergen, P. V., Salmon, K., Dadds, M. R., & Allen, J. (2009). The effects of mother training in emotion-rich, elaborative reminiscing on children's shared recall and emotion knowledge. *Journal of Cognition and Development*, *10*(3), 162–187. doi:10.1080/15248370903155825

Bergmann, S., Wendt, V., von Klitzing, K., & Klein, A. M. (2012). Emotional availability of father–child dyads versus mother–child dyads in children aged 0–3 years. *Family Science*, *3*(3-4), 145–154. doi:10.1080/19424620.2012.779422

Berman, J. M. J., Chambers, C. G., & Graham, S. A. (2010). Preschoolers' appreciation of speaker vocal affect as a cue to referential intent. *Journal of Experimental Child Psychology*, *107*(2), 87–99. doi:10.1016/j.jecp.2010.04.012

Berman, J. M. J., Graham, S. A., Callaway, D., & Chambers, C. G. (2013). Preschoolers use emotion in speech to learn new words. *Child Development*, *00*(0), 1–15. doi:10.1111/cdev.12074

Berti, A. E., Garattoni, C., & Venturini, B. (2000). The understanding of sadness, guilt, and shame in 5-, 7-, and 9-year-old children. *Genetic, Social, and General Psychology Monographs;*

Bhana, A. (2010). Middle childhood and pre-adolescence. In I. Petersen, A. Bhana, A. J. Flisher, L. Swartz, & L. Richter (Eds.), *Promoting mental health*

in scarce-resource contexts: emerging evidence and practice (pp. 124–142). Cape Town: HSRC Press.

Binder, J. R., Desai, R. H., Graves, W. W., & Conant, L. L. (2009). Where is the semantic system? A critical review and meta-analysis of 120 functional neuroimaging studies. *Cerebral cortex*, *19*(12), 2767–96. doi:10.1093/cercor/bhp055

Bloom, L. (1998). Language development and emotional expression. *Pediatrics*, *102*, 1272–1277. Retrieved from http://pediatrics.aappublications.org/

Bloom, L. (2000). The intentionality model of word learning: How to learn a word, any word. In R. M. Golinkoff, K. Hirsh-Pasek, L. Bloom, L. B. Smith, A. L. Woodward, N. Akhtar, M. Tomasello, et al. (Eds.), *Becoming a word learner: A debate on lexical acquisition* (pp. 19–50). New York, NY: Oxford University Press.

Bloom, L, & Tinker, E. (2001). The intentionality model and language acquisition: Engagement, effort, and the essential tension in development. *Monographs of the Society for Research in Child Development*, *66*(4), 1–89. Retrieved from http://www.wiley.com/bw/journal.asp?ref=0037-976x

Bloom, Lois, & Beckwith, R. (1989). Talking with feeling: Integrating affective and linguistic expression in early language development. *Cognition & Emotion*, *3*(4), 313–342. doi:10.1080/02699938908412711

Bohnert, A. M., Crnic, K. A., & Lim, K. G. (2003). Emotional competence and aggressive behavior in school-age children. *Journal of Abnormal Child Psychology*, *31*(1), 79–91. doi:10.1023/A:1021725400321

Boiger, M., & Mesquita, B. (2012). The construction of emotion in interactions, relationships, and cultures. *Emotion Review*, *4*(3), 221–229. doi:10.1177/1754073912439765

Booth, A. E. (2009). Causal supports for early word learning. *Child development*, *80*(4), 1243–50. doi:10.1111/j.1467-8624.2009.01328.x

Bornstein, M. H., & Hendricks, C. (2012). Basic language comprehension and production in >100,000 young children from sixteen developing nations.

Journal of Child Language, *39*(4), 899–918. doi:10.1017/S0305000911000407

Bosacki, S. L. (2007). Children's understandings of emotions and self: Are there gender differences? *Journal of Research in Childhood Education*, *22*(2), 155–172. doi:10.1080/02568540709594619

Bosacki, S. L., & Moore, C. (2004). Preschoolers' understanding of simple and complex emotions: Links with gender and language. *Sex Roles*, *50*(9-10), 659–675. doi:10.1023/B:SERS.0000027568.26966.27

Bretherton, I., & Beeghly, M. (1982). Talking about internal states: The acquisition of an explicit theory of mind. *Developmental Psychology*, *18*(6), 906–921. doi:10.1037/0012-1649.18.6.906

Bretherton, I., Fritz, J., Zahn-Waxler, C., & Ridgeway, D. (1986). Learning to talk about emotions: A functionalist perspective. *Child Development*, *57*(3), 529. doi:10.2307/1130334

Brewer, D. D. (1995). Cognitive indicators of knowledge in semantic domains. *Journal of Quantitative Anthropology*, *5*, 107–128.

Brewer, D. D., Garrett, S. B., & Rinaldi, G. (2002). Free-listed items are effective cues for eliciting additional items in semantic domains. *Applied Cognitive Psychology*, *16*(3), 343–358. doi:10.1002/acp.797

Brinton, B., Spackman, M. P., Fujiki, M., & Ricks, J. (2007). What should Chris say? The ability of children with specific language impairment to recognize the need to dissemble emotions in social situations. *Journal of Speech, Language & Hearing Research*, *50*(3), 798–811. doi:10.1044/1092-4388(2007/055)

Brody, L. R., & Harrison, R. H. (1987). Developmental changes in children's abilities to match and label emotionally laden situations. *Motivation and Emotion*, *11*(4), 347–365. doi:10.1007/BF00992849

Bullock, M., & Russell, J. A. (1984). Preschool children's interpretation of facial expressions of emotion. *International Journal of Behavioral Development*, *7*(2), 193–214. doi:10.1177/016502548400700207

Burnett, S., Thompson, S., Bird, G., & Blakemore, S.-J. (2011). Pubertal development of the understanding of social emotions: Implications for education. *Learning and Individual Differences*, *21*(6), 681–689. doi:10.1016/j.lindif.2010.05.007

Cacioppo, J., & Berntson, G. (1999). The affect system architecture and operating characteristics. *Current Directions in Psychological Science*, *8*(5), 133–137. doi:10.1111/1467-8721.00031

Camras, L. a., & Shuster, M. M. (2013). Current emotion research in developmental psychology. *Emotion Review*, *5*(3), 321–329. doi:10.1177/1754073913477516

Cervantes, C. A, & Callanan, M. A. (1998). Labels and explanations in mother-child emotion talk: Age and gender differentiation. *Developmental Psychology*, *34*(1), 88–98. doi:10.1037//0012-1649.34.1.88

Charlesworth, L., Wood, J., & Viggiani, P. (2008). Middle childhood. In E. D. Hutchinson (Ed.), *Dimensions of human behavior: The changing life course.* (pp. 175–226). Thousand Oaks, California: Sage Publications.

Chomsky, N. (1965). *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.

Clore, G. L., Ortony, A., & Foss, M. A. (1987). The psychological foundations of the affective lexicon. *Journal of Personality and Social Psychology*, *53*(4), 751–766. doi:10.1037/0022-3514.53.4.751

Colle, L., & Del Giudice, M. (2011). Patterns of attachment and emotional competence in middle childhood. *Social Development*, *20*(1), 51–72. doi:10.1111/j.1467-9507.2010.00576.x

Collins, W. A. (1984). *Development during middle childhood: The years from six to twelve*. Washington, DC: National Academy Press.

Conway, M. A., & Bekerian, D. A. (1987). Situational knowledge and emotions. *Cognition & Emotion*, *1*(2), 145–191. doi:10.1080/02699938708408044

Corter, J. E. (1982). ADDTREE/P: A PASCAL program for fitting additive trees based on Sattath and Tversky's ADDTREE algorithm. *Behavior research*

methods, *14*(3), 353–354.

Crowe, S., & Prescott, T. J. (2003). Continuity and change in the development of category structure: Insights from the semantic fluency task. *International Journal of Behavioral Development*, *27*(5), 467–479. doi:10.1080/01650250344000091

Crutch, S. J. (2006). Qualitatively different semantic representations for abstract and concrete words: Further evidence from the semantic reading errors of deep dyslexic patients. *Neurocase*, *12*(2), 91–97. doi:10.1080/13554790500507172

Crutch, S. J., & Warrington, E. K. (2005). Abstract and concrete concepts have structurally different representational frameworks. *Brain*, *128*(3), 615–627. doi:10.1093/brain/awh349

Crutch, S. J., Williams, P., Ridgway, G. R., & Borgenicht, L. (2012). The role of polarity in antonym and synonym conceptual knowledge: Evidence from stroke aphasia and multidimensional ratings of abstract words. *Neuropsychologia*. doi:10.1016/j.neuropsychologia.2012.07.015

Cunningham, A. E., & Stanovich, K. E. (1998). What reading does for the mind. *American Educator*, *22*(1), 8–15. Retrieved from http://www.aft.org/newspubs/periodicals/ae/

Cutting, A. L., & Dunn, J. (1999). Theory of mind, emotion understanding, language, and family background: Individual differences and interrelations. *Child Development*, *70*(4), 853–865. doi:10.1111/1467-8624.00061

Damon, W., & Hart, D. (1991). *Self-understanding in childhood and adolescence*. New York: Cambridge University Press.

Denham, S. A. (1998). *Emotional development in young children.* New York, NY: Guilford Press.

Denham, S. A., & Auerbach, S. (1995). Mother-child dialogue about emotions and preschoolers' emotional competence. *Genetic, social, and general psychology monographs*.

Denham, S. A., Bassett, H. H., Way, E., Mincic, M., Zinsser, K., & Graling, K. (2012). Preschoolers' emotion knowledge: self-regulatory foundations, and predictions of early school success. *Cognition & Emotion*, *26*(4), 667–79. doi:10.1080/02699931.2011.602049

Denham, S. A., Blair, K. A., DeMulder, E., Levitas, J., Sawyer, K., Auerbach-Major, S., & Queenan, P. (2003). Preschool emotional competence: pathway to social competence? *Child Development*, *74*(1), 238–56. doi:10.1111/1467-8624.00533

Denham, S. A., & Burton, R. (2003). *Social and emotional prevention and intervention programming for preschoolers*. Springer.

Denham, S. A., Caverly, S., Schmidt, M., Blair, K., DeMulder, E., Caal, S., Hamada, H., et al. (2002). Preschool understanding of emotions: contributions to classroom anger and aggression. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *43*(7), 901–16. doi:10.1300/J002v34n03_06

Denham, S. A., Cook, M., & Zoller, D. (1992). "Baby looks very sad": Implications of conversations about feelings between mother and preschooler. *British Journal of Developmental Psychology*, *10*(3), 301–315. doi:10.1111/j.2044-835X.1992.tb00579.x

Denham, S. A., & Couchoud, E. A. (1990). Young preschoolers' ability to identify emotions in equivocal situations. *Child Study Journal*, *20*(3), 153–169.

Denham, S. A., McKinley, M., Couchoud, E. a, & Holt, R. (1990). Emotional and behavioral predictors of preschool peer ratings. *Child Development*, *61*(4), 1145–52. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2209184

Denham, S. A., Zoller, D., & Couchoud, E. A. (1994). Socialization of preschoolers' emotion understanding. *Developmental Psychology*, *30*(6), 928–936. doi:10.1037//0012-1649.30.6.928

Diener, E., & Diener, C. (1996). Most people are happy. *Psychological Science*, *7*(3), 181–185. doi:10.1111/j.1467-9280.1996.tb00354.x

Dienes, Z., & Perner, J. (1999). A theory of implicit and explicit knowledge. *The*

Behavioral and Brain Sciences, *22*(5), 735–55; discussion 755–808. doi:10.1017/S0140525X99002186

Dimberg, U., & Petterson, M. (2000). Facial reactions to happy and angry facial expressions: Evidence for right hemisphere dominance. *Psychophysiology*, *37*(5), 693–696. doi:10.1111/1469-8986.3750693

Dockrell, J., & Messer, D. (2004). Lexical acquisition in the early school years. In R. A. Berman (Ed.), *Language development across childhood and adolescence* (pp. 35–52). Amsterdam: John Benjamins.

Donati, V., & Levorato, M. C. (1999). Conceptual and lexical knowledge of shame in Italian children and adolescents. *International Journal of Behavioral Development*, *23*(4), 873–897. doi:10.1080/016502599383586

Dunn, J., & Brown, J. R. (1993). Early conversations about causality: Content, pragmatics and developmental change. *British Journal of Developmental Psychology*, *11*(2), 107–123. doi:10.1111/j.2044-835X.1993.tb00591.x

Dunn, J., & Hughes, C. (1998). Young children's understanding of emotions within close relationships. *Cognition & Emotion*, *12*(2), 171–190. doi:10.1080/026999398379709

Dunn, L. M., & Dunn, L. M. (2004). *Peabody Picture Vocabulary Test. German Adaptation by S. Bulheller and H.O. Haaecker*. Frankfurt, Germany: Harcourt.

Durand, K., Gallay, M., Seigneuric, A., Robichon, F., & Baudouin, J.-Y. (2007). The development of facial emotion recognition: The role of configural information. *Journal of Experimental Child Psychology*, *97*(1), 14–27. doi:10.1016/j.jecp.2006.12.001

Durst, U. (2001). Why Germans don't feel "anger." In J. Harkins & A. Wierzbicka (Eds.), *Emotions in crosslinguistic perspective* (pp. 115–148). Berlin, Germany: Mouton de Gruyter.

Eid, M., & Diener, E. (2001). Norms for experiencing emotions in different cultures: Inter- and intranational differences. *Journal of Personality and Social Psychology*, *81*(5), 869–885. doi:10.1037//0022-3514.81.5.869

Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, *51*(1), 665–697. doi:10.1146/annurev.psych.51.1.665

Ensor, R., Spencer, D., & Hughes, C. (2011). “You Feel Sad?” Emotion understanding mediates effects of verbal ability and mother-child mutuality on prosocial behaviors: Findings from 2 years to 4 years. *Social Development*, *20*(1), 93–110. doi:10.1111/j.1467-9507.2009.00572.x

Entwisle, D. R., & Alexander, K. L. (1998). Facilitating the transition to first grade: The nature of transition and research on factors affecting it. *The Elementary School Journal*, *98*(4), 351–364. doi:10.1086/461901

Evans, V. (in press). Cognitive Linguistics. *The Oxford Handbook of Cognitive Science*.

Evans, V., & Bergen, B. (2007). The cognitive linguistics enterprise: An overview. *The Cognitive Linguistics Reader*, 1–36.

Evans, V., & Green, M. (2006). *Cognitive linguistics: An introduction*. Edinburgh: Edinburgh University Press.

Fair, D. A., Cohen, A. L., Dosenbach, N. U. F., Church, J. A., Miezin, F. M., Barch, D. M., Raichle, M. E., et al. (2008). The maturing architecture of the brain’s default network. *Proceedings of the National Academy of Sciences of the United States of America*, *105*(10), 4028–32. doi:10.1073/pnas.0800376105

Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General*, *113*(3), 464–486. doi:10.1037//0096-3445.113.3.464

Ferguson, T. J., Stegge, H., & Damhuis, I. (1991). Children’s understanding of guilt and shame. *Child Development*, *62*(4), 827–839. doi:10.1111/j.1467-8624.1991.tb01572.x

Field, A. P., & Lawson, J. (2003). Fear information and the development of fears during childhood: Effects on implicit fear responses and behavioural avoidance. *Behaviour Research and Therapy*, *41*(11), 1277–93. doi:10.1016/S0005-7967(03)00034-2

Field, A. P., & Lawson, J. (2008). The verbal information pathway to fear and subsequent causal learning in children. *Cognition & Emotion*, *22*(3), 459–479. doi:10.1080/02699930801886532

Fischer, K. W., Shaver, P. R., & Carnochan, P. (1990). How emotions develop and how they organise development. *Cognition & Emotion*, 37–41. doi:10.1080/02699939008407142

Fivush, R. (2007). Maternal reminiscing style and children's developing understanding of self and emotion. *Clinical Social Work Journal*, *35*(1), 37–46. doi:10.1007/s10615-006-0065-1

Fivush, R., Haden, C. a, & Reese, E. (2006). Elaborating on elaborations: role of maternal reminiscing style in cognitive and socioemotional development. *Child development*, *77*(6), 1568–88. doi:10.1111/j.1467-8624.2006.00960.x

Flack, W. (2006). Peripheral feedback effects of facial expressions, bodily postures, and vocal expressions on emotional feelings. *Cognition & Emotion*, *20*(2), 177–195. doi:10.1080/02699930500359617

Flavell, J. H., Flavell, E. R., & Green, F. L. (2001). Development of children's understanding of connections between thinking and feeling. *Psychological Science*, *12*(5), 430–432.

Flavell, J. H., Green, F., & Flavell, E. R. (2000). Development of children's awareness of their own thoughts. *Journal of Cognition and Development*, *1*, 97–112. doi:10.1207/S15327647JCD0101N_10

Flavell, J. H., Green, F. L., Flavell, E. R., Harris, P. L., & Astington, J. W. (1995). Knowledge about thinking. *Monographs of the Society for Research in Child Development*, *60*(1), i+iii+v–vi+1–113. doi:10.2307/1166124

Fodor, J. A. (1983). *The modularity of mind: An essay on faculty psychology*. Cambridge, MA: The MIT Press.

Ford, J. A., & Milosky, L. M. (2003). Inferring emotional reactions in social situations: Differences in children with language impairment. *Journal of Speech, Language, and Hearing Research*, *46*(1), 21–30. doi:10.1044/1092-4388(2003/002)

Frazier, B. N., Gelman, S. A., & Wellman, H. M. (2009). Preschoolers' search for explanatory information within adult-child conversation. *Child Development*, *80*(6), 1592–611. doi:10.1111/j.1467-8624.2009.01356.x

Furukawa, E., Tangney, J. P., & Higashibara, F. (2012). Cross-cultural continuities and discontinuities in shame, guilt, and pride: A study of children residing in Japan, Korea and the USA. *Self and Identity*, *11*(1), 90–113. doi:10.1080/15298868.2010.512748

Gao, W., Zhu, H., Giovanello, K. S., Smith, J. K., Shen, D., Gilmore, J. H., & Lin, W. (2009). Evidence on the emergence of the brain's default network from 2-week-old to 2-year-old healthy pediatric subjects. *Proceedings of the National Academy of Sciences of the United States of America*, *106*(16), 6790–5. doi:10.1073/pnas.0811221106

Gardner, D., Harris, P. L., Ohmoto, M., & Hamazaki, T. (1988). Japanese children's understanding of the distinction between real and apparent emotion. *International Journal of Behavioral Development*, *11*(2), 203–218. doi:10.1177/016502548801100204

Garner, P. W. (1996). The relations of emotional role taking, affective/moral attributions, and emotional display rule knowledge to low-income school-age children's social competence. *Journal of Applied Developmental Psychology*, *17*(1), 19–36. doi:10.1016/S0193-3973(96)90003-9

Garner, P. W., Jones, D. C., Gaddy, G., & Rennie, K. M. (1997). Low-income mothers' conversations about emotions and their children's emotional competence. *Social Development*, *6*(1), 37–52. doi:10.1111/j.1467-9507.1997.tb00093.x

Garner, P. W., & Waajid, B. (2008). The associations of emotion knowledge and teacher–child relationships to preschool children's school-related developmental competence. *Journal of Applied Developmental Psychology*, *29*(2), 89–100. doi:10.1016/j.appdev.2007.12.001

Gifford-Smith, M. E., & Brownell, C. A. (2003). Childhood peer relationships: Social acceptance, friendships, and peer networks. *Journal of School Psychology*, *41*(4), 235–284. doi:10.1016/S0022-4405(03)00048-7

Gleitman, L. R., Cassidy, K., Nappa, R., Papafragou, A., & Trueswell, J. C. (2005). Hard words. *Language Learning and Development*, *1*(1), 23–64. doi:10.1207/s15473341lld0101_4

Graham, S. (1988). Children's developing understanding of the motivational role of affect: An attributional analysis. *Cognitive Development*, *3*(1), 71–88. doi:10.1016/0885-2014(88)90031-7

Gross, D., & Harris, P. L. (1988). False beliefs about emotion: Children's understanding of misleading emotional displays. *International Journal of Behavioral Development*, *11*(4), 475–488. doi:10.1177/016502548801100406

Grube, D., & Hasselhorn, M. (1996). Children's freelisting of animal terms: Developmental changes in activating categorical knowledge. *Zeitschrift für Psychologie mit Zeitschrift für angewandte Psychologie*, *204*(2), 119–134.

Harris, P. L. (1989). *Children and emotion: The development of psychological understanding*. Oxford: Blackwell.

Harris, P. L., Johnson, C. N., Hutton, D., Andrews, G., & Cooke, T. (1989). Young children's theory of mind and emotion. *Cognition & Emotion*, *3*(4), 379–400. doi:10.1080/02699938908412713

Harris, P. L., Olthof, T., & Terwogt Meerum, M. (1981). Children's knowledge of emotion. *Journal of Child Psychology and Psychiatry*, *22*(3), 247–262. doi:10.1111/j.1469-7610.1981.tb00550.x

Harris, P. L., Olthof, T., Terwogt Meerum, M., & Hardman, C. E. (1987). Children's knowledge of the situations that provoke emotion. *International Journal of Behavioral Development*, *10*(3), 319–343. doi:10.1177/016502548701000304

Harter, S. (2006). The self. In N. Eisenberg & W. Damon (Eds.), *Handbook of child psychology: Social, emotional, and personality development (Vol. 3)* (6th ed., pp. 505–570). Wiley.

Harter, S. (2012). *Construction of the Self: Developmental and Sociocultural Foundations* (2nd ed.). New York, NY: Guilford Press.

Harter, S., & Buddin, B. J. (1987). Children's understanding of the simultaneity of two emotions: A five-stage developmental acquisition sequence. *Developmental Psychology*, *23*(3), 388–399. doi:10.1037//0012-1649.23.3.388

Harter, S., & Whitesell, N. R. (1989). Developmental changes in children's understanding of single, multiple, and blended emotion concepts. *Children's understanding of emotion* (pp. 81–116). New York: Cambridge University Press.

Havas, D. A., Glenberg, A. M., Gutowski, K. A, Lucarelli, M. J., & Davidson, R. J. (2010). Cosmetic use of botulinum toxin-a affects processing of emotional language. *Psychological Science*, *21*(7), 895–900. doi:10.1177/0956797610374742

Heister, J., Würzner, K.-M., Bubenzer, J., Pohl, E., Hanneforth, T., Geyken, A., & Kliegl, R. (2011). dlexDB – Eine lexikalische Datenbank für die psychologische und linguistische Forschung. *Psychologische Rundschau*, *62*(1), 10–20. doi:10.1026/0033-3042/a000029

Hogan, P. C. (2011). *What literature teaches us about emotion*. New York, NY: Cambridge University Press.

Irwin, J. R., Carter, A. S., & Briggs-Gowan, M. J. (2002). The social-emotional development of "late-talking" toddlers. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(11), 1324–1332. doi:10.1097/00004583-200211000-00014

Isabella, R. A., & Diener, M. L. (2010). Self-representations of social and academic competence: Contextual correlates in middle childhood. *Journal of Research in Childhood Education*, *24*(4), 315–331. doi:10.1080/02568543.2010.510082

Izard, C. E. (2001). Emotional intelligence or adaptive emotions? *Emotion*, *1*(3), 249–257. doi:10.1037//1528-3542.1.3.249

Izard, C. E. (2010). The many meanings/aspects of emotion: Definitions, functions, activation, and regulation. *Emotion Review*, *2*(4), 363–370. doi:10.1177/1754073910374661

Izard, C. E., Fine, S., Schultz, D., Mostow, A., Ackerman, B. P., & Youngstrom, E. A. (2001). Emotion knowledge as a predictor of social behavior and academic competence in children at risk. *Psychological Science*, *12*(1), 18–23. doi:10.1111/1467-9280.00304

Izard, C. E., & Harris, P. L. (1995). Emotional development and developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology. Vol. 1: Theory and methods* (pp. 467–503). New York, NY: Wiley.

James, K. H., & Maouene, J. (2009). Auditory verb perception recruits motor systems in the developing brain: an fMRI investigation. *Developmental science*, *12*(6), F26–34. doi:10.1111/j.1467-7687.2009.00919.x

Jarrold, C., Hartley, S. J., Phillips, C., & Baddeley, A. (2000). Word fluency in Williams syndrome: Evidence for unusual semantic organisation? *Cognitive Neuropsychiatry*, *5*(4), 293–319. doi:10.1080/13546800050199739

Jessen, F., Heun, R., Erb, M., Granath, D. O., Klose, U., Papassotiropoulos, A., & Grodd, W. (2000). The concreteness effect: Evidence for dual coding and context availability. *Brain and Language*, *74*(1), 103–112. doi:10.1006/brln.2000.2340

Johnson-Laird, P. N., & Oatley, K. (1989). The language of emotions: An analysis of a semantic field. *Cognition & Emotion*, *3*(2), 81–123. doi:10.1080/02699938908408075

Joshi, M. S., & MacLean, M. (1994). Indian and English children's understanding of the distinction between real and apparent emotion. *Child Development*, *65*(5), 1372. doi:10.2307/1131504

Kail, R., & Nippold, M. (1984). Unconstrained retrieval from semantic memory. *Child Development*, *55*(3), 944–951. doi:10.2307/1130146

Kauschke, C., & Klann-Delius, G. (1997). The acquisition of verbal expressions for internal states in German: a descriptive, explorative, longitudinal study. In S. Niemeier & R. Dirven (Eds.), *The Language of Emotions: Conceptualization, Expression, and Theoretical Foundation* (p. 173 - 194). Amsterdam:

John Benjamins.

Kelley, S. A., Brownell, C. A., & Campbell, S. B. (2013). Mastery motivation and self-evaluative affect in toddlers: longitudinal relations with maternal behavior. *Child Development*, *71*(4), 1061–71. doi:10.1111/1467-8624.00209

Kerns, K., Tomich, P., & Kim, P. (2006). Normative trends in children's perceptions of availability and utilization of attachment figures in middle childhood. *Social Development*, 1–23. doi:10.1111/j.1467-9507.2006.00327.x

Kornilaki, E. N., & Chlouverakis, G. (2004). The situational antecedents of pride and happiness: Developmental and domain differences. *British Journal of Developmental Psychology*, *22*(4), 605–619. doi:10.1348/0261510042378245

Kounios, J., & Holcomb, P. J. (1994). Concreteness effects in semantic processing: ERP evidence supporting dual-coding theory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *20*(4), 804–823.

Kousta, S., Vigliocco, G., Vinson, D. P., Andrews, M., & Del Campo, E. (2011). The representation of abstract words: Why emotion matters. *Journal of Experimental Psychology: General*, *140*(1), 14–34. doi:10.1037/a0021446

Kucirkova, N., & Tompkins, V. (2013). Personalization in mother-child emotion talk across three contexts. *Infant and Child Development*. doi:10.1002/icd.1814

Kuebli, J., Butler, S., & Fivush, R. (1995). Mother-child talk about past emotions: Relations of maternal language and child gender over time. *Cognition & Emotion*, *9*(2), 265–283. doi:10.1080/02699939508409011

Kumschick, I. R. (2007). *Wie gut und wie schnell erkennen Jugendliche Emotionen im Gesicht des Gegenübers? Entwicklung, Durchführung und Auswertung eines altersadäquaten Emotionserkennungstestes für Jugendliche (How well and how fast recognize adolescents emotions in others'?)*. Unpublished Diploma thesis. Freie Universität, Berlin.

Kusche, C. A., Beilke, R. L., & Greenberg, M. T. (1988). *Kusche Affective Interview – Revised.* Unpublished Measure, University of Washington, Seattle,

WA.

Kölliker Funk, M. (2006). Zusammenhang von frühem Spracherwerb und emotionaler Entwicklung bei Spracherwerbsstörungen. In R. Bahr & C. Iven (Eds.), *Sprache – Emotion – Bewusstheit: Beiträge zur Sprachtherapie in Schule, Praxis, Klinik* (pp. 49–56). Schulz-Kirchner Verlag.

Labov, W., & Waletzky, J. (1967). Narrative analysis. In J. Helm (Ed.), *Essays on the verbal and visual arts* (pp. 12–24). Seattle, WA: University of Washington Press.

Lagattuta, K. H., & Thompson, R. A. (2007). The development of self-conscious emotions: Cognitive processes and social influences. *Self-Conscious Emotions*. Guilford Press.

Lagattuta, K. H., & Wellman, H. M. (2001). Thinking about the past: Early knowledge about links between prior experience, thinking, and emotion. *Child Development*, *72*(1), 82–102.

Lagattuta, K. H., & Wellman, H. M. (2002). Differences in early parent-child conversations about negative versus positive emotions: Implications for the development of psychological understanding. *Developmental Psychology*, *38*(4), 564–580. doi:10.1037//0012-1649.38.4.564

Lagattuta, K. H., Wellman, H. M., & Flavell, J. H. (1997). Preschoolers' understanding of the link between thinking and feeling: Cognitive cuing and emotional change. *Child Development*, *68*(6), 1081–1104. doi:10.2307/1132293

Laible, D. (2004). Mother-child discourse in two contexts: Links with child temperament, attachment security, and socioemotional competence. *Developmental Psychology*, *40*(6), 979–92. doi:10.1037/0012-1649.40.6.979

Laible, D. (2007). Attachment with parents and peers in late adolescence: Links with emotional competence and social behavior. *Personality and Individual Differences*, *43*(5), 1185–1197. doi:10.1016/j.paid.2007.03.010

Laible, D., & Song, J. (2006). Constructing emotional and relational understanding: The role of affect and mother-child discourse. *Merrill-Palmer Quarterly*, *52*(1), 44–69. doi:10.1353/mpq.2006.0006

Laible, D., & Thompson, R. A. (1998). Attachment and emotional understanding in preschool children. *Developmental Psychology*, *34*(5), 1038–1045. doi:10.1037/0012-1649.34.5.1038

Lamb, M. (2004). *The Role of the Father in Child Development*. Hoboken, NJ: Wiley.

Larsen, J. T., Norris, C. J., & Cacioppo, J. T. (2003). Effects of positive and negative affect on electromyographic activity over zygomaticus major and corrugator supercilii. *Psychophysiology*, *40*(5), 776–785. doi:10.1111/1469-8986.00078

Larsen, J. T., To, Y. M., & Fireman, G. (2007). Children's understanding and experience of mixed emotions. *Psychological Science*, *18*(2), 186–91. doi:10.1111/j.1467-9280.2007.01870.x

Leerkes, E. M., Paradise, M., Brien, M. O., & Calkins, S. D. (2008). Emotion and cognition processes in preschool children. *Merrill-Palmer Quarterly*, *54*(1), 102–124. doi:10.1353/mpq.2008.0009

Lenhard, W., & Schneider, W. (2006). *ELFE 1-6. Ein Leseverständnistest für Erst- bis Sechstklässler. (Information comprehension test for primary schools)*. Göttingen, Germany: Hogrefe.

Levy, E., & Nelson, K. (1994). Words in discourse: A dialectical approach to the acquisition of meaning and use. *Journal of Child Language*, *21*, 367.

Lewis, C., & Lamb, M. E. (2003). Fathers' influences on children's development: The evidence from two-parent families. *European Journal of Psychology of Education*, *18*(2), 211–228. doi:10.1007/BF03173485

Lewis, M. (1991). Cultural differences in children's knowledge of emotional scripts. In C. Saarni & P. L. Harris (Eds.), *Children's understanding of emotion* (pp. 350–373). Cambridge University Press.

Lewis, M. (2002). Early emotional development. *Introduction to infant development*, 192–209.

Lewis, M. (2008). Self-conscious emotions: Embarrassment, pride, shame and

guilt. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 742–756). New York: Guilford Press.

Lewis, M., Alessandri, S. M., & Sullivan, M. W. (1992). Differences in shame and pride as a function of children's gender and task difficulty. *Child Development*, *63*(3), 630–638. doi:10.2307/1131351

Liao, W., Ding, J., Marinazzo, D., Xu, Q., Wang, Z., Yuan, C., Zhang, Z., et al. (2011). Small-world directed networks in the human brain: multivariate Granger causality analysis of resting-state fMRI. *NeuroImage*, *54*(4), 2683–94. doi:10.1016/j.neuroimage.2010.11.007

Lindsay, G., & Dockrell, J. (2000). The behaviour and self-esteem of children with specific speech and language difficulties. *British Journal of Educational Psychology*, *70*(4), 583–601. doi:10.1348/000709900158317

Mahon, B. Z., & Caramazza, A. (2008). A critical look at the embodied cognition hypothesis and a new proposal for grounding conceptual content. *Journal of physiology*, *102*(1-3), 59–70. doi:10.1016/j.jphysparis.2008.03.004

Mandler, J. M. (2004a). *The foundations of mind: Origins of conceptual thought*. New York, NY: Oxford University Press.

Mandler, J. M. (2004b). Two kinds of knowledge acquisition. In J. M. Lucariello, J. A. Hudson, R. Fivush, & P. J. Bauer (Eds.), *The development of the mediated mind: Sociocultural context and cognitive development* (pp. 13–32). Mahwah, NJ: Psychology Press.

Martin, R. M., & Green, J. A. (2005). The use of emotion explanations by mothers: Relation to preschoolers' gender and understanding of emotions. *Social Development*, *14*(2), 229–249. doi:10.1111/j.1467-9507.2005.00300.x

Marx, W. (1982). Das Wortfeld der Gefühlsbegriffe. *Zeitschrift für experimentelle und angewandte Psychologie*, *XXIX*(1), 137–146. Retrieved from http://www.worldcat.org/title/zeitschrift-fur-experimentelle-und-angewandte-psychologie/oclc/1357278?lang=de

Mascalzoni, E., Regolin, L., Vallortigara, G., & Simion, F. (2013). The cradle of causal reasoning: newborns' preference for physical causality. *Developmen-*

tal Science, *16*(3), 327–35. doi:10.1111/desc.12018

Mayer, M., & Mayer, M. (1971). *A boy, a dog, a frog and a friend*. New York, NY: Dial.

McCabe, A., & Peterson, C. (1984). What makes a good story. *Journal of Psycholinguistic Research*, *13*(6), 457–480. doi:10.1007/BF01068179

McCabe, P. C., & Meller, P. J. (2004). The relationship between language and social competence: How language impairment affects social growth. *Psychology in the Schools*, *41*(3), 313–321. doi:10.1002/pits.10161

McRae, K., & Jones, M. (2013). *Semantic Memory*. In D. Reisberg (Ed.); *The Oxford Handbook of Cognitive Psychology* (pp. 206–219). Oxford, UK: Oxford University Press.

Mesquita, B., & Frijda, N. H. (1992). Cultural variations in emotions: A review. *Psychological Bulletin*, *112*(2), 179.

Mesquita, B., & Karasawa, M. (2004). Self-conscious emotions as dynamic cultural processes. *Psychological Inquiry*, *15*(2), 161–166. Retrieved from http://www.jstor.org/stable/10.2307/20447222

Miller, A. L., Gouley, K. K., Seifer, R., Zakriski, A., Eguia, M., & Vergnani, M. (2005). Emotion knowledge skills in low-income elementary school children: Associations with social status and peer experiences. *Social Development*, *14*(4), 637–651. doi:10.1111/j.1467-9507.2005.00321.x

Mills, R. S. L. (2003). Possible antecedents and developmental implications of shame in young girls. *Infant and Child Development*, *12*(4), 329–349. doi:10.1002/icd.308

Mills, R. S. L. (2005). Taking stock of the developmental literature on shame. *Developmental Review*, *25*(1), 26–63. doi:10.1016/j.dr.2004.08.001

Moore, C. C., Romney, A. K., Hsia, T., Rusch, C. D., & Rusch, D. (1999). The universality of the semantic structure of emotion terms: Methods for the study of inter- and intra-cultural variability. *American Anthropologist, New Series*, *101*(3), 529–546. doi:10.1525/aa.1999.101.3.529

Morgan, J. K., Izard, C. E., & King, K. a. (2009). Construct validity of the emotion matching task: Preliminary evidence for convergent and criterion validity of a new emotion knowledge measure for young children. *Social development*, *19*(1), 52–70. doi:10.1111/j.1467-9507.2008.00529.x

Morgan, R. L., & Heise, D. (1988). Structure of emotions. *Social Psychology Quarterly*, *51*(1), 19–31. doi:10.2307/2786981

Morizet, D., Depezay, L., Masse, P., Combris, P., & Giboreau, A. (2011). Perceptual and lexical knowledge of vegetables in preadolescent children. *Appetite*, *57*(1), 142–147. doi:10.1016/j.appet.2011.04.006

Moseley, R., Carota, F., Hauk, O., Mohr, B., & Pulvermüller, F. (2012). A role for the motor system in binding abstract emotional meaning. *Cerebral cortex*. doi:10.1093/cercor/bhr238

Murphy, G. L. (2004). *The big book of concepts*. Cambridge, MA: The MIT Press.

Muthén, L. K., & Muthén, B. O. (2010). *Mplus User's Guide* (Sixth Edit.). Los Angeles, CA: Muthén & Muthén.

Nelson, K. (1996). *Language in cognitive development: The emergence of the mediated mind*. New York, NY: Cambridge University Press.

Nelson, K., & Kessler Shaw, L. (2002). Developing a socially shared symbolic system. In E. Amsel & J. Byrnes (Eds.), *Language, literacy, and cognitive development: The development and consequences of symbolic communication* (pp. 27–58). Mahwah, NJ: Lawrence Erlbaum Associates.

Nelson, K., Welsh, J., Trup, E., & Greenberg, M. (2011). Language delays of impoverished preschool children in relation to early academic and emotion recognition skills. *First Language*, *31*(2), 164–194. doi:10.1177/0142723710391887

Newman, B. M., & Newman, P. R. (2011). *Development through life: A psychosocial approach* (11th ed.). Wadsworth Publishing Company.

Niedenthal, P. M. (2008). Emotion concepts. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 587–600). New

York: Guilford.

Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in attitudes, social perception, and emotion. *Personality and Social Psychology Review*, *9*(3), 184–211. doi:10.1207/s15327957pspr0903_1

Niedenthal, P. M., Winkielman, P., Mondillon, L., & Vermeulen, N. (2009). Embodiment of emotion concepts. *Journal of Personality and Social Psychology*, *96*(6), 1120–36. doi:10.1037/a0015574

Ninio, A., & Snow, C. E. (1996). *Pragmatic development*. Boulder, CO: Westview Press.

Nippold, M. (1988). *Later language development: Ages 9 through 19*. Boston, MA: Little Brown.

Norris, C. J., Larsen, J. T., Crawford, L. E., & Cacioppo, J. T. (2011). Better (or worse) for some than others: Individual differences in the positivity offset and negativity bias. *Journal of Research in Personality*, *45*(1), 100–111. doi:10.1016/j.jrp.2010.12.001

Oakes, L. M., & Cohen, L. B. (1990). Infant perception of a causal event. *Cognitive Development*, *5*(2), 193–207. doi:10.1016/0885-2014(90)90026-P

Olthof, T., Schouten, A., Kuiper, H., Stegge, H., & Jennekens-Schinkel, A. (2000). Shame and guilt in children: Differential situational antecedents and experiential correlates. *British Journal of Developmental Psychology*, *18*(1), 51–64. doi:10.1348/026151000165562

Ontai, L. L., & Thompson, R. A. (2002). Patterns of attachment and maternal discourse effects on children's emotion understanding from 3 to 5 years of age. *Social Development*, *11*(4), 433–450. doi:10.1111/1467-9507.00209

Oosterwijk, S., Rotteveel, M., Fischer, A. H., & Hess, U. (2009). Embodied emotion concepts: How generating words about pride and disappointment influences posture. *European Journal of Social Psychology*, *39*(3), 457–466. doi:10.1002/ejsp.584

Ortony, A., Clore, G. L., & Foss, M. A. (1987). The referential structure of the affective lexicon. *Cognitive Science*, *11*(3), 341–364. doi:10.1016/S0364-0213(87)80010-1

Paivio, A. (1991). Dual coding theory: Retrospect and current status. *Canadian Journal of Psychology*, *45*(3), 255–287. doi:10.1037/h0084295

Paradis, C., & Willners, C. (2011). Antonymy: From convention to meaning-making. *Review of cognitive linguistics*, *9*(2), 367–391. doi:10.1075/rcl.9.2.02par

Parke, R. D. (2002). Fathers and families. In M. H. Bornstein (Ed.), *Handbook of parenting. Vol. 3: Being and becoming a parent* (Vol. 3, pp. 27–73). NJ: Erlbaum.

Parker, J. G., & Gottman, J. M. (1989). Social and emotional development in a relational context: Friendship interaction from early childhood to adolescence. In J. T. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 95–131). New York: John Wiley & Sons.

Peterson, C., & McCabe, A. (1983). *Developmental psycholinguistics: Three ways of looking at a child's narrative*. New York: Plenum Press.

Pons, F., Lawson, J., Harris, P. L., & De Rosnay, M. (2003). Individual differences in children's emotion understanding: Effects of age and language. *Scandinavian Journal of Psychology*, *44*(4), 347–353. doi:10.1111/1467-9450.00354

Prescott, T. J., Newton, L. D., Mir, N. U., Woodruff, P. W. R., & Parks, R. W. (2006). A new dissimilarity measure for finding semantic structure in category fluency data with implications for understanding memory organization in schizophrenia. *Neuropsychology*, *20*(6), 685–699. doi:10.1037/0894-4105.20.6.685

Pulvermüller, F. (2013). How neurons make meaning: Brain mechanisms for embodied and abstract-symbolic semantics. *Trends in Cognitive Sciences*. doi:10.1016/j.tics.2013.06.004

Redmond, S. M., & Rice, M. L. (1998). The socioemotional behaviors of children

with SLI: Social adaptation or social deviance? *Journal of Speech, Language, and Hearing Research*, *41*(3), 688–700. Retrieved from http://jslhr.asha.org/

Reilly, J., Bates, E. A., & Marchman, V. A. (1998). Narrative discourse in children with early focal brain injury. *Brain and Language*, *61*(3), 335–75. doi:10.1006/brln.1997.1882

Reilly, J., Klima, E. S., & Bellugi, U. (1990). Once more with feeling: Affect and language in atypical populations. *Development and Psychopathology*, *2*(04), 367–391. doi:10.1017/S0954579400005782

Reilly, J., Losh, M., Bellugi, U., & Wulfeck, B. (2004). “Frog, where are you?” Narratives in children with specific language impairment, early focal brain injury, and Williams syndrome. *Brain and Language*, *88*(2), 229–47. doi:10.1016/S0093-934X(03)00101-9

Ridgeway, D., Waters, E., & Kuczaj, S. A. (1985). Acquisition of emotion-descriptive language: Receptive and productive vocabulary norms for ages 18 months to 6 years. *Developmental Psychology*, *21*(5), 901–908. doi:10.1037//0012-1649.21.5.901

Romney, A. K., Moore, C., & Rusch, C. D. (1997). Cultural universals: Measuring the semantic structure of emotion terms in English and Japanese. *Proceedings of the National Academy of Sciences*, *94*(10), 5489. doi:10.1073/pnas.94.10.5489

Rosch, E. H. (1973). Natural categories. *Cognitive Psychology*, *4*(3), 328–350. doi:10.1016/0010-0285(73)90017-0

Rubinov, M., & Sporns, O. (2010). Complex network measures of brain connectivity: uses and interpretations. *NeuroImage*, *52*(3), 1059–69. doi:10.1016/j.neuroimage.2009.10.003

Ruble, D N, & Frey, K. S. (1991). Changing patterns of comparative behavior as skills are acquired: A functional model of self-evaluation. In T. A. Wills (Ed.), *Social comparison: Contemporary theory and research* (pp. 79–113). Lawrence Erlbaum.

Ruble, Diane N., Boggiano, A. K., Feldman, N. S., & Loebl, J. H. (1980). Developmental analysis of the role of social comparison in self-evaluation. *Developmental Psychology*, *16*(2), 105–115. doi:10.1037/0012-1649.16.2.105

Ruffman, T., Slade, L., Rowlandson, K., Rumsey, C., & Garnham, A. (2003). How language relates to belief, desire, and emotion understanding. *Cognitive Development*, *18*(2), 139–158. doi:10.1016/S0885-2014(03)00002-9

Ruhl, K. L., Hughes, C. A., & Camarata, S. M. (1992). Analysis of the expressive and receptive language characteristics of emotionally handicapped students served in public school settings. *Communication Disorders Quarterly*, *14*(2), 165–176. doi:10.1177/152574019201400205

Russell, J. A. (1990). The preschooler's understanding of the causes and consequences of emotion. *Child Development*, *61*(6), 1872–1881. doi:10.2307/1130843

Russell, J. A. (1991a). Culture, scripts, and children's understanding of emotion. In C. Saarni & P. L. Harris (Eds.), *Children's understanding of emotion* (pp. 293–318). Cambridge University Press.

Russell, J. A. (1991b). In defense of a prototype approach to emotion concepts. *Journal of Personality and Social Psychology*, *60*(1), 37–47. doi:10.1037//0022-3514.60.1.37

Russell, J. A., & Sato, K. (1995). Comparing emotion words between languages. *Journal of Cross-Cultural Psychology*, *26*(4), 384–391. doi:10.1177/0022022195264004

Russell, J. A., & Widen, S. C. (2002). Words versus faces in evoking preschool children's knowledge of the causes of emotions. *International Journal of Behavioral Development*, *26*(2), 97–103. doi:10.1080/01650250042000582

Saarni, C. (1979). Children's understanding of display rules for expressive behavior. *Developmental Psychology*, *15*(4), 424–429. doi:10.1037/0012-1649.15.4.424

Saarni, C. (1999). *The development of emotional competence*. New York, NY: Guilford Press.

Sales, J. M., & Fivush, R. (2005). Social and emotional functions of mother–child reminiscing about stressful events. *Social Cognition*, *23*(1), 70–90. doi:10.1521/soco.23.1.70.59196

Salisch, M. V., Haenel, M., & Freund, P. A. (2013). Emotion understanding and cognitive abilities in young children. *Learning and Individual Differences*. doi:10.1016/j.lindif.2013.04.001

Salmon, K., Evans, I. M., Moskowitz, S., Grouden, M., Parkes, F., & Miller, E. (2013). The components of young children's emotion knowledge: Which are enhanced by adult emotion talk? *Social Development*, *22*(1), 94–110. doi:10.1111/sode.12004

Salovey, P., Detweiler-Bedell, B. T., Detweiler-Bedell, J. B., & Mayer, J. D. (2008). Emotional intelligence. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 533–547). New York, NY: Guilford Press.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, (9(3)), 185–211. doi:10.2190/dugg-p24e-52wk-6cdg

Sanger, D. (1994). Language problems among students with emotional and behavioral disorders. *Intervention in School & Clinic*, (2), 103–108.

Sattath, S., & Tversky, A. (1977). Additive similarity trees. *Psychometrika*, *42*(3), 319–345. doi:10.1007/BF02293654

Schild, U., Röder, B., & Friedrich, C. K. (2011). Learning to read shapes the activation of neural lexical representations in the speech recognition pathway. *Developmental Cognitive Neuroscience*, *1*(2), 163–174. doi:10.1016/j.dcn.2010.11.002

Schore, A. (1998). Early shame experiences and infant brain development. In P. Gilbert & B. Andrews (Eds.), *Shame: Interpersonal behavior, psychopathology, and culture* (pp. 57–77). New York: Oxford University Press.

Schrauf, R. W., & Sanchez, J. (2004). The preponderance of negative emotion words in the emotion lexicon: A cross-generational and cross-linguistic study. *Journal of Multilingual and Multicultural Development*, *25*(2-3), 266–

284. doi:10.1080/01434630408666532

Schrauf, R. W., & Sanchez, J. (2008). Using freelisting to identify, assess, and characterize age differences in shared cultural domains. *Journal of Gerontology*, *63*(6), 385–393. doi:10.1093/geronb/63.6.S385

Schultz, D., Izard, C. E., & Ackerman, B. P. (2000). Children's anger attribution bias: Relations to family environment and social adjustment. *Social Development*, *9*(3), 284–301. doi:10.1111/1467-9507.00126

Schultz, D., Izard, C. E., Ackerman, B. P., & Youngstrom, E. A. (2001). Emotion knowledge in economically disadvantaged children: Self-regulatory antecedents and relations to social difficulties and withdrawal. *Development and Psychopathology*, *13*(1), 53–67. doi:10.1017/S0954579401001043

Schwanenflugel, P. J. (1991). Why are abstract concepts hard to understand. *The psychology of word meanings* (pp. 223–250). Hillsdale, NJ: Lawrence Erlbaum Associates.

Scott, L. A., Healey, E. C., & Norris, J. A. (1995). A comparison between children who stutter and their normally fluent peers on a story retelling task. *Journal of Fluency Disorders*, *20*(3), 279–292. doi:16/0094-730X(94)00015-L

Seidner, L., Stipek, D., & Feshbach, N. (1988). Analysis of elementary school-aged children's concepts of pride and embarrassment. *Child Development*, *59*(2), 367–377. doi:10.2307/1130316

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, *52*(6), 1061–1086. doi:10.1037//0022-3514.52.6.1061

Shields, A., Dickstein, S., Seifer, R., Giusti, L., Magee, K. D., & Spritz, B. (2001). Emotional competence and early school adjustment: A study of preschoolers at risk. *Early Education & Development*, *12*(1), 73–96. doi:10.1207/s15566935eed1201_5

Smith, J. J., Furbee, L., Maynard, K., Quick, S., & Ross, L. (1995). Salience counts: A domain analysis of English color terms. *Journal of Linguistic Anthropology*, *5*(2), 203–216. doi:10.1525/jlin.1995.5.2.203

Smith, M. (2001). Social and emotional competences: Contributions to young African-American children's peer acceptance. *Early Education & Development*, *12*(1), 49–72. doi:10.1207/s15566935eed1201_4

Solomon, R. C. (2008). The philosophy of emotions. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 3–15). New York: Guilford Press.

Spackman, M. P., Fujiki, M., & Brinton, B. (2006). Understanding emotions in context: The effects of language impairment on children's ability to infer emotional reactions. *International Journal of Language & Communication Disorders*, *41*(2), 173–88. doi:10.1080/13682820500224091

Swain, J. (2003). How young schoolboys become somebody: The role of the body in the construction of masculinity. *British Journal of Sociology of Education*, *24*(3), 299–314. doi:10.1080/01425690301890

Tangney, J. P., & Dearing, R. L. (2002). *Shame and Guilt*. New York: Guilford Press.

Tangney, J. P., & Fischer, K. W. (1995). *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride*. New York: Guilford Press.

Thompson, E. C., & Juan, Z. (2006). Comparative cultural salience: measures using free-list data. *Field methods*, *18*(4), 398–412.

Thompson, R. A. (1987). Development of children's inferences of the emotions of others. *Developmental Psychology*, *23*(1), 124–131. doi:10.1037//0012-1649.23.1.124

Tomasello, M. (2009). *Constructing a language: A usage-based theory of language acquisition*. Harvard University Press.

Tomasello, M., & Barton, M. E. (1994). Learning words in non-ostensive contexts. *Developmental Psychology*, *30*(5), 639–650. doi:10.1037/0012-1649.30.5.639

Tomasello, M., Strosberg, R., & Akhtar, N. (1996). Eighteen-month-old children learn words in non-ostensive contexts. *Journal of Child Language*, *23*(01),

157–176. doi:10.1017/S0305000900010138

Tomblin, J. B., & Zhang, X. (2006). The dimensionality of language ability in school-age children. *Journal of Speech, Language, and Hearing Research*, *49*(6), 1193–1208. doi:10.1044/1092- 4388(2006/086)

Tracy, J. L., & Robins, R. W. (2004). Putting the self into self-conscious emotions: A theoretical model. *Psychological Inquiry*, *15*(2), 103–125.

Tracy, J. L., & Robins, R. W. (2007). Emerging insights into the nature and function of pride. *Current Directions in Psychological Science*, *16*(3), 147–150. doi:10.1111/j.1467-8721.2007.00493.x

Tracy, J. L., Robins, R. W., & Lagattuta, K. H. (2005). Can children recognize pride? *Emotion*, *5*(3), 251–7. doi:10.1037/1528-3542.5.3.251

Trentacosta, C. J., & Fine, S. E. (2010). Emotion knowledge, social competence, and behavior problems in childhood and adolescence: A meta-analytic review. *Social Development*, *19*(1), 1–29. doi:10.1111/j.1467-9507.2009.00543.x

Trentacosta, C. J., & Izard, C. E. (2007). Kindergarten children's emotion competence as a predictor of their academic competence in first grade. *Emotion*, *7*(1), 77–88. doi:10.1037/1528-3542.7.1.77

Vaish, A., Grossmann, T., & Woodward, A. (2008). Not all emotions are created equal: The negativity bias in social-emotional development. *Psychological Bulletin*, *134*(3), 383–403. doi:10.1037/0033-2909.134.3.383

Van Bergen, P., & Salmon, K. (2010). Emotion-oriented reminiscing and children's recall of a novel event. *Cognition & Emotion*, *24*(6), 991–1007. doi:10.1080/02699930903093326

Vieillard, S., & Guidetti, M. (2009). Children's perception and understanding of (dis)similarities among dynamic bodily/facial expressions of happiness, pleasure, anger, and irritation. *Journal of Experimental Child Psychology*, *102*(1), 78–95. doi:10.1016/j.jecp.2008.04.005

Vigliocco, G., Meteyard, L., Andrews, M., & Kousta, S. (2009). Toward a theory of

semantic representation. *Language and Cognition*, *1*(2), 219–247. doi:10.1515/LANGCOG.2009.011

Wagner, V., Jacobsen, T., Hanich, J., Lensing, N., Shah, M., & Menninghaus, W. (2012). When we were moved. Emotions experienced in moving situations. *Manuscript submitted for publication.*

Wang, J., Conder, J. A., Blitzer, D. N., & Shinkareva, S. V. (2010). Neural representation of abstract and concrete concepts: a meta-analysis of neuroimaging studies. *Human brain mapping*, *31*(10), 1459–68. doi:10.1002/hbm.20950

Weisfeld, G., & Goetz, S. (2013). Applying evolutionary thinking to the study of emotion. *Behavioral Sciences*, *3*(3), 388–407. doi:10.3390/bs3030388

Wellman, H. M., Harris, P. L., Banerjee, M., & Sinclair, A. (1995). Early understanding of emotion: Evidence from natural language. *Cognition & Emotion*, *9*(2-3), 117–149. doi:10.1080/02699939508409005

Wellman, H. M., & Lagattuta, K. H. (2000). Developing understandings of mind. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.), *Understanding other minds: Perspectives from developmental cognitive neuroscience* (2nd ed., pp. 21–49). New York, NY: Oxford University Press.

Widen, S. C. (2004). The relative power of an emotion's facial expression, label, and behavioral consequence to evoke preschoolers' knowledge of its cause. *Cognitive Development*, *19*(1), 111–125. doi:10.1016/j.cogdev.2003.11.004

Widen, S. C., & Russell, J. A. (2003). A closer look at preschoolers' freely produced labels for facial expressions. *Developmental Psychology*, *39*(1), 114–128. doi:10.1037/0012-1649.39.1.114

Widen, S. C., & Russell, J. A. (2008). Children acquire emotion categories gradually. *Cognitive Development*, *23*(2), 291–312. doi:10.1016/j.cogdev.2008.01.002

Widen, S. C., & Russell, J. A. (2010a). Differentiation in preschooler's categories of emotion. *Emotion*, *10*(5), 651–661. doi:10.1037/a0019005

Widen, S. C., & Russell, J. A. (2010b). Children's scripts for social emotions: Causes and consequences are more central than are facial expressions. *British Journal of Developmental Psychology*, *28*(3), 565–581. doi:10.1348/026151009X457550d

Widen, S. C., & Russell, J. A. (2011). In building a script for an emotion, do preschoolers add its cause before its behavior consequence? *Social Development*, *20*(3), 471–485. doi:10.1111/j.1467-9507.2010.00594.x

Wierzbicka, A. (1992). Defining emotion concepts. *Cognitive Science*, *16*(4), 539–581. doi:10.1016/0364-0213(92)90031-O

Wittgenstein, L. (2009). *Philosophical Investigations*. (P. M. S. Hacker & J. Schulte, Eds.) (4th ed.). Wiley-Blackwell, Malden.

Yeh, W., & Barsalou, L. W. (2006). The situated nature of concepts. *The American Journal of Psychology*, *119*(3), 349–84.

Zammuner, V. L. (1998). Concepts of emotion: "Emotionness", and dimensional ratings of Italian emotion words. *Cognition & Emotion*, *12*(2), 243–272. doi:10.1080/026999398379745

Zammuner, V. L. (2011). People's active emotion vocabulary: Free listing of emotion labels and their association to salient psychological variables. In A. Esposito, A. Vinciarelli, K. Vicsi, C. Pelachaud, & A. Nijholt (Eds.), *Analysis of verbal and nonverbal communication and enactment. The processing issues* (Vol. 6800, pp. 449–460). Berlin, Germany. doi:10.1007/978-3-642-25775-9_40

APPENDIX

List of Tables

Table 2.1 **57**
Measures of language competence and emotional competence: Mean, standard deviation, skewness, and kurtosis

Table 2.2 **59**
Correlations between measures of language competence and emotional competence

Table 2.3 **61**
Partial correlations between measures of language and emotional competence, controlling for age and gender

Table 3.1 **83**
Frequencies and percentages of emotion words in children and adults

Table 3.2 **87**
Percentages of response categories in children and adults

Table 4.1 **106**
Coding categories of pride and shame descriptions with examples drawn from children's responses

Table 4.2 **110**
Frequencies and percentages of content categories in descriptions of shame by children and adults

Table 4.3 **113**
Frequencies and percentages of content categories in descriptions of pride by children and adults

List of Figures

Figure 2.1 **63**
Model with two factors

Figure 2.2 **64**
Model with one general factor

Figure 3.1 **84**
Frequencies of individual differences between positive and negative emotion words in children and adults

Figure 3.2 **86**
ADDTREE Analysis dendrograms for emotion words in children and adults

Figure 4.1 **108**
Percentages of don’t-know-answers in descriptions of shame and pride as a function of age

Figure 4.2 **116**
(Co-)Occurrences of the content categories in children’s descriptions of shame and pride

Figure 4.3 **117**
(Co-)Occurrences of the content categories in adults’ descriptions of shame and pride

Figure 4.4 **118**
Frequency distribution of references to an audience in descriptions of shame and pride by children and adults

Curriculum Vitae

For reasons of data protection, the curriculum vitae is not included in the online version.

Erklärung

Hiermit versichere ich, dass ich die vorgelegte Arbeit selbständig verfasst habe. Andere als die angegebenen Hilfsmittel habe ich nicht verwendet. Die Arbeit ist in keinem früheren Promotionsverfahren angenommen oder abgelehnt worden.

Berlin, August 2013 Luna Beck