

2. Research aims

Research in the area of bilingualism indicates that several of the essential verbal and cognitive processes involved in reading may be shaped differently in children with dual language experiences and competencies. As phonological awareness has been shown to be a particularly vital aspect of reading development and is thought to be stronger in bilingual persons, special attention is paid to this component ability in the reading process. On the other hand, the vocabularies and German verbal abilities of the bilingual children in Germany, which are widely believed to be deficient, are closely examined as well. Still, there is no evidence to date that bilingualism itself has negative consequences for the development of general reading skills (see Chiappe & Siegel, 1999). To test the validity of a typical monolingual model of reading for a population of bilingual children, a group of monolingual German speakers was compared to a bilingual group with particular regard for phonological awareness and verbal abilities as well as reading comprehension.

Drawn from the body of literacy on emerging literacy, bilingualism, and linguistic research reviewed above, the following four primary hypotheses were developed as a platform for examining early reading processes among Turkish-German bilingual children. The underlying questions of this study can be divided into four primary categories: 1) questions addressing mean differences in reading-related skills between Turkish-German bilingual students and monolingual German students, 2) questions regarding the predictive power of base reading competencies in accounting for performance on measures of word decoding and reading comprehension, 3) inquiries concerning differential patterns of growth and development in reading and reading-related skills, and 4) the investigation of relative goodness-of-fit for the proposed model of reading among the two groups.

The theoretical model on which the investigation is based is discussed in Section 2.1.. Section 2.2. specifies the research questions in more detail. Finally, Section 2.3. introduces the structure of the research design to give an overview of the time intervals between measurements and instruments utilized at each point in time.

2.1. Theoretical model

The Näslund and Schneider (1991) model of reading is an ideal model for exploring these questions for several reasons. First, it is not clear to what extent literacy acquisition processes reflect the specific characteristics of the language for which they were developed. Since the target language for literacy development in German schools is German, and since the population under investigation is German-speaking, it was therefore logical to select a model of reading developed

for a German-speaking population. Secondly, the Näslund and Schneider model of reading comprehension incorporates the salient components of early reading that permeate the theoretical and empirical literature: verbal memory, verbal abilities, phonological awareness, and decoding. Finally, Näslund and Schneider propose a simple and parsimonious model that makes model testing possible with a smaller sample size.

Because the model was tested with a wholly new population in this study (Turkish-German bilingual L2 readers), it was decided that for the version of the model used in this study all relevant paths among the central variables would be tested so that no information regarding the interactions between those variables is lost (see Figure 5). Therefore, direct paths from verbal abilities to decoding speed and from phonological awareness to reading comprehension were also included for model testing¹. The Näslund and Schneider model will be used as the fundamental model for this study, but with the additional inclusion of those two paths.

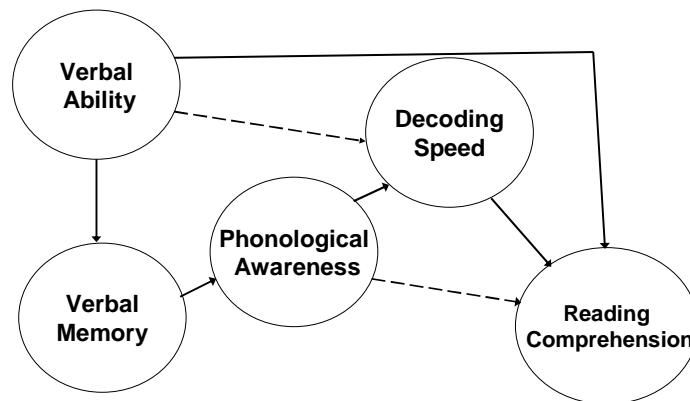


Figure 5. Structural model for predictors of reading comprehension in the second grade with proposed modifications

Note. Adapted from “Longitudinal effects of verbal ability, memory capacity, and phonological awareness on reading performance,” by J. Näslund & W. Schneider, 1991, *European Journal of Psychology of Education*, 6, p.387.

In their 1999 article, Schneider and Näslund found that intelligence quotients (IQ) measured in preschool had moderate predictive power for reading comprehension, but far less than originally anticipated. They concluded that the predictive power of general cognitive abilities has been overrated and is greatly reduced when accounting for more specific reading related processes. Non-verbal cognitive abilities are still assessed for this study and are examined in relation to the proposed model as an important control variable, but no meaningful relationship with reading comprehension is expected.

¹ There is some evidence from the North American literature that in an L2 sample of Spanish-English speaking children (Gholamain & Geva, 1999), verbal abilities are not significant predictors of decoding. Because this sample involves two very different languages, this path will be examined nonetheless.

2.2. Hypotheses

2.2.1. Mean differences between bilingual and monolingual readers

An essential aspect of this study is aimed at exploring mean differences between bilingual and monolingual students in base reading abilities. The abilities investigated were selected by compiling the most common base reading skills found in the extensive body of emerging literacy literature with particular regard for factors influenced by diverse backgrounds. A review of the current literature led to questions regarding possible mean differences on three base reading skills: phonological awareness, vocabulary skills, and word decoding. Specific attention was paid to how Turkish L2 learners of German perform on tasks of phonological awareness in comparison to their native German L1 speaking peers. To integrate a further aspect of literacy acquisition especially pertinent to a minority language population, this study also examines how well developed the German vocabularies of Turkish-speaking L2 learners of German were in comparison to their native speaking peers during the early years of formal education. Finally, an attempt was made to determine if Turkish-German bilingual children differ from their monolingual peers on another critical component of reading abilities: word decoding².

Several mean differences in the fundamental competencies necessary for reading were expected. Literature addressing the cognitive abilities of bilingual children (see Bialystok, 2002 or Hakuta, 1986 for a review) gives substantial reason to believe that both metalinguistic abilities and verbal memory may be positively affected by the early acquisition of two languages. Since phonological awareness is a substantial component of metalinguistic awareness and because the Turkish language has been shown to promote phonological awareness abilities in young children (Durgonoglu & Öney, 1999), it was anticipated that Turkish-German children would demonstrate superior performance on measures of phonological skills when compared with their monolingual German peers. The research on bilingualism and memory also led to the expectation of a possible advantage for the bilingual children on measures of short-term verbal memory. Alternatively, the literature does not bode as well for the vocabulary and verbal skills of bilingual children in L2 reading contexts (e.g., Bialystok, 1988; Droop & Verhoeven, 2003; Hutchinson et al., 2003). It was therefore anticipated that Turkish-German children in the early primary school years would perform significantly worse on measures of German vocabulary. There was no reason to believe that other core components of reading such as word decoding, which is largely

² Cross-language transfer of Turkish verbal abilities will be briefly discussed in relation to German verbal abilities. Nonetheless, using the same reasoning as Proctor and colleagues (2005), L1 literacy was assumed to be limited or absent among the young minority language children in this sample and L1 reading skills or their cross-linguistic transfer with regard to L2 literacy skills were therefore not a focus of this study.

based on visual and phoneme-grapheme pairing abilities, would be affected by the early acquisition of two languages. No differences in bilingual or monolingual performance in decoding were found by Hutchinson and colleagues (2003) or by Verhoeven (2000).

Consequently, the following hypotheses were posited:

H1. Of the base reading components proposed by Näslund and Schneider (1991), significant discrepancies will be found between bilingual Turkish-German-speaking children and monolingual children on measures of phonological awareness and German verbal abilities, but not word decoding.

H1a. Bilingual Turkish-German-speaking children will perform better on measures of phonological awareness and verbal memory than their monolingual German counterparts.

H1b. The Turkish-German bilingual students will score more poorly on measures of German vocabulary and verbal skills than their monolingual German peers.

H1c. The Turkish-German bilingual group will not differ from the German monolingual sample on measures of word decoding.

2.2.2. Differential predictors of reading skills

Although there is a large body of literature focusing on the prediction of reading abilities with core reading components such as those in the Näslund and Schneider (1991) model, there is little available research examining the essential components of reading acquisition for minority language children. Similarly, no information whatsoever was found in the currently available literature regarding the factors involved in beginning reading for children with Turkish-speaking backgrounds in the German educational system. In this section, questions regarding the necessary base reading skills for Turkish-German bilinguals developing word decoding skills and reading comprehension will be dealt with. Due in part to the lack of literature in this specific field and the rather inconclusive information available from other language contexts, there was no reason to believe that different component skills would be related to either word level decoding or reading comprehension among the two groups. In other words, the literature provided no indication that a separate set of base reading skills would be responsible for developing literacy for children with dual language capabilities.

The question then became: Do those common base skills have equal predictive power for reading abilities among both Turkish-German bilingual and German monolingual early readers? More specifically, this study looks at the importance of phonological awareness in early reading comprehension for Turkish-German bilingual children in comparison to German

monolingual students in the German-speaking classroom. Additionally, the relative importance of verbal and expressive vocabulary skills in German is investigated.

Following the findings of Fitzgerald (1995), it was expected that the core processes for both monolingual and bilingual participants would be substantively the same. Since it was expected that the bilingual students will have more advanced phonological awareness skills (H1a), but known that minority primary school students do not typically outperform native German speakers in Germany (Bos et al., 2003; Baumert et al., 2003), it was expected that phonological awareness would be a weaker predictor of reading comprehension among children in the bilingual group than among children in the German monolingual group. Bialystok (2002) proposed that the differing requirements of metalinguistic awareness for bilingual and monolingual readers are an underlying reason for differential roles of phonological awareness. She posited that, while the acquisition of phonological awareness is the primary challenge of developing metalinguistic strategies for monolingual children learning to read, second language readers are confronted with the additional burden of developing strategies and insights that are specific for reading in different languages (Bialystok, 2002).

If phonological awareness, typically the strongest predictor of reading, loses some of its predictive strength among bilingual students, then it could be expected that another aspect of reading takes the place of phonological awareness as the most important predictor of reading abilities. Several empirical investigations with other linguistic populations indicate the possibility of vocabulary skills taking on a more influential role in developing reading abilities for minority language children. As found by Verhoeven (2000) and Droop and Verhoeven (2003) with minority language children learning to read Dutch, and indicated by Carlisle and colleagues (1999) with Spanish-English speaking bilinguals, it was anticipated that vocabulary skills would carry more weight in the reading process for the bilingual readers than for the monolingual readers. These studies and others described in the introductory section thus led to the following hypotheses:

H2. Although the core components of reading will be similar for both Turkish-German bilingual children and monolingual German children, the extent to which those components influence reading abilities will differ for the two groups.

H2a. Word decoding performance will be predicted by the same core components for both the bilingual and monolingual groups.

H2b. Reading comprehension performance will be predicted by the same core components of reading abilities for both the bilingual and monolingual groups.

H2c. Phonological awareness will be a weaker predictor of reading comprehension among Turkish-German bilingual children as compared to monolingual German children.

H2d. Vocabulary will be a stronger predictor of reading comprehension abilities for the Turkish-German bilingual readers than for the German monolingual readers.

2.2.3. Patterns in development

As a longitudinal investigation, this study presents a unique opportunity to assess differences in developmental patterns among Turkish-German bilingual and German monolingual beginning readers. With the aim of devoting attention specifically to patterns of growth, all analyses investigating gains over time have been delineated in this separate section devoted to the processes of literacy development. Although the hypotheses in this section do not differ substantially from those in the previous section regarding the predictive powers of the component reading skills, the possibility of different developmental patterns emerging with regard to growth was recognized and will therefore be discussed separately here.

Not all measures in the present investigation could be administered at multiple points in time. Still, the data collected allows for investigations into the rates of development of several base reading skills (i.e., phonological awareness, vocabulary, word decoding), as well as reading comprehension gains from second grade to third grade. The Näslund and Schneider (1991) model of reading again served as the underlying theoretical model for examining the development of reading. The base components of the model were explored with regard to their growth over time as well as their predictive power in explaining growth in reading skills. The central areas of inquiry in this section include examining 1) whether Turkish-German bilingual and German monolingual children differ with regard to their rates of growth in their base reading skills (phonological awareness, vocabulary, word decoding), 2) whether the two groups differ in their development of reading comprehension, and 3) whether the factors responsible for growth in reading differ for Turkish-German bilingual children in comparison to German monolingual children.

Again, hypotheses regarding the growth rates of base reading skills could only be drawn from research in other cultural and language contexts, due to the lack of similar studies in Germany. There is some evidence from Great Britain that points to a failure of L2 learners to catch up to their monolingual peers in terms of vocabulary in the early primary years (Hutchinson et al., 2003). The prediction follows that children in the bilingual group will remain significantly lower at each time of measurement and that their rate of growth will not exceed their

monolingual counterparts. No research was found indicating that different growth rates for phonological awareness would be expected in a multilingual population; consequently, differences between the monolingual and bilingual groups in phonological awareness growth were not anticipated.

Hutchison and colleagues (2003) found no group differences between L1 and L2 beginning readers in the development of word decoding skills. However, another study that investigated growth patterns in word decoding found that L2 learners showed greater growth than L1 readers from kindergarten to first grade (Chiappe et al., 2002). The heterogeneous nature of Chiappe's U.S. American sample in combination with the much younger participants led to the decision not to take this singular result as sufficient evidence on which to base a hypothesis. No theoretical reasoning was found to expect differential predictive patterns between bilingual and monolingual children with regard to growth in word decoding. Furthermore, neither Hutchison and colleagues (2003) nor Chiappe et al. (2002) provided evidence of different predictors accounting for growth in decoding skills for bilingual and monolingual readers. Thus, neither differential growth rates in decoding nor differential predictors for growth in decoding skills were anticipated for Turkish-German bilingual and monolingual German readers.

The literature on reading comprehension development is somewhat more extensive, though the development of reading skills among multilingual primary school children in Germany has not yet been addressed. Although findings of Droop and Verhoeven (2003) from the Netherlands and of Hutchinson and colleagues (2003) from Great Britain found no differences in growth rates for reading comprehension between L1 and L2 beginning readers, they did find some differences in the factors responsible for that growth, particularly with regard to vocabulary. It was therefore expected that growth rates in reading comprehension for bilingual and monolingual children would be similar but that vocabulary would be a more important predictor of reading growth for the Turkish-German bilingual population than for the German monolingual population. Conversely, in the same logic as explained by H2c, it was predicted that phonological awareness would play a weaker role in reading comprehension development for children who were proficient in two languages than for monolingual children.

H3. Both Turkish-German bilingual children and monolingual German-speaking children will show similar patterns of growth with regard to base reading skills, decoding, and reading comprehension; however, vocabulary skills will be a stronger predictor of reading comprehension growth for the Turkish-German bilingual group while phonological awareness will be a stronger predictor of reading comprehension growth for the German monolingual group.

H3a. On measures of phonological awareness, vocabulary, word decoding, and reading comprehension, both the bilingual and monolingual groups will show similar development over time.

H3b. The factors predicting growth in word decoding will be similar for both the monolingual and the bilingual groups

H3c. Phonological awareness will be a weaker predictor of gains in reading comprehension for the Turkish-German bilingual group than for the German monolingual group.

H3d. Vocabulary skills will be a stronger predictor of gains in reading comprehension for the Turkish-German bilingual group than for the German monolingual group.

2.2.4. Fitting the model of reading

As described in detail above, most models of reading development have been conceived for and tested with monolingual populations only. An essential underlying thesis of this investigation is the belief that the available theories and models of reading are not fully capturing the processes at work among children learning to read in an L2. It is hypothesized here that the conventional models of reading, including the German reading model at hand, neglect the particular abilities and deficits unique to bilingual populations.

It was therefore a principal aim of this study to test a relevant German-based model of reading to determine the extent to which it applies to a Turkish-German bilingual population. In this section, the full model proposed by Näslund and Schneider (1991) is used to examine the predictors of reading comprehension at time of measurement separately as well as to explain growth in the dependent variable: reading comprehension. As in the hypotheses above, it was anticipated that phonological awareness would play a weaker role in the model for Turkish-German bilingual students than for the German monolingual students. It was also expected that vocabulary would play a stronger role for the German monolingual group. Following that reasoning, it was predicted that the Näslund and Schneider model would differ in fit for monolingual and bilingual readers: Poorer model fits were anticipated for the Turkish-German bilingual group than for the monolingual German group at each measurement point.

H4. The Näslund and Schneider (1991) model of reading will not have the same fit for monolingual and bilingual readers: The Turkish-German bilingual group of readers will show stronger paths with regard to vocabulary skills and weaker paths for phonological awareness than the German monolingual group. Model fit will be poorer for the bilingual

readers for the single measurement point models as well as the model of reading comprehension growth.

H4a. Phonological awareness will play a lesser role for the Turkish-German bilingual group in predicting reading comprehension, whereas vocabulary skills will play a greater role for the Turkish-German bilingual group than the German monolingual group at each time of measurement within the model.

H4b. The model of reading comprehension will be a substantially poorer fit for the Turkish-German bilingual group than for the German monolingual group. A larger amount of variance will be left unexplained for the bilingual group.

H4c. Phonological awareness will play a lesser role among the Turkish-German bilingual group, whereas vocabulary skills will play a greater role among the Turkish-German bilingual group than the German monolingual group in the explanation of growth in reading comprehension with the model.

H4d. The proposed model for growth in reading comprehension will not fit a Turkish-German bilingual population as well as a monolingual German population. A larger amount of variance will be left unexplained for the bilingual group.

2.3. Design

The study is based on a longitudinal quasi-experimental design with two comparison groups and a data collection period of over three years. A group of Turkish-German bilingual children and a comparison group of monolingual German children were followed from the first through the third grade. Data presented in this report are based on the five points of measurement displayed in Table 1, including a preliminary measurement time, Time minus one (T-1), which served to collect background and baseline data on the participants at the onset of first grade. The principal measures of interest in this investigation were administered at T1 to T3 (dependent variables only). A detailed description of the measures utilized at each time of measurement is provided in the Method section below.

Table 1

Overview of the Measurement Timeline

		T-1	T0	T1	T2	T3
		Nov.- Jan.	May- June	Nov.- Jan.	May- June	Dec.- Jan.
		Grade 1	Grade 1	Grade 2	Grade 2	Grade 3
Baseline	Teacher evaluations of Language					
	Cognitive abilities					
Reading	Word decoding					
	Reading comprehension					
Verbal	Phonological awareness					
	Verbal short-term memory					
	German vocabulary					
	Turkish vocabulary					
	German listening Comp					