Home language and mono- and bilingual children's emergent academic language: A longitudinal study of Dutch, Moroccan-Dutch, and Turkish-Dutch 3- to 6-year-olds

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Home language and mono- and bilingual children's emergent academic language: A longitudinal study of Dutch, Moroccan-Dutch, and Turkish-Dutch 3- to 6-year-olds

Thuistaal en de beginnende schooltaal van één- en tweetalige kinderen: Een longitudinale studie van Nederlandse, Marokkaans-Nederlandse, en Turks-Nederlandse 3- tot 6-jarigen (met een samenvatting in het Nederlands)

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Chapter 1

INTRODUCTION

Globalization has led to large-scale migration worldwide (Suárez-Orozco & Suárez-Orozco, 2007). Consequently, a growing number of children has to acquire at least two languages up to a reasonable level of proficiency: the minority language of their cultural community and the majority language of their country of residence. While maintaining and expanding a first language is needed for effective communication with the family, acquiring the majority language is crucial to school success (Kohnert, Yim, Nett, Kan, & Duran, 2005; Stipek, 2001). Dual language acquisition is particularly challenging for immigrant children whose parents have low levels of educational attainment and literacy (Bradley & Corwyn, 2002). Studies have repeatedly shown that, compared to their monolingual peers, young bilingual immigrant children lag behind in first (L1) as well as second language (L2) skills (Hammer, Davison, Lawrence, & Miccio, 2009; Ivanova & Costa, 2008; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Páez, Tabors, & López, 2007; Treffers-Daller, Özsoy, & van Hout, 2007; Uccelli & Páez, 2007). Consequently, the educational attainment of language minority children from low-income immigrant families consistently stays behind (Kieffer, 2008; Stanat & Christensen, 2006; Stipek, 2001). These language disadvantages of bilingual immigrant children often become manifest before they enter primary school, suggesting that early experiences in the home environment play an important role in their genesis (Duursma, Romero-Contreras, Szuber, Proctor, & Snow, 2007; Hoff, 2006; Leseman, 2000).

The purpose of the present thesis is to provide further insight in the precursors of bilingual immigrant children's language disadvantages. In order to increase understanding of the processes underlying bilingual immigrant children's language disadvantages, we conducted a longitudinal study involving mono- and bilingual children, into the impact of home language and literacy activities on a range of language skills that are considered important for school achievement. Given the early manifestation of disadvantages with bilingual immigrant children, we were especially interested in the developmental processes between ages three and six. We hypothesized that a lack of early experience with sophisticated language at home might explain the early arising disadvantages that have such far fetching consequences for educational performance (cf. Hoff, 2006; Schleppegrell, 2004). Furthermore, studying children's language development between the age of three and six enabled us to examine the impact of the transition from a home environment in which the first language was predominantly spoken to a school environment in which the second language, the language of the majority, was the norm.

We conducted our study in The Netherlands, selecting a research sample comprising three ethnic-cultural groups that differed in language status and access to literacy. This way we could compare the home language environment and language development of children speaking a majority language (Dutch monolinguals), children speaking a minority language with an academic tradition (Turkish-Dutch bilinguals), and children speaking a minority language that does not have a script (Moroccan-Dutch bilinguals). The research design allowed us to examine how language status and access to a literate register of a language affect language development via patterns of language use in the home environment. This kind of in-depth longitudinal studies regarding the role of language use at home in different minority groups are greatly needed, as there is surprisingly little research that investigates how various social and linguistic contexts alter the processes linked to language acquisition and language use (Bialystok, 2007a; Snow & Yusun Kang, 2006).

BACKGROUND

Linguistic demands of schooling

In primary school, children are faced with many new impressions and demands. Besides learning how to read, write and do mathematics, they are expected to acquire a substantial body of abstract knowledge about history, biology, geography, and physics (WPO, 2005). Educational knowledge is typically communicated through abstract, often written monologues, which are separated from any situational context that might be shared by the interlocutors (Halliday, 1988, p.11). For instance, during the early years of primary education, children acquire knowledge about topics of general interest, like nature, history, and moral behaviour, via exposure to narrative book reading about situations closely connected to their daily experiences (Christie, 2002). Moreover, shared book reading often sets the stage for talking about extra-textual, but semantically related topics of general interest stimulating the use of specific, rare vocabulary and elaborate grammatical constructions (Hammett, Kleeck, & Huberty, 2003; Leseman & De Jong, 1998). In order for children to successfully participate in this process of abstract knowledge transfer (Schleppegrell, 2004) it is essential they acquire certain prerequisite linguistic skills, such as being able to understand and construct literate, academic text. Although relying on environmental cues or shared experiences might be effective strategies during informal face-to-face communications, these strategies do not suffice to convey meaning in oral or

written decontextualized texts. Take, for example, the following storytelling episode of a four-year-old child:

> *"A cat! A hat. I see a staircase. There! I see a cat. This one is going to chase that cat away. The cat is in the bushes. That cat cannot reach it any longer. A tree. The cat falls out of the tree. They play with leaves. They sleep."* (Dutch child, 4 years old)

Unless the addressee is familiar with the story context, it is difficult to distil meaning from this text without additional contextual cues. The example given above illustrates the necessity to use specific wordings in a narrative text to create a shared frame of reference with the audience. Furthermore, as narrative texts often take the form of a monologue, it is essential to create a structured and cohesive discourse to effectively convey the meaning to the recipient. The following example illustrates how the use of linguistic features facilitates a shared understanding:

> *"Toffee was standing in front of the window, feeling bored. And he was glad when he saw a moving van standing at the neighbours' place. He looked outside and saw a lot of things coming out of the moving van: Chairs and tables, boxes, lightings. And at that day, he saw feet coming from under the barn. And that night he saw something funny out of the window. And when he was going to have dinner, he saw the cat flap moving up and down. And suddenly, when he came downstairs to eat, there was a kitten standing in the kitchen. He chased it away, because he didn't want it to be in the kitchen. He went to his favourite spot, to think. And he heard "Tik, tik, tik". The kitten, once more. And he said "Can you never be without me?" and he had never been that angry in his whole life. He hid under the leaves. The kitten fell right on top of him. And the wind blew the leaves away and they started fetching them. And the little kitten did exactly the same as he was doing. And he liked the neighbours after all".* (Dutch child, 5 years old)

Unlike with the previous example, the relations between the different components in the story are clear, and as a result the story is easily understood.

Academic language as a language of schooling

We used the Systemic Functional Grammar (SFG) theory (cf Halliday & Matthiessen, 2004, Schleppegrell, 2004) as a framework to establish which specific linguistic features are appropriate in the school context. According to SFG, language is "a

systematic resource for expressing meaning in context" (Chapelle, 1998, p. 1). The theory assumes a functional relationship between social context and linguistic form (cf Halliday & Matthiessen, 2004). This implies that each text is a realization of a semantic choice, and should be analyzed according to its functionality for expressing a particular meaning in a certain context (cf. Halliday & Matthiessen, 2004). Vice versa, each context can be analysed in view of the linguistic choices it affords. SFG distinguishes three aspects of context that impact the constellation of lexical, grammatical, and textual features of a text: *Ideational Field* (i.e. the activity in which the participants are involved, influencing the content, that what is being talked about), *Tenor* (i.e. the interpersonal relations among interlocutors, influencing stance taking, for instance authoritative stance) and *Mode* (i.e. the communication channel impacting textual structure, for instance written text) (Halliday & Matthiessen, 2004; Matthiessen & Halliday, 1997). In chapter 3 we will further elaborate on this theory. We will use *academic language* or *academic register* to refer to the configuration of lexical and grammatical resources which bring about knowledge exchanges in the school context.

By using SFG as a theoretical framework to study academic language development in relation to home language and literacy, the current thesis stands in a long tradition of sociological, sociolinguistic, and educational research into differences in school achievement. The development of the SFG theory in the early 1960s enriched sociological studies on educational disadvantages, as it provided tools to analyse the linguistic choices afforded by the school context, i.e. which linguistic skills were a prerequisite for school success (cf. Christie, 2005). Since the 1970s, researchers have emphasized the importance of experience for the acquisition of the literate, academic register (Bernstein, 1971-1973; Bourdieu & Passeron, 1977; Christie & Martin, 2007; Cummins, 1979; Gee, 2001; Halliday & Matthiessen, 2004; Schleppegrell, 2004). They have argued that familiarization with academic register features is essential for school success, as it fosters the ability to make register-appropriate lexical, grammatical, and textual choices within the school context.

Differing in academic tradition, these researchers referred to the concept of academic register differently. Despite the fact that these researchers did not have a uniform concept of academic register, they all made a distinction between communication that is supported by contextual or interpersonal cues and communication that relies on linguistic cues because of its independence from the immediate communicative context (Cummins, 2003). Socio-linguist Basil Bernstein (1971, 1973), for instance, made the

distinction between a *restricted* and an *elaborated language code*. The *restricted langue code* draws on the immediate situation and shared understanding and is characterized by short, simple sentences and use of additional gestures and intonation to convey meaning and therefore is considered less suited for the purpose of expanding experiences. In contrast, an *elaborate language code*, characterized by explicit and specific language use and complex syntax, allows expanding on and explanation of experience, and hence affords knowledge exchange in the school context (cf. Christie & Martin, 2007). Bernstein stated that working class children's educational disadvantages stem from their lack of access to the elaborated language code. He argued that working class children merely had access to a restricted langue code due to socialization processes. Cummins (1979) distinguished *basic interpersonal communicative skills* (BICS) from *cognitive academic language proficiency* (CALP). BICS refers to context embedded conversational language skills that are acquired through initial socialization processes at home in face-to-face interactions, whereas CALP is a context reduced, cognitively challenging academic language skill, essential for school success (Cummins, 2003). More recently, researchers have come to use *literate* (either written or oral) versus *oral language* to differentiate between formal and informal language use, emphasizing the importance of literate language for later literacy (cf Christie, 1998; Cox et al., 1997; De Temple, Wu, & Snow, 1991; Watson, 2001) or the terms *decontextualized* versus *contextualized language* (Curenton, Craig, & Flanigan, 2008; Curenton & Justice, 2004; Davidson, Kline, & Snow, 1986; Snow, 1991). In line with SFG theory, the aforementioned researchers presuppose that social context and linguistic form are functionally related, as they suggest that the level of distancing from an immediate face-to-face interaction has an impact on the linguistic choices. Using SFG provides a new perspective on how the use of particular linguistic forms is functional when expressing meaning, building an interpersonal relationship with the interlocutor, and when structuring a coherent text.

We have framed the concept of academic language in a historical context. In the next paragraph we will discuss the mechanism by which we assume home language and literacy experiences impact development of the early beginnings of academic language in young children.

Predictors of academic language development

Proximal processes and individual factors that impact academic language development A great number of studies with monolingual children has shown that

socioeconomic status (SES) of the family impacts children's vocabulary, syntactic skills, and narrative comprehension through language input (Farah et al., 2008; Goodman, Dale, & Li, 2008; Hart & Risley, 1995; Hoff, 2006; Hoff & Naigles, 2002; Hurtado, Marchman, & Fernald, 2008; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002; Noble, McCandliss, & Farah, 2007; Pan, Rowe, Singer, & Snow, 2005). Although this relation is possibly genetically mediated (cf De Thorne et al., 2008), recent studies provide convincing evidence that both quantity and quality of language input affect children's language acquisition (Goodman et al., 2008; Huttenlocher et al., 2002).

Considering the complexity of academic language acquisition, we assume that sophisticated language input is essential to familiarize children with lexical, grammatical, and textual forms that are rare during informal language exchanges. Our presupposition that children's academic language outcomes are related to the home language environment is based on the usage based theory of language acquisition (Tomasello, 2000, 2003). This theory postulates that children are able to learn vocabulary and syntactic rules from language input as they understand the communicative intent of their interlocutors and have domain general abilities that facilitate language acquisition (Abbot-Smith & Tomasello, 2006; Tomasello, 2000, 2003). Children are endowed with a memory system, i.e. a domain-general information processing system involved in learning in many areas, including language (Adams & Gathercole, 2000; Baddeley, 2003). Therefore, repeated exposures to a language unit (token), i.e. a word or phrase, will leave memory traces that facilitate future understanding and productive use of the particular token (Behrens, 2009). This entrenchment mechanism alone does not explain why children are able to create new language structures. In addition, children are able to abstract syntactic rules from an increasing number of different utterances (types), with variations of particular "slots", because they can recognize patterns of similarities and dissimilarities in language input (Tomasello, 2000). Moreover, due to their ability to generalize across domains and combine different sources of information, children can compose qualitatively new and more complex structures from simpler unanalysed phrases (Behrens, 2009; MacWhinney 1999: ix).

Tomasello's usage based theory of language implies that inter-individual differences in language input can result in profound differences in language proficiency (Tomasello, 2000, 2003). Findings from observational studies indicate that regularly occurring language exchanges which incorporate linguistic features that resemble academic language use in formal instruction, facilitate children's acquisition of academic

language (Beals & Snow, 2002; Curenton et al., 2008; Price, Kleeck, & Huberty, 2009; Snow & Beals, 2006; Weizman & Snow, 2001). For instance, when parents and children talk about past experiences they have to create a shared frame of reference by using linguistic devices such as explicit reference to time and place or connectives to establish causal and temporal relations (Beals, 1997, 2001; Gauvain, 2001; Haden, Haine, & Fivush, 1997). In addition, research has shown that during joint storybook reading, children are exposed to language that is lexically divers, structurally coherent, and grammatically complex (Beals & Snow, 2002; Curenton, et al., 2008; Hoff, 2006; Price et al., 2009; Snow & Beals, 2006; Weizman & Snow, 2001). By frequently participating in these activities children become aware of the linguistic choices that are needed during particular social interactions, such as sharing personal experiences or narrative storytelling.

Although relations have been established between shared reading frequency and monolingual children's syntax and story comprehension (Leseman, Scheele, Mayo, & Messer, 2007; Sénéchal & LeFevre, 2002; Sénéchal, Pagan, Lever, & Ouelette, 2008), there is a need for more detailed information about the nature of language input in the home learning environment that can promote mono- as well as bilingual children's emergent academic language proficiency (Cox , Fang, & Otto, 1997; Vasilyeva, Waterfall, & Huttenlocher, 2008). Therefore, the present thesis focuses on the impact of language uses which are shown to contain academic register features, i.e. personal conversations, oral storytelling, and shared book reading (Beals & Snow, 2002; Curenton et al., 2008; Henrichs, 2010; Weizman & Snow, 2001). As the usage-based theory postulates that language learning not only depends on input, but also on children's domain-general ability *to learn* from input, the present thesis additionally examines the role of verbal short term memory in the emergence of academic language (c.f. Adams & Gathercole, 2000; Baddeley, 2003). Knowing how contextual and cognitive factors are related to academic language acquisition is important for explaining intra-individual differences of children.

Dual academic language development: competition and transfer Several studies have indicated that, as with monolingual children, frequency of shared book reading positively impacts the extent to which bilingual children use expressive and receptive vocabulary, narrative complexity, and complex syntax, *at least in the language used during these interactions* (Kalia, 2007; Leseman, Mayo & Scheele, 2007; Patterson, 2002). The finding that quantity of experience with each language matters implies that L1

and L2 compete with each other for time available for language learning. If time for language learning is indeed restricted, time spent on learning a new language inevitably takes time away from learning L1. In this sense, acquiring the majority language (L2), will come at the expense of L1, which is defined as a situation of *negative*, or *subtractive*, bilingualism (Butler & Hakuta, 2004; Cummins, 1991). With regard to quality, the research literature provides indications that language-minority children who grow up in low income families, particularly in societies that provide limited or no support for L1 development, often lack sufficiently rich and elaborated language input to develop more complex L1 skills (Genesee, Paradis, & Crago, 2004; Leseman & Van den Boom, 1999; cf. Pearson, 2007). Indeed, the finding that compared to their monolingual peers, bilingual immigrant children have a lower proficiency in each language seems to indicate that subtractive bilingualism might be an issue for these children (Aarts & Verhoeven, 1999; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Páez et al., 2007; Patterson & Pearson, 2004; Shrubshall, 1997).

On the other hand, bilingualism has also been reported to come with advantages. First, a substantial body of evidence has associated bilingualism with cognitive advantages such as enhanced metalinguistic awareness (phonological as well as syntactic awareness) and executive control that will also support L2 learning (Bialystok, 2007b; Bialystok & Feng, 2009; Bialystok & Senmann, 2004; Bialystok & Viswanathan, 2009; Davidson, Raschke, & Perez, 2009; Kim, 2009; Kovelman, Baker, & Petittio, 2008; Luo, Luk, & Bialystok, 2009; Xuereb, 2009). Second, although not unequivocally confirmed, numerous indications have been found that the conceptual knowledge basis built up in L1 facilitates learning of L2 (Atwill, Blanchard, Gorin, & Burstein, 2007; Conboy & Thal, 2006; Cummins, 1991; Genesee et al., 2004; Kroll & DeGroot, 2005; Leseman, 2000; Schoonbaart, Duyck, Brysbaert, & Hartsuiker, 2009; Verhoeven, 2007). Third, children's ability to make appropriate linguistic choices for the academic register can be transferred across languages (Cummins, 2000; Cummins, 1991; cf. Elbers, 2010). These examples of *positive bilingualism*, marked by transfer of knowledge and skills from L1 to L2, are not just limited to bilingualism in favourable socioeconomic, cultural, and political circumstances, or to older students, but are also found with young minority language children with an immigrant background (Cummins, 1991; Durgunoğlu, 2002; Fiestas, 2009; Francis, 1999; Guglielmi, 2009; Sparks, Patton, Ganschow, Humbacy, & Javorsky, 2008; Ucelli & Páez, 2007; Verhoeven, 2007). This suggests that the possibility that the knowledge basis built up in L1 facilitates L2 acquisition should be taken into account

when studying dual language development (Cummins, 1991; Genesee et al., 2004; Kroll & De Groot, 2005).

Concluding, an important question is how a competition and a transfer mechanism jointly determine first and second language outcomes in immigrant children. We address this issue by examining bilingual immigrant children's dual language development as related to L1 and L2 input in the home environment, paying special attention to the more complex language skills, referred to as academic language.

QUESTIONS ADDRESSED IN THE PRESENT THESIS

The focus of this thesis lies on individual and group differences in early development of academic language in 58 monolingual native Dutch, 47 bilingual Moroccan-Dutch (speaking Tarifit-Berber, a non-scripted language), and 56 Turkish-Dutch three-year-olds, over a three year period. Inter-individual as well as inter-group differences were assumed to be predicted by oral and literate language learning activities in the family. Moreover, immigrant children were expected to profit from their L1 in learning L2. The study is part of a large scale research project on academic language development in Dutch, Moroccan-Dutch and Turkish-Dutch 3 to 6-years old, entitled "Development of Academic language in School and at Home (DASH)".

We examined these assumptions by addressing the following main questions: (1) does language status and access to literate uses of a language relate to patterns of language use?; (2) is mono- and bilingual children's emergent academic language related to the language specific input in literate and oral activities in the home learning environment and (3) do these activities mediate effects of SES on emergent academic language?; (4) do bilingual immigrant children profit from their L1 when learning their L2?

MOROCCAN AND TURKISH IMMIGRANTS IN THE NETHERLANDS

Migration history

Moroccans and Turks form the two largest non-Western immigrant populations in The Netherlands, with 341 528 and 378 330 people respectively, out of a total Dutch population of 16 485 787 (CBS Statline, 30 november 2009). The migration of Turks and Moroccans to The Netherlands went through different stages. In the 1950s and 1960s The Netherlands experienced a shortage of low-skilled workers in the textile and metal industries (Eldering, 1997). To overcome this shortage, so called Turkish and Moroccan "guest workers" were recruited from poor areas with high unemployment rates (Crul &

Doomernik, 2003). Many Turkish migrants came from the more traditional provinces of Central Antolia and the Black Sea, and the majority of the Moroccan migrants originated from rural backgrounds in the North of Morocco, especially the Rif Mountains in which Tarifit-Berber is spoken (Eldering, 1997; Laghzaoui, 2006). Most immigrants settled in major cities in the Western part of The Netherlands (Latten, Nicolaas, & Wittebrood, 2005). Initially, these labour immigrants were expected to return to their home country after a relatively short stay in The Netherlands. However, in the 1970s and 1980s it became clear that the guest workers had settled permanently as their family members followed them to The Netherlands (Van der Silk, Driessen, & DeBot, 2006). Subsequently, rather than marrying within the immigrant community the second-generation mostly married spouses from Morocco or Turkey respectively (CBS, 2004). This marriage pattern has lead to an ongoing influx of migrants from Morocco and Turkey.

Socioeconomic context

Although the first Turkish and Moroccan immigrants mostly came to The Netherlands for economic reasons, they faced the economical hardships of the oil crises and the industrial restructuring in the 1980s. As a consequence, many of the first labour migrants lost their jobs and are still outside the Dutch labour market due to health issues and low levels of education (cf Crul & Doomernik, 2003; Laghzaoui, 2006). To date, Moroccan and Turkish immigrant families far more often live in low SES neighbourhoods with a high immigrant density than Dutch families. Moroccan-Dutch and Turkish-Dutch have fewer opportunities in the labour market and career opportunities and in general earn lower wages than same aged Dutch peers (CBS, 2008; Gijsberts & Dagevos, 2005; Kooi, 2008; Kullberg, Vervoort, & Dagevos, 2009). Although the educational position of Moroccan-Dutch and Turkish-Dutch children is gradually improving (Dagevos & Gijsberts, 2007), Turkish-Dutch and Moroccan-Dutch children still leave primary education with a Dutch language delay of roughly two years compared to native Dutch middle-class children (Dagevos & Gijsberts, 2007). Moreover, they lag behind native Dutch children whose parents received vocational training as their highest level of education as well, showing an achievement gap on a Dutch language test of 0.6 (Turkish-Dutch children) and 0.4 (Moroccan-Dutch children) times the pooled standard deviation (Dagevos & Gijsberts, 2007). Furthermore, they still face a higher chance of educational delays and school dropout and more often enter the lowest educational tracks, even when

their scores on a standardized national exam (CITO) imply that they could achieve higher levels of education (CBS, 2009).

Educational policy towards minority groups

Since the arrival of guest workers into The Netherlands, the government designed a number of educational policies which targeted cultural minority groups. Schools with a high percentage of immigrant children, for example, received additional funding (Eldering, 1997). In the early stages, the government prepared the immigrants to return to their home country, while simultaneously facilitating their children's integration in the Dutch education system (Silk et al, 2006). When it became clear that the immigrants intended to stay permanently, efforts to facilitate integration into Dutch society were increased (Nortier, 2008). A special Educational Priority Policy program was developed to create equal educational opportunities and enhance the social-economic participation of immigrants (Eldering, 1997; Silk et al, 2006). In 1983, the government issued a regulation entitled '*Onderwijs in Eigen Taal en Cultuur'* (i.e., *'Instruction in one's own language and culture'*), to decrease the gap between the culture of the school and that of the home and to contribute to intercultural education by teaching children the culture and official language of the country of origin (Bezemer & Kroon, 2006). In 1998, the act was adapted into '*Onderwijs in Allochtone Levende Talen' (OALT)* (i.e., *'Instruction in non-indigenous, living languages*'), in which first language instruction was restricted to the lower grades of primary education and extracurricular activities and for which municipalities bared the responsibility (Bezemer & Kroon, 2006). However, a series of political developments after the turn of the millennium led immigration policy to shift from an integration to an assimilation frame in which socio-cultural adaptation in Dutch society became the norm (Scholten, 2007). This new style of integration policy brought about changes in educational policymaking. In 2004, the governmental support of minority language education came to an end as the government abolished the OALT act because of prioritisation of immigrants' acquisition of Dutch (Donner, 2002).

Differences between Turkish and Moroccan immigrants

Although the Turkish and Moroccan first-generation immigrants arrived simultaneously, came from comparable rural areas, and often shared religious beliefs, they differed in a number respects. Primary school or Qu'ran school was the highest level of education experienced by the majority of first-generation Moroccan men and Moroccan

women had even less schooling resulting in high levels of illiteracy (Crul & Doomernik, 2003). Moreover, Tarifit-Berber, which is spoken by the majority of the Moroccan-Dutch immigrants, is not used in education in Morocco. Therefore, the Moroccan that had acquired literacy did so in Arabic (cf. Rosenhouse & Goral, 2005). Compared to the Moroccan immigrants, Turkish first-generation immigrants had generally received more education, more women had attended primary school, more men completed primary school, and some men even had schooling beyond primary school (Crul & Doomernik, 2003). Furthermore, the Turkish-Dutch community shows stronger social cohesion and orientation towards their own culture than the Moroccan-Dutch (Dagevos & Gijsberts, 2007). First, compared to the Moroccan-Dutch, Turkish-Dutch more often have traditional family values and oppose Dutch liberal customs and family values, especially regarding the position of women. Second, in social contacts Turks in The Netherlands are more oriented towards members of their own cultural group. Many Turkish-Dutch belong to a Turkish organisation and overrepresentation in low socioeconomic neighbourhoods in cities combined with a high self-employment rate has led to a dense network of microeconomics (Backus, 2005; Crul & Doomernik, 2003). Third, they more often identify themselves as Turkish than Dutch (Dagevos & Gijsberts, 2007). Fourth, because of its longstanding literary and academic tradition, Turkish has a relatively high status worldwide and in the Turkish-Dutch society. Maintenance of the Turkish language is highly valued in immigrant communities and facilitated by easy access to different sorts of official Turkish media, including books, television, and newspapers (Backus, 2005). By contrast, the Tarifit-Berber language is a non-scripted language, not used in education or official public media in Morocco, nor elsewhere (cf. Rosenhouse & Goral, 2005). Due to these socio-cultural factors, the Moroccan-Dutch parents have fewer resources available for first language maintenance. The higher educated Moroccan-Dutch parents who, because of their educational experiences might be inclined to provide more formal, literate language activities to their child, have no other option than use (written materials in) the Dutch language.

In summary, the overview suggests rather unfavourable conditions for first and second language acquisition for children from Moroccan-Dutch and Turkish-Dutch backgrounds due to the, on average, low level of educational attainment and literacy of their parents, the presence of socioeconomic stresses in the family and the neighborhood, and the low social prestige of and lack of institutional support for the first language.

Moreover, these disadvantages seem to be even stronger for the Tarifit speaking Moroccan-Dutch children.

OUTLINE OF THE THESIS

In the following chapters, four empirical studies addressing the key issues of this dissertation will be presented. In *Chapter 2* patterns of language input experienced by 3-year-old mono- and bilingual children are related to their first and, for the bilingual children, second language receptive vocabulary skills. In addition, cross-language transfer from first to second language vocabulary will be examined. Children's receptive vocabulary scores are regarded as an indicator of their access to a rich, technical vocabulary, as the words in the assessment battery were derived from a large database of words which teachers considered important for successful participation in primary school and for understanding instruction in school subjects. *Chapter 3* examines genre-specific relations between the home language environment and three-year-old Dutch children's emergent academic language comprehension and production in a personal narrative, an impersonal narrative, and an instruction genre. In *Chapter 4*, we investigate the effect of experiences with oral and literate activities on mono- and bilingual three to six year old children's vocabulary levels and development, using multi-group latent growth modelling. The chapter focuses on first as well as second language vocabulary development, allowing for examination of possible cross-language transfer. *Chapter 5* addresses whether immigrant parents, who have limited access to the dominant language, can still foster their children's emergent academic language achievement in a second language via first language input. We examine the relationship between patterns of first and second language use, literacy activities, and mono- and bilingual children's emergent academic language skills at age 5. In addition, controlling for socioeconomic status, second language literate input, and children's verbal short-term memory skills, we test whether academic language productivity in the first language supports early acquisition of academic language in a second language. Finally, the presentation of these studies will be followed by a general discussion of the findings in *Chapter 6*.

2

The Home Language Environment of Mono- and Bilingual Children and their Language Proficiency

Anna F. Scheele, Paul P.M. Leseman, & Aziza Y. Mayo

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Chapter 2

ABSTRACT

This study investigated the relationships between home language learning activities and vocabulary in a sample of monolingual native Dutch (n = 58) and bilingual immigrant Moroccan-Dutch (n = 46) and Turkish-Dutch (n = 55) 3-year-olds, speaking Tarifit-Berber, a non-scripted language, and Turkish as their first language (L1), respectively. Despite equal domain general cognitive abilities, Dutch children scored higher than the bilingual children on a L1 vocabulary test, and Moroccan-Dutch children had higher second language (L2) vocabulary skills as compared to Turkish-Dutch children. Multigroup analyses revealed strong impact on both L1 and L2 skills of language specific input in literate and oral activities. Finally, indications were found of positive cross-language transfer from L1 to L2 as well as competition between L1 and L2 input.

INTRODUCTION

In countries throughout the world, educational achievement of language-minority children from low-income immigrant families consistently falls behind (Stanat & Christensen, 2006). Disadvantages are already manifest upon introduction to primary school, when these children's first (L1) and second language (L2) skills, in particular vocabulary, are less well developed than the language skills of their monolingual peers (Duursma, Romero-Contreras, Szuber, Proctor, & Snow, 2007; Leseman, 2000; Leseman & van Tuijl, 2006; Oller & Eilers, 2002). Immigrant children are confronted with the difficult task of acquiring a substantial vocabulary in the majority language in order to succeed in school (Stipek, 2001), while simultaneously having to maintain and expand their first language skills for all kinds of communicative purposes in the context of the family and wider cultural community. A central question for researchers, educationalists, and policymakers alike, that still lacks a clear answer, is whether these two tasks are competitive or whether they can support each other.

Although language development of monolingual and bilingual children has been widely studied, studies including bilingual children from bilingual *low-income immigrant* families are scarce. This makes it hard to determine whether the usual contextual factors associated with language development, such as socioeconomic status (SES) of the family and the family's home language and literacy practices (cf. Hoff, 2006), suffice to explain the early language arrears of these children. Findings from studies that included language-minority children suggest that additional factors need to be considered, such as the ways in which L1 and L2 input is divided across language interactions at home, the social status of L1, and the access to formal and literate use of L1 (cf. Pearson, 2007).

The current study aims to contribute to the understanding of the processes underlying bilingual immigrant children's educational disadvantages by examining the relationships between their home language environment and their L1 and L2 proficiency. To this purpose we focus on language input patterns within the home context of children from two bilingual immigrant populations and from the majority population in The Netherlands. By detailing language input patterns, rather than using broad measures such as overall percentage of L1 and L2 use (De Houwer, 2007; Gutiérrez-Clellen & Kreiter, 2003; Oller & Eilers, 2002), we aim to further clarify the relation between input patterns and language skills. Furthermore, including two immigrant populations that share a similar migration history and socioeconomic background, but strongly differ with regard to the social prestige of their first languages and the access to formal and literate uses these languages provide, will allow us to address the role played by socio-historical factors at the level of language communities.

Home Language Input and Language Development

An extensive body of research with monolingual children has established that children's early language skills are strongly related to their experiences with language input in the home context. For instance, there is considerable evidence that SES-related qualitative and quantitative differences in language learning experiences, or "input", explain variability in children's language skills (Hoff, 2006; Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005; Raviv, Kessenich, & Morrison, 2004). Overall, children from high SES families by comparison with children from low SES families have more opportunities to experience language input that stimulates language development. For one, they receive more overall language input (Hart & Risley, 1995). Observational studies indicate that children who receive most language input also receive the *kind of language input* that is most effective for language learning (Hart & Risley, 1995; Hoff & Naigles, 2002). For instance, high SES children more frequently participate in home literacy activities (Bradley & Corwyn, 2002; Hoff, 2006). Home literacy activities, such as shared book reading and related types of parent-child conversations, are characterized by the use of a rich vocabulary, complex and information-dense sentences, and semantically interconnected discourse, that is, the kind of language use that is generally thought to stimulate language development (Deckner, Adamson, & Bakeman, 2006; Hoff & Naigles, 2002; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002; Sénéchal & LeFevre, 2002; Weizman & Snow, 2001). Furthermore, there is a clear association between SES and the

occurrence of additional sources of language development, such as watching educational television programs and overhearing and singing songs (Leseman, Mayo, & Scheele, 2009; Linebarger & Walker, 2004; Schön et al., 2008; Wright et al., 2001).

Parents can involve their children in a range of activities that nurture children's language skills. Because these activities generally occur less regularly in low SES families, vocabulary development of children from these families tends to proceed at a slower pace (Hoff, 2006). This appears to be the case for children from low-income immigrant families as well. However, the language input that these children experience is likely to differ even more if they are raised in a bilingual language environment. To date, only a few studies have investigated bilingual children's participation in activities that are associated with language development. These studies show that, as with monolingual children, shared book reading, story telling, conversations, and watching educational television programs positively impact bilingual children's vocabulary and language comprehension, *at least in the language used during these interactions* (Leseman et al., 2009; Patterson, 2002). Furthermore, studies show that bilingual children's proficiency in each language is strongly related to the amount of input in that language. The more input a child receives in a specific language, the better the child performs on vocabulary, reading, and writing tests in that language (De Houwer, 2007; Duursma et al., 2007; Oller & Eilers, 2002; Patterson & Pearson, 2004; Pearson, Fernandez, Lewedeg, & Oller, 1997). The consistent relationships found between language input through particular language activities at home and children's language development, raise an important question. Is there a competition for scarce time resources that affect children's L1 and L2 skills?

Positive and negative effects of bilingualism

Bilingualism as such is reported to come with advantages. It has been noted that bilinguals' combined L1 and L2 vocabulary often exceeds that of monolinguals (Oller, Pearson, & Cobo-Lewis, 2007; Vermeer, 1992), that the conceptual knowledge basis built up in L1 facilitates learning of L2 (Cummins, 1991; Genesee, Paradis, & Crago, 2004; Kroll & De Groot, 2005; Verhoeven, 2007), and that being bilingual brings cognitive advantages such as enhanced metalinguistic awareness and executive control that will also support L2 learning (Bialystok & Senmann, 2004; Bialystok, 2007). Such a situation of *positive bilingualism*, marked by transfer of knowledge and skills from L1 to L2, is not limited to bilingualism in favourable socioeconomic, cultural, and political circumstances, or to older students, but is also found with young language-minority children with an

immigrant background (Verhoeven, 2007). However, caution is warranted. First, the correlations reported to substantiate positive transfer remain tentative, because both contextual and general cognitive factors may account for the relation, and should thus be controlled for. Moreover, if exposure to L1 and L2 is correlated, either positively or negatively, transfer between the languages may be over- or underestimated. Thus, the effects of exposure should be controlled as well.

Second, despite the evidence for positive bilingualism, there is a plausible argument to the contrary, arising from the notion that the quantity of input in either language matters and that L1 and L2 stand in a competitive relation regarding available time for language learning, as was discussed above. If time for language learning is indeed restricted, time spent on learning a new language inevitably takes away time for learning L1. In this sense, acquiring L2, the majority language, will come at the expense of L1, which is defined as a situation of *negative*, or *subtractive*, bilingualism (Butler & Hakuta, 2004; Cummins, 1991). Moreover, the quality of input also matters, which relates strongly to the family's SES, as was discussed above. In the research literature indications can be found that language minority children who grow up in low income families, in societies that provide only limited support for L1 development, if at all, lack sufficiently rich and elaborated language input to develop their L1 skills further (cf. Pearson, 2007; Leseman & Van den Boom, 1999; Genesee et al., 2004). Indeed, the finding in several studies that bilingual immigrant children have a lower proficiency in each language than monolingual peers have in their language (Aarts & Verhoeven, 1999; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Patterson & Pearson, 2004; Pearson et al., 1997) seems to indicate that subtractive bilingualism might be an issue for these children.

In sum, an important question is if bilingualism in immigrant communities is indeed characterised by contradicting positive and negative mechanisms and how these mechanisms jointly determine child outcomes.

The current study

The main objective of the present study is to gain more insight in the bilingual development of language-minority children with an immigrant background. The study examines the relationships between ethnic-cultural background, SES, home language, and literacy practices, and children's L1 and L2 vocabularies in a sample of Turkish-Dutch, Moroccan-Dutch, and Dutch children and their families. The Moroccans and the Turks are two of the largest non-Western immigrant populations in The Netherlands. Turkish and

especially Moroccan families in The Netherlands have a low SES. By comparison with other large bilingual immigrant groups in The Netherlands, Moroccan-Dutch and Turkish-Dutch parents least often address their children in Dutch (Sociaal en Cultureel Planbueau [SCP], 2005). Yet, from age four, their children, like all 4-year-olds in The Netherlands, are required to participate in the primary school system, where Dutch is the language of instruction. Although Moroccan-Dutch and Turkish-Dutch children are mainly exposed to their L1 before they enter primary school, they are also gradually introduced to Dutch in several ways, for instance, via Dutch television watching, listening to Dutch songs, and input of Dutch by family and community members. We assume that having to acquire two languages in early childhood poses a particular heavy demand for Moroccan-Dutch and Turkish-Dutch children. Because of the low SES of their families, we expect them, overall, to receive less language input through the literate and oral language activities identified in previous research as promoting language development. Moreover, the input they receive needs to be divided over two or more different languages, implying that the amount of input for L1 and especially for L2, separately, will be even less (Paradis & Genesee, 1995). We hypothesize that reduced input of L1 and L2 provides a likely explanation of the persistent language delays of language minority immigrant children.

The expected negative effect of bilingualism, however, may be counteracted, at least partly, by a *positive* effect of bilingualism that results from the use that bilingual children can make of the knowledge and skills acquired in L1 in learning L2. Given that L1 development in both Moroccan-Dutch and Turkish-Dutch children starts well before they start acquiring Dutch as L2, L1 is assumed to be the more dominant language. Therefore, we expect a positive effect of L1 on L2 that partly compensates the negative effect of divided language input.

Concerning possible differences between the two immigrant groups we expect the Turkish-Dutch children to have greater proficiency in their L1 and lower proficiency in their L2 as compared to the Moroccan-Dutch children. We expect the Turkish-Dutch children to receive more L1 input, as their parents are reported to maintain their own language to a stronger degree than the Moroccan-Dutch parents (SCP, 2005). Turkish has a relatively high status because of its longstanding literary and academic tradition, and Turkish parents in principle can easily access different sorts of official Turkish media, including books and newspapers, to maintain their language (Backus, 2005). Besides Turkish, there will also be exposure to Dutch in Turkish-Dutch families. For the Moroccan-Dutch parents in this study, the situation is quite different. All of them are of

Berber descent and they speak a variety of Tarifit-Berber as their first language (which holds for 70 % of the Moroccan immigrants in The Netherlands; SCP, 2005), in addition to Dutch and, occasionally, Arabic, mainly connected to religious practices. Tarifit is a non-scripted language, not used in education or official public media in Morocco, nor elsewhere (cf. Rosenhouse & Goral, 2005). Due to these sociohistorical factors, Moroccan-Dutch parents of Berber descent, compared to Turkish-Dutch parents, have less resources available for L1 maintenance and have virtually no access to formal and literate uses of their language. Therefore, we expect them to provide more Dutch as L2 input to their children compared to the Turkish-Dutch parents, which will lead to a higher level of L2 proficiency of the Moroccan-Dutch children.

In sum, we will examine whether children from the different ethnic-cultural groups indeed differ in language input they receive at home and in language skills. We will test the hypothesis that language input in L1 and L2 can explain the relationships found between children's L1 and L2 skills and the family's socioeconomic status and ethnic-cultural background. Furthermore, we will test the hypothesis that skill in L1 supports acquiring skill in L2. Finally, we will examine differences in language input patterns between the Moroccan-Dutch and Turkish-Dutch participants.

METHOD

Sample and Procedures

The present study involved 162 3-year-old children from Dutch (n = 58), Moroccan-Dutch (n = 46), and Turkish-Dutch (n = 55) families living in The Netherlands. The respective groups did not differ significantly with regard to children's gender (79 males) or age (range 35-43 months, M = 39, SD = 1.6). Two large municipalities in The Netherlands provided addresses of Dutch, Moroccan-Dutch, and Turkish-Dutch families with a 3-year-old child. Information on average SES of the neighbourhood was used to stratify the sample to obtain a representative range in SES. In agreement with demographics in The Netherlands, the immigrant families more often lived in low SES neighbourhoods with a high immigrant density than the Dutch families. After selection of target families, parents were sent a letter introducing the study in Dutch and Turkish or Arabic. Families were then personally contacted by a female research assistant with the same cultural background. The research assistant administered a short screening questionnaire in order to exclude single-parent families; children with serious developmental delays or medical speech-hearing problems; children who attended day-

care, preschool, or playgroups for more than two full days or four half days a week; and Moroccan-Dutch families who did not speak the Tarifit-Berber language. Furthermore, as we were interested in immigrant children who were being raised primarily in the language of their cultural community, children who experienced less than 70% L1 input in the home context were excluded. L1 input in the home context was assessed by asking parents which language they spoke during mealtime, playing, reading, and daily routines. Of the families that met the criteria, 65% of the Dutch, 66% Turkish-Dutch, and 44% Moroccan-Dutch families agreed to participate. Parents who decided not to participate were either not interested in the study or too busy, or in the case of the immigrant families, objected to home visits. After the data were collected families received a gift voucher of €10 and a story book for the child.

Data were collected during two home visits by trained female research assistants (college students majoring in psychology or educational sciences) who belonged to the same cultural community as the family. Each visit took approximately two and a half hours. Following previous studies on effects of the home learning environment, the focus was on the mothers as the primary caregivers of the children. A semistructured questionnaire was administered in personal interviews in the caregiver's language of preference. Fathers were not involved, because we expected that being interviewed by female assistants would be perceived as a violation of cultural and religious customs in the immigrant groups. The alternative, using male research assistants to visit the families, would not have been accepted either. The questionnaire addressed family demographics, language use, and language activities in the home environment. Test assistants were instructed to clarify the questions and to provide concrete examples of what was meant whenever necessary, and they used colourful visual aid-cards to support the use of prestructured answering scales. In all cases the test assistants registered the mothers' answers. Standardized tests were administered to the children in a fixed order using laptop computers. Translations of the instruments were provided by Turkish and Tarifit linguists. Moroccan-Dutch assistants were trained to work with a scripted form of the Tarifit language in order to ensure standardization of the assessments.

Measures

SES. Family SES was based on two components: the highest completed educational level of both parents ranging from 1 (no education) to 7 (university degree) and the status of their current jobs on the Dutch national job index list ranging from 1

(unemployed) to 6 (scientific job level) (Centraal Bureau voor de Statistiek [CBS], 2001). SES was computed as the mean of parents educational and job levels (α = .84 for the total sample).

Non-verbal intelligence. Raven's Coloured Progressive Matrices (CPM) was administered to measure children's non-verbal intelligence (Raven, 1995). The Raven CPM consists of 36 perceptual and conceptual matching exercises in which the child has to complete a pattern by choosing one out of six pieces. The test requires minimal verbal instruction, which were given in children's L1. The test is considered particularly useful for measuring fluid intelligence of children with language difficulties (Carver, 1990) and is viewed as a culturally fair measure of intellectual functioning (Kaplan & Saccuzzo, 1997). Testing ended when children failed five consecutive items.

Home language environment. Children's experience with language through reading activities and oral language interactions (including television watching) in the family context was determined by a questionnaire based on the Early Childhood version of the HOME observation scheme by Bradley and Caldwell (1984) and previously used questionnaires (e.g. Leseman & Van den Boom, 1999). The HOME EC lists concrete learning activities in the area of motor, cognitive, language, and literacy skills. For the present purpose, the dichotomous scoring of the HOME items was replaced by 5-point Likert scales, with scores ranging from 1 (*never*) to 5 (*daily*). Given the focus of the present study, additional items referring to concrete oral and literate language activities were added. The primary caregiver rated how frequently the child participated in these activities. Based on theoretical considerations, and supported by the results of exploratory principal components analysis, five scales, representing five types of literate and oral language activities, were constructed by computing the mean of the items included in these scales (see Table 1 for sample items).

The *reading* scale consisted of eight items and included questions about the frequency of shared reading of narrative stories and information books. The *storytelling* scale contained four items on the frequency of different kinds of story telling (e.g. true stories, funny stories, tales). The *conversations* scale was composed of five items, covering different forms of spoken interaction with the child, including conversations about personal experiences, shared memories, and discussions about topics of general interest. The *singing* scale comprised four items about the frequency of singing or

listening to songs and lullabies. Finally, the *educational TV* scale consisted of two items addressing the frequency of watching TV programs for young children with an educational purpose, like Sesame Street. All scales had satisfactory Cronbach alpha values for the total sample as well as for each subsample separately, ranging from .57 to .90, except for the Cronbach alpha of the conversations scale in the Moroccan-Dutch group, which was .41.

Table 1. *Sample Items Interview Scales*

Reading: "How frequently do you read a narrative picture book to your child?"
Storytelling*:* "How frequently do you tell your child made-up stories, fairy tails, or legends?''
Conversations: "How frequently do you talk with your child about its experiences, for instance with which children s/he had played?"
Singing: "How frequently do you and your child sing songs together?"
Educational TV watching: "How frequently does your child watch TV programs that explain things, such as Sesame Street?"

In addition, interviewees were asked to indicate for each type of language activity which language was used, yielding measures of *L1* and *L2 use* for each type of activity separately, with scores ranging from 0 to 1. Situations in which the target language (L1 or L2) was always used were scored 1. If the target language was mostly used, but another language sometimes, a score of .75 was given. If the target language and another language were used equally, a score of .50 was given. A score of .25 was assigned if another language was used more often than the target language, and finally, a score of 0 was given if the target language was never used with that particular type of activity. Language-specific input measures were constructed by multiplying the five language input measures with the measures of either L1 or L2 use respectively, with scores ranging from 0 to 5. Note that, for instance, for Dutch language input a maximum score of 5 meant that the type of language activity concerned was provided very frequently on average (at least once per day) and always only in Dutch (language weight 1), whereas a score of 0 would mean that, either the type of activity was never present or the language used was always another language than Dutch. To obtain overall measures of L1 and L2 use in the families, we, in addition, constructed two global scales, ranging from 0 to 1, indicating average L1

use and L2 use across the five types of language activities, weighted by the mean frequencies of the types of activity.

L1 and L2 vocabulary. Children's receptive vocabulary skills were assessed using the receptive vocabulary test of the Diagnostic Test of Bilingualism of the national educational testing service (Verhoeven, Narrain, Extra, Konak, & Zerrouk, 1995), an instrument specifically developed for research with bilingual immigrant children in The Netherlands (for the construction of equivalent vocabulary measures in Turkish and Berber, respectively, see Verhoeven, 2007; E-Rramdani, 1999). The test required children to match a target word, mentioned by a research-assistant, with one out of four pictures. To reduce testing time, the vocabulary test was split in two parts, one part consisting of the odd items and a parallel part consisting of the even items, yielding equivalent parallel forms (the within-language correlation between the two forms was $r = .71$, $p < .01$). In the Moroccan-Dutch and Turkish-Dutch group, the odd-items parallel form of the test was used to assess vocabulary in L1, the other form was used to assess vocabulary in L2. Dutch children were given the second form, Dutch vocabulary, only. Testing continued until the child failed five consecutive items or completed all 30 items of the test. Cronbach alpha for the receptive vocabulary test ranged from .77 to .89 for the three separate groups.

RESULTS

Overview of the analyses

We first present the descriptive statistics of the measurements. Using one-way analysis of variance, we compare the three groups with respect to the family's SES, the child's cognitive abilities, the language input through literate and oral language activities at home, and the child's vocabulary. Then we examine the correlations between family SES, language input measures, and vocabulary in the three groups. Finally, we present the results of structural equations modeling (SEM) of the relationships between SES, language input, and vocabulary for the Dutch, Moroccan-Dutch, and Turkish-Dutch subsamples separately.

Table 2. *Descriptive Statistics for Observed Variables*

	Range	*Dutch*	*Moroccan*	*Turkish*	*F*	*Post Hoc*
1. SES	1- 6.5	4.56 (1.20)	2.30 (0.80)	3.20 (0.95)	65.64***	Du>Tu>Mo
2. Raven CPM	0 - 36	6.00 (2.93)	7.00 (3.87)	6.37 (2.60)	1.28	Du=Tu=Mo
3. Day-care[a]	0 - 4	2.64 (1.31)	1.31 (1.74)	2.39 (1.81)	9.24***	Du,Tu>Mo
4. Siblings	0 - 6	1.03 (0.67)	1.67 (1.52)	1.18 (0.78)	5.05**	Du<Mo;Tu=Mo
5. Siblings at school	0 - 6	0.43 (0.68)	1.39 (1.54)	0.91 (0.87)	10.67***	Mo,Tu>Du

Note. Du = Dutch sample; Tu = Turkish-Dutch sample; Mo = Moroccan-Dutch sample. [a] one unit represents one day part (3 hours); * $p < .05$; ** $p < .01$; *** $p < .001$

Descriptives

Table 2 reports the descriptive statistics. The results reveal strong differences in SES, with the Moroccan-Dutch families, on average, having the lowest SES, because of the low level of education of the parents and the low status of their jobs. Moroccan-Dutch children attended preschool out of home care facilities less frequently than the Turkish-Dutch and Dutch children (mean difference= 3 hr/week), receiving less exposure to Dutch as a consequence. Moroccan-Dutch and Turkish-Dutch children did not significantly differ in the total number of siblings or in the number of older siblings attending primary school. The differences between the groups reflect the present demographic characteristics of the Dutch, Moroccan-Dutch, and Turkish-Dutch communities in The Netherlands accurately (SCP, 2005). An important finding is that the three groups did not significantly differ in nonverbal fluid intelligence, measured with the Raven CPM. As will be discussed later, this finding is not coincidental, but replicates the results of other Dutch studies within these ethnic-cultural communities, using different samples (Messer, Leseman, Boom, & Mayo, in press).

The findings regarding overall language input and language specific input are presented in Table 3. Recall that language specific input was computed by multiplying the average frequency of literate and oral language activities with the degree of L1 or L2 use during these activities. In addition to this, Figure 1 gives a graphical display of the complex language input patterns in the Moroccan-Dutch and Turkish-Dutch sub-samples. First, *overall language input* through literate and oral interactions at home, including television watching, differs strongly between the three groups, regardless the language(s) used with these interactions. Based on the reported mean frequencies, the results indicate that Dutch parents read much more to their children than the Moroccan-Dutch and Turkish-Dutch parents did, whereas the Turkish-Dutch parents provided more of such

Table 3. *Descriptive Statistics for Observed Variables*

	Range	*Dutch*	*Moroccan-Dutch*	*Turkish-Dutch*	*F*	*Post Hoc*
1. Reading Input	0 - 5	3.50 (0.86)	2.09 (1.23)	2.83 (1.13)	21.69***	Du>Tu>Mo
2. Storytelling	0 - 5	2.97 (1.07)	2.40 (0.86)	2.77 (1.22)	3.47*	Du,Tu>Mo
3. Conversations	0 - 5	3.15 (0.65)	2.49 (0.67)	3.01 (0.76)	12.38***	Du,Tu>Mo
4. Singing	0 - 5	3.64 (0.77)	1.75 (0.83)	2.81 (1.00)	60.37***	Du>Tu>Mo
5. TV	0 - 5	4.29 (0.89)	3.47 (1.08)	3.91 (1.24)	7.52**	Du,Tu>Mo
			First Language			
6. L1 use	0 - 1	0.99 (0.06)	0.76 (0.17)	0.87 (0.13)	42.35***	Du>Tu>Mo
7. Reading Input	0 - 5	3.49 (0.87)	0.04 (0.33)	1.91 (1.42)	132.84***	Du>Tu>Mo
8. Storytelling	0 - 5	2.97 (1.07)	1.60 (1.34)	2.49 (1.25)	16.39***	Du,Tu>Mo
9. Conversations	0 - 5	3.15 (0.65)	2.16 (2.78)	2.77 (0.78)	25.00***	Du>Tu>Mo
10. Singing	0 - 5	3.37 (0.98)	0.43 (0.65)	2.33 (1.27)	108.56***	Du>Tu>Mo
11. TV	0 - 5	4.11 (0.92)	0.00 (0.00)	1.28 (1.38)	234.92*	Du>Tu>Mo
12. Vocabulary	0 - 30	16.32 (4.83)	11.39 (5.57)	10.45 (4.75)	21.94***	Du>Tu,Mo
			Second Language[a]			
13. L2 use	0-1		0.23 (0.17)	0.13 (0.13)	6.37*	
14. Reading Input	0-5		1.52 (1.58)	0.85 (0.79)	29.49***	
15. Storytelling	0-5		0.54 (0.93)	0.28 (0.55)	10.95**	
16. Conversations	0-5		0.32 (0.49)	0.24 (0.49)	0.29	
17. Singing	0-5		0.67 (0.76)	0.40 (0.55)	7.78*	
18. TV	0-5		3.16 (1.32)	2.58 (1.54)	1.96	
19. Vocabulary	0-30		11.29 (4.46)	6.62 (4.94)	4.87***	

Note. Du = Dutch sample; Tu = Turkish-Dutch sample; Mo = Moroccan-Dutch sample. [a]n = 101; * p < .05; ** p< .01; *** p < .001

activities than the Moroccan-Dutch parents did. The differences were rather sizeable (up to 2 standard deviations). Similar results were found for singing. With respect to the other oral language activities, Dutch and Turkish-Dutch parents were found to involve their children equally frequently and both groups of parents did this more frequently than Moroccan-Dutch parents did. Second, use of L1 revealed the expected pattern of differences. Use of Dutch in almost 100% of the reported settings in the Dutch families is characteristic of the monolingual situation of this group. The only sources that provided Dutch children with input of a different language were singing and television watching (7% and 4%, respectively). In the Moroccan-Dutch families L1 was used least frequently, as a consequence of the stronger influence of Dutch in these families (see below). Third, the findings for L1 language input through literate and oral interactions *in L1* demonstrate the consequences of the need to divide the available time for interaction between the two

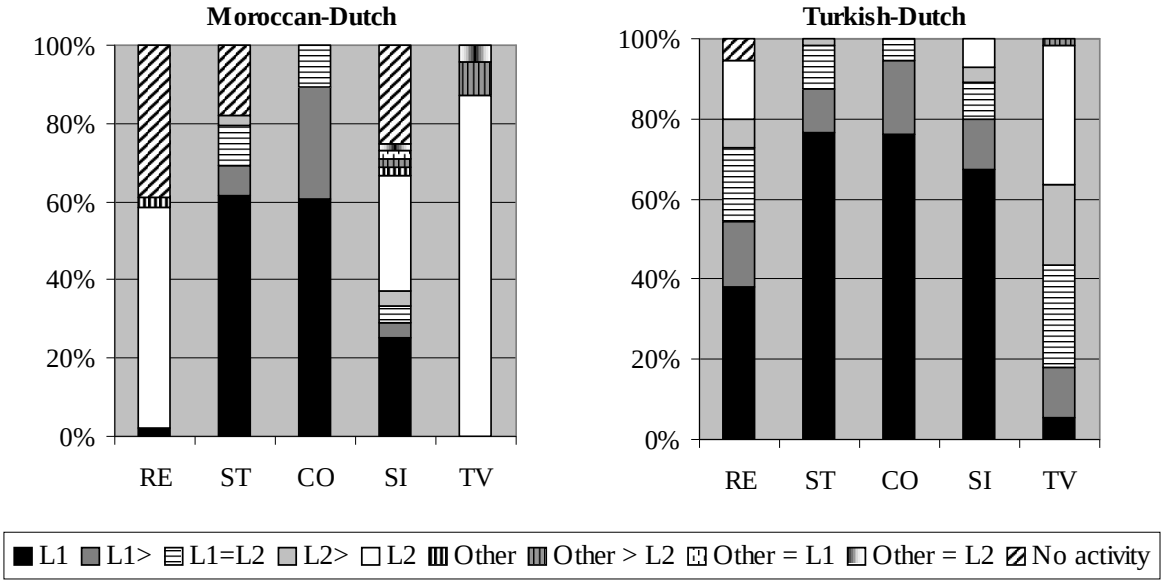

Figure 1. Bilingual parents' language use in oral and literate activities. RE=Reading; ST=Storytelling; CO=Conversations; SI=Singing; TV=Television viewing

(or more) languages in a situation of bilingualism. Whereas in the Dutch group the input figures hardly change upon combining the frequency of language activities with L1 use, combining the frequency of these activities with L1 use in both immigrant groups results in a profoundly different pattern, especially in the Moroccan-Dutch group, as can be seen in Table 3. For instance, L1 input through shared book reading and television watching is almost absent in the Moroccan-Dutch group, whereas L1 input through oral interactions varies between 25% and 87% of the total language input through these activities. In the Turkish-Dutch group L1 input through reading and oral language activities is also less than the total input through these activities (67% and 92%, respectively), but the distribution effect generally is less strong than in the Moroccan-Dutch group. Table 3 also shows that L2 input is to a high degree complementary to L1 input, but not fully due to the use of other languages not taken into account in the present study. For instance, in the Turkish-Dutch group L2 input through reading was about 30% of the total amount of reading interactions, whereas L1 input through reading activities was about 67%; in a few families child book reading did not occur. In the Moroccan-Dutch group the percentages match less exactly due to the use of Moroccan-Arabic and Qu'ran Arabic as additional languages and the fact that in some families the respective activities did not occur (see Figure 1).

Finally, Table 3 shows big differences between the groups in vocabulary scores. The gap found between Moroccan-Dutch and Turkish-Dutch children's vocabulary in Dutch as L2, on the one hand, and Dutch children's vocabulary in Dutch as L1, on the other hand, amounting to almost 1 (Moroccan-Dutch children) to more than 1.5 times the pooled standard deviation (Turkish-Dutch children), was expected given the bilingual background of the Moroccan-Dutch and Turkish-Dutch children. With respect to Dutch as L2, the Moroccan-Dutch children were clearly ahead of the Turkish-Dutch children. Below we will test whether differences in L2 input can explain the Moroccan-Dutch children's advantage. Most remarkable, however, were the differences found in L1 skills, which were measured with vocabulary tests that were constructed as equivalent parallel tests across the languages. The results indicate that the Moroccan-Dutch and Turkish-Dutch children were not only behind in Dutch as L2, but also rather strongly in L1 vocabulary relative to their Dutch monolingual peers. Considering L1 vocabulary, the gap for the Moroccan-Dutch children was about 0.9 times the pooled standard deviation and for the Turkish-Dutch children almost 1.

Preliminary analyses.

The variables included in the correlation analysis and SEM-models were checked for outliers and missing data. No extreme outliers were found when looking at the variables within each group separately. To check for outliers between predictor and outcome variables, regression analyses were conducted. Outliers greater than 2 standard deviations were excluded by replacing the respective value by a missing value (Dutch 3.4%, Moroccan-Dutch 2.2% for L1 and 2.2% for L2, Turkish-Dutch 3.6% for L2). Two variables suffered from missing values: L1 receptive vocabulary (2.2% Moroccan-Dutch) and L2 receptive vocabulary (2.2% Moroccan-Dutch, 5.5% Turkish-Dutch), primarily caused by children's refusal to cooperate on these tests. To address the missing data problem and to avoid biased results and sample size reduction in case of listwise deletion (Enders, 2001), the missing data were imputed using the regression method.

Table 4. *Correlations among the Variables in the Dutch sub-sample (n = 58)*

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*
1. SES	—	.34**	.13	.38**	.39**	.35**	.26*
2. Reading		—	.50***	.70***	.20†	-.07	.41**
3. Storytelling			—	.69***	.28*	-.11	.37**
4. Conversations				—	.32**	-.09	.59***
5. Singing					—	.31**	.19†
6. Educational TV						—	-.07
7. Vocabulary							—

†p <.10;* p < .05; ** p< .01; *** p<.001

Table 5. *L1 Input: Correlations among the Variables in the bilingual sub-samples*

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*
Moroccan-Dutch (n = 46)								
1. SES	—	—	-.01	-.09	-.21†	—	.02	.14
2. Reading L1		—	—	—	—	—	—	—
3. Storytelling L1			—	.66***	.31*	—	.41**	.06
4. Conversations L1				—	.37**	—	.39**	-.06
5. Singing L1					—	—	.06	-.08
6. Educational TV L1						—	—	—
7. Vocabulary L1							—	.30*
8. Vocabulary L2								—
Turkish-Dutch (n = 55)								
1. SES	—	-.15	-.04	-.02	.12	-.04	-.05	.00
2. Reading L1		—	.56***	.57***	.25†	.14	.06	.15
3. Storytelling L1			—	.72***	.28*	.13	.33**	.02
4. Conversations L1				—	.21†	.06	.45***	.25*
5. Singing L1					—	.13	.00	-.30*
6. Educational TV L1						—	-.19	.02
7. Vocabulary L1							—	.19†
8. Vocabulary L2								—

Note. In the Moroccan sub-sample, intercorrelations of Reading L1 and Television L1 are not reported, as only one Moroccan parent indicated to read in Berber (through an online translation of a book) and Berber television did not exist. †p <.10;* p < .05; ** p< .01; *** p<.001

Correlational analysis

In order to examine the role of input, structural equations, "path" modelling (SEM) with Amos was used, separately for the Dutch and the Moroccan-Dutch and Turkish-

Table 6. *L2 Input: Correlations among the Variables in the bilingual sub-samples*

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*
Moroccan-Dutch (*n* = 46)								
1. SES	—	.44**	.40**	.46**	.58***	-.18	.02	.14
2. Reading L2		—	.50**	.64***	.46*	.21	-.17	.17
3. Storytelling L2			—	.62***	.56***	-.16	-.16	-.07
4. Conversations L2				—	.48***	-.10	-.11	.23†
5. Singing L2					—	.02	.00	.34*
6. Educational TV L2						—	-.15	.10
7. Vocabulary L1							—	.30*
8. Vocabulary L2								—
Turkish-Dutch (*n* = 55)								
1. SES	—	-.12	-.05	-.05	-.05	-.13	-.05	.00
2. Reading L2		—	.36**	.36**	.40**	.04	.00	.14
3. Storytelling L2			—	.82***	.47***	.04	.01	.40***
4. Conversations L2				—	.59***	.02	-.04	.27*
5. Singing L2					—	.19†	-.07	.42**
6. Educational TV L2						—	-.15	.09
7. Vocabulary L1							—	.19†
8. Vocabulary L2								—

†p <.10;* p < .05; ** p< .01; *** p<.001

Dutch groups. Before presenting the results, we will briefly review the intercorrelations of SES, oral and literate language activities at home, and children's vocabulary skills within each group. Nonverbal intelligence was not included because preliminary analyses revealed no significant correlations with children's receptive vocabulary scores. Table 4 presents the results for the Dutch group. As was expected, the L1 input measures correlated significantly with SES, except for storytelling. Furthermore, frequency of reading, storytelling, and conversations correlated moderately to strongly with children's receptive vocabulary. Educational television watching and singing were not related to children's vocabulary and therefore not included in the SEM- analysis to be reported below. Table 5 and 6 list the correlations of the L1 and L2 variables for the Moroccan-Dutch and Turkish-Dutch group respectively. Recall that language specific input in these groups was indicated by the variables that combined the reported frequency of the language activities with the language that was used in these activities. The results reveal a difference with the Dutch group regarding the commonly found association between SES and language input. Contrary to the findings in the Dutch group, SES did not significantly

relate to any of the L1 input measures in both immigrant groups. Furthermore, in the Turkish-Dutch group, SES was also unrelated to the L2 input measures.

Of particular interest for the present study are the correlations between the L1 and L2 oral and literate language activities provided at home and Moroccan-Dutch and Turkish-Dutch children's L1 and L2 vocabulary. Tables 5 and 6 show that, as in the Dutch group, language input indeed correlated with language outcomes in these groups. However, the patterns of correlations differed across the groups. As in the Dutch group, frequency of L1 storytelling and conversations related to Moroccan-Dutch and Turkish-Dutch children's L1 vocabulary, whereas frequency of L1 singing and educational TV watching did not. In contrast with the Dutch group, language input through reading in either L1 or L2 was not related to the Moroccan-Dutch and Turkish-Dutch children's L1 and L2 vocabulary. Another difference with the Dutch group was that singing in L2 did relate to Moroccan-Dutch and Turkish-Dutch children's L2 vocabulary. Furthermore, storytelling in L2 seemed less important as a source of language input in the Moroccan-Dutch group, probably because of the low frequency of story telling and the low degree of use of Dutch with this particular type of language activity (see Table 3 and Figure 1).

Another point of interest for the present study is the correlation between the L1 and L2 vocabularies of the Moroccan-Dutch and Turkish-Dutch children, which may point to transfer of knowledge from L1 to L2. As expected, Table 5 and 6 indeed show a significant correlation of L1 vocabulary with L2 vocabulary for the Moroccan group (r = .30, $p < .05$) and a small, borderline significant correlation for the Turkish group (r = .19, $p < .10$).

Structural Equations Modelling

Dutch sample. To examine the effect of Dutch language (L1) input on vocabulary in the Dutch group, a path model was specified with one latent factor representing L1 input, indicated by the measured constructs reading, storytelling, and conversations. The observed variable Dutch receptive vocabulary was the dependent. L1 input was included as endogenous variable and presupposed to mediate, at least partly, the effect of SES on vocabulary. In addition to the chi-square goodness of fit test, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the Tucker-Lewis coefficient (TLI) were used to evaluate the model fit. Fit was considered to be satisfactory when the χ^2 statistic was not significant at $p > .05$, CFI > .90, RMSEA < .06 and TLI > .90 (Hu & Bentler, 1998).

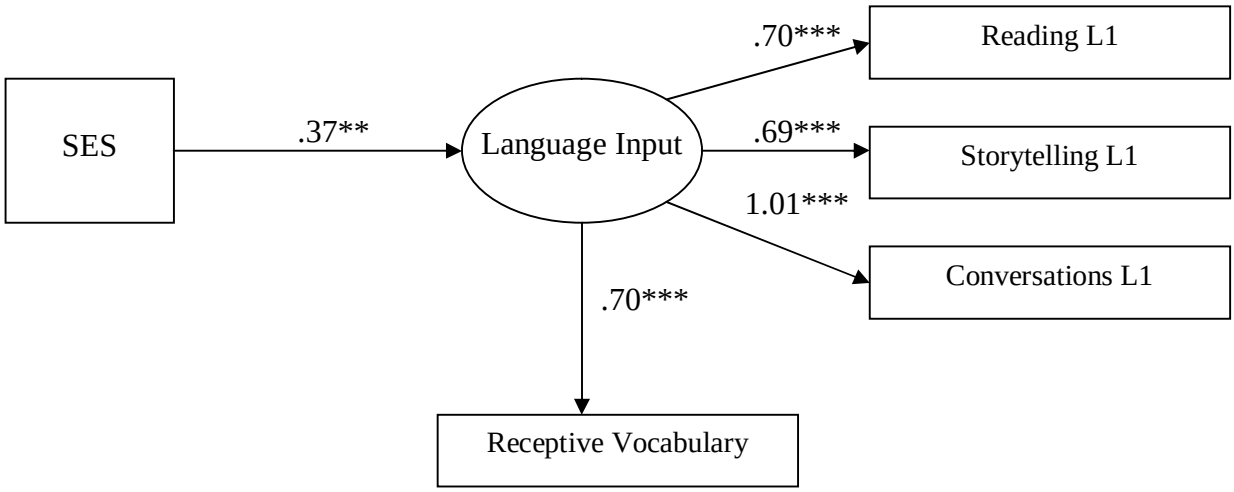

Figure 2. Structural model on relations between SES and monolingual children's L1 vocabulary skills. **p < .01. ***p < .001.

The SEM analysis comprised two steps. In the first step an initial path model was tested, including both direct and indirect effect of SES on receptive vocabulary. The initial model fitted the data well, χ^2 (11) = 3.38, p > .05; CFI = 1.000; RMSEA = 0.000; TLI = 1.015. However, the direct path from SES to vocabulary, assessed by z tests of the ratio of parameter coefficients to their robust standard estimates, was not significant (β = .06, p > .05). Therefore, in the second step, the direct path was removed from the model to yield a more parsimonious model with fewer estimated parameters. Although the model fit did not significantly improve, $\Delta\chi^2$ (1) = 0.23, p > .05, the final model with full mediation of the SES effect on vocabulary fitted the data very well, χ^2 (10) = 3.62, p > .05; CFI = 1.000; RMSEA = 0.000; TLI = 1.027, and was more parsimonious. The final model is presented in Figure 2. The model shows a strong effect of language input on vocabulary (β = .70, p < .001). Furthermore, the effect of SES on L1 vocabulary was fully mediated by L1 input.

Moroccan-Dutch and Turkish-Dutch samples. To simultaneously examine the effect of L1 and L2 input on L1 and L2 vocabulary in the Moroccan-Dutch and Turkish-Dutch group, a similar modelling approach was followed as before, but now with two latent factors, for L1 and L2 input respectively. Furthermore, a few adaptations were made based on the correlation analysis. First, reading activities in L1 and L2 were not included as measured constructs of the latent input factors, because there were correlated with neither L1 nor L2 vocabulary in the Moroccan-Dutch and Turkish-Dutch groups. Second,

there were significant correlations between L2 singing and L2 vocabulary in both immigrant groups. Therefore, L2 singing was added as an additional indicator of the latent factor L2 input. Third, to allow multi-group comparison of the effects of L2 input with comparable input measures and equal measurement weights across groups, L2 storytelling was not included in the model, because this type of language activity appeared to be relevant in the Turkish-Dutch group only.

Two further adjustments concerned the core hypotheses of the present study. First, to test the transfer hypothesis, a path was specified from L1 vocabulary to L2 vocabulary. Second, to test the competition hypothesis a bidirectional correlation was specified between L1 input and L2 input, expecting a negative value. The multigroup option was used to examine whether L1 and L2 input effects on L1 and L2 vocabulary, and the effects of SES were similar in the Moroccan-Dutch and Turkish-Dutch groups. The initial model again postulated direct effects of SES on L1 and L2 input, and direct and indirect effects of SES on L1 and L2 vocabulary via L1 and L2 input. Model testing proceeded in six steps. In the first step, the two groups were constrained to be similar on every parameter except for intercept means and random error components. Second, as the correlation analysis indicated that the correlations between SES and L1 input measures were close to zero in the Turkish-Dutch as well as the Moroccan-Dutch group, we examined whether the path from SES to L1 input could be removed from the model. The path was not significant (β = -.03, p > .05) and therefore removed. Removing the path did not lead to a significantly worse model fit, $\Delta\chi^2$ (1) = 0.11, p > .05. Furthermore, the direct effects of SES on L1 and L2 vocabulary were close to zero, and therefore removed as in the Dutch sample. Third, we used critical ratio comparisons to identify which model parameters significantly differed between the groups. The results indicated significant differences between the two groups in the variance of SES (Z = -5.17, p <.0001), in the error covariance between singing in L2 and storytelling in L2 (Z = 2.27, p <.05), and in the effect of SES on L2 Input (Z = 4.24, p < .0001). In the next analysis steps, these parameters were therefore set free to vary between the groups, leading to significantly better model fits, $\Delta\chi^2$ (1) = 191.49, p = 0; $\Delta\chi^2$ (1) = 12.69, p = 0 and $\Delta\chi^2$ (1) = 18.05, p = 0. Fourth, model testing indicated that the effect of SES on L2 Input was not significant in the Turkish-Dutch group (β = .00, p > .05). Therefore, the effect was fixed to zero in the Turkish-Dutch group. The resulting more parsimonious model did not fit

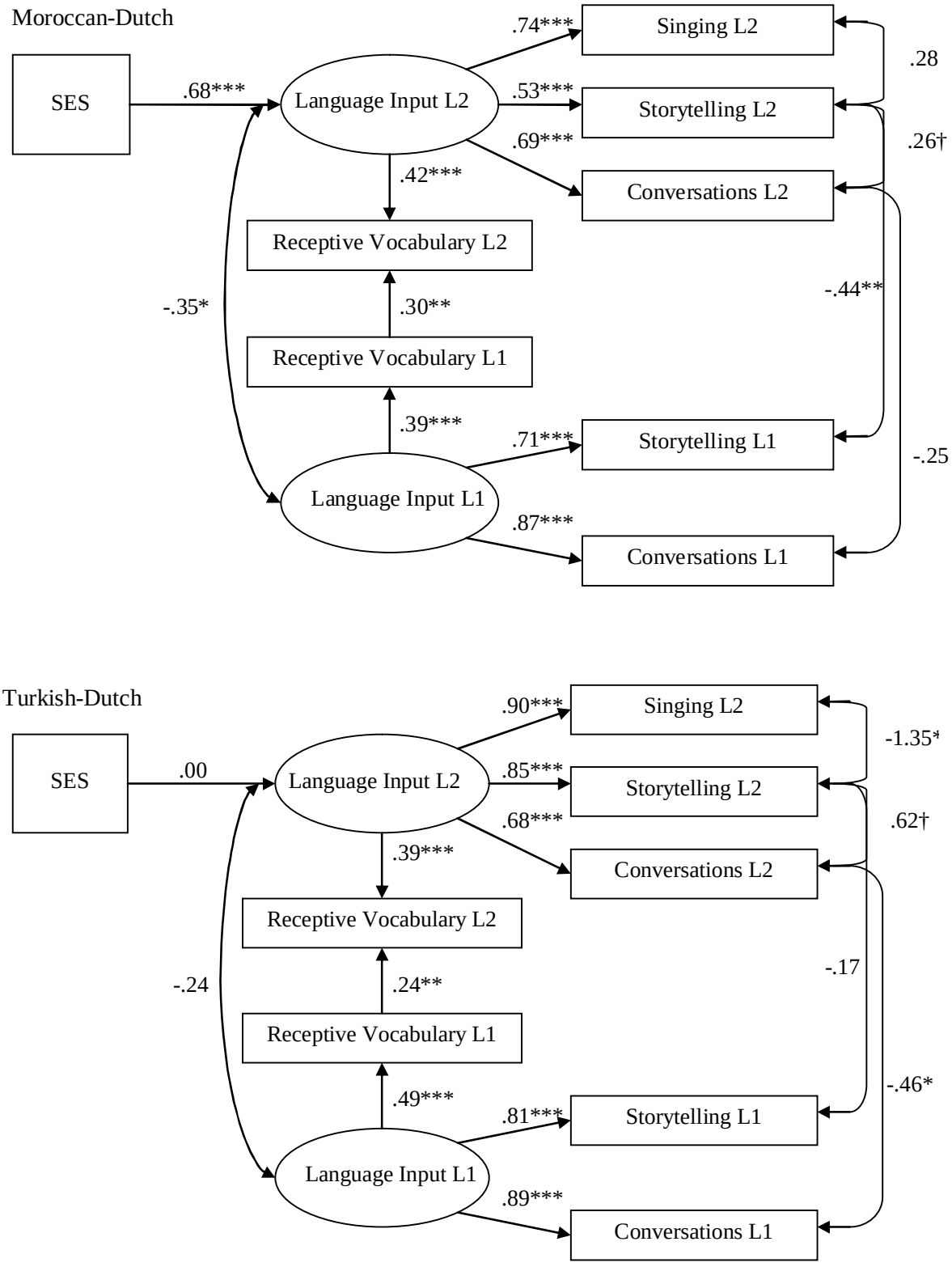

Figure 3. Structural model on relations between socioeconomic status (SES) and bilingual children's first language (L1) and second language (L2) vocabulary skills. *p<.05. **p<.01. ***p<.001.

worse to the data, $\Delta\chi^2$ (1) = .28, $p > .05$. Fifth, we tested whether in the Moroccan-Dutch group the effect of SES on L2 vocabulary was fully mediated by L2 input. The direct path between SES and L2 vocabulary was close to zero and statistically not significant ($\beta = .00$, $p > .05$), indicating that L2 input fully mediated the effect of SES on L2 vocabulary in the Moroccan-Dutch group. In the Turkish-Dutch group SES was not related to L1 input or to L2 input. Therefore, mediation was not further examined in this group. Finally, the measurement weights were released to control for measurement invariance between groups. Allowing the measurement weights to vary between the two groups did not significantly improve model fit, $\Delta\chi^2$ (2) = .43, $p > .05$, indicating that the input measurements were equivalent in both groups which is a prerequisite for cross-group comparisons.

The final model for the multigroup, presented in Figure 3, fitted the data well, χ^2 (36) = 39.36, $p > .05$; CFI = 0.988; TLI= 0.981; RMSEA = 0.031. The model shows moderately strong effects of L1 input on L1 vocabulary ($\beta = .49$, $p < .001$ for the Turkish-Dutch group; $\beta = .39$, $p < .001$ for the Moroccan-Dutch group) and a moderately strong effect of L2 input on L2 vocabulary ($\beta = .39$, $p < .001$, for the Turkish-Dutch group; $\beta = .42$, $p < .001$, for the Moroccan-Dutch group). In the Moroccan-Dutch group, the effect of SES on L2 skill was fully mediated by L2 input; SES was not related to L1 input or L1 vocabulary. In the Turkish-Dutch group, SES was unrelated to input and vocabulary in both L1 and L2. Two paths are of special interest. First, there was a statistically significant effect of L1 on L2 vocabulary ($\beta = .24$, $p < .10$, for the Turkish-Dutch; $\beta = .30$, $p < .01$, for the Moroccan-Dutch group), indicating positive transfer from L1 vocabulary to L2 vocabulary. Second, there were *negative* correlations between L1 input and L2 input, reflecting competition between the languages ($\beta = -.24$, $p > .05$ for the Turkish-Dutch; $\beta = -.35$, $p < .05$ for the Moroccan-Dutch group). Note that the effect sizes of transfer and competition are roughly similar.

DISCUSSION

The aim of the present study was to examine whether the commonly found language disadvantages of low income bilingual immigrant children could be explained by the patterns of L1 and L2 input in the children's home environment. Using parallel language tests of receptive vocabulary that were specifically constructed for research into bilingual development, the bilingual Moroccan-Dutch and Turkish-Dutch immigrant

children in the present sample were found to be less proficient in both L1 and L2 as compared to monolingual native Dutch children. As was expected, the differences in L1 and L2 skills were related to L1 and L2 input at home. Based on reports by the principal caregiver, we found profound differences in the amount of language learning activities at home. Overall, the Moroccan-Dutch and Turkish-Dutch children received less L1 and L2 input through shared book reading and through a range of oral language interactions, including activities such as personal conversations and singing. The finding that language input through oral interactions related to children's language outcomes is an important addition to Patterson (2002), who found that book reading activities can stimulate bilingual children's L1 and L2 development.

An important finding of the present study was that the bilingual immigrant children equalled the Dutch monolingual children in nonverbal intelligence. In a related study of our lab with a different sample of native Dutch and Turkish-Dutch 4-year-olds, using more extensive measures of nonverbal intelligence, digit span, and visuo-spatial working memory (Messer et al., in press), essentially the same result was found. Taken together, these findings provide support for the hypothesis that the language disadvantages of bilingual immigrant children cannot be attributed to their general learning capacity, but likely stem from differences in language input. The results clearly demonstrated that being raised in bilingual immigrant families substantially impacted the L1 and L2 input children received: as the input was divided over two languages, minority language children experienced far less literate and oral interactions as compared to native monolingual children.

By testing separate SEM models for the three groups, we tried to further clarify the ways in which being raised in a particular cultural and linguistic community influences young children's language development. The first model involved the Dutch group and focused on determinants of Dutch vocabulary. The results indicated that the effect of SES on vocabulary was entirely mediated by the effect of L1 language input. Moreover, the effect of language input on vocabulary was rather strong ($\beta = .70$, $p < .001$), confirming the hypothesis that reading, storytelling, and conversations positively related to Dutch children's vocabulary. The second SEM-model involved the Moroccan-Dutch and Turkish-Dutch children and focused on their L1 and L2 receptive vocabulary, measured with equivalent parallel tests. The results again supported the input hypothesis, although the effects of input were less strong than in the model of the Dutch group (βs .39-.42, $p <$ .001). Furthermore, L1 input was not significantly related to SES, whereas L2 input

almost completely mediated the effect on L2 of SES differences within the Moroccan-Dutch sample, but not in the Turkish-Dutch sample.

The role of the family's SES as a background characteristic that is associated with the amount and quality of language input to children, and through language input with children's language development, is widely documented in previous research (see, for instance, Foster et al., 2005; Hart & Risley, 1995; Hoff, 2006; Leseman & Van den Boom, 1999; Leseman & Van Tuijl, 2006; Raviv et al., 2004). SES usually refers to parents' formal education, the degree of symbolic content of their jobs, and the availability of economic and cultural resources that all are considered to directly or indirectly influence children's language development. Therefore, the present findings regarding the role of SES deserve further consideration. First, it should be noted that the vast majority of studies showing SES effects on language development were conducted in monolingual samples. Second, the few studies that included low SES bilingual immigrant families, as in the present study, typically provide less clear-cut results on the role of SES (Duursma et al., 2007; Leseman & Van den Boom, 1999; Oller & Eilers, 2002). The present results for the Dutch group corroborate previous research, that is, SES was significantly and positively associated with the amount of L1 language input through both literate and oral interactions in the family ($\beta = .37$, $p < .01$). However, the findings for the Moroccan-Dutch and Turkish-Dutch groups show a more complicated pattern. In both groups, the effects of SES on *L1 input* were close to zero and statistically not significant. In the Moroccan-Dutch group SES had a statistically significant positive effect on *L2 language input* ($\beta = .68$, $p < .001$), but in the Turkish-Dutch group SES had no effect at all.

There are several possible explanations for these findings. First, restriction of range could underlie the absence of clear relationships of SES and language input. However, Levine's test for equality of variance in SES across groups revealed that the groups did not significantly differ in SES variance, except for the Moroccan-Dutch and Dutch group (Field, 2005). Moreover, note that a significant effect of SES on L2 input was found for the Moroccan-Dutch group. Furthermore, the groups did not significantly differ in the variances of the language input measures. An alternative explanation might be found in the patterns of language use. The pattern of L1 and L2 use, and consequently, L1 and L2 input in the two immigrant groups differed in a number of respects, related to the respective language status. As expected, the amount of L2 input through oral language interaction was bigger in the Moroccan-Dutch group than in the Turkish-Dutch group. Reversely, the amount of L1 input through both literate and oral language interactions was

bigger in the Turkish-Dutch group. The lack of opportunities for Moroccan-Dutch families to use their L1 in formal and literate ways explains the strong association of L2 input and SES. The higher educated who, as a consequence of their status, are inclined to provide more formal, in particular literate, language activities to their child, have no other option than to take recourse to (written materials in) Dutch language. In addition, being higher educated in the Moroccan-Dutch community often means that, after migration at a young age, at least part of the school career was completed in The Netherlands. Public primary and secondary education in the country of origin, Morocco, is still limited in the rural areas where most of the Moroccan immigrants in The Netherlands were born, and especially difficult to access for women. Finally, is has been observed that, due to absence of formal use of Tarifit-Berber in education, public administration, and public media, L1 loss is stronger among the higher educated Moroccan-Dutch immigrants than among the higher educated in other language minority groups, such as the Turks (Backus, 2005).

The situation of the Turkish-Dutch groups differs in several respects. Due to a more extensive education system, increasingly also in rural areas, many Turks in The Netherlands have completed primary education and often a few years of secondary education as well in Turkey. Moreover, language maintenance is considered to be especially important in the Turkish immigrant community (Backus, 2005). Language maintenance, moreover, is strongly supported by accessible sources of formal and academic Turkish language, including public Turkish television on the Dutch cable, newspapers, books, and picture books for young children. Therefore, socioeconomic differences between Turkish-Dutch families do not necessarily run parallel to differences in experience with Dutch as L2 and with language choice at home, at least less strongly so than in the Moroccan-Dutch group, explaining the lack of association between SES and both the L1 and L2 input measures.

In this respect, it is interesting to note that the more intensive exposure to L1 did not lead to a significant advantage in L1 vocabulary for the Turkish-Dutch children in this study compared to the Moroccan-Dutch children. However, the higher level of L2 input in the Moroccan-Dutch families did lead to a clear advantage in L2 vocabulary for the Moroccan-Dutch children compared to the Turkish-Dutch children. A possible explanation is that the need to divide the available family interaction time over two languages resulted also in the Turkish-Dutch families in this study in *too low* intensity of L1 input, especially with respect to language learning activities that propel L1 learning beyond a basic level of everyday communication (cf. Pearson, 2007). For instance,

although much more than the Moroccan-Dutch families, still only 40% of the Turkish-Dutch families reported to read to their children in L1. A related explanation, therefore, might be that, given the lack of a positive association with SES, discussed above, the quality of L1 input was not sufficient to stimulate L1 development beyond the basic level of the lexical and grammatical knowledge for informal, everyday interpersonal communication, which was reflected in low scores on the vocabulary test in Turkish (for a further discussion of the threshold hypothesis implied here, see Leseman et al., 2009). Thus, although Turkish-Dutch parents in principle had more written and oral Turkish language resources at their disposal to provide high quality L1 input compared to Moroccan-Dutch parents, the overall low education levels of the Turkish-Dutch parents in this sample probably set limits to the use of these resources, thereby limiting the linguistic quality of the L1 input in these families. Indeed, in two previous observation studies parent-child interactions in Turkish-Dutch families with young children, using L1 in reading and problem-solving tasks, were found to be less cognitively demanding than similar interactions in Dutch and Surinamese-Dutch families (Leseman & Van den Boom, 1999; Leseman & Van Tuijl, 2006).

The results of the present study provided support for both the competition hypothesis and the positive transfer hypothesis, suggesting that both mechanisms are present in situations of bilingual upbringing. The results of the SEM analysis revealed that the effect sizes of the two mechanisms were roughly similar, suggesting a balance between negative and positive effects of bilingualism. It should be noted, however, that the small positive transfer effects found in this study ($\beta = .24$, $p < .01$ for the Turkish-Dutch and $\beta = .30$, $p < .01$ for the Moroccan-Dutch group), replicating the results of Verhoeven (2007), may also be partly due to cognitive and verbal abilities of the children, so that the negative effects of bilingualism (competition) still outweigh the positive effects (transfer). Furthermore, presumably because of the relatively low level of L1 input, immigrant children's actual level of L1 vocabulary was below the age norms. Nonetheless, insofar the L1 vocabulary test can be seen as representing broader lexical, semantic, grammatical, and meta-linguistic knowledge of L1, the present results support the hypothesis that young second language learners can use their L1 knowledge in this broad sense to learn L2, even if acquisition of L1 is only a few years ahead of the acquisition of L2, as in the present sample.

CONCLUSIONS AND LIMITATIONS

To conclude, we will summarize the most important findings and discuss some of the limitations of the present study. Moroccan-Dutch and Turkish-Dutch 3-year-olds did not differ from native Dutch peers in basic cognitive ability involved in learning language from input. The differences in the patterns of language input found between the three groups largely explained the differences in children's L1 proficiency, and, in the Moroccan-Dutch and Turkish-Dutch group, the differences in children's L2 vocabulary. Furthermore, the differences in input patterns were clearly related to background characteristics, including the status of the minority languages involved. In view of optimal preparation for primary school, being raised in a low-SES bilingual immigrant family puts young children's language development at a double risk: first, the (limited) available time for literate and oral language interactions has to be divided over two languages, which have to compete for scarce resources; second, the lack of association of SES with L1 input limits the support of L1 for acquiring L2. Nonetheless, even 3-year-old bilingual children apparently could use their skill in L1 to learn L2 to some extent. However, it remains to be seen whether the transfer of L1 to L2 will hold with increasing age.

The study suffered from a number of limitations. First, the measures of language input were based on primary caregivers' self-reports in personal interviews with semi-structured questionnaires. Answers may have been biased due to social desirability tendencies and to inaccuracies in rating the frequencies of particular language interactions at home. Moreover, the data did not allow us to draw firm conclusions about the quality of the language interactions at home. Observational measures of both the quantity and quality of the language input are needed to deepen understanding of the role of input in (bilingual) language development. Second, the present study focused only on parent related language input. It is recommendable to include also language input provided by peers, daycare teachers, and older siblings. Third, the present study was not longitudinal. To provide for a stronger basis for causal inferences, a longitudinal design is needed. In addition, L1 and L2 language development was in the present study measured only by vocabulary, seen as proxy for broader lexical, grammatical and discursive skills. Clearly, broader assessment of bilingual children's L1 and L2 development will contribute to further understanding of the phenomena reported in this article. Despite the limitations, present study has provided useful insights in the language input patterns in mono- and bilingual families as related to children's language skills.

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3

Home Language and Literacy: Three-Year-Old's Emergent Academic Language Use in Narrative and Instruction Genres.

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Submitted for publication

Chapter 3

ABSTRACT

Research Findings: The present study examined genre-specific relations between the home language and literacy environment and 3-year-old Dutch children's emergent academic language comprehension and production in a personal narrative, an impersonal narrative, and an instruction task in a sample of 58 Dutch families from various socioeconomic backgrounds. Children used most academic language features in the impersonal narrative. Regression analyses indicated that the home language and literacy environment predicted children's ability to understand and use lexical, grammatical, and textual features of academic language in impersonal and personal narratives. Results regarding the instruction genre were less clear cut: experience with this genre related to children's academic language comprehension but not to their academic language production. Although the results were not conclusive, there were indications that the relation between the home language environment and children's academic language proficiency is genre specific. *Practice or Policy:* These findings suggest that parents can contribute to their children's school readiness by familiarizing them with academic language through frequent exposure to personal and impersonal narratives in order to close early education gaps. Future directions for research are discussed, emphasizing the need to simultaneously include indicators of the home language environment and children's learning capacity.

INTRODUCTION

The ability to use and understand *academic language* is a prerequisite for school success as it enables efficient knowledge transfer (cf. Schleppegrell, 2004). Although reliance on environmental cues or on shared experience are effective strategies in informal face-to-face communication, these strategies do not suffice to convey meaning in oral or written, more decontextualized text. Instead, a speaker needs to create a shared frame of reference with the audience through the use of specific wordings. Furthermore, as decontextualized texts often take the form of a monologue, creating a structured and cohesive discourse structure is essential to convey the meaning to the recipient. Even in the early grades of primary school teachers expect children to produce language that displays features of this so called academic language (Schleppegrell, 2004). For instance, during sharing time, primary school teachers expect children to take the role of the expert when sharing their personal experiences with listeners that had no part in these events, and

to express themselves accordingly by using particular lexical and grammatical structures that code for 'authority' and 'truthfulness' (Christie, 2002; Schleppegrell, 2004).

Recent studies indicate that children in the preschool age already differ considerably in vocabulary and in the ability to use complex syntax and to cohesively structure a text, implying that children are not equally well prepared for the gradual use of academic language upon introduction to primary school (cf Hoff, 2006; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002; Leseman, Scheele, Mayo, & Messer, 2007; Sénéchal, Pagan, Lever, & Ouelette, 2008; Vasilyeva, Waterfall & Huttenlocher, 2008). Indications can be found that children's ability to understand and apply lexical, grammatical, and textual features of academic language relate to the understanding of different genres of oral discourse such as stories, expository text, and instruction, and, at a later stage, to reading comprehension (Chang, 2006; Dufva, Niemi, & Voeten, 2001; Fang, Schleppegrell, & Cox, 2006; Nation & Snowling, 2004, Paris & Paris, 2001). As early oral discourse understanding and reading comprehension are strongly related to later achievement in several subject matter areas in school and strongly predict finally attained level of education (Savolainen, Ahonen, Aro, Tolvanen, & Holopainen, 2008; De Jong & Leseman, 2001), it is of great interest to investigate whether young pre-school children already learn to use linguistic features of academic language in genres typical for early childhood and, more specifically, whether their ability to do so relates to experience with these genres in the home environment. Although it has been widely documented that language skills such as receptive and productive vocabulary, syntactical skills, and narrative comprehension are related to language input in the home environment (cf Hoff, 2006), evidence that reveals in detail which language and literacy activities can promote children's ability to use lexical and grammatical characteristics of academic language is lacking.

The theory of Systemic Functional Grammar

The theory of Systemic Functional Grammar (SFG) (cf Halliday & Matthiessen, 2004, Schleppegrell, 2004) provides a framework for considering specifically which linguistic features are appropriate in the school context. The theory of SFG assumes a functional relationship between social context and linguistic form. SFG distinguishes three aspects of context that impact the constellation of lexical, grammatical, and textual features of a text: *Ideational Field* (i.e. the nature of the social activity, influencing the content, that what is being talked about), *Tenor* (i.e. the interpersonal relations among

interlocutors, influencing stance taking, for instance authoritative stance) and *Mode* (i.e. the communication channel impacting textual structure, for instance written text) (Halliday & Matthiessen, 2004; Matthiessen & Halliday, 1997). Thus, according to the theory of SFG, a specific *genre* of communication, seen as a staged, goal-oriented, social process affords a particular linguistic realisation, that is, affords the choice of a particular *register* of the language (Christie, 1995; Martin, 1997).

Schooling involves socialization into knowledge exchange. Therefore, children are expected to develop the language skill to convey cognitively complex content (field), in a distanced and assertive manner (tenor), expressing themselves as explicitly as possible as they construct meanings through cohesive textual structuring (mode) (Schleppegrell, 2004). This puts particular demands on their emerging language proficiency. In the current study, following Schleppegrell (2004), we focused on the emergence of language skills considered essential for knowledge exchange. First, conveying a cognitively complex content asks of a person to use a rich, technical vocabulary, to construct information dense sentences, to use clause combining strategies, and to apply specific use of connectives that allows for efficient and effective explanation of relations between concepts and propositions. Second, authoritative stance taking asks for frequent use of the declarative mood. Third, creating a shared frame of reference with the audience asks for usage of explicit reference to time and place and elaborate forms of verb tense and aspect. Fourth, at the textual level, as text most often takes the form of a monologue, cohesively narrative structuring asks for usage of text markers and specific connectives.

The present study stands in a long tradition of sociological, sociolinguistic, and educational research of differences in school achievement as related to home language and literacy. Since the 1970s theorists have emphasized the importance of experience for the acquisition of the literate, academic register, stating that familiarization with academic register features fosters the ability to make register-appropriate lexical, grammatical, and textual choices within the school context (Bernstein, 1971-1973; Bourdieu & Passeron, 1977; Christie & Martin, 2007; Gee, 2001; Halliday & Matthiessen, 2004; Schleppegrell, 2004). The aim of the present study was to deepen understanding of the role of the home language and literacy environment in young children's emerging academic language using SFG as a theoretical frame.

Academic language in early childhood

Acquiring the linguistic features of academic language is a special case of general language acquisition. While acknowledging that major controversies in language acquisition research are far from resolved (cf. Tomasello, 2003), we assume that especially in the case of emergent academic language special language input is required to provide the young language learner with sufficient tokens and types of the lexical, grammatical, and textual forms of academic language that are rare in ordinary interpersonal language use. It has been widely documented that children's early language skills, such as receptive and expressive vocabulary, syntactic skills, and language comprehension are related to both quantity and quality of language input (Chapter 2; Goodman, Dale, & Li, 2008; Hart & Risley, 1995; Hoff & Naigles, 2002; Hoff, 2006; Hurtado, Marchman, & Fernald, 2008; Huttenlocher et al., 2002). However, although relations have been established between shared reading frequency and children's syntax and story comprehension (Leseman et al., 2007; Sénéchal & LeFevre, 2002; Sénéchal et al., 2008), there is a need for more detailed information about the nature of the language input in the home learning environment that can promote children's emergent academic language proficiency (Cox, Fang, & Otto, 1997; Vasilyeva et al., 2008).

Although young, pre-school aged children are not yet confronted with academic language use in formal instruction situations, we presuppose that several genres of informal oral and literate language use in daily family routines support them in the initial acquisition of academic language. Frequently occurring activities in the home environment reveal linguistic features that resemble academic language use in formal instruction (Beals & Snow, 2002; Curenton, Craig, & Flanigan, 2008; Price, Kleeck, & Huberty, 2009; Snow & Beals, 2006; Weizman & Snow, 2001). Verbally reconstructing personal experiences and memories, for instance, requires clarification of the context of reference and coherent – narrative - ordering of the sequence of events that is reported (Beals, 1997, 2001; Gauvain, 2001; Haden, Haine, & Fivush, 1997). Shared narrative book reading about unknown characters in distant, often fictitious worlds presents the child with coherently interrelated sentences that usually contain many new, often specific and rare words in a semantically rich context that helps the child to grasp the elaborate meanings of these words (Hammett, Kleeck, & Huberty, 2003; Leseman & De Jong, 1998; Weizman & Snow, 2001). Daily family routines also provide ample opportunities for instruction talk, for instance, when doing educational games, playing with construction materials, or solving puzzles. Shared playing with construction games elicits talking about

technical features of the task at hand and often involves the use of spatial action verbs and explicit reference to objects and movements in space. Indeed, Leseman and De Jong (1998; De Jong & Leseman, 2001) found long lasting effects of the degree of elaborate talk by mothers during a marble slide construction task at pre-school age on children's vocabulary and reading comprehension in grade 3 in primary school.

Language learning not only depends on input but also on children's ability *to learn* from input. Current research focuses in particular on the role of working memory as a domain-general information processing system involved in learning in many areas, including language (Adams & Gathercole, 2000; Baddeley, 2003). Differences between children in the capacity to store verbal information temporarily were found to predict differences in the rate of development of several aspects of language, such as receptive and productive vocabulary, story comprehension, mean length of utterances, and syntactic diversity (Adams, Bourke, & Willis, 1999; Adams & Gathercole, 2000; Baddeley, 2003). To the best of our knowledge, no studies to date examined the joint effects of input and verbal short term memory on emergent academic language. Yet, knowing how both factors are involved in emergent academic language is important for understanding differences between children. Therefore, the present study also examined the role of verbal short term memory in emergent academic language.

The current study

The current study aims to contribute to the understanding of young children's acquisition of the academic register by examining relationships between their home language and literacy environment and their emergent productive and receptive academic language proficiency in three genres: impersonal narrative, personal narrative, and instruction. These genres are regarded as the prototypical 'pre-academic' text genres of early childhood that forerun similar text genres in primary and secondary school (Schleppegrell, 2004). The *Impersonal Narrative* genre comprises storytelling which emphasizes actions that participants undertake to solve a problem resulting in a plot, usually in an unknown, fictitious world. Fairy tales and children's storybooks are examples of the impersonal narrative genre. Language used in this genre is characterized by varied verb tense, coordinate and subordinate clauses, and varied use of connectives. Circumstances and events are elaborated by use of adverbs and explicit references to time and place. The sequence in which the events are related creates a structure for the text. The *Personal Narrative* genre deals with the retelling of a sequence of events, based on

personal experiences. Linguistic features of this genre include use of past tense, personal pronouns, and additive and temporal connectives. The *Instruction* genre is used to provide instructions, directing "actions of others through a set of steps" (Schleppegrell, 2004, p.86). In contrast to the narrative genres, instruction has a more direct connection to action and, therefore, affords different linguistic choices. Typical for this genre is a mixed use of declarative and imperative mode and present tense verbs, as well as the use of specific, technical vocabulary. Assessing children in three distinct genres allows us to investigate whether children's lexical, grammatical, and textual choices differ between genres. Furthermore, by assessing the input at home in the three genres, rather than merely using a global measure of the amount of shared reading and talking, or distal indicators of the home environment such as SES (Sénéchal et al., 2008; Vasilyeva et al., 2008), we are able to further examine whether there are genre specific relations between input, acquisition, and use of academic language. For this purpose we developed comprehension and production tasks in the impersonal narrative, the personal narrative, and the instruction genre.

Children's language use was expected to differ across the three genres. We expected features of academic language to be most present in the impersonal narrative genre through the use of information dense sentences, connectives, multiclause sentences, specific reference to time and place, and strategies to create text cohesion and a high abstraction level, as use of these academic language features facilitates storytelling that focuses on fictitious characters that have to resolve a problem in a fictitious world. The personal narrative episodes were also expected to contain emergent academic language features, although to a lesser extent than with the impersonal narrative tasks, as summing up of past experiences to a familiar audience involves less authoritative stance taking and presumably is less cognitive demanding (Curenton et al., 2008; Sénéchal et al., 2008). Furthermore, we anticipated that personal narrative would be characterized by more frequent use of past tense verbs as opposed to the other genres (Schleppegrell, 2004). Finally, the instruction genre was expected to be characterised by frequent use of reference to space, adversative and temporal connectives, and a high occurrence of present tense, as the interlocutor has to receive specific instruction on the building of a construct.

We expected to find a positive association between impersonal narrative storybook reading and storytelling at home and children's academic language use in the impersonal narrative task (see also Leseman et al., 2007). In addition, we hypothesized that the occurrence of conversations about personal experiences and personal narrative storybook

reading facilitates children's ability to construct a personal narrative (Snow & Beals, 2006). Finally, we expected a positive association between children's performance in the instruction genre and the exposure to instruction talk at home. To the authors' knowledge, no study to date compared academic language features in preschoolers' speech in an impersonal, a personal, and an instruction genre. As it has been widely acknowledged that children's language development and verbal short term memory are interrelated (Adams & Gathercole, 2000; Baddeley, 2003; Messer, Leseman, Boom, & Mayo, in press), we also controlled for children's verbal short term memory when examining whether children's emergent academic language proficiency within the three genres related to particular home literacy activities. In the remainder of this article we will try to answer the following research questions:

(1) Do children as young as three years old already show the beginnings of academic language in different genres of narrative and instruction texts?
(2) Is children's emergent academic language in these genres specifically related to home language and literacy activities in the same genres?
(3) Is children's emergent academic language predicted by genre-specific home language and literacy activities, while controlling for verbal short term memory?

METHOD

Sample

The present study involved 58 3-year-old (range 35 to 43 months, *M*= 39, *SD*= 1.6) monolingual Dutch children, 32 girls and 26 boys. Using a random sample of addresses made available by a median sized municipality, trained female research assistants visited target families at home with the request to participate in the study. Single-parent families, children with serious developmental delays or medical speech or hearing problems, and children who attended day-care, preschool, or playgroups for more than two full days or four half days a week were excluded. Of the families that met the criteria, 65% agreed to participate. Parents who decided not to participate were either not interested in the study or too busy. After the data were collected families received a gift voucher of €10 and a story book for the child.

Procedure

Data were collected during two home visits by trained female research-assistants, college students majoring in psychology or educational sciences. Each visit took

approximately two and a half hours. During these visits a questionnaire was administered to the primary caregiver, in the present study always the mother, addressing family demographics and language and literacy activities at home. Standardized tests were administered to the children in a fixed order using laptop computers. The personal and impersonal narrative tasks and the instruction task were conducted in a quiet place and recorded on video to allow for subsequent coding. During the first visit, children's verbal short term memory and their impersonal as well as personal narrative skills were assessed. During the second visit their receptive vocabulary skills were assessed and the instruction task was administered. Before coding, coders had received an extensive training to assure consistent coding. Ambiguities were resolved through discussion with the principal investigator. Decisions on ambiguities were shared with all coders.

Measures

SES. Family SES was based on two components: the highest completed educational level of both parents ranging from 1 (no education) to 7 (university degree) and the status of their current jobs on the Dutch national job index list ranging from 1 (unemployed) to 6 (scientific job level) (Centraal Bureau voor de Statistiek [CBS], 2001). SES was computed as the mean of both parents' educational and job levels ($\alpha = .91$).

Verbal short-term memory. The Digit Span test, from the Dutch version of the McCarthy Scale of Children's Ability (MSCA), was used to measure children's verbal short term memory (Van der Meulen & Smrkovsky, 1985). The MSCA manual reports satisfactory internal consistency for the Memory scale (McCarthy, 1972). In this test children had to recall random series of numbers between 1 and 9, with series increasing in length, which were voiced by a computer.

Receptive vocabulary. The Diagnostic Test of Bilingualism of the national educational testing service, CITO, was used to assess children's *receptive vocabulary* (Verhoeven, Narrain, Extra, Konak, & Zerrouk, 1995). The test has a similar format as the well-known Peabody Picture Vocabulary Test: a child has to match a target word with one out of four pictures. Test words were derived from a large database of words which teachers considered important for successful participation in primary school and for understanding instruction in school subjects. To reduce testing time only the odd items of

the subtests were administered, 30 in all. Testing continued until the child failed five consecutive items or completed all items of the test. Cronbach alpha of the test was .84.

Academic Language Comprehension. Structured interactions in the genres impersonal narrative, personal narrative, and instruction were developed to assess children's comprehension proficiency within these three genres of the academic register. Child and research assistant were seated in a quiet place on a couch, rug, or at a table. The research assistant had brought along hand puppet Ernie, a well-known character from Sesame Street, as a playmate to enhance children's engagement in the task. During the *Impersonal Narrative Comprehension* task children answered nine comprehension questions about a read-aloud age-appropriate picture book (438 words), titled Badger's bath. The story was about a badger who does not want to take a bath, hides in a tree and ends up falling in the bath tub. Each question was first formulated open-ended ("What should the badger do first, before he could visit his friend for tea?"). If the child was unable to correctly answer the question, an alternative closed question was posed ("Did the badger have to take a bath, before he could visit his friend for tea?"). Children received 1 point for each correctly answered question and 0 points for incorrect answers. Scores were averaged over the nine questions. Cronbach alpha for the test was .69. The *Personal Narrative Comprehension* task had a similar format. The research assistant read a personal narrative (containing 255 words) in the form of a letter written by Ernie to his grandmother, describing his visit to a market. After reading the letter, the assistant asked nine comprehension questions. Cronbach alpha for the task was .89. For the *Instruction Comprehension* task the child received 20 instruction clues in order to build a bird from Duplo® blocks. The instructions contained technical and referential vocabulary, e.g., color- and shape names, action verbs, and references such as 'similar' or 'on top'; for instance "Take a red square block". Instructions were repeated once if a child was unable to correctly follow the instruction. For difficult concepts, like square and rectangle, an additional instruction was given with extra information when a child was unable to follow the repeated instruction ("Take the smallest red block"). Children received 1 point for correct responses to instructions and 0 points if they could not follow an instruction. Scores were averaged over the 20 instructions. Cronbach alpha for the task was .65. All tasks were recorded on video tape and scored afterwards. Interrater reliability based on 10% of the tasks was satisfactory (r = .92, p = .00).

Academic Language Production. Besides the comprehensive parts, all three interaction tasks had a productive part in which children were stimulated to use genre appropriate language. The *Impersonal Narrative Production* task consisted of two parts. During the first part of the assessment, children were asked to retell the story of 'Badger's Bath' to Ernie. The children were asked to retell the story to Ernie in the same way they had heard the story read to them, as Ernie had not been paying attention when the story was read. Using hand-puppet Ernie, the assistants signaled interest using paraverbal or short verbal prompts (such as "hmm; and else; ooh") or nonverbal cues such as nodding and smiling. During the second part of the assessment, children constructed a narrative on the basis of the wordless picture book 'Bib of Bas', with 12 pictures showing a little boy carrying around his bib, using it as a blanket to tuck in his doll, as a bag to carry cookies, and, eventually, as a napkin to prevent spilling food on his clothes. Children were allowed time to explore the book and look at the pictures before starting the task. The assistants guided the children through the picture book, asking questions to optimally elicit academic language production, following a strict protocol with scaffolding adjusted to the child's performance. The assistant always started with a general open ended question (e.g. "What do you see?"). Subsequently, whenever a child left out important story elements, such as descriptions and explanations of participants' behavior, assistants asked specific questions to promote more elaborate storytelling ("What are they doing?; Why are they doing that?") per page. Furthermore, when a child was not specific enough, the assistant elicited introduction of necessary elements about time and place (e.g. "Where are they now?"). Both impersonal narrative task responses were pooled for further analyses.

During the *Personal Narrative Production* task, assistants encouraged children to tell a story about something they had recently experienced (for instance playing in the park). To elicit an academic instead of a more informal oral register, children were instructed to dictate the story in such a way that it could be written down in a letter to their grandmother. Hand puppet Ernie wrote down the children's personal narratives. Children had been introduced to the concept of a personal letter in the comprehension part of the personal narrative task. Assistants supported the children following a protocol similar to the storytelling task. First, children were asked to start telling their story. Subsequently, when necessary, assistants asked questions focusing on children's personal experiences to stimulate elaborate personal narrative production with specific descriptions of past events and specific time and place references (e.g. "When/Where was that?; What happened

next?; Why did you do that?"). At the end of the task the assistant read the letter back to the child.

The *Instruction Production* task required the child to instruct Ernie on how to build a bird from Duplo® blocks. Children received a picture of the completed bird as an example. To elicit an academic register, the assistants encouraged them to provide verbal instead of nonverbal instructions by telling the child that Ernie really had to learn to listen well and learn to follow the instruction just as the child had done previously (i.e. during the instruction comprehension task). Whenever a child pointed at a block, the assistant requested the child to describe the block to Ernie ("Try not to point to the blocks, but instead describe them as Ernie has to learn to listen well."). Assistants were allowed to aid the children according to a clearly defined protocol. First, whenever the child only described one characteristic of the block (e.g. color or shape), Ernie would look at all the similar colored/shaped blocks and ask for clarification ("What color does it have; How does the red block looks like?"). If the child was unable to answer Ernie's question, the assistant would provide three alternatives ("Look, the blocks have different colors: red, yellow, and green. Just tell Ernie which block he should take."). Finally, if the child was still unable to provide an appropriate instruction, Ernie took the right block, saying "this one, right?". At the end of the task, Ernie enthusiastically thanked the child for explaining to him how to build the bird.

All three interaction tasks were transcribed and coded afterwards in the laboratory both on utterance level as well as in a holistic manner, using a coding scheme[1] based on the theory of SFG (Halliday & Matthiessen, 2004; Schleppegrell, 2004). Utterances of the child were defined as units of speech containing a single, sometimes complex meaning proposition, as indicated by intonation or pauses. Children's self corrections, off task utterances, largely inaudible, and simple 'yes' or 'no' utterances were excluded. Development of an age appropriate coding scheme allowed evaluation of children's emergent academic language proficiency. The following categories were coded at the utterance level:

- Number of content words in each utterance (all nouns, verbs, adjectives, and count words and a selection of adverbs with a clear meaning).
- Use of either no, deictic ('here', 'this one'), explicit but non-specific ('somewhere') or explicit and specific references to time and place ('in the tree').

[1] The coding scheme of the present study is a shortened version of an extensive coding scheme developed within the DASH-project (DASH, 2006). The coding manual, in English, can be obtained from the authors.

- Use of verb tense and aspect (subcategories: no verb, present simple, present perfect, past simple, past perfect, present future, or past future tense).
- Mood (subcategories: no verb, declarative, interrogative or imperative mood).
- Use of connectives (subcategories: additive, temporal, causal, and contrastive connectives).
- Use of clause combining (subcategories: coordinate and subordinate).

Each category was aggregated to create an indicator of mean number of content words per utterance and percentage of occurrence of the aforementioned variables.

In addition, coders rated the overall discourse produced by the child during the narrative tasks on the following dimensions:

- Textual cohesion of the story told by the child using a 7-point rating scale, with scale point 1 meaning 'very low cohesion between separate utterances, virtually all utterances are semantically or linguistically unrelated', 4 meaning 'intermediate cohesion, utterances are interrelated half of the time', and 7 meaning 'the discourse is highly coherent, all utterances together forming one complex statement'.
- Abstraction level displayed in the story, rated a 4-point rating scale derived from Blank, Rose, and Berlin (1978), with scale point 1 meaning that the story produced by the child was closely connected to the immediate situation, e.g. merely labelling the pictures, scale point 2 meaning that children described actions and integrated separate components of the story, scale point 3 meaning that children made inferences about perception, and scale point 4 meaning that the child reasoned about not directly observed aspects of the story. In addition to the holistic rating, coders rated the highest used abstraction level within each task.

Taking into account the different nature of the instruction task in which the separate instructive steps structured the interaction, coders did not code for textual cohesion and rated abstractness at action and utterance level on a rating scale, ranging from 1 (nonverbal instruction, e.g. pointing, demonstrating) to 8 (child reasons about not directly observed aspects of the block building), affording a transparent and easily manageable coding procedure for abstraction level in the instruction task. Afterwards, the 8-point rating scale was recoded into the 4-point rating scale from Blank, Rose, and Berlin (1978) to permit between task comparisons of abstraction level.

Overall reliability of coding across genres was determined on approximately 10% (n = 22) of the transcripts. All of the transcripts were examined a second time to ensure no other errors had been made. The mean intercoder correlation was 0.78 (range r = 0.53, p =

.01 to $r = 0.91$, $p = .00$) for the utterance-based codings. The mean intercoder agreement of the ratings, based on free-marginal Kappa, was 0.58, indicating moderate agreement.

Home language and literacy. Children's experience with language through reading activities and oral interactions in the family context was determined through a questionnaire adapted from the Early Childhood version of the HOME observation scheme by Bradley and Caldwell (1984). The primary caregiver rated how frequently the child participated in language activities on a five-point Likert scale, ranging from 1 (never) to 5 (daily). Based on theoretical considerations, and supported by the results of exploratory principal components analysis, three scales for language input through reading and oral language activities were constructed by computing the mean of the items included in these scales. The scale *Personal Narrative Input* represented the self-reported mean frequency of mothers' talking with their children about personal experiences and shared memories and reading of personal narrative books. The scale consisted of eight items with a Cronbach alpha of .54. We considered this alpha sufficient for the present purpose, also given the heterogeneity of the type of activities included in the scale. A sample item is: "How frequently do you talk with your child about what he/she experiences in school?". The scale *Impersonal Narrative Input* consisted of seven items about frequency of impersonal narrative storytelling and impersonal narrative book reading. A sample item is: "How frequently do you tell your child made-up stories, fairy tails or legends?'. Cronbach alpha for the scale was .71. The scale *Instruction* measured frequency of conversations regarding problem solving strategies and talking about concepts such as shape and size. A sample item is: "How frequently do you demonstrate your child how to make a puzzle or talk with your child about where to start or how you can see whether a piece fits?". The scale consisted of 7 items. Cronbach alpha for the scale was .59.

RESULTS

Overview of the analyses

We first present the descriptive statistics of the measurements. Using repeated measures analysis of variance, we will compare children's receptive and productive academic language proficiency within the genres personal narrative, impersonal narrative, and instruction. Second, using correlation analysis, we will examine the relations between children's verbal short term memory, receptive vocabulary, academic language comprehension and production, and home language input in the impersonal narrative, the

Table 1. *Descriptives Home and Child Characteristics*

Measure	*M (SD)*	Observed range
Home characteristics		
SES	4.56 (1.18)	1.50 - 6.50
Impersonal narrative input	3.42 (0.73)	1.86 - 4.86
Personal narrative input	3.62 (0.57)	2.00 - 4.62
Instruction input	3.16 (0.71)	1.57 - 4.43
Child characteristics		
Verbal short term memory	2.58 (1.55)	0 - 6
Receptive vocabulary	16.13 (5.13)	5 - 24

personal narrative, and the instruction genre. In addition, multiple regression analyses will be used to address the question whether, after controlling for children's verbal short term memory, children's academic language proficiency is related to genre specific input at home.

Descriptives

The descriptive statistics for home characteristics and children's receptive vocabulary and verbal short term memory are reported in Table 1. The mean SES was 4.56, indicating that parents in the present sample on average were schooled on and worked on intermediate to higher vocational levels. SES varied strongly, as indicated by the range and standard deviation. Parents reported that reading and talking in the genres impersonal and personal narrative and instruction occurred frequently. The mean frequencies of home language and literacy activities show that, on average, activities within the three genres occurred between a few times per month and a few times per week. The mean scores on the working memory composite and the vocabulary test did not reveal bottom or ceiling effects. Of specific interest are the results on the receptive and productive academic language tasks, reported in Table 2. Comparison of the mean scores of the narrative comprehension tasks revealed that children were least proficient in the impersonal narrative genre, with a mean score of .64 (*post hoc Bonferroni test* $p < .05$). On average, children correctly answered 55% of the questions about the impersonal narrative (22% of the open ended and 42% of the closed questions), whereas they succeeded to correctly answer an average of 72% of the questions about the personal narrative (40% of the open ended questions and 31% of the closed questions). Note that the assistants only posed a closed question if a child was unable to answer the open ended question correctly.

In the instruction comprehension task, children on average were able to follow 46% of the instructions. On average, they managed to follow 34% of the first instructions, 11% of the second instructions, and 1% of the third instructions. Note that the assistants only provided a second and third instruction when necessary. The standard deviation as well as the observed score range indicated considerable inter-individual differences in comprehension skills (observed range for all three tasks 0-1).

Table 2 also lists the results of the production tasks. The mean number of content words per utterance ranged from 1.28 to 1.77 across tasks. Children on average used non-deictic reference to time and place in their stories, depending on the task, in 14 to 29% of their utterances. In all three tasks, the majority of verb tenses used were present simple, present perfect, and past simple (only very few other tenses, such as past perfect, present future, and past future were found). In order to create an indicator of academic verb use, all verb tenses except present simple were pooled in a single measure, namely elaborate verb use. The mean percentage of utterance containing another tense than present simple varied between 0 to 19% across task, whereas on average 38 to 77% of the utterances contained no verb at all. Note that in the instruction task, on average, only 23% of children's utterance contained a verb, which was in present tense in most of the cases. For the utterances that contained a verb, declarative verb mode was most prevalent, ranging from 87 to 93% across the three genres. Interrogatives and imperatives were highly infrequent (0-2%). For the purpose of the present study, a distinction was made between no, simple additive, temporal, causal, and comparative connectives. As the more specific connectives, such as temporal, causal, and comparative connectives, were used quite infrequent, they were pooled into the single measure "use of logical connectives". Furthermore, coordinate and subordinate clause combining, also used quite infrequently, were pooled into the variable clause combining. The mean percentage of utterance containing combined clauses ranged between 1 to 2 % across the genres. Note that also for this aspect the range of scores was considerable. Overall, for textual cohesion and abstraction level, children obtained scores in the lower range in all three genres.
To answer the first research question, children even as young as three years already show emerging academic language, not only in a receptive way, that is, in understanding narrative and instruction texts that contained lexical, grammatical, and textual features of academic language, but also in producing narrative and instruction texts. The results also indicate interesting differences in use of academic language across genres, even at this

Table 2. *Descriptives Receptive and Productive Academic Language Skills*

Measure	*M (SD)* Impersonal[a]	*M (SD)* Personal [b]	*M (SD)* Instruction[c]	*Observed range*	Bonferonni
Comprehension	0.64 (.18)	.72 (.18)	0.46 (.16)	0 - 1	P > Imp > Ins
Number of utterances	46.53 (22.68)	27.24 (14.05)	42.65 (19.07)	1 - 116	Imp & Ins > P
Mean number of content words	1.71 (.31)	1.77 (.39)	1.28 (.34)	0.68 - 2.48	Imp & P > Ins
Non deictic reference	.29 (.15)	.20 (.15)	.14 (.09)	0 - .24	Imp > P >Ins
Specific reference	.17 (.09)	.13 (.10)	.07 (.05)	0 - .43	Imp ≥ P > Ins
Non specific reference	.11 (.09)	.07 (.09)	.07 (.06)	0 - .58	Imp > P & Ins
Deictic reference	.10 (.07)	.05 (.09)	.35 (.15)	0 - .72	Ins > Imp & P
Present tense	.51 (.16)	.29 (.15)	.23 (.13)	0 - .82	Imp > P & Ins
Present perfect	.04 (.05)	.10 (.15)	.00 (.01)	0 - .64	P > Imp > Ins
Past tense	.06 (.09)	.08 (.11)	.00 (.00)	0 - .55	Imp & P > Ins
Past perfect	.00 (.01)	.01 (.02)	.00 (.00)	0 - .08	Imp = P = Ins
Future tense	.01 (.02)	.00 (.01)	.00 (.00)	0 - .09	Imp > P & Ins
Future perfect	.00 (.00)	.00 (.00)	.00 (.00)	0 - .03	Imp = P = Ins
Elaborate verb use	.11 (.10)	.19 (.17)	.00 (.00)	0 - .64	P ≥ Imp > Ins
No verb use	.38 (.16)	.53 (.19)	.77 (.13)	0 - 1.00	Ins > P > Imp
Declarative mode	.54 (.16)	.44 (.19)	.20 (.13)	0 - .83	Imp > P > Ins
Interrogative mode	.04 (.08)	.01 (.02)	.01 (.01)	0 - .50	Imp > P & Ins
Imperative mode	.04 (.06)	.02 (.04)	.02 (.03)	0 - .33	Imp>Ins
Additive connective	.02 (.03)	.05 (.08)	.01 (.01)	0 - .38	Imp & P > Ins
Temporal connective	.01 (.02)	.01 (.02)	.00 (.00)	0 - .11	Imp > P & Ins
Causal connective	.02 (.03)	.01 (.03)	.00 (.00)	0 - .10	Imp > P > Ins
Comparative connective	.01 (.02)	.01 (.03)	.01 (.03)	0 - .12	Imp>Ins;P≥Ins
Use of logical connectives	.04 (.04)	.02 (.05)	.01 (.031)	0 - .06	Imp > P & Ins
Coordinate clause	.00 (.01)	.01 (.02)	.00 (.00)	0 - .09	Imp = P = Ins
Subordinate clause	.01 (.02)	.01 (.03)	.00 (.01)	0 - .11	Imp > Ins
Clause combining	.02 (.03)	.02 (.04)	.01 (.02)	0 - .18	Imp & P > Ins
Abstraction	1.44 (0.45)	1.52 (0.50)	1.80 (0.40)	1 - 3	Ins > Imp; Imp=P
Highest abstraction	2.61 (0.56)	2.27 (0.56)	2.08 (0.33)	1 - 4	Imp > Ins & P
Textual cohesion	1.71 (0.61)	1.93 (0.70)		1 - 4	P = Imp

*Note.*P = personal narrative, Imp = impersonal narrative, Ins = instruction; [a]*n* = 51 for the productive and *n* = 50 for the receptive task. [b] *n* = 44 for the productive and *n* = 46 for the receptive task. [c] *n* = 49 for the productive and *n* = 57 for the receptive task.

young age. In general, as expected, children's language use most often showed features of academic language in the impersonal narrative text genre, as indicated by a more frequent use of non deictic reference, declarative mood, and specific causal, temporal, and comparative connectives as compared to the personal narrative and the instruction genre (*post hoc Bonferroni tests* all *p*'s <.05). Language use in the personal and impersonal narrative tasks did not significantly differ for mean number of content words per utterance, use of specific verb tense, occurrence of clause combining, textual cohesion, and abstraction level. Language use in the instruction task was least often characterised by academic language features, with less information dense sentences, a higher use of deictic

reference, less clause combining, and less verb use and, hence, less use of declarative mood (*post hoc Bonferroni tests* all *p*'s <.05) than in the narrative tasks. Yet, compared to the narrative tasks, children on average used a higher degree of abstraction in the instruction task, with a mean score close to 2, indicating that children focused on specific characteristics of objects, namely colour or shape aspects of the blocks.

Correlational analysis

In order to examine the hypothesized relation between receptive and productive academic language skills, as well as the role of genre specific input at home, three composite measures were created as indicators of children's genre specific productive academic language performance. Forced principal component analyses were conducted to construct a single composite measure of academic language use per genre, including the following variables: mean number of content words per utterance, use of explicit (non deictic) reference to time and place, elaborate verb tense, declarative mood, clause combining, logical connectives, textual cohesion, and abstraction level. For the instruction task, the following adjustments were made to take into account the different nature of the task: the use of present tense was included instead of other tenses (and contrasted to no verb use) as an indicator of appropriate use of verb tense in this genre, and in addition to the declarative mood also the imperative mood was regarded as appropriate for this genre, thus included in the principal components analysis. Across tasks, the first component explained between 41 and 46% of the variance. All variables were positively correlated with the first principal component. Composite measures of academic language were obtained by saving the component scores. Cronbach alpha of all three composite measures ranged between .75 and .84.

Table 3 presents intercorrelations between genre specific language input, children's receptive vocabulary skills, their verbal short term memory, and their genre specific academic language comprehension and production proficiency. Because missing value analysis revealed that the academic language comprehension and production variables had a high occurrence of missing data points, ranging from 12 % to 24 %, missing values were replaced using the regression estimation method whenever a variable contained more than 8% missing values. The results indicate that children's emergent productive academic language proficiency was significantly related to their verbal short

Table 3. *Correlations Between the Home Language and Literacy Environment, Children's Outcomes, and Verbal Short Term Memory*

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. Imp input	–										
2. P input	.52***	–									
3. Ins input	.43**	.57***	–								
4. Rec Voc	.21†	.47***	.33**	–							
5. Imp comp	.01	.12	.25*	.35**	–						
6. P comp	.20†	.31*	.29*	.44**	.37**	–					
7. Ins comp	.13	.17	.28*	.38**	.29*	.43**	–				
8. Imp prod	.34**	.11	.02	.33**	.50***	.29*	.16	–			
9. P prod	.16	.29*	.29*	.30*	.56**	.56**	.50**	.40**	–		
10. Ins prod	.01	-.03	.00	.05	.26*	.28*	.36**	.19†	.36**	–	
11. STM	.25*	.28*	.17	.39**	.28*	.31*	.40**	.30*	.38**	.17	–

Imp = impersonal narrative; P = personal narrative; Ins = instruction; Rec Voc = receptive vocabulary; comp = comprehension; prod = production; STM = verbal short term memory; †p <.10; *p < .05; **p < .01; ***p <.001

term memory, receptive vocabulary, and academic language comprehension scores in all three genres, with one exception. In the instruction production task, children's academic language production proficiency was not related to their receptive vocabulary nor to their verbal short term memory (r = .05, p >.05 and r = .17, p >.05, respectively).

A second hypothesis of the current study was that children's receptive as well as productive academic language proficiency would be related to the home learning environment. Furthermore, we presupposed that the relations between home language activities and children's academic language skills are genre specific. Table 3 shows that language input at home indeed relates to children's receptive as well as productive academic language proficiency. To answer the second research question, there are some indications that the relations between the home language and literacy environment and children's academic language proficiency are genre specific. Receptive academic language skill in the personal narrative and instruction genres is indeed correlated with the amount of personal narrative and instruction language input at home respectively, and productive academic language use reveals genre-specific relations in the impersonal and personal narrative genre. However, the pattern of correlations is not fully consistent. For instance, instruction language input positively correlates with children's receptive academic

Table 4. *Correlations Between Children's Emergent Academic Language skills and Genre Specific Language Input, Vocabulary and Verbal Short Term Memory*

Academic Language Composite	Imp Input	P Input	Ins Input	Rec voc	STM
Imp	.28*	.20†	.21†	.41**	.35*
P	.23*	.43**	.31**	.40**	.41**
Ins	.15	.11	.20†	.28*	.35**

Imp = impersonal narrative; P = personal narrative; Ins = instruction; Rec Voc = receptive vocabulary; STM = verbal short term memory; †p <.10; *p < .05; **p < .01; ***p <.001

language in all three genres, whereas instruction language input does not correlate with productive academic language in the instruction genre.

Hierarchical Regression Analysis

A series of stepwise multiple regression analyses was conducted to test whether relations found between children's emergent academic language proficiency and genre specific home language activities would hold after controlling for children's verbal short term memory. As children's comprehensive and productive academic language proficiency within each genre were considerably interrelated (r's ranging between .36, p < .01 and .56, p <.001), they were pooled for this analysis to create a general indicator of emergent academic language. After creating the composite measure, missing data were replaced using the regression estimation method, and outliers greater than two standard deviations were excluded (1,7% in the personal narrative task, 6,9% in the impersonal narrative task and 5,2% in the instruction task). Correlations between the composite measures of academic language proficiency and language input at home, children's receptive vocabulary, and verbal short term memory are presented in Table 4; Table 5 lists the results of the regression analyses.

For each genre, children's verbal short term memory was first entered into the regression model, followed by the measure of input within that genre. Note that we included as predictor the measure of language input with the strongest bivariate correlation with children's academic language proficiency. The results show that verbal short term memory explained significant variance in children's emergent academic language proficiency in all genres. Personal narrative input and instruction input both correlated moderately with children's academic language proficiency in the personal narrative genre. Therefore, both were entered in two successive steps in the regression

Table 5. *Hierarchical Regression Analyses Predicting Academic Language Skills*

Criterion and predictor order	*B*	*SE B*	β
Impersonal Narrative[a]			
Step 1			
Verbal short term memory	.19	.06	.39**
Step 2			
Verbal short term memory	.16	.06	.32*
Impersonal Narrative Input	.33	.13	.32*
Personal Narrative[b]			
Step 1			
Verbal short term memory	.23	.07	.41**
Step 2			
Verbal short term memory	.17	.07	.30*
Personal Narrative Input	.54	.18	.37**
Step 3			
Verbal short term memory	.17	.07	.30*
Personal Narrative Input	.46	.20	.31*
Instruction	.13	.16	.11
Instruction[c]			
Step 1			
Verbal short term memory	.18	.06	.38**
Step 2			
Verbal short term memory	.17	.06	.36**
Instruction	.12	.14	.12

Note.[a] R^2 =.15** for Step 1; ΔR^2 =.09* for Step 2. [b] R^2 =.17** for Step 1; ΔR^2 =.12** for Step 2; ΔR^2 =.01 for Step 3. [c]R^2 =.14** for Step 1; ΔR^2 =.01 for Step 2.; *p < .05; **p < .01.

analysis, with personal narrative input entered first as it had the strongest bivariate correlation with children's academic language proficiency in the personal narrative tasks. Language activities at home explained additional variance in children's academic language performance over and above children's verbal short term memory in the personal narrative genre ($F_{(1,53)}$ = 9.07, p < .05) as well as the impersonal narrative genre ($F_{(1,51)}$ = 6.51, p < .05), but not in the instruction genre.

DISCUSSION

The purpose of the present study was to examine whether children in the preschool age would be able to understand and use academic language in narrative and instruction text genres and to determine whether this proficiency relates to particular language and

literacy activities in the home learning environment. We were especially interested in children of this young age as we hypothesized that a lack of early experience with the academic register at home may explain early arising educational disadvantages that already become manifest upon introduction to primary school and have long lasting consequences for educational performance (cf. Schleppegrell, 2004). Our analysis focussed on children's text comprehension as well as their use of lexical, grammatical, and textual features of academic language in an impersonal narrative, a personal narrative, and an instruction genre. We examined whether children's beginning command of academic language differed across these genres and was *specifically* related to oral and literate activities within these genres at home. The results indicated that children as young as three years were, on average, already able to comprehend and use academic language in all three genres under study, and that this proficiency was related to oral and literate activities at home. Moreover, there were indications of genre-specific relations between home language and literacy activities and children's emergent academic language; however the overall pattern of relations was not consistent. Furthermore, genre-specific home input predicted children's emergent academic language proficiency in a personal and impersonal narrative after controlling for verbal short memory.

Emergent academic language use in narrative and instruction texts.

The current study contributes to recent attempts to provide a comprehensive account of the so called academic, literate, or decontextualized language by using the SFG theory as a framework to develop a composite measure of academic language (cf Curenton, et al., 2008; Curenton & Justice, 2004, Sénéchal et al., 2008; Shiro, 2003; Ucelli, Hemphill, Pan, & Snow, 2006). In SFG it is assumed that content, nature of the relationship among interlocutors, and textual mode impact the linguistic realization of a narration. As academic language is characterized by an abstract and decontextualized content, authoritative stance taking, and monologual text, it affords use of high information dense sentences, explicit references to time and place, elaborate verb tense and aspect, the declarative mood, and cohesiveness and distancing strategies. Three-year-old children, albeit still quite infrequently, already use lexical, grammatical, and textual features of academic language in three pre-academic text genres typical for early childhood, especially in the narrative genres. Moreover, cross-genre comparison of children's academic language production revealed that children make genre-specific linguistic choices. In the narrative genres, children already used cohesiveness strategies to

structure their narratives, took an authoritative stance by frequently using the declarative mood, produced utterances with a relatively high information density and high average use of non-deictic reference, and used an elaborate verb tense to create a shared frame of reference. As expected, children more frequently used academic language features in the impersonal narrative genre than in the personal narrative genre. Presumably, evaluating actions fictitious characters undertake to resolve a problem, such as which is done in the impersonal narrative genre, is more complex than retelling a temporal succession of personal experiences to a familiar interlocutor and, hence, stronger affords use of academic language.

In contrast, the instruction task was characterized by short, simple utterances with present tense verbs and deictic reference to time and place. On average, children rarely attempted to structure their instruction through the use of comparative or temporal connectives. Although children were encouraged to provide explicit instructions to a doll, children used non-specific descriptions or deictic references in their instructions or simply pointed to the blocks on average in 44% of their utterances. Children's low scores on the instruction comprehension task indicated that the instruction genre was still a difficult one for them. In contrast to the narrative tasks, we found no relations between children's academic language proficiency in the productive instruction task and their vocabulary and verbal short term memory, which may point to a basic lack of technical vocabulary and expressions to provide the kind of explicit instructions that were required in this task. As a result, the instruction production task turned out to be more contextualised than the narrative tasks. Nonetheless, the finding that children adapted their linguistic choices to the particular genre, using academic language features more frequently in the decontextualized narrative tasks, can be regarded as support for the hypothesis that context and linguistic choices are interrelated and that decontextualized texts afford academic language use (Christie, 2002; Christie & Martin, 2007; Halliday & Matthiessen, 2004; Schleppegrell, 2004).

Children's use of academic language features and their academic language comprehension proficiency were found to be considerably interrelated. Furthermore, children's receptive vocabulary correlated positively with their productive and receptive academic language proficiency, except for productive academic language proficiency in the instruction genre. The correlations between receptive and productive academic language proficiency indicate that the ability to use lexical, grammatical, and textual features of academic language is an important tool for academic text comprehension too.

This finding corroborates and further extends other findings concerning language skills that facilitate text comprehension (Chang, 2006; Fang et al., 2006).

We examined whether experiencing conversations about personal experiences and reading of personal narratives, impersonal narrative storytelling and reading, and explanatory and instruction talk related to problem solving provided children with opportunities to acquire academic language skills in these genres. A composite score including both children's productive and receptive academic language skills was created, allowing correlation and regression analyses regarding the relations between the home learning environment and children's academic language proficiency. The results supported the idea that children's academic language use in narratives can be promoted by language input in genres that follow the linguistic features of academic language, as indicated by the positive associations with impersonal narrative, personal narrative, and instruction input (r = 0.20-0.43; $p < .10$). Furthermore, it can be tentatively concluded that children's academic language performance within a particular genre is best predicted by language input within the respective genre. Regression analysis revealed that after inclusion of children's verbal short term memory to control for general language learning ability, genre specific academic language input explains additional variance in academic language performance in personal as well as impersonal narratives. However, in the instruction genre, children's verbal short term memory was the only significant predictor of their academic language proficiency. We mentioned previously that the instruction genre was quite difficult for children of this young age. As children already had problems with understanding instructions in the comprehension task, not surprisingly, providing instructions appeared to be even more difficult, resulting in short, simple utterances with many non specific or deictic instructions.

The correlation and regression analyses of children's academic language use indicated that children's domain-general ability, represented in this study by their verbal short term memory capacity, is an important source of inter-individual differences in emergent academic language. This finding adds to the sociolinguists' view that academic language acquisition depends on children's experience with academic register (Gee, 2001; Schleppegrell, 2004). Apparently, including measures of children's capacity to learn from language input provides a more comprehensive account of the mechanism of academic language acquisition and is necessary to avoid third variable problems when testing the correlation between the home learning environment and children's academic language acquisition. However, caution is warranted. The finding that children's verbal short term

memory itself was positively related to the home language and literacy environment may imply that the impact of the home environment will be underestimated when controlling for children's verbal short term memory. In fact, there is increasing evidence for a reciprocal relation between verbal short term memory and language acquisition (for an overview, see Messer et al., in press). The positive correlation between children's verbal short term memory and the home learning environment, thus, could mean that children also *indirectly* profit from the home language and literacy environment through enhancement of their language learning ability.

LIMITATIONS AND CONCLUSION

The study suffered from a number of limitations. First, the measures of language input were based on primary caregivers' self-reports in personal interviews with semi-structured questionnaires. Answers may have been biased due to social desirability tendencies and to inaccuracies in rating the frequencies of particular language interactions at home. Moreover, the data did not allow us to draw firm conclusions about the quality of the genre specific language interactions. Observational measures of both the quantity and quality of the language input are needed to enhance understanding of the role of input in academic language acquisition. Second, we only assessed children's emergent academic language proficiency and their home learning environment at one measurement occasion with a relatively small sample of Dutch monolingual children. Due to children's young age, we had to deal with high percentages of missing values. Therefore, caution is needed when interpreting the results. A longitudinal design with larger samples, including mono- as well as bilingual children, will provide a stronger basis for causal inferences about the role of language input in academic language acquisition. Assessing children's academic language proficiency from the preschool age until the age children leave primary school will allow testing of the assumption that acquisition of the academic register is important for school success. Furthermore, providing a more comprehensive account of children's domain general ability, including verbal as well as visual measures of children's working memory capacity, combined with measures of genre specific input will allow a more in-depth understanding of the mechanism of academic language development.

Despite these limitations, we conclude that already at the age of three children show the beginnings of academic language. However, there are large inter-individual differences that can be explained, at least partly, by the joint effects of language learning ability and input at home. There are interesting differences between the three genres that

were examined in this study. The impersonal genre elicits most and the instruction genre least academic language use. We examined whether the relations between input and emergent academic language were genre-specific, but the results for the instruction genre were not fully conclusive in this respect. Nonetheless, the present results suggest that the use of narratives in early childhood education - at home or in pre-school – might be a viable strategy to decrease early disparities between children in emergent academic language, which may be an important first step in reducing educational inequality.

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4

Mono- and Bilingual Development and Language Input: a Growth Modeling Approach.

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Chapter 4

ABSTRACT

This 4-wave longitudinal study investigated the relationship between the home language environment and vocabulary development in a sample of 58 monolingual native Dutch, 47 bilingual Moroccan-Dutch (speaking Tarifit-Berber), and 56 bilingual Turkish-Dutch 3-year-olds, over a three year period. Dutch children received most first language (L1) input via literate and oral activities, Moroccan-Dutch children least. Turkish-Dutch children were least exposed to Dutch (L2) language activities. Multi-group latent growth modeling showed that, despite equal domain-general nonverbal cognitive abilities, the monolinguals scored consistently higher on a Dutch vocabulary test than the bilinguals on L1 and L2 vocabulary tests and Moroccan-Dutch children had higher L2 vocabulary as compared to Turkish-Dutch children. Furthermore, bilingual children's L1 developed slower, but their Dutch vocabulary faster than their monolingual peers. Language-specific input in the home environment explained variation in both L1 and L2 level, but not in growth. Finally, indications were found of positive cross-language transfer from L1 to L2.

INTRODUCTION

Children vary greatly in their vocabulary development (Pan, Rowe, Singer, & Snow, 2005). The origin of this inter-individual variation remains a topic of much investigation (Hoff, 2006). An increasing number of studies with monolingual children indicates big quantitative and qualitative differences in language experiences which are positively related to the socioeconomic status (SES) of the family and explain variability in children's language skills (Farah et al., 2008; Hart & Risley, 1995; Hoff, 2006; Hoff & Naigles, 2002; Noble, McCandliss, & Farah, 2007; Pan et al., 2005). Observational studies indicate that children who receive most language input also receive the *kind of language input* that is most effective for language learning (Hart & Risley, 1995; Hoff & Naigles, 2002). For instance, high SES children more frequently participate in home literacy activities (Bradley & Corwyn, 2002; Hoff, 2006). Home literacy activities, such as shared book reading and related types of parent-child conversations, are characterized by the use of a rich vocabulary, complex and information dense sentences, and semantically interconnected discourse, that is, the kind of language use that is generally thought to stimulate language development (Deckner, Adamson, & Bakeman, 2006; Hoff & Naigles, 2002; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002; Sénéchal & LeFevre, 2002; Weizman & Snow, 2001). The pattern that children from a high SES family in general receive more overall as well as more varied and complex language input is reported to be

consistent over time (Huttenlocher, Vasilyeva, Waterfall, Vevea, & Hedges, 2007). Although there is the possibility of a genetically mediated correlation between the home language environment and children's language proficiency (cf DeThorne et al., 2008), recent studies provide compelling evidence that both quantity and quality of language input impacts children's language proficiency (Goodman, Dale, & Li, 2008; Huttenlocher et al., 2002).

Studies involving bilingual children provide additional evidence for the essential role of language input in language acquisition. First, if input plays a crucial role, bilingual children's language proficiency within each language should mirror the quantity and quality of input in each language. Indeed, mounting evidence indicates that the more input a child receives in a specific language, the larger the child's vocabulary in that language (Chapter 2; De Houwer, 2007; Duursma, Romero-Contreras, Szuber, Proctor, & Snow, 2007; Oller & Eilers, 2002; Marchmann & Martínez-Sussman, 2002; Pearson, Fernandez, Lewedeg, & Oller, 1997). Recent cross-sectional and longitudinal examinations of language acquisition in minority language bilingual children suggest that their first language (L1) develops at a slower rate than their second (L2) language. Their second language, the language of the majority, may even develop faster in these children than with children who are monolingual in the majority language, at least from about 3 to about 7 years of age, a period in which most children enter kindergarten and primary school and experience increased L2 and reduced L1 exposure (Goldberg, Paradis, & Crago, 2008; Hammer, Davison, Lawrence, & Miccio, 2009; Hoff, 2009; Kan & Kohnert, 2005; Kohnert & Bates, 2002; Leseman, 2000; Páez, Tabors, & López, 2007; Uccelli & Páez, 2007; Uchikoshi, 2006).

Second, studies have repeatedly shown that young bilingual children's language proficiency in each language lags behind that of their monolingual peers (Chapter 2; Hammer et al., 2009; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Páez et al., 2007; Uccelli & Páez, 2007; Uchikoshi, 2006). This disadvantage cannot be attributed to generally lower language learning abilities of bilingual children. In fact, research has shown that bilinguals' conceptual knowledge that underlies their vocabulary in L1 and L2 equals that of monolinguals (Marchman & Martínez-Sussmann, 2002; Pearson et al., 1997), that bilinguals, on average, have equal learning potential as monolinguals of the same socioeconomic background (Messer, Leseman, Boom, & Mayo, in press), and that being bilingual brings cognitive advantages such as enhanced metalinguistic awareness and executive control (Bialystok & Senman, 2004; Bialystok, 2007b; Bialystok &

Viswanathan, 2009). Therefore, a more plausible explanation for the disadvantage that is in line with the idea that quantity of input in either language matters, is that bilinguals are exposed less to each language separately.

The present study aims to enhance understanding of the role of input in language acquisition by examining the relationships between SES, home language and literacy practices and mono- and bilingual immigrant children's vocabulary development in a sample of native Dutch and immigrant Turkish-Dutch and Moroccan-Dutch children speaking Turkish and Tarifit-Berber respectively. The children were followed from age 3 to (almost) age 6, shortly before they enter primary school. More insight in the process of migrant children's dual language acquisition is highly relevant. Due to increased migration worldwide, a growing number of children go through the process of acquiring a second language in early childhood, well before their first language has reached a mature level. For these children, the language input through the literate and oral language activities identified in previous research as promoting language development has to be divided over two or more different languages. Moreover, the conditions of first and second language acquisition are often rather unfavorable due to the, on average, low level of educational attainment and literacy of their parents, the presence of socioeconomic stresses in the family and the neighborhood, and the low social prestige of and lack of institutional support for the first language (Bradley & Corwyn, 2002). The Turkish- and Moroccan-Dutch immigrant communities in The Netherlands are no exception to this (Extra & Yagmur, 2009; Sociaal en Cultureel Planbueau [SCP], 2008).

Despite its relevance for researchers, educationalists, and policymakers alike, longitudinal studies on the complex interplay between the home language environment and migrant children's dual language development are scarce. Findings from cross-sectional studies that included language-minority children suggest that socio-cultural factors such as the social status of the first language and access to formal and literate use of the first language need to be considered (cf. Pearson, 2007). However, most of the current knowledge of bilingual development is based on research concerning languages with roughly equal social prestige (Snow & Yusun Kang, 2006). There is surprisingly little research that investigates how varied social and linguistic contexts alter the processes linked to language acquisition and language use (Bialystok, 2007a). This makes it hard to determine how language status and access to a literate register of a language affect language development.

To address the impact of these socio-cultural factors on children's language development, we selected a sample comprising of monolingual children and bilingual children from two immigrant communities in The Netherlands that share a similar migration history, but differ with regard to the social prestige of their first languages and the access to formal uses these languages provide. Turkish has a relatively high status because of its longstanding literary and academic tradition and Turkish parents in principle can easily access different sorts of official Turkish media, including books and newspapers to maintain their language (Backus, 2005). By contrast, Tarifit is a non-scripted language, not used in education or official public media in Morocco, nor elsewhere (cf. Rosenhouse & Goral, 2005). Due to these socio-cultural factors, the Moroccan-Dutch parents have fewer resources available for first language maintenance. Therefore, we expected them to provide less L1 input and more Dutch as L2 input to their children compared to the Turkish-Dutch parents, which would lead to a lower level of L1 and a higher level of L2 proficiency for the Moroccan-Dutch children. In addition, we expected Moroccan-Dutch children's L1 to develop at a slower rate than Turkish-Dutch children's L1. Furthermore, we expected the bilingual children to have lower vocabulary scores than their monolingual peers as the input they received would be divided over at least two languages. Finally, in line with previous research findings, we expected a catch-up effect in the immigrant children's L2 acquisition and a reduced L1 acquisition rate due to their start in kindergarten from age 4.

When studying dual language development, the possibility that L2 acquisition is facilitated by the knowledge basis built up in L1 should be taken into account (Cummins, 1991; Genesee, Paradis, & Crago, 2004; Kroll & DeGroot, 2005). If indeed bilingual children can use the knowledge and skills acquired in L1 in learning L2, the expected negative effect of bilingualism, i.e. the language arrears that result from reduced language input per language, may be counteracted, at least partly, by a *positive* effect of bilingualism. The question whether L1 knowledge can be transferred to L2 still lacks a clear answer. Contrasting findings have been reported regarding cross-language semantic transfer, with either no indication of transfer (Kan & Kohnert, 2008; Ucelli & Páez, 2007; Uchikoshi, 2006) or significantly positive indications of transfer (Atwill, Blanchard, Gorin, & Burstein, 2007; Chapter 2; Conboy & Thal, 2006; Leseman, 2000; Verhoeven, 2007). The current study aims to enhance insight in transfer mechanisms in dual language acquisition by investigating the impact of L1 knowledge on L2 development longitudinally.

In sum, we aim to contribute to the understanding of the role of input in language acquisition by examining the impact of language input on language development in a monolingual sample as well as in two bilingual (immigrant) samples. An important question therein is if bilingualism is indeed characterised by contradicting - positive and negative – mechanisms, and how these mechanisms jointly determine child outcomes. First, we examined whether children from the different ethnic-cultural groups differed in their L1 and L2 language development, using structural multiple-group longitudinal growth curve modeling (LGM). Next, we analyzed whether these differences could be attributed to differences in language input. Finally, in an additional model for the bilingual samples only, controlling for contextual effects, we tested whether L1 receptive vocabulary supported early acquisition of L2 receptive vocabulary.

METHOD

Measures

Sample and Procedures. The present study involved 161 children (83 females) from Dutch (*n* = 58), Moroccan-Dutch (*n* = 47), and Turkish-Dutch (*n* = 56) families living in The Netherlands whose L1 input in the home context was at least 70% at entrance into the study (for full details about sampling and recruitment see Chapter 2). Data collection started at age 3 years and 2 months (*SD* = 1.79 month), with follow-ups two months before their transition into kindergarten (*M* age = 3;10 year, *SD* = 1.08 month), three months after their transition into kindergarten (*M* age = 4;3 year, *SD*= 1.56 month) and shortly before the transition from kindergarten to the first grade of primary school (*M* age = 5;11 year, *SD* = 1.47). At this final measurement time, the total sample was reduced to 137 participants (69 females), with a drop-out of 4% at Time 2, an additional 4% at Time 3, and 7% at Time 4. Attrition was highest in the Moroccan-Dutch group (23%) and lowest in the Dutch group (9%). The groups did not differ significantly with regard to children's gender or age.

Trained female research assistants belonging to the same cultural community as the family collected the data during two home visits. They administered a questionnaire during a face-to-face interview with the primary caregiver, always the mother in the present sample, using the caregiver's language of preference and standard tests to the children in a fixed order using laptop computers. Turkish and Tarifit linguists had provided translations of the instruments. Moroccan-Dutch assistants were trained to work with a scripted form of the Tarifit language in order to ensure standardized assessments.

Families received a gift voucher and a story book for the child after each round of data collection.

SES. Family SES was based on two indicators: the highest completed educational level of both parents ranging from 1 (no education) to 7 (university degree) and the status of their current jobs in the Dutch national job index list, ranging from 1 (unemployed) to 6 (academic job level) (Centraal Bureau voor de Statistiek [CBS], 2001). SES was computed as the mean of parents educational and job levels (Cronbach $\alpha = .84$ for the total sample).

Non-verbal intelligence. Raven's Coloured Progressive Matrices (CPM) was administered during the third measurement wave to assess children's non-verbal intelligence (Raven, 1995). The test consists of 36 perceptual and conceptual matching exercises in which the child has to complete a pattern by choosing one out of six pieces. The test requires minimal verbal instruction, which was given in children's L1. The test is viewed as a culturally fair measure of intellectual functioning (Kaplan & Saccuzzo, 1997).

L1 and L2 vocabulary. Children's receptive vocabulary skills were assessed using the receptive vocabulary test from the Diagnostic Test of Bilingualism (Verhoeven, Narrain, Extra, Konak, & Zerrouk, 1995), an instrument specifically developed for research with immigrant children in The Netherlands. The test required children to match a read-aloud target word with one out of four pictures. To avoid fatigue with the younger children, the test was split in two parts at Time 1 to Time 3, one part consisting of the odd items and a parallel part consisting of the even items, yielding equivalent parallel tests (the within-language correlation between the two forms was $r = .71$, $p < .01$). In the Moroccan-Dutch and Turkish-Dutch group, the odd-items parallel test was used to assess vocabulary in L1, the other section was used to assess vocabulary in L2. At Time 1, Dutch children were given the even test only. The following waves, both the odd and the even items parallel tests were administered. During the first three waves, testing continued until the child failed five consecutive items or completed all 30 items of the test. After cut-off, the remaining items were rewarded with the chance-score of 0.25. At Time 4, the complete L1 and L2 vocabulary tests were administered, without cut-off rule. The test scores obtained at the four measurement times were linearly transformed to equal scales, with the same

score range. Cronbach alpha for the receptive vocabulary tests were all above .77, for the three groups separately.[2]

Home language environment. Children's experience with language through reading activities and oral language interactions in the family context was determined by a questionnaire with a 5-point Likert scale, with scores ranging from 1 (never) to 5 (daily). Two scales were constructed by computing the mean of the items included in these scales: *Literate Input*, which consisted of five items and included questions about the frequency of shared reading of narrative stories and information books, and *Oral Input*, which comprised of six items about the frequency of oral story telling and conversations about personal experiences, childhood memories, and topics of general interest. All scales had satisfactory Cronbach alpha values for the total sample as well as for each subsample separately, ranging from .58 to .90, except for the Cronbach alpha of the *Oral Input* scale in the Moroccan-Dutch group at Time 1, which was .31. In addition, interviewees indicated for each type of language activity which language was used, yielding measures of *L1* and *L2 use* for each type of activity separately, with scores ranging from 0 to 1, with 0 indicating that the target language (L1 or L2) was never used with that particular type of activity; .25 that another language was used more often than the target language; .50 that the target language and another language were used equally; .75 that the target language was mostly used, but another language sometimes; and 1 that the target language was always used.

In order to reduce data and strengthen the measures, we created two global language input measures per language, representing the average home language input through either reading or oral language activities during the whole period of assessment. The intercorrelations across measurement times for the oral and literate language input measures respectively were moderate to strong. By averaging across four measurement moments, the measurement reliability of the scales was further increased. For instance, the

[2] Preliminary analysis of the data indicated significantly higher L1 vocabulary scores in a sub-group of Moroccan-Dutch children that had been tested by one particular research assistant. A review of filmed assessments of this assistant indicated that she occasionally provided additional prompts, which explained the higher scores. A correction was applied using regression analysis. To calculate the raw regression weight of the bias, verbal short term memory and listening comprehension test scores (not biased) were included in the regression equation as predictors of L1 receptive vocabulary scores, together with a dummy variable indicating whether the test was administered by the particular assistant. Subsequently, the regression weight of the dummy variable was subtracted from the L1 vocabulary scores of the sub-group of Moroccan-Dutch children. This procedure was repeated for Time 2 and 3. At time 4 the assistant no longer participated in data collection.

Cronbach alpha of the resulting *Oral Input* scale in the Moroccan-Dutch group was now considered to be sufficient (Cronbach $\alpha = .62$). Language-specific input measures were constructed by multiplying the two language input measures with the measures of either L1 or L2 use respectively after standardization ($M = 10$, $SD = 1$).

RESULTS

Overview of the analyses

We first present the descriptive statistics of the measurements. Using one-way analysis of variance, we compared the three groups with respect to the family's SES, the child's cognitive abilities, and the language input through literate and oral language activities at home. Next, we present LGMs of children's L1 and Dutch vocabulary development. LGM enables differentiation between interindividual differences in vocabulary level (intercept) and interindividual differences in rate of growth (slope). First, we investigated group differences in children's L1 and L2 vocabulary development using multi-group univariate LGM (Duncan, Duncan, & Strycker, 2006). Second, we investigated the extent to which SES and language-specific input predicted the level and growth in children's L1 and Dutch vocabulary development, by including these predictors in the models as covariates. Third, in the Moroccan-Dutch and Turkish-Dutch sub-samples only, we combined the L1 and Dutch vocabulary models of the previous step and examined whether L1 and Dutch vocabulary development were interrelated by specifying paths between L1 intercept and Dutch intercept, L1 intercept and Dutch slope, and L1 slope and Dutch slope. All the LGM analyses were performed using AMOS (version 7; Arbuckle, 2006). To address missing data problems and to avoid biased results and sample size reduction in case of listwise deletion (Enders, 2001), we used the full information maximum likelihood estimation method (FIML). In FIML estimation all available data are used to estimate the model without imputing missing values. In addition to the chi-square goodness of fit test, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the Tucker-Lewis coefficient (TLI) were used to evaluate the model fit. Fit was considered to be satisfactory when the χ^2 statistic was not significant at $p > .05$, CFI $> .90$, RMSEA $< .06$ and TLI $> .90$ (Hu & Bentler, 1998).

Table 1. *Descriptive Statistics*

	Dutch	Moroccan	Turkish	*F*	*Post Hoc*
1. SES	4.56 (1.2)	2.29 (0.80)	3.20 (0.95)	68.34***	Du>Tu>Mo
2. Raven CPM	14.22 (3.65)	14.55 (3.66)	13.24 (2.60)	1. 89	Du=Tu=Mo
3. Literate Input	3.41 (0.57)	2.54 (0.87)	3.15 (0.67)	20.30***	Du,Tu >Mo
4. Oral Input	3.85 (0.63)	3.25 (0.50)	3.73 (0.54)	15.70***	Du,Tu >Mo
5. L1 Literate Input	0.99 (0.67)	0.03 (0.08)	0.49 (0.30)	350.61***	Du>Tu>Mo
6. L1 Oral Input	0.99 (0.03)	0.64 (0.23)	0.77 (0.19)	61.95***	Du>Tu>Mo
7. L2 Literate Input	0.99 (0.67)	0.66 (0.33)	0.48 (0.29)	60.23***	Du>Mo>Tu
8. L2 Oral Input	0.99 (0.03)	0.31 (0.24)	0.21 (0.18)	352.91***	Du>Mo>Tu

Note. Du = Dutch sample; Tu = Turkish-Dutch sample; Mo = Moroccan-Dutch sample. * $p < .05$; ** $p < .01$; *** $p < .001$

Descriptives

Table 1 reports the descriptive statistics. The results reveal strong differences in SES, with the Moroccan-Dutch families, on average, having the lowest SES. The differences between the groups reflect the present demographic characteristics of the Dutch, Moroccan-Dutch, and Turkish-Dutch communities in The Netherlands accurately (SCP, 2005). An important finding is that the three groups did not significantly differ in nonverbal fluid intelligence, measured with the Raven CPM. This finding is not coincidental, but replicates the results of another Dutch study within these ethnic-cultural communities, using different samples (Messer et al., in press).

The findings regarding overall language input and language-specific input, averaged over four measurements, are also presented in Table 1. First, the results indicate that Dutch and Turkish-Dutch parents more frequently engaged their children in literate and oral activities than the Moroccan-Dutch parents did. Second, use of L1 and Dutch revealed the expected pattern of differences. Use of Dutch with almost 100% of the reported activities in the Dutch families is characteristic of the monolingual situation of this group. In the Moroccan-Dutch families L1 was used least frequently. In the Turkish-Dutch families Dutch was used least frequently. Third, Table 1 also shows that L2 input is to a high degree complementary to L1 input, but not fully due to the use of other languages not taken into account in the present study.

Vocabulary Development

First Language. The multi-group LGM model for children's L1 vocabulary development was constructed in multiple steps. First, we examined whether a linear, a quadratic or an optimal growth function provided the best fit with the data. Groups were constrained to be equal on each parameter. We tested linear and quadratic change with time-adjusted scaling to take into account the differences in time intervals of 8 months (T12), 5 months (T23) and 19 months (T34) respectively, fixing vocabulary loadings to 0, 1, 1.625 and 4 on the linear change factor in the linear growth model and 0, 1, 2.64 and 16 in the quadratic growth model. In the optimal growth function model the third and fourth linear change factor were freely estimated (i.e. 0.0, 1.0, a, b). Subsequently, the estimated linear factors (a = 1.69, b = 3.22) were included in the model as fixed parameters to warrant similar degrees of freedom across growth models. Children's L1 vocabulary growth was best predicted by the optimal growth function model, with a significantly smaller chi-square than the linear ($\Delta \chi^2 = 13.65$) and quadratic growth function models ($\Delta \chi^2 = 80.25$). Second, we examined group differences by stepwise releasing intercept means, slope means, the intercept and slope variance, and the covariance among intercept and slope. Note that when the parameter releases did not lead to a significant improvement to the model fit (as indicated by chi-square difference testing, with $p > .10$ taken as indicating no significant improvement), they were again constrained to be similar in subsequent steps, resulting in satisfactory model fit. In addition, we released the L1 vocabulary error variance at T2 and T3 in the Dutch group, as critical ratio comparisons had indicated that they significantly differed from the L1 vocabulary error variance in the Turkish-Dutch and Moroccan-Dutch group. Results and fit indices of the final model are presented in Table 2.

Table 2. *Estimated Means and Fit Indices for the Best Fitting Model for L1 Vocabulary Development*

		Dutch	Moroccan	Turkish
Intercept	M	34.79***	23.62***	25.38***
	σ^2	40.22***	38.69***	38.69***
Slope	M	6.35***	4.56***	4.56***
	σ^2	1.68**	3.76***	3.76***
Covariance		-8.11***	-8.11***	-8.11**
Model fit indices				
df	χ^2	CFI	TLI	RMSEA
26	35.80	0.947	0.939	0.049

* $p<.05$; ** $p<.01$;*** $p<.001$

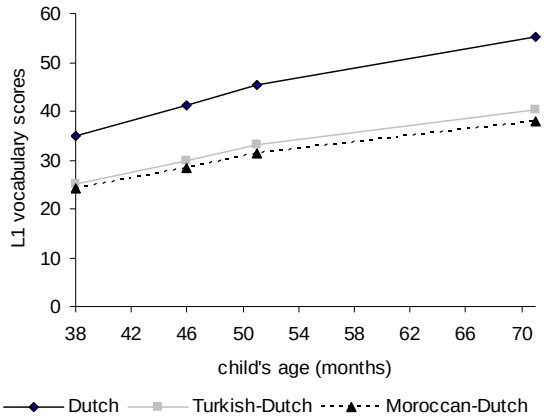

Figure 1. L1 receptive vocabulary development.

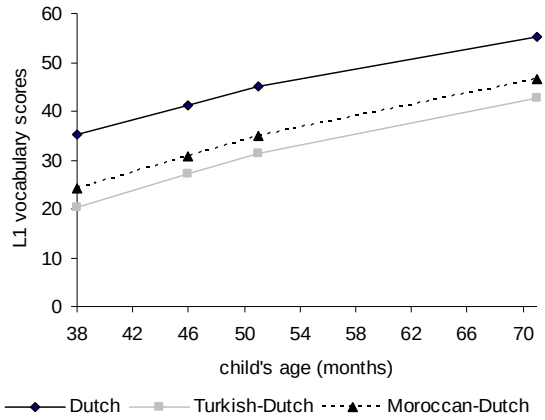

Figure 2. L2 receptive vocabulary development

Figure 1 depicts the estimated L1 vocabulary growth curves for the Dutch, Moroccan-Dutch, and Turkish-Dutch group. Table 2 and Figure 1 show considerable between-group differences in L1 vocabulary level. Critical ratio comparisons of intercept means indicated that the Moroccan-Dutch and Turkish-Dutch children were considerably behind in L1 vocabulary relative to their Dutch monolingual peers (Z = -8.43, p < .0001 and Z = -7.36, p < .0001 respectively). The Moroccan-Dutch children were falling most behind, indicated by a marginally significant lower intercept mean compared to the Turkish-Dutch group (Z = -1.69, p < .10). In addition, the results showed a further increase of the L1 gap over time, as was indicated by the significantly lower slope means for both bilingual groups compared to the Dutch group (Z = -4.88, p < .001). There was no significant difference between the Moroccan-Dutch and Turkish-Dutch children in L1 vocabulary growth. The covariances of intercept and slope were negative in all three groups (σ^2 = -8.15, p < .001), indicating that children who started with relatively high L1 vocabulary at T1 tended to further develop their L1 vocabulary at a slower rate than children who had relatively low L1 vocabulary scores at T1.

Dutch Language. A similar modeling approach was followed for Dutch vocabulary development. Again the optimal growth function model provided the best fit to the data, with change factors fixed at 0, 1, 1.65 and 3.38 ($\Delta \chi^2$ = 7.55 compared to the linear and $\Delta \chi^2$ = 115.26 compared to the quadratic growth function model). As with the L1 vocabulary development model, we stepwise released parameter constraints whenever

Table 3. *Estimated Means and Fit Indices for the Best Fitting model for Dutch Vocabulary Development*

		Dutch	Moroccan	Turkish
Intercept	M	35.30***	24.05***	20.38***
	σ^2	34.14***	31.04***	31.04***
Slope	M	5.92***	6.64***	6.64***
	σ^2	1.34*	3.50***	3.50***
covariance		-6.33***	-6.33***	-6.33***
Model fit indices				
df	χ^2	CFI	TLI	RMSEA
26	37.59	0.935	0.925	0.053

* p<.05; ** p<.01;*** p<.001

it led to a significant improvement of the model fit. The results and fit indices of the final model are given in Table 3.

Figure 2 depicts the estimated Dutch vocabulary growth curves for the Dutch, Moroccan-Dutch, and Turkish-Dutch group. Results showed considerable differences between the groups in Dutch vocabulary level. Critical ratio comparisons of intercept means indicated that the gap in Dutch receptive vocabulary between monolingual Dutch children and bilingual immigrant children was considerable (Z = -9.04, p < .0001 for the Moroccon-Dutch; Z = -12.54, p < .0001 for the Turkish-Dutch group). As was expected given that Dutch as L2 input was least frequent in this group, the Turkish-Dutch children were falling behind considerably on their receptive Dutch vocabulary. With respect to Dutch vocabulary growth, the results revealed a catch-up effect for both bilingual groups, as was indicated by the significantly higher slope means (Z = 2.11, p < .05). Again the covariances of intercept and slope were negative in all three groups (σ^2 = -6.33, p < .001).

Input and vocabulary development

First Language. We tested an LGM specifying effects of SES and L1 oral input on L1 vocabulary level (intercept) and rate of growth (slope), as specified in Figure 3. The results of the final model are given in Table 4; the bivariate correlations of the variables included in the model are presented in Appendix A. Of specific interest were the weights of the structural paths and the inter-group differences in intercept and slope mean. Due to the very low occurrence of L1 Literate Input in the Moroccan-Dutch group (due to unavailability of books in Tarifit; only very few Moroccan-Dutch families reported to read books to their children using Tarifit to tell the story in the book) and the inconsistent

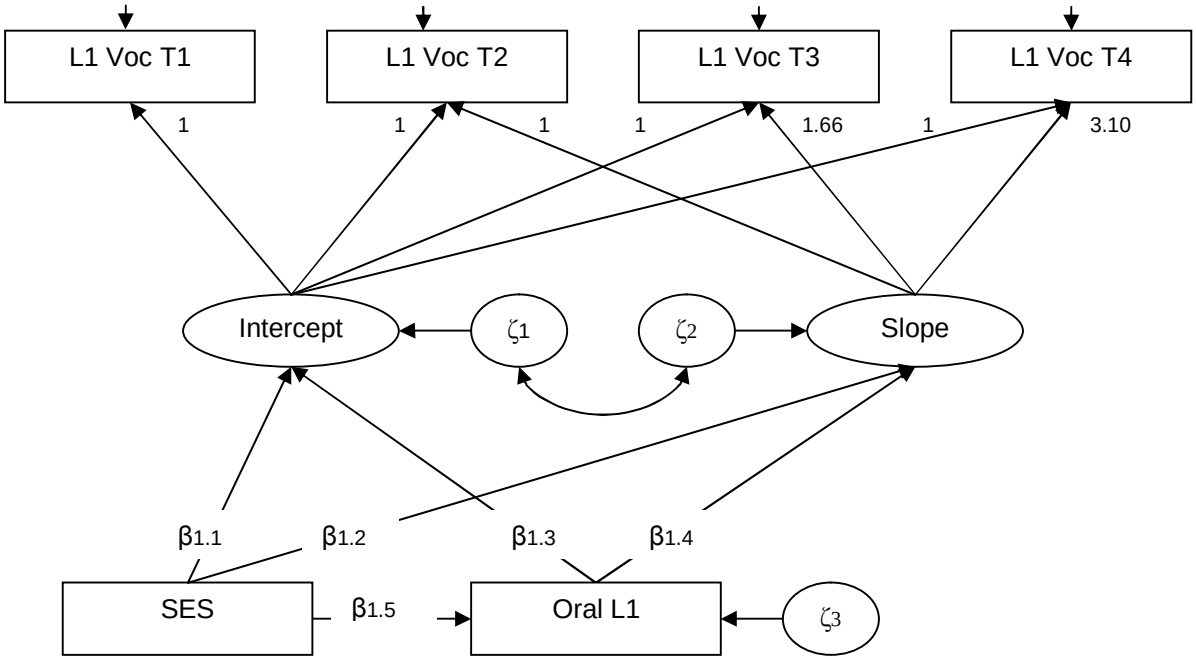

Figure 3. L1 language input and L1 vocabulary development.

pattern of correlation between L1 Literate Input and L1 vocabulary in the Turkish-Dutch group (see Appendix A), L1 Literate Input was not included in the path model.
To build the LGM part of the model we followed the previously described procedure. Next, model testing of the structural part of the model proceeded in three steps. First, all structural paths were constrained to be equal across groups. Second, we used the critical ratio test for differences between parameters to examine which structural paths differed significantly across groups. If the test indicated that paths significantly differed, these were subsequently released. Whenever the release of a path did not lead to a significantly improved model fit this path was again constrained to be equal across groups. Finally, paths with β-weights < .10, $p > .05$ were fixed to zero.

The critical ratio tests did not reveal significant inter-group differences in the effects of SES on L1 intercept (β1.1) and L1 Oral Input on L1 intercept (β1.3). Critical ratio test did point to significant differences for the remaining three paths. First, the path from L1 Oral input to L1 slope (β1.4) in the Turkish-Dutch group differed significantly from the same paths in the models of the Moroccan-Dutch and Dutch groups. Therefore, the parameter constraint was released, leading to a significantly better model fit, $\Delta \chi^2 = 4.46$, $p < .05$. However, in none of the groups L1 Input had significant impact on the rate of L1 development. Second, the effect of SES on L1 Oral input (β1.5) was significant in the Dutch group, but not in the Moroccan-Dutch and Turkish-Dutch groups.

Table 4. *Estimated Means and Fit Indices for the Best Fitting Structural Model for L1 Vocabulary Development*

		Dutch	Moroccan	Turkish
Intercept	M	30.54***	22.10***	22.10***
	σ^2	35.43***	33.65***	33.65***
Slope	M	6.63***	6.63***	4.93***
	σ^2	2.49***	1.73***	4.19***
Covariance		-8.78***	-8.78***	-8.78***
Regression weights	β1.1	.16**	.11**	.13**
	β1.2	.0*	-.52***	.0*
	β1.3	.34***	.35***	.37***
	β1.4	-.16	-.16	.18
	β1.5	.40***	-.14	-.16
Model fit indices				
df	χ^2	CFI	TLI	RMSEA
45	50.30	.979	.970	.027

* p<.05; ** p<.01;*** p<.001

Releasing the path in the Dutch group led to a significantly better model fit ($\Delta \chi^2$ = -10.43, p = .001). The higher the SES in the Dutch group, the more parents provided their children with L1 Oral input (β1.5 = .40, p < .001). For the Moroccan-Dutch and Turkish-Dutch groups, a small, non-significant negative effect was found (β1.5 = -.14 & -.16, p = .14). Third, in the Moroccan-Dutch group, SES was a significant predictor of the L1 slope (β1.2 = -.52, p <.001), indicating that the higher the family's SES, the slower Moroccan-Dutch children's L1 vocabulary developed. Releasing the path (β1.2) in the Moroccan-Dutch group led to a significantly better model fit ($\Delta \chi^2$ = 8.76, p < .01). In the Turkish-Dutch and Dutch groups no significant effects of SES on slope were found, and, as β1.2 < .10, these paths were constrained to zero in both groups.

Adding the SES and L1 input to the L1 vocabulary development model led to similar intercept and slope means and variances in the Turkish-Dutch and Moroccan-Dutch groups, but the differences in means and slopes between these groups and the Dutch group remained significant, indicating that differences in L1 vocabulary skills between the bilingual and monolingual groups cannot fully be attributed to SES and L1 input at home as measured in this study. After releasing the path from SES to the L1 slope in the Moroccan-Dutch group, the difference in slope mean between the Moroccan-Dutch and the Dutch group was no longer significant (Z = -0.03, p > .05), whereas the Turkish-Dutch

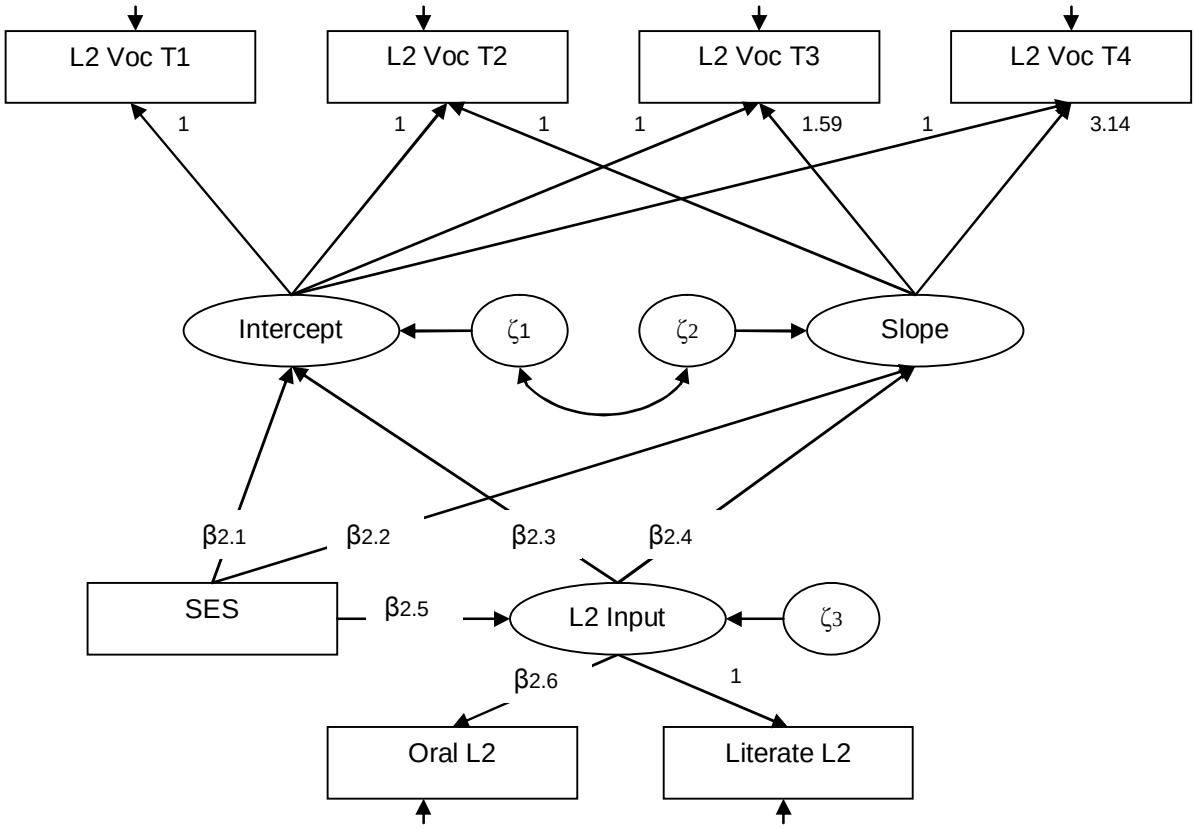

Figure 4. Dutch language input and Dutch vocabulary development.

slope mean was significantly lower than that of the Dutch and Moroccan-Dutch group (Z = -3.97, p < .001 and Z= -1.89, p < .10 respectively). To yield a more parsimonious model with fewer estimated parameters, the slope mean was constrained to be similar for the Moroccan-Dutch and Dutch group.

Input and vocabulary development

Dutch language. The structural multi-group LGM of children's Dutch vocabulary development as related to Dutch language input and the family's SES is depicted in Figure 4; the results of the model testing are shown in Table 5. The bivariate correlations of the variables included in the model are presented in Appendix B. The model differs from the previous model in that Dutch input was represented by a latent factor, indicated by the measured constructs Dutch Literate and Oral Input. A similar procedure of model building was followed as previously described, with an additional test for measurement invariance of the latent factor. Allowing the measurement weights to vary between the three groups did not significantly improve the model fit

Table 5. *Estimated Means and Fit Indices for the Best Fitting Structural Model for Dutch Vocabulary Development*

		Dutch	Moroccan	Turkish
Intercept	M	28.59***	22.00***	9.41***
	σ^2	28.82***	22.35***	22.35***
Slope	M	6.46***	7.19***	7.19***
	σ^2	1.82**	4.25***	4.25***
Covariance		-6.91***	-6.91***	-6.91***
Regression weights	β2.1	.12	0*	.40***
	β2.2	0*	0*	0*
	β2.3	.35***	.37***	.33***
	β2.4	0*	0*	0*
	β2.5	.48***	.34***	.40***
	β2.6	.85***	.83**	.84***
Model fit indices				
df	χ^2	CFI	TLI	RMSEA
69	72.32	.989	.987	.017

* p<.05; ** p<.01;*** p<.001

($\Delta\chi^2(2) = .12$, $p > .05$), indicating that the input measurement was equivalent in the three groups which is a prerequisite for cross-group comparisons.

The results confirmed the hypothesis that Dutch language input mediates the relationship between SES of the family and children's Dutch vocabulary. However, no effects were found of Dutch language input on the slope, that is, the inter-individual variation in rate of Dutch vocabulary development was not significantly related to variation in Dutch Input. Critical ratio tests revealed that the structural paths did not significantly differ across the groups, with the exception of the path from SES to vocabulary level in the Turkish-Dutch group ($Z = 2.93$, $p < .01$). In the Moroccan-Dutch and Dutch group the effect of SES on Dutch vocabulary level was not significant, indicating that Dutch input fully mediated the effect of SES on Dutch vocabulary. Moreover, in the Moroccan-Dutch group, the path was constrained to zero, as β2.1 <.10. In the Turkish-Dutch group, however, the effect of SES on Dutch vocabulary was only partly mediated by L2 input, while a significant direct effect remained (β2.1 = .40, $p < .001$). Adding the covariates to the Dutch vocabulary development model did not lead

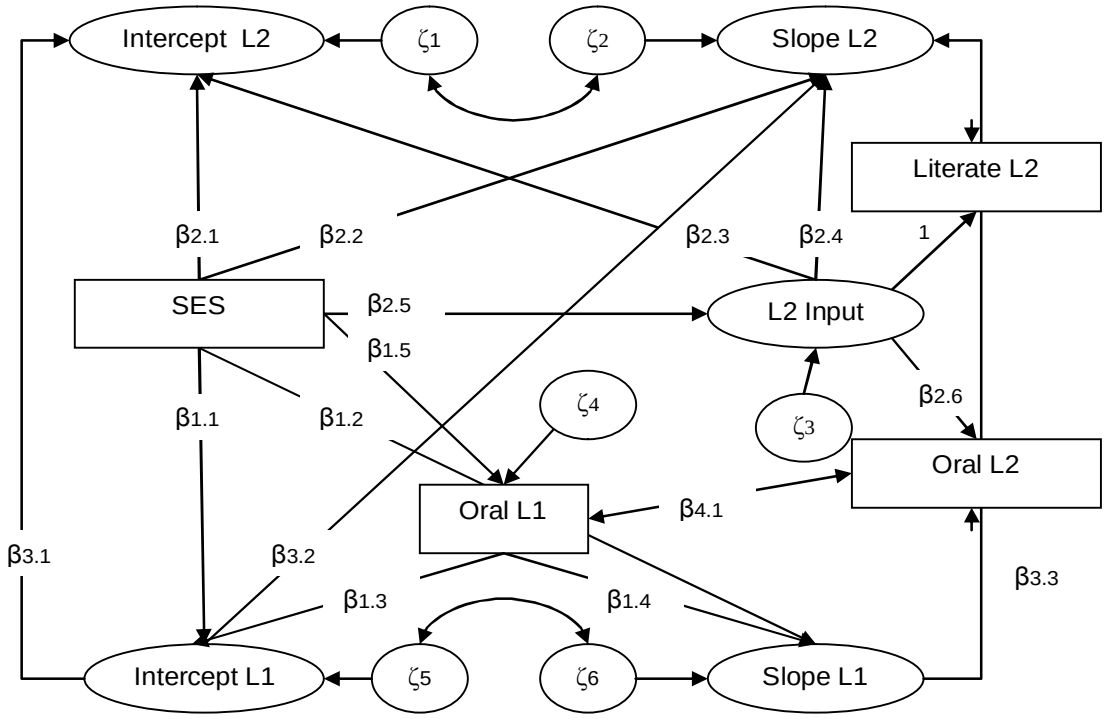

Figure 5. Transfer effects of L1 on Dutch vocabulary.

to equal intercept and slope means across the groups, indicating that differences in Dutch vocabulary development between the bilingual and monolingual group can not be fully attributed to SES and the average level of Dutch input at home.

Transfer from L1 to L2

The final question to be addressed was to what extent the Moroccan-Dutch and Turkish-Dutch children benefited from their first language skills in learning Dutch as a second language, or, to put it differently, showed *positive transfer* from L1 to L2. Therefore, concerning only the bilingual groups, the structural LGM models of children's L1 and Dutch vocabulary development were integrated (see Figure 5 and Table 6). The bivariate correlations of L1 and L2 vocabulary scores on the four measurement times are presented in Appendix C. The results of the structural LGM models were already discussed above. In this final result section, we will focus on the transfer effects only. The model of Figure 5 postulates effects of L1 vocabulary level on Dutch vocabulary level (β3.1) and on Dutch vocabulary growth (β3.2) and of L1 vocabulary slope on Dutch vocabulary slope (β3.3). In the first step, the parameters were constrained to be equal

Table 6. Transfer Effects of L1 on Dutch Vocabulary.

				Moroccan	Turkish
Regression weights		β3.1		.37*	.33*
		β3.2		.21	.21
		β3.3		.09	.11
Model fit indices	df	χ^2	CFI	TLI	RMSEA
	131	148.35	.935	.922	.036

* $p<.05$; ** $p<.01$; *** $p<.001$

across groups. Next, the parameters were stepwise released and again constrained to be equal across groups if the model fit did not significantly improve. The results reveal a positive transfer effect from L1 vocabulary level to Dutch vocabulary level. After controlling for the transfer between L1vocabulary level and Dutch vocabulary level, no additional significant transfer effects were found of L1 intercept on Dutch slope, nor of L1 slope on Dutch slope.

DISCUSSION

The aim of the present study was to clarify the role of input in language acquisition by analyzing whether the commonly found language disadvantages of bilingual children could be explained by the patterns of L1 and L2 input in the children's home environment. Using equivalent parallel language tests of receptive vocabulary, the bilingual Moroccan-Dutch and Turkish-Dutch immigrant children in the present sample were found to be less proficient in both L1 and L2 than the monolingual native Dutch children. The bilingual children's Dutch receptive vocabulary development over a three year period revealed a *catch-up* effect, probably related to children's introduction into the all-Dutch kindergarten and an increased use of Dutch at home. However, at age 6, the bilingual children still lagged behind in Dutch vocabulary. In contrast, the gap between the bilingual and monolingual's L1 development increased further. These results replicate previous findings on bilingual children's dual language development (cf Hoff, 2009). In addition, the finding that the bilingual children equalled the monolingual children in nonverbal intelligence confirms the presupposition that bilingual immigrant children have the same learning potential as native children (Messer et al., in press). The results clearly demonstrated that being raised in bilingual immigrant families substantially impacted the L1 and L2 input children received: the need to divide available time for language learning over two (or more) languages led to less exposure per language, as was illustrated in Table 1. Taken

together, these findings provide support for the hypothesis that the language disadvantages of bilingual children cannot be attributed to their general learning capacity, but stem from differences in language input.

By using structural multi-group latent growth modeling to analyse children's L1 and Dutch vocabulary development, we tried to further clarify the ways in which being raised in a particular cultural and linguistic community influences young children's language development. A somewhat surprising finding was that in both models, and for all three cultural groups, language input explained children's vocabulary level but not their vocabulary slope, indicating that *within cultural groups,* individual variation in the rate of development was not related to language-specific input. Note that for all three groups, slope variance was statistically significant (all *p's* <.0001). Recall that intercept and slope correlated negatively, indicating that children with relatively high vocabulary levels at T1, and, as indicated by the positively significant effect of input on vocabulary level, relatively higher L1/L2 input, tended to develop their language at a slower rate, and vice versa. Thus, the positive effects of language input on language development might have been underestimated due to catch-up effects of children who had relatively low vocabulary scores at T1, for instance, due to increased sophisticated language input at school. Alternatively, the lack of association between input and slope in the present study could indicate that input exerts its influence on language acquisition rate at an earlier stage.

Concerning the vocabulary level (intercept), the results indicated that in the Dutch group, the effect of SES on vocabulary was partly mediated by the effect of L1 oral language input, confirming the hypothesis that storytelling and conversations positively related to Dutch children's vocabulary level. The results for the Moroccan-Dutch and Turkish-Dutch children again supported the input hypothesis. However, in the bilingual groups, L1 input was not significantly related to SES. Moreover, in the Moroccan-Dutch group, a significantly negative effect was found of SES on the pace of L1 development. Interestingly, the structural multi-group LGM model of Dutch language development did reveal the traditionally found pattern of mediation of SES effects via Dutch language input on children's Dutch vocabulary level. However, in the Turkish-Dutch group, a rather large direct effect of SES on Dutch vocabulary level was found, indicating that Dutch language input did not fully mediate the variance in Dutch vocabulary scores associated with SES in the Turkish-Dutch group.

A possible explanation for the complicated role of SES in dual language acquisition in immigrant children can be found in patterns of language use, related to the

differing social status of L1 versus L2. Being a minority language in a country where acquisition of the dominant language is highly emphasised and stimulated, L1 has a relatively lower status than L2. Most probably, higher educated parents with higher status jobs face higher demands regarding acquisition of the dominant language and have more opportunities to acquire L2 via courses or contacts with colleagues, and, consequently, provide more L2 input to their children. Following the competition hypothesis, a higher level of input of L2 will be at the expense of L1 input. Interestingly, as additional correlation analyses showed, SES correlated negatively with L1 use during storytelling and conversations (r = -.20, p < .15 in the Turkish-Dutch; r = -.56, p <.00 in the Moroccan-Dutch group), and positively with L2 use during storytelling and conversations (r = .24, p < .08 for the Turkish-Dutch; r = .45, p < .001 for the Moroccan-Dutch group). Hence, the absence of an association between SES and L1 Oral input can be attributed to an attenuating effect of the negative correlation between SES and L1 use.

The results of the present study provide indications that language status and access to formal language impacts children's L1 and L2 vocabulary via patterns of language use in the home environment. The pattern of L1 and L2 use, and, consequently, L1 and L2 input in the immigrant groups differed in a number of respects, related to the respective language status. In the Moroccan-Dutch group, opportunities to use L1 in formal and literate ways are fairly limited. The higher educated who, as a consequence of their status, are inclined to provide more formal language activities to their child, have to take recourse to Dutch. As expected, the amount of L2 input through oral and literate language interaction was bigger in the Moroccan-Dutch group than in the Turkish-Dutch group. The higher level of L2 input in the Moroccan-Dutch families led to a clear advantage in L2 vocabulary for the Moroccan-Dutch children. Conversely, the amount of L1 input through both literate and oral language interactions was bigger in the Turkish-Dutch group, which led to a marginally significant advantage in L1 vocabulary level for the Turkish-Dutch children. No differences were found between Turkish-Dutch and Moroccan-Dutch children's L1 and L2 acquisition rate. Language maintenance is considered to be especially important in the Turkish immigrant community (Backus, 2005). Language maintenance, moreover, is strongly supported by accessible sources of formal and academic Turkish language, including newspapers, books, and picture books for young children. This might explain why no negative effects of SES on L1 vocabulary slope were found in the Turkish-Dutch group.

The results of the present study provided support for both the competition hypothesis and the positive transfer hypothesis, suggesting that both mechanisms are present in situations of bilingual upbringing. Children's time spent on language learning activities was divided across two languages, leaving less language input per language. For instance, Moroccan-Dutch children had fewer opportunities to acquire their L1 from exposure to oral interactions due to a loss of 36% of the time on use of other languages. Taking L1 and L2 language input into account, results revealed a moderate transfer effect of L1 vocabulary level on Dutch vocabulary level ($\beta = .37$, $p < .05$ for the Moroccan-Dutch and $\beta = .33$, $p < .05$ for the Turkish-Dutch group). However, no significant transfer effects were found of L1 vocabulary level on Dutch slope. Nevertheless, although not statistically significant ($p = .24$), the positive effect of L1 intercept on slope provides an indication that knowledge of L1 vocabulary can increase the pace of L2 vocabulary development. Faster acquisition of L1 did not lead to faster acquisition of L2, as indicated by an absence of transfer of L1 on L2 slope. It should be noted that the moderate positive transfer effects found in this study, replicating the results of Verhoeven (2007), may also be partly due to cognitive and verbal abilities of the children. Nonetheless, insofar the L1 vocabulary test can be seen as representing broader lexical, semantic, grammatical, and meta-linguistic knowledge of L1, the present results support the hypothesis that young second language learners can use their L1 knowledge in this broad sense to learn L2, even if acquisition of L1 is only a few years ahead of the acquisition of L2, as in the present sample. Additional longitudinal studies with larger samples are needed to enhance insight in the mechanism of cross-linguistic transfer.

CONCLUSIONS AND LIMITATIONS

To conclude, we will summarize the most important findings and discuss some of the limitations of the present study. Moroccan-Dutch and Turkish-Dutch children did not differ from native Dutch peers in nonverbal cognitive ability. The differences in the patterns of language input found between the three groups explained, albeit not fully, the differences in children's L1 proficiency, and, in the Moroccan-Dutch and Turkish-Dutch group, the differences in children's L2 vocabulary. The differences in input patterns were clearly related to background characteristics, including the status of the minority languages involved. In view of optimal preparation for primary school, being raised in a low-SES bilingual immigrant family puts young children's language development at a double risk: first, the available time for literate and oral language interactions has to be

divided over two languages; second, the lack of association of SES with L1 input limits the support of L1 for acquiring L2. Nonetheless, even 3-year-old to 6-year old bilingual children apparently could use their skill in L1 to learn L2 to some extent. However, it remains to be seen whether the transfer of L1 to L2 will hold with increasing age.

The study suffered from a number of limitations. First, the measures of language input were based on primary caregivers' self-reports in personal interviews with semi-structured questionnaires. Answers may have been biased due to social desirability tendencies and to inaccuracies in rating the frequencies of particular language interactions at home. Moreover, the data did not allow us to draw firm conclusions about the quality of the language interactions at home. Observational measures of both the quantity and quality of the language input are needed to deepen understanding of the role of input in (bilingual) language development. Second, the present study focused only on parent related language input. It is recommendable to include also additional language input measures for instance provided by peers, daycare teachers, and older siblings.

In addition, in the present study L1 and L2 language development were measured only by vocabulary, seen as proxy for broader lexical, grammatical and discursive skills. Clearly, broader assessment of bilingual children's L1 and L2 development will contribute to further understanding of the phenomena reported in this article. Despite these limitations, the present study has provided useful insights in the language input patterns in mono- and bilingual families as related to children's language level and development.

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Appendix A. Correlation between SES, Literate and Oral L1 Input, and Children's L1 Vocabulary Scores.

	Dutch			Moroccon			Turkish		
	SES	Literate	Oral	SES	Literate	Oral	SES	Literate	Oral
L1 T1	.23†	.37**	.52***	-.11	-	.37*	.30*	.18	.26†
L1 T2	.32*	.33*	.37**	-.05	-	.36*	.34*	.11	.24†
L1 T3	.15	.38**	.33*	-.19	-	.31†	.16	.09	.25†
L1 T4	.39**	.35*	.55***	-.51**	-	.35*	.18	.46**	.58***
SES		.27*	.40**			-.33*		.19	.00

† $p < .10$; * $p<.05$; ** $p<.01$;*** $p<.001$

Appendix B. Correlation Between SES, Literate and Oral Dutch Input, and Children's Dutch Vocabulary Scores

	Dutch			Moroccon			Turkish		
	SES	Literate	Oral	SES	Literate	Oral	SES	Literate	Oral
Du T1	.23†	.35**	.51***	.19	.38*	.23	.36**	.25†	.31*
Du T2	.32*	.32*	.37**	.11	.34*	.37*	.45**	.22	.27*
Du T3	.15	.38**	.33*	.02	.39*	.32*	.54***	.28†	.32*
Du T4	.39**	.35**	.55***	.18	.47**	.36*	.58***	.18	.30*
SES		.26†	.40**		.33*	.51***		.28*	.22

† $p < .10$; * $p<.05$; ** $p<.01$;*** $p<.001$

Appendix C. Intercorrelations Between Bilingual Children's L1 and Dutch Vocabulary Scores.

	Moroccan				Turkish			
	Du T1	Du T2	Du T3	Du T4	Du T1	Du T2	Du T3	Du T4
L1 T1	.39**	.11	.23	.25	.26†	.25†	.29†	.39**
L1 T2	.24	.28†	.24	.30†	.15	.15	.19	.47**
L1 T3	.24	.17	.20	.34*	.23	.21	.22	.37*
L1 T4	-.01	.08	.14	.09	.07	.10	.09	.34*

† $p < .10$; * $p<.05$; ** $p<.01$;*** $p<.001$

5

Mono- and Bilingual Children's Emergent Academic Language: Developmental Changes and Cross-language Effects

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Chapter 5

ABSTRACT

This study examined cross-linguistic associations between immigrant children's first (L1) and second language (L2) emergent narrative comprehension and production. In addition, the study investigated development of, and relationships between, narrative production and patterns of L1 and L2 use, home literacy activities, and verbal short-term memory capacity. Participants were 54 monolingual Dutch, 38 bilingual Moroccan-Dutch speaking Tarifit-Berber, a non-scripted language, and 54 Turkish-Dutch 4;3 year-olds, assessed over a 2 year period. Parents reported on their literacy activities and language use via a personal interview. Child assessments included a verbal short-term memory span, L1 and L2 vocabulary tests, narrative comprehension and production tasks, and a L2 morphosyntactic task. Home literacy activities related to children's L1 and L2 narrative production. Language use impacted children's L1 but not their L2 narrative production. Turkish-Dutch children were least exposed to L2, whereas Moroccan-Dutch children received least L1 input. The monolinguals scored higher on Dutch language tests than the bilinguals on L1 and L2 language tests. Although Moroccan-Dutch children displayed better Dutch vocabulary and syntax skills than Turkish-Dutch children, they did not exceed them in L2 narrative skills. Moreover, most of them were unable to construct a L1 narrative, despite having equal L1 vocabulary scores as the Turkish-Dutch children. Mixed-design analysis of variance indicated that, of the three groups, Turkish-Dutch children's L2 narrative production proficiency developed fastest. Finally, multiple regression analyses showed cross-linguistic transfer of narrative skills, even when controlling for the effects of socioeconomic status, second language literacy input, and children's verbal short-term memory skills.

INTRODUCTION

All primary school children are expected to learn the linguistic tools that enable them to participate in knowledge exchange (cf. Schleppegrell, 2004). This poses a challenging task for immigrant children: in order to succeed they have to acquire an *academic language register* in a second language, while simultaneously having to maintain and expand their first language skills for all kinds of communicative purposes in the context of the family and wider cultural community (August & Hakuta, 1997; Chapter 3; Kohnert, Yim, Nett, Kan, & Duran, 2005; Schleppegrell, 2004). The *academic register* is a particular register of the language, i.e. a configuration of lexical and grammatical resources that realize construction of abstract knowledge (Schleppegrell, 2004). The

present paper addresses the question whether the knowledge built-up in a first language can support early acquisition of academic language skills in a second language (cf. Cummins, 1991).

Prototypical for educational knowledge exchange is written monologic text, abstracted from any situational context (Halliday, 1988). Therefore, in contrast to informal face-to-face communication, reliance on gestures, environmental cues or on shared experience are less adequate to express oneself in language exchanges about theoretical concepts or events that are not part of the immediate environment (Currenton, Craig, & Flanigan, 2008). Instead, a speaker needs to use linguistic strategies to create a shared frame of reference with the audience. Furthermore, as educational texts often take the form of a monologue, creating a structured and cohesive discourse structure is essential to convey the meaning to the recipient. Even in the early grades of primary school, teachers expect children to produce language that displays features of this so called academic language (Christie, 2002; Schleppegrell, 2004). This is particularly challenging for children with an insufficient command of the language used in school.

Studies have repeatedly shown that, compared to their monolingual peers, young bilingual immigrant children lag behind in first as well as second language vocabulary, lexical access in speech, and in their ability to use complex syntax and to cohesively structure a text, implying that they are less well prepared for academic language use in school (Chapter 2; Ivanova & Costa, 2008; Hammer, Davison, Lawrence, & Miccio, 2009; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Páez, Tabors, & López, 2007; Shrubshall, 1997; Treffers-Daller, Özsoy, & van Hout, 2007; Uccelli & Páez, 2007; Uchikoshi, 2006). Moreover, studies have indicated that children's ability to understand and apply lexical, grammatical, and textual features of academic language relates to their acquisition of literacy, and, subsequently, strongly predicts finally attained level of education (Chang, 2006; Cummins, 1991; De Jong & Leseman, 2001; Dufva, Niemi, & Voeten, 2001; Fang, Schleppegrell, & Cox, 2006; Guglielmi, 2008; Nation & Snowling, 2004, Paris & Paris, 2001; Ravid & Tolchinsky, 2002; Savolainen, Ahonen, Aro, Tolvanen, & Holopainen, 2008). Therefore, to prevent persistent educational delays (Kiefer, 2008), it is of great interest to investigate which home language and literacy activities can promote immigrant children's academic language proficiency.

Linguistic Features of Academic Language

The present study stands in a long tradition of sociological, sociolinguistic and educational research into precursors of differences in school achievement. Since the 1970s theorists have emphasized the importance of experience for the acquisition of the academic register, stating that familiarization with academic register features fosters the ability to make register-appropriate lexical, grammatical and textual choices within the school context (Bernstein, 1971-1973; Bourdieu & Passeron, 1977; Christie & Martin, 2007; Cummins, 1979; Gee, 2001; Halliday & Matthiessen, 2004; Schleppegrell, 2004). The present study aimed to enhance understanding of the role of the home language and literacy environment in immigrant children's emerging academic language using the theory of Systemic Functional Grammar (SFG) as a theoretical frame (cf Halliday & Matthiessen, 2004, Schleppegrell, 2004).

The theory of SFG provides a framework for considering specifically which linguistic features are appropriate in the school context. SFG assumes a functional relationship between social context and linguistic form. SFG distinguishes three aspects of context that impact the constellation of lexical, grammatical and textual features of a text: *Ideational Field* (i.e. the nature of the social activity, influencing the content, that what is being talked about), *Tenor* (i.e. the interpersonal relations among interlocutors, influencing stance taking, for instance authoritative stance) and *Mode* (i.e. the communication channel impacting textual structure, for instance written text) (Halliday & Matthiessen, 2004; Matthiessen & Halliday, 1997). Thus, according to the theory of SFG, a specific *genre* of communication, seen as a staged, goal-oriented social process affords a particular linguistic realisation (Christie, 1995; Martin, 1997).

Schooling involves socialization into knowledge exchange. Besides learning how to read, write and do mathematics, children are expected to acquire a substantial body of abstract knowledge about history, biology, geography, and physics (WPO, 2005). Therefore, they are expected to develop the language skill to convey cognitively complex content (field), in a distanced and assertive manner (tenor), expressing themselves as explicitly as possible as they construct meanings in connected discourse (mode) (Schleppegrell, 2004). This places particular demands on their emerging language proficiency. In the current study, following Schleppegrell (2004), we focused on the emergence of language skills considered essential for knowledge exchange. First, conveying a cognitively complex content demands the use of a rich, technical vocabulary, information condensing and clause combining strategies, and connectives in a way that

allows for efficient and effective explanation of relations between concepts and propositions. Second, regarding the relation with the audience, authoritative stance taking calls for frequent use of the declarative mood. Further, creating a shared frame of reference with the audience asks for use of explicit reference to time and place and elaborate forms of verb tense and aspect. Third, at the textual level, as text most often takes the form of a monologue, cohesive text structuring requires the use of text markers and specific connectives to clarify the text structure.

Home Language Input and Bilinguals' Academic Language Acquisition

It has been widely documented that monolingual children's early language skills, such as receptive and expressive vocabulary, syntactic skills, and language comprehension are related to both quantity and quality of language input (Chapter 2; Goodman, Dale, & Li, 2008; Hart & Risley, 1995; Hoff & Naigles, 2002; Hoff, 2006; Hurtado, Marchman, & Fernald, 2008; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002). We assume that especially in the case of emergent academic language special language input is required to provide the young language learner with sufficient tokens and types of the lexical, grammatical and textual forms of academic language that are rare in ordinary interpersonal language use. Although young, pre-school aged children are not yet confronted with academic language use in formal instruction situations, we presuppose that literate language use in everyday family routines support them in the initial acquisition of academic language. Observational studies have indicated that the language spoken during joint storybook reading indeed reveals linguistic features that resemble academic language use in formal instruction (Beals & Snow, 2002; Curenton, Craig, & Flanigan., 2008; Price, Kleeck, & Huberty, 2009; Snow & Beals, 2006; Weizman & Snow, 2001). Shared narrative book reading about unknown characters in distant, often fictitious worlds, presents the child with coherently interrelated sentences that usually contain many new, often specific and rare words in a semantically rich context that helps the child to grasp the elaborate meanings of these words (Hammett, Kleeck, & Huberty, 2003; Leseman & De Jong, 1998; Weizman & Snow, 2001). Moreover, occurrence of shared reading interactions has been positively associated with monolingual children's syntax and story comprehension (Sénéchal & LeFevre, 2002; Sénéchal, Pagan, Lever, & Ouelette, 2008), as well as with emergent academic language proficiency (Chapter 3; Henrichs, 2010; Leseman, Scheele, Mayo & Messer, 2007).

An important question when researching immigrant children's academic language acquisition is whether the use of the majority language (L2) during literacy interactions is essential for fostering children's command of academic language use in the language of schooling (L2). Studies on bilingual children's *vocabulary* development indicate that the more input a child receives in a specific language, the larger the child's vocabulary in that language (Chapter 2; De Houwer, 2007; Duursma, Romero-Contreras, Szuber, Proctor, & Snow, 2007; Oller & Eilers, 2002; Marchmann & Martínez-Sussman, 2002; Pearson, Fernandez, Lewedeg, & Oller, 1997). Furthermore, indications exist that, as with monolingual children, shared book reading positively effects bilingual children's expressive and receptive vocabulary, narrative complexity, and complex syntax, *at least in the language used during these interactions* (Kalia, 2007; Leseman, Mayo & Scheele, 2009; Patterson, 2002). The finding that quantity in each language matters may imply that L1 and L2 stand in a competitive relation regarding available time for language learning (see Chapter 2). The notion that acquisition of the majority language hampers L1 acquisition and vice versa, is supported by a number of studies indicating delays in bilingual's vocabulary development (Chapter 2 & 4; Hammer et al., 2009; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Páez et al., 2007; Uccelli & Páez, 2007; Uchikoshi, 2006).

At first sight, these results seem to indicate that early L2 input is essential for acquisition of academic language proficiency in L2 and that immigrant children should be exposed to L2 as soon as possible to prevent disadvantages in school. Alternatively, children can be prepared for academic language use in L2 by familiarization with academic register features in their first language. Whether or not children should be exposed to L2 as soon as possible has been topic of much investigation and debate (cf Kohnert et al., 2005; Gathercole & Thomas, 2009; Hammer et al., 2009; Van der Laan, 2009). A recent study of the effect of parental book reading on preschoolers' L2 acquisition indicated that frequent book reading sessions compensated for low levels of L2 use in the home (Kalia & Reese, 2009). That is, children who often experienced L1 book reading had similar L2 receptive vocabulary scores as children who were frequently involved in L2 shared reading.

A different perspective on dual language acquisition comes from recent cross-sectional and longitudinal examinations of language acquisition in minority language bilingual children. Their findings suggest that immigrant children's L1, not their L2, is the language at risk for substantial delays. Studies have reported decelerated growth of their

L1 and accelerated growth of their L2 (Chapter 3; Goldberg, Paradis, & Crago, 2008; Han, 2008; Hammer, Lawrence, & Miccio, 2007; Hammer et al., 2009; Hoff, 2009; Kan & Kohnert, 2005; Kohnert & Bates, 2002; Leseman, 2000; Páez et al., 2007; Uccelli & Páez, 2007; Uchikoshi, 2006). Their second language, the language of the majority, may even develop faster in these children than in children who are monolingual in the majority language, at least from about 3 to about 7 years-of-age, due to increased L2 and reduced L1 exposure because of kindergarten and primary school attendance. In addition, studies have shown that L2 use at home is less important for immigrant children's L2 acquisition, whereas continued L1 use at home is a prerequisite for staying proficient in L1 (August, Snow, et al., 2006; Duursma et al., 2007; Gathercole & Thomas, 2009; Hammer et al., 2009; Kohnert et al., 2005). Children receive ample L2 exposure outside the home, for instance at preschool and during interactions with L2 speaking peers, whereas L1 use at home and in the extended family mostly is the only source of L1 input.

There is a plausible argument indicating that immigrant children can profit from their L1 skills when developing their L2 skills. This argument, the topic of the present study, holds that children's language skills and familiarity with the academic register can be transferred across languages (Cummins, 2000; Cummins, 1991; cf. Elbers, 2010). A number of studies have indeed found indications for cross-linguistic transfer. First, although not unequivocally confirmed, numerous indications have been found that the conceptual knowledge basis built up in L1 facilitates learning of L2 (Atwill, Blanchard, Gorin, & Burstein, 2007; Chapter 2 & 4; Conboy & Thal, 2006; Cummins, 1991; Genesee, Paradis, & Crago, 2004; Kroll & DeGroot, 2005; Leseman, 2000; Schoonbaart, Duyck, Brysbaert, & Hartsuiker, 2009; Verhoeven, 2007). Second, studies have revealed relations within a language as well as across L1 and L2 between vocabulary and reading comprehension in second language learning children attending kindergarten through fourth grade (August, Snow, et al., 2006; Carlisle, Beeman, Davis, & Spharim, 1999; Miller, Heilman, Nockerts, Iglesias, Fabiano, & Francis, 2006; Proctor, August, Carlo, & Snow, 2006). Third, several studies have reported cross-linguistic associations for oral narrative skills, reading comprehension, grammatical skills, and the ability to understand, speak, read, and write in a language (Cummins, 1991; Durgunoğlu, 2002; Fiestas, 2009; Francis, 1999; Guglielmi, 2009; Sparks, Patton, Ganschow, Humbacy, & Javorsky, 2008; Ucelli & Páez, 2007).

However, a number of studies did not show L1 to L2 transfer of lexical, grammatical, and narrative skills (Bialystok, 2007c; Bialystok & Herman, 1999; Conboy

& Thal, 2006; Simon-Cereijido & Gutiérrez-Clellen, 2009; Swanson, Rosston, Gerber, & Solari, 2008; Verhoeven & Vermeer, 2009). Interestingly, most of the studies that found no indications of cross-linguistic transfer of academic language mainly involved either balanced bilingual or L2 dominant children, whereas the studies that did find cross-linguistic correlations included L1 dominant minority language children that acquired L2 as a second language. This is in line with Mac Whinney's (2005) prediction that use of L1 knowledge to learn L2 will diminish with enhanced development of L2, which increasingly becomes represented in a separate conceptual system and less dependent on L1. It should be noted that in most studies, there was no control for factors that may account for a cross-linguistic relation.

Because of the inconsistencies in research findings, and the fact that these studies focussed on diverse aspects of academic language instead of taking a comprehensive account, much remains uncertain about the transferability of academic language across languages. Furthermore, the correlations reported to substantiate positive transfer remain tentative, because both contextual and general cognitive factors may account for this relation and thus should be controlled for. It has been widely acknowledged that children's language development relates to literacy and language input *and* language learning ability, in particular verbal short term memory (Adams & Gathercole, 2000; Baddeley, 2003; Chapter 3; Hoff, 2006; Leseman et al., 2007; Messer, Leseman, Boom, & Mayo, in press; Montgomery, Polunenko, & Marinellie, 2009). To the best of our knowledge, no studies to date examined the joint effects of input and verbal short term memory on emergent academic language in L1 as well as L2 in a bilingual sample. Therefore, it is difficult to determine whether L1 academic language input can be beneficial to L2 academic language development via cross-linguistic transfer.

Several authors have argued that children's L1 proficiency should be sufficiently developed in order to facilitate transfer (August, Snow, et al., 2006; Butler & Hakuta, 2004; Cummins, 1979; 2000; Elbers, 2010). Unfortunately, immigrant children are more likely to face difficulties in the acquisition of L1 academic language because language-minority children who grow up in low income families, in societies that provide limited or no support for L1 development, lack sufficiently rich and elaborate language input to develop their L1 skills further (Chapter 2 & 4; Elbers, 2010; Extra & Yagmur, 2009; Leseman & Van den Boom, 1999; Genesee et al., 2004; cf. Pearson, 2007). Children from families with a low socioeconomic status (SES) on average receive less overall as well as less varied and complex language input (Farah et al., 2008; Hart & Risley, 1995;

Huttenlocher, Vasilyeva, Waterfall, Vevea, & Hedges, 2007; Noble, McCandliss, & Farah, 2007).

The present study investigates the role of input in academic language acquisition by examining the relationships between SES, home language, and literacy practices and mono- and bilingual immigrant children's academic language development in a sample of native Dutch and immigrant Turkish-Dutch and Moroccan-Dutch children speaking Turkish and Tarifit-Berber respectively. The children were followed from age 4 when they started kindergarten to (almost) age 6, just before they would start primary school. The Turkish language has a relatively high status because of its longstanding literary and academic tradition and Turkish parents in principle can easily access different sorts of official Turkish media, including books and newspapers to maintain their language (Backus, 2005). By contrast, Tarifit-Berber is a non-scripted language, not used in education or official public media in Morocco, nor elsewhere (cf. Rosenhouse & Goral, 2005). Due to these socio-cultural factors, Moroccan-Dutch parents have fewer resources available for first language maintenance. Higher educated parents, who are usually inclined to provide more formal language and literacy activities to their child (Bradley & Corwyn, 2002; Hoff, 2006), have no other option than to take recourse to (written materials in) Dutch language. Previous studies with the same sample have indicated that, in general, Moroccan-Dutch parents provide less L1 input and more Dutch as L2 input to their children than the Turkish-Dutch parents (Chapter 2 & 4; Leseman et al., 2009). Moreover, Moroccan-Dutch children are least exposed to literacy experiences. As a consequence, we expect Moroccan-Dutch children to be less proficient in L1 academic language than the Turkish-Dutch and Dutch children. Regardless the language use, Turkish-Dutch children are expected to be more familiarised with features of academic language than Moroccan-Dutch children because of the higher occurrence of parental book reading in Turkish-Dutch families. However, Turkish-Dutch children are expected to be less proficient in Dutch, due to the less frequent use of Dutch (see Chapter 2 & 4).

Comparing the academic language development of two immigrant groups that have similar migration histories but differ with regard to their access to literate forms of their first language can be seen as an experiment by nature. At age four, all immigrant children will be exposed to Dutch because of their obligatory start in kindergarten. Hence, from that age, Moroccan-Dutch and Turkish-Dutch children will experience ample L2 exposure which enables them to use their L1 to acquire the L2 (cf. Cummins, 1991). However, because of the unavailability of literate forms of Tarifit-Berber, Moroccan-Dutch children

are at risk for delays in their L1 academic language acquisition. Following the hypothesis that children's L1 should be sufficiently developed to enable transfer, Moroccan-Dutch children are expected to profit less from their L1 in learning L2 than Turkish-Dutch children. As a consequence, Moroccan-Dutch children may not be able to make up for disadvantages in L2 academic language. In contrast, once exposed to academic language in L2, Turkish-Dutch children are expected to develop their L2 at a faster rate and partly catch-up their monolingual peers (Leseman, 2000; Chapter 4).

In sum, we aim to contribute to the understanding of the role of language input in academic language acquisition by examining its impact on academic language development in a monolingual sample as well as in two bilingual (immigrant) samples. Children were followed longitudinally from kindergarten towards their transition to primary school on two measurement occasions. The main purpose was to investigate whether familiarity with the academic register in L1 can support early acquisition of academic language in Dutch. In order to address this issue we conducted a number of analyses. First, we examined whether children from the different ethnic-cultural groups differed in socioeconomic status of their family, exposure to L1 and Dutch literate language input, in general language learning ability, and in academic language proficiency and development in L1 and Dutch. Second, we examined within-language correlations between academic language production and other language skills. Third, we examined the extent to which children's L1 and L2 academic language production at time two related to children's verbal short-term memory, the SES of the family, and to patterns of language and literacy use. Finally, controlling for SES, Dutch literacy input and children's verbal short-term memory skills, we tested whether L1 academic language productivity supported early acquisition of L2 academic language.

METHOD

Sample and Procedures

A total of 146 children (71 females) from Dutch (n = 54), Moroccan-Dutch (n = 38), and Turkish-Dutch (n = 54) families living in The Netherlands participated in this study, which was part of a four wave longitudinal study on mono- and bilingual children's language development (see Chapter 4). The children included in the present study were assessed at two waves: at age 4 years and 3 months (SD = 1.56 month) and at age 5 years and 11 months (SD = 1.47). Due to an attrition rate of 7%, the total sample was reduced to 136 participants (69 females) at the second wave. Children had been

recruited at age 3 years and 2 months (SD = 1.79 month). At that time, their first language input in the home context was at least 70% (for full details about sampling and recruitment see Chapter 2). The groups did not differ significantly with regard to children's gender or age, except for age at wave 1, in which the Turkish-Dutch children on average were 2 months older than the Moroccan-Dutch and Dutch children.

Trained female research assistants belonging to the same cultural community as the family collected the data during two home visits. They administered a questionnaire during a personal interview with the primary caregiver, always the mother in the present sample, in the language of preference and standard tests to the children in a fixed order using laptop computers. Turkish and Tarifit linguists had provided translations of the instruments. Moroccan-Dutch assistants were trained to work with a scripted form of the Tarifit language in order to ensure standardized assessments. During the first visit, children's verbal short term memory, their first language receptive vocabulary, and their first language impersonal narrative skills were assessed. During the second visit, their non-verbal intelligence, Dutch receptive vocabulary skills, and their Dutch impersonal narrative skills were assessed. The narrative tasks were conducted in a quiet place and recorded on video to allow for subsequent coding. Before coding, coders had received an extensive training to assure consistency. Ambiguities were resolved through discussion with the principal investigator. Decisions on ambiguities were shared with all coders. Families received a gift voucher and a story book for the child after each wave.

Measures

SES. Family SES was based on two indicators: the highest completed educational level of both parents ranging from 1 (no education) to 7 (university degree) and the status of their current jobs in the Dutch national job index list, ranging from 1 (unemployed) to 6 (scientific job level) (Centraal Bureau voor de Statistiek [CBS], 2001). SES was computed as the mean of parents educational and job levels (Cronbach's $\alpha = .84$ for the total sample).

Home language environment. Children's experience with language through reading activities in the family context was assessed at wave two, determined by a questionnaire with a five-point Likert scale, with scores ranging from 1 (never) to 5 (daily). The scale *Literate Input* was constructed by computing the mean of five questions about the frequency of shared reading of narrative stories and information books during

the past six months. The scale had a satisfactory Cronbach's alpha for the total sample as well as for each sub sample separately, ranging from .74 to .86. In addition, interviewees were asked to indicate which language was used, yielding measures of *L1* and *L2 use*, with scores ranging from 0 to 1, with 0 indicating that the target language (L1 or L2) was never used with that particular type of activity; .25 that another language was used more often than the target language; .50 that the target language and another language were used equally; .75 that the target language was mostly used, but another language sometimes; and 1 that the target language was always used. Language specific input measures were constructed by multiplying the language input measure with the measures of either L1 or L2 use respectively after standardization (M = 10, SD =1).

Non-verbal intelligence. Raven's Coloured Progressive Matrices (CPM) was administered to measure children's non-verbal intelligence (Raven, 1995). The test consists of 36 perceptual and conceptual matching exercises in which the child has to complete a pattern by choosing one out of six pieces. The minimal verbal instruction required by the test was given in children's L1. The test is viewed as a culturally fair measure of intellectual functioning (Kaplan & Saccuzzo, 1997). The test was administered when children were 4 years old.

Verbal short-term memory. Test scores of verbal short-term memory tests administered at the four data waves of the larger longitudinal study were averaged after standardisation to create a global indicator of children's verbal short-term memory capacity. At the first wave of the four-wave longitudinal study, the Digit Span test from the McCarthy Scale of children's ability (MSCA) was used to measure children's verbal short-term memory (Van der Meulen & Smrkovsky, 1985). The MSCA manual reports satisfactory internal consistency for the Memory scale (McCarthy, 1972). In this test children had to recall random series of numbers between 1 and 9, with series increasing in length, which were voiced by a computer. The subsequent waves, the subtest *Digit recall* of the Automated Working Memory Assessment Battery (Alloway, Gathercole, & Pickering, 2007) was used to assess verbal short-term recall. As in the MSCA, a random sequence of digits ranging from 0-9 was presented to the children. The verbal short-term memory tests were administered in the child's first language at the first three data waves and in Dutch at the last data wave. In order to reduce data and strengthen the measures, we created a global short-term memory composite, representing the average verbal short-term

memory scores during the four measurement occasions, after standardization (with intercorrelations ranging between $r = .40$, $p < .001$ and $r = .60$, $p < .001$).

L1 and L2 vocabulary. Children's receptive vocabulary skills were assessed using the receptive vocabulary test of the Diagnostic Test of Bilingualism (Verhoeven, Narrain, Extra, Konak, & Zerrouk, 1995), an instrument specifically developed for research with immigrant children in The Netherlands. The test required children to match a read-aloud target word with one out of four pictures. To avoid fatigue with the younger children, the test was split in two parts at wave 1, one part consisting of the odd items and a parallel part consisting of the even items, yielding equivalent parallel forms (the within-language correlation between the two forms was $r = .71$, $p < .01$). In the Moroccan-Dutch and Turkish-Dutch group, the odd-items parallel form of the test was used to assess vocabulary in L1, the other half was used to assess Dutch vocabulary in L2. During the first wave, testing continued until the child failed five consecutive items or completed all 30 items of the test. After break-off, the remaining items were rewarded with the chance-score of 0.25. At the second wave, the complete L1 and L2 vocabulary tests were administered, without break-off rule. The test scores obtained at the two measurement times were linearly transformed to equal scales, with the same score range. Cronbach's alpha for the receptive vocabulary tests were all above .77, for the three groups separately[3].

Dutch morphosyntactic ability. The sentence imitation test of the Language Test for All Children (Verhoeven & Vermeer, 2001) was administered at the second wave to assess children's Dutch morphosyntactic ability. Children had to reproduce a total of 20 read-aloud sentences that contained a rich variety of syntactic structures and grammatical morphemes. Each sentence contained a target function word (such as connectives and auxiliary and copula verbs) and a target word order (such as inversion, position of subordinate clauses, and complex verbal, nominal and prepositional phrases) that had to

[3] Preliminary analysis of the data indicated significantly higher L1 vocabulary scores in a sub-group of Moroccan-Dutch children that had been tested by one particular research assistant. A review of filmed assessments of this assistant indicated that she occasionally provided additional prompts, which explained the higher scores. A correction was applied using regression analysis. To calculate the raw regression weight of the bias, verbal short term memory and listening comprehension test scores (not biased) were included in the regression equation as predictors of L1 receptive vocabulary scores, together with a dummy variable indicating whether the test was administered by the particular assistant. Subsequently, the regression weight of the dummy variable was subtracted from the L1 vocabulary scores of the sub-group of Moroccan-Dutch children. At wave 2 the assistant was no longer involved in the data collection.

be recalled correctly. Children received a score of 1 for each correctly reproduced target item. Scores were added to calculate the child's test score.

L1 and L2 Narrative Comprehension. Two structured interactions in the genre impersonal narrative were developed to assess children's first and second language academic language comprehension proficiency. During two separate visits, the test-assistant read a first language and a Dutch story to the child using age-appropriate narrative picture books with pictures and text (approximately 350 words). The research assistant had brought along hand puppet Ernie, a well known character from Sesame Street, as a playmate to enhance children's engagement in the task. Both books were translated from English and not known to the children. The first language story was about a cat, Loekie, who finds the kitten of the new neighbours in her kitchen, tries to chase it away as she want to be left in peace, and ends up making friends with it as they play with autumn leaves. After reading the story, the test-assistant asked the child questions about the story, 9 in all. The questions were at first open-ended ("What did Loekie think of the kitten being in her kitchen?"). If the child did not answer the question, a closed alternative question was posed ("Did Loeki enjoy the kitten being in her kitchen?"). A correct answer to the open question was awarded 2 points, a correct answer to the closed alternative 1, and no answer or an obviously wrong answer 0. Cronbach's alpha of the test was .73. The Dutch academic language comprehension task had a similar format. The Dutch story was a different story about Loekie (approximately 350 words), who wants to play, first with a fly, then with a bird, causing a lot of turmoil in the house. After reading the story, the assistant asked eight comprehension questions. A diverse set of questions were posed, ranging from literal recall of events to deep causal inferences. Scores were averaged over the eight questions. Cronbach's alpha for the task was .43.

L1 and L2 narrative text production. After the comprehension test, the children were asked to retell the story of Loekie to hand puppet Ernie. They were prompted to tell the story in the same way and the same language as they had heard the story read to them, as Ernie had not been paying attention when the story was read. Using hand-puppet Ernie, the assistants signaled interest using paraverbal or short verbal prompts (such as "hmm; and else; ooh") or nonverbal cues such as nodding and smiling. The narrative tasks were transcribed and coded afterwards in the laboratory both on utterance level as well as in a

holistic manner, using a coding scheme[4] based on the theory of SFG (Halliday & Matthiessen, 2004; Schleppegrell, 2004). Expressions of the child were defined as units of speech containing a single, sometimes complex meaning proposition, as indicated by intonation or pauses. Children's self corrections, off task utterances, largely inaudible, and simple 'yes' or 'no' utterances were excluded. Development of an age appropriate coding scheme afforded evaluation of children's emergent academic language proficiency. The following categories were coded at the utterance level:

- Number of content words in each utterance (all nouns, verbs, adjectives and count words, and a selection of adverbs with a clear meaning).
- Use of explicit and specific references to time and place ('in the tree').
- Use of verb tense and aspect (subcategories: no verb, present simple, present perfect, past simple, past perfect, present future, or past future tense).
- Use of connectives (subcategories: additive, temporal, causal, and contrastive connectives).
- Use of clause combining (subcategories: coordinate and subordinate).

Each category was aggregated to create an indicator of mean number of content words per utterance (MLcU) and percentage of occurrence of the aforementioned variables.

In addition, coders rated the overall discourse produced by the child during the narrative tasks on the following dimensions:

- Textual cohesion of the story told by the child using a 7-point rating scale, with scale point 1 meaning 'very low cohesion between separate utterances, virtually all utterances are semantically or linguistically unrelated', 4 meaning 'intermediate cohesion, utterances are interrelated half of the time', and 7 meaning 'the discourse is highly coherent, all utterances together forming one complex statement'.
- Abstraction level displayed in the story, rated a 4-point rating scale derived from Blank, Rose, and Berlin (1978), with scale point 1 meaning that the story produced by the child was closely connected to the immediate situation, e.g. merely labelling the pictures, scale point 2 meaning that children described actions and integrate separate components of the story, scale point 3 meaning that children made inferences about perception, and scale point 4 meaning that the child reasoned about not directly observed aspects of the story. In addition to the holistic rating, coders rated the highest used abstraction level within each task.

[4] The coding scheme of the present study is a shortened version of an extensive coding scheme developed within the DASH-project (DASH, 2006). The coding manual, in English, can be obtained from the authors.

Reliability of coding was determined on approximately 13% (n=46) of the transcripts. The mean intercoder correlation was .87 (range $r = .76$, $p < .001$ to $r = .99$, $p < .001$).

RESULTS

Overview of the analyses

We first present the descriptive statistics of the measurements. Using one-way analysis of variance, we compared Dutch, Moroccan-Dutch, and Turkish-Dutch children's home language environment, their verbal short-term memory and nonverbal intelligence, as well as their receptive and productive academic language proficiency. Second, using mixed-design analysis of variance, we examined inter-group differences in children's productive Dutch and L1 academic language development over time. Third, bivariate correlations were estimated to investigate relationships between different measures within language at both measurement occasions. Finally, we conducted regression analyses to address the question whether, after controlling for child and home characteristics, Turkish-Dutch children's first-grade L1 academic language production predicts their Dutch academic language production.

Descriptive Statistics

Table 1 presents the means, standard deviations, and score ranges of the home characteristics. The results reveal strong differences in SES, with the Moroccan-Dutch families, on average, having the lowest SES. The differences between the groups reflect the present demographic characteristics of the Dutch, Moroccan-Dutch, and Turkish-Dutch communities in The Netherlands accurately (Gijsberts & Dagevos, 2009).

Table 1. *Descriptive Statistics Home characteristics*

	Range	*Dutch*	*Moroccan*	*Turkish*	*F*	*Post Hoc*
1. SES	1-6.5	4.56 (1.2)	2.29 (0.80)	3.20 (0.95)	68.34***	Du>Tu>Mo
2. Literate Input T2	0-5	3.44 (0.72)	3.29 (0.82)	3.51 (0.79)	9.92***	Du=Tu=Mo
% L1	0-1	1.00 (0.00)	0.06 (0.24)	0.40 (0.39)	151.52***	Du>Tu>Mo
% Du	0-1	1.00 (0.00)	0.91 (0.28)	0.60 (0.39)	28.21***	Du&Mo>Tu
3. L1 Literate Input T2		0.66 (0.70)	-0.84 (0.68)	-0.13 (0.98)	37.90***	Du>Tu>Mo
4. Dutch Literate Input T2		0.37 (0.71)	0.06 (1.12)	-0.48 (1.02)	9.92***	Du&Mo>Tu

Du = Dutch, Tu = Turkish-Dutch, Mo = Moroccan-Dutch, T2 = Time 2

Regarding language input, Table 1 presents a number of results. First, at the second measurement occasion, *overall language input* through literate interactions at home did not significantly differ between the three groups. Second, use of L1 and Dutch revealed the expected pattern of differences. Use of Dutch with almost 100% of the reported activities in the Dutch families is characteristic of the monolingual situation of this group. In the Moroccan-Dutch families L1 was used least frequently: due to unavailability of books in Tarifit only one of the Moroccan-Dutch families reported to use Tarifit to tell the story in the book. In the Turkish-Dutch families Dutch was used least frequently. Third, the findings for L1 language input through literate interactions *in L1* in the Turkish-Dutch group demonstrate the consequences of the need to divide the available time for interaction between the two languages: although Turkish-Dutch children did not significantly differ from Dutch children in experience with literate interactions, they did experience significantly less Turkish as L1 and Dutch as L2 reading activities

The descriptive statistics of the child characteristics are reported in Table 2. The three groups did not significantly differ in nonverbal fluid intelligence, measured with the Raven CPM. Moroccan-Dutch children did have lower verbal short-term memory scores, averaged over four measurements, than the Dutch and the Turkish-Dutch children. The results on the receptive and productive academic language skills are also reported in Table 2. In order to examine group differences in productive academic language performance, forced principal component analyses were conducted to create a single component score per language, including the following variables: mean content words per utterance (MLcU), frequency of specific reference to time and place, use of academic verb tense, clause combinations, academic connectives, ratings of textual cohesion, and highest abstraction level. The descriptives of the variables included in the Dutch and L1 composites are presented in Appendix A and B respectively. Per task, children's scores on the respective variables on wave two were placed underneath those of wave one to facilitate examination of children's productive academic language development. L1 academic language production scores for the Moroccan-Dutch children were not computed, as already at the first measurement occasion, 52,6% of the children spoke mostly Dutch during the L1 academic language production task (despite assistants prompts to use L1). Across tasks, the first component explained between 56.26% and 56.63% of the variance, Cronbach alphas of all features ranged between .86 and .87.

Table 2. *Descriptive Statistics Child characteristics*

	Range	*Dutch*	*Moroccan*	*Turkish*	*F*	*Post Hoc*
1. Age T1		50.67 (0.65)	50.75 (1.20)	52.59 (1.77)	33.87***	Tu>Du&Mo
2. Age T2		70.72 (0.95)	70.97 (2.38)	70.98 (1.04)	0.49	Tu=Du=Mo
3. Raven CPM	0-36	14.22 (3.65)	14.55 (3.66)	13.24 (2.60)	1.89	Du=Tu=Mo
4. STM		0.26 (0.83)	-0.44 (0.57)	-0.03 (0.73)	10.10***	Du&Tu>Mo
Receptive Academic Language						
5. L1 vocabulary T1	0-60	45.34 (5.41)	31.02 (6.63)	32.69 (7.37)	71.43***	Du>Mo&Tu
6. Du vocabulary T1	0-60	45.34 (5.41)	33.04 (7.34)	30.62 (7.21)	71.36***	Du>Mo>Tu
7. L1 vocabulary T2	0-60	55.02 (3.30)	38.11 (5.91)	40.34 (5.91)	156.99***	Du>Mo&Tu
8. Du vocabulary T2	0-60	55.02 (3.30)	46.56 (5.44)	43.47 (6.12)	71.38***	Du>Mo>Tu
9. L1 Nar Com T1	0-2	1.33 (0.27)	0.70 (0.24)	0.70 (0.20)	119.70***	Du>Mo&Tu
10. Du Nar Com T1	0-2	1.22 (0.39)	0.87 (0.34)	0.73 (0.34)	41.07***	Du>Mo&Tu
11. L1 Nar Com T2	0-2	1.63 (0.17)	1.00 (0.25)	1.26 (0.34)	66.37***	Du>Tu>Mo
12. Du Nar Com T2	0-2	1.61 (0.23)	1.55 (0.29)	1.52 (0.28)	1.56	Du=Tu=Mo
Productive Academic Language						
13. Du syntax T2		30.23 (5.44)	23.94 (8.05)	19.66 (7.98)	27.92***	Du>Mo>Tu
14. Du Nar Prod T1		-0.11 (0.77)	-0.81 (0.64)	-0.85 (0.78)	16.26***	Du>Mo&Tu
15. L1 Nar Prod T1		-0.19 (0.98)		-0.80 (0.53)	21.54***	Du>Tu
16. Du Nar Prod T2		0.92 (0.82)	0.28 (0.56)	0.39 (0.72)	11.27***	Du>Mo&Tu
17. L1 Nar Prod T2		0.91 (0.94)		0.01 (0.67)	27.93***	Du>Tu

Du = Dutch, Tu = Turkish, Mo = Moroccan, T1 = Time1, T2 = Time 2, STM = verbal short term memory, Nar Com = narrative comprehension, Nar Prod = narrative production; * $p < .05$; ** $p < .01$; *** $p < .001$

Because missing value analysis revealed that the academic language comprehension and production variables had a high occurrence of missing data points, ranging from 4.08 % to 10.88 %, missing values were replaced using the regression estimation method. Within variable scores from the preceding or following measurement were included in the regression equation as predictors of the missing value scores.

As can be seen in Table 2, results of the language tasks indicated big differences between the groups that are roughly consistent across measurement times. The gap found between Moroccan-Dutch and Turkish-Dutch children's receptive and productive language skills in Dutch as L2, and Dutch children's language skills in Dutch as L1, was expected given the bilingual background of the Moroccan-Dutch and Turkish-Dutch children. The bilingual children equalled the Dutch children in only one task: the Dutch Narrative Comprehension task at Time 2. With respect to Dutch as L2, the Moroccan-Dutch children were ahead of the Turkish-Dutch children in receptive vocabulary and syntax skills, but not in narrative comprehension and production. The results regarding L1 skills show that the Moroccan-Dutch and Turkish-Dutch children were not only behind in Dutch as L2, but also rather strongly in L1 skills relative to their Dutch monolingual peers: on all L1 language tasks Dutch children outperformed the bilingual children. Although Turkish-Dutch and Moroccan-Dutch children had similar L1 receptive vocabulary skills, Turkish-Dutch children generally were more proficient in the L1 narrative tasks. Turkish-Dutch children had higher narrative comprehension scores at Time 2 and most of them were able to tell narratives in their L1, as indicated by a low occurrence of children that converted to Dutch during storytelling (6% at Time 1 and Time 2). Although it was not possible to compare Turkish-Dutch and Moroccan-Dutch children's narrative production composite scores, Moroccan-Dutch children's frequent usage of Dutch during the L1 narrative production task indicates that they had problems using their L1 productively in a narrative task. Most probably, Moroccan-Dutch children's L1 academic language production proficiency was insufficiently developed to deal with a narrative production task. In contrast, although their low score on the narrative comprehension task indicated that they also had difficulties with academic language comprehension, they did manage to successfully answer some of the questions about the read-aloud story (63% of the open ended questions and 78% of the closed questions).

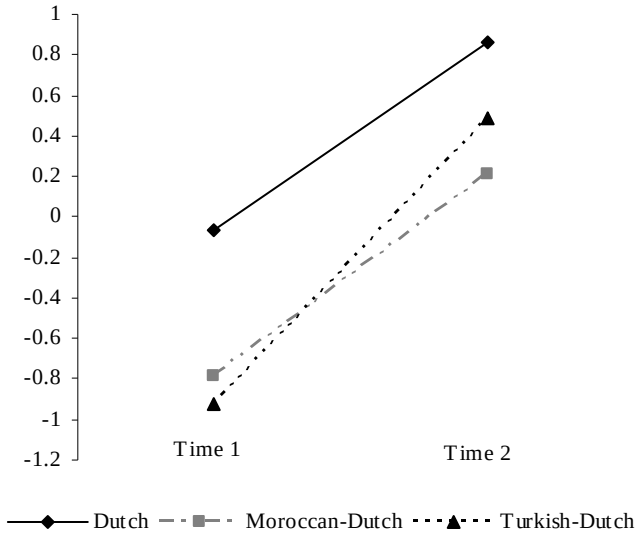

Figure 1. Composite Measure Dutch Academic Language skills over time

Productive Academic Language Development

Dutch Language. In order to examine inter-group differences in children's productive academic language development, we conducted a mixed analysis of variance with time entered as a within-subjects factor and cultural group entered as a between-subjects factor. As Turkish-Dutch children were two months older at Time 1, age at Time 1 was added as a covariate. Figure 1 shows the development of children's Dutch academic language proficiency. Repeated measure analysis indicated significant main effects for time (F (1,133) = 7.40, p <.01) and cultural group (F (2,133) = 16.71, p = .000), a significant interaction effect between age and time (F (1,133) = 5.48, p < .05), as well as a significant interaction effect between culture and time (F (2,133) = 6.35, p < .05). Levene's test of homogeneity indicated no violations of homogeneity of variance. Children's Dutch academic language proficiency significantly improved over time. Contrasts showed that, on average, Dutch children had significantly higher academic language composite scores than the Moroccan-Dutch and Turkish-Dutch children. There were no differences in Dutch academic language proficiency between the Moroccan-Dutch and Turkish-Dutch children.

In addition, separate repeated measure analyses were conducted to determine whether the growth in academic language proficiency significantly differed between cultural groups. Results indicated similar growth in Dutch academic language proficiency for the Moroccan-Dutch and Dutch children (F (1,85) = 0.11, p =.74), whereas

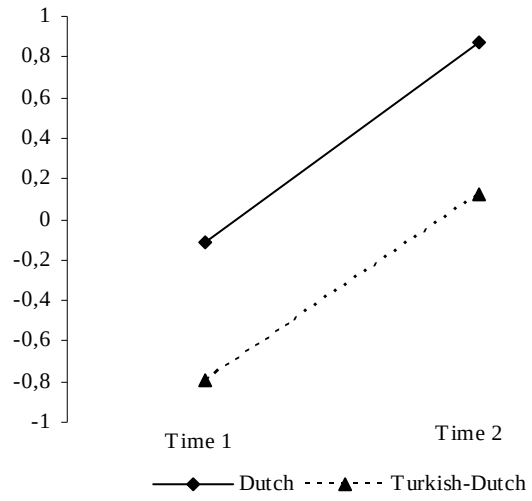

Figure 2. Composite Measure First Language Academic Language skills over time Dutch

Turkish-Dutch children's growth in academic language proficiency exceeded that of Dutch (F(1,97) = 3.59, p = .061) and Moroccan-Dutch children (F (1,82 = 6.27, p < .05).

First Language. Figure 2 shows the development of Turkish-Dutch and Dutch children's first language academic language proficiency. Repeated measures analysis indicated a borderline significant main effect for time (F (1,97) = 3.84, p = .053), a significant main effect for cultural group (F (1,97) = 19.06, p = .000), and a borderline significant interaction effect between age and time (F (1,97) = 2.78, p < .10). Levene's test of homogeneity indicated violations of homogeneity of variance. As the Dutch and the Turkish-Dutch groups had roughly equal sample sizes (n = 52 and n = 48 respectively), the mixed-design analysis of variance was considered to be robust to the violation of homogeneity of variances. Children's first language academic language proficiency significantly improved over time. Contrasts showed that, on average, Dutch children had significantly higher first language academic language composite scores than the Moroccan-Dutch and Turkish-Dutch children. There was no significant interaction effect between time and ethnic-cultural group (F (1,97) = .144, p = .705), indicating that Dutch and Turkish-Dutch children's first language academic language skills developed at a similar pace.

Table 3. *Within-year Within-language Correlations between Academic Language and Vocabulary, Story Comprehension and Syntax*

	First Language		Dutch		
	Voc	Nar Com	Voc	Nar Com	Syntax
Total group					
Academic language T1	.18*	.28***	.53***	.55***	_
Academic language T2	.57***	.54***	.45***	.29***	.40***
Dutch					
Academic language T1	.13	.31*	.17	.31*	_
Academic language T2	.25*	.25*	.41**	.30*	.29*
Moroccan					
Academic language T1	_	_	.47**	.42**	_
Academic language T2	_	_	.22†	.11	.24†
Turkish					
Academic language T1	.23†	.21†	.41**	.51***	_
Academic language T2	.47***	.48***	.39**	.32*	.40**

Voc = vocabulary; Nar Com = narrative comprehension; T1 = Time 1; T2 = Time 2; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Within-language relations among language skills.

Table 3 displays the within-language correlations between use of academic language in narrative production, and narrative comprehension, vocabulary and, for Dutch language only, syntax skills. Results on the total sample indicated moderate to strong within-language relations between productive and receptive academic language proficiency at both testing times. In addition, at Time 2, children's productive Dutch academic language proficiency significantly related to their Dutch syntax skills. The within-group correlations revealed the same patterns, with a few exceptions. Dutch children's receptive vocabulary at Time 1 was not significantly related to their academic language production. At Time 2, Moroccan-Dutch children's Dutch narrative comprehension was not significantly related to their Dutch narrative production. The relations between their Dutch academic language production and Dutch syntax and vocabulary were marginally significant.

Relations with child characteristics and the home learning environment

The correlations between children's academic language production at Time 2, and children's verbal STM, SES, and the indicators of the home language and literacy environment are presented in Table 4. Except for the Moroccan-Dutch group, children's

Table 4. *Correlation between Language Input and First and Dutch Academic Language Production at T2*

	First Language Academic language T2			
	Dutch	Moroccan	Turkish	Total group
STM	.23†	_	.27*	.30**
SES	-.11	_	-.01	.20*
Reading T2	.20†	_	.31*	.17*
% L1	_	_	.32*	_
% Du	_	_	-.32*	_
	Dutch Academic language T2			
	Dutch	Moroccan	Turkish	Total group
STM	.40*	.06	.22†	.36***
SES	.09	.07	.28*	.34***
Reading T2	.24*	.31*	.28*	.26*
% L1	_	_	-.02	_
% Du	_	.02	.02	_

STM= verbal short term memory; T2 = Time 2, Du = Dutch; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

verbal STM positively related to their ability to use academic language in narrative production (with *r's* ranging between .22, $p < .10$ and .40, $p < .05$). Within the total sample, SES correlated positively with children's ability to use L1 and Dutch academic language productively. However, within groups, results indicated no positive associations between SES and children's academic language production, with the exception of a positive correlation between SES and Dutch academic language production in the Turkish-Dutch group ($r = .28$, $p < .05$).

A hypothesis of the current study was that children's productive academic language proficiency would be related to the home learning environment. Table 4 shows that children's productive academic language proficiency indeed related to their experiences with reading at home (with *r's* ranging between .20, $p < .10$ and .31, $p < .05$). Positive associations were found for the total sample as well as the separate groups, both for L1 and L2. Results regarding effects of language use during storybook reading

revealed an interesting pattern. Note that we could study the differential impact of L1 and L2 use during book reading in the Turkish-Dutch group only, as Moroccan-Dutch parents had no access to L1 storybooks. Remarkably, choice of language during reading impacted children's L1 academic language proficiency only, in the expected direction: Turkish language use associated positively, whereas Dutch language use associated negatively with children's performance on the L1 narrative production task. Hence, parental use of Turkish during storybook reading does not seem to impede Turkish-Dutch children's acquisition of the Dutch academic register. In contrast, use of Dutch during reading does seem to impede children's L1 academic language acquisition. In the next paragraph, we will examine whether this pattern can be attributed to cross-linguistic transfer of academic language proficiency.

Cross-linguistic Transfer of Academic Language

Two stepwise multiple regression analyses were conducted to test whether Moroccan-Dutch and Turkish-Dutch children's L1 academic language proficiency would predict their Dutch academic language proficiency after controlling for a series of variables. A composite measure was created to assess cross-linguistic relations between

Table 5. *Hierarchical Regression Analyses Predicting Dutch Receptive Academic Language of the Moroccan-Dutch and Turkish-Dutch Children*

Criterion and predictor order						
	Moroccan [a]			Turkish[b]		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Step 1						
STM	.41	.27	.25	.33	.15	.32*
Step 2						
STM	.61	.24	.37*	.30	.12	.30*
Dutch Reading	.04	.01	.57**	.01	.01	.11
SES	-.19	.18	-.17	.43	.09	.58***
Step 3						
STM	.59	.24	.37*	.23	.12	.22†
Dutch Reading	.03	.01	.57**	.01	.01	.15
SES	-.13	.18	-.12	.38	.09	.52***
L1 Academic Language	.28	.16	.24†	.19	.10	.23†

Note. STM = verbal short term memory; [a] R^2 =.07 for Step 1; ΔR^2 =.30** for Step 2; ΔR^2 =.06† for Step 3; [b] R^2 =.11* for Step 1; ΔR^2 =.39*** for Step 2; ΔR^2 =.05† for Step 3. †$p < .10$; *$p < .05$; **$p < .01$.

L1 and L2 *receptive* academic language skills, including children's narrative comprehension and receptive vocabulary scores (with *r's* ranging between .23, $p > .05$ and .61, $p < .001$). Table 5 depicts the models for transfer of receptive academic language skills. To rule out spurious relations the following measures were added to the model as control variables: verbal short-term memory, SES, and frequency of Dutch reading activities. Preliminary analysis indicated no significant regression outliers ($SD > 2.5$). The results show a marginally significant positive association between L1 and L2 receptive academic language ($\beta = .24$, $p < .10$ and $\beta = .23$, $p < .10$ for the Moroccan-Dutch and Turkish-Dutch group). The final models explained 43% (Moroccan-Dutch group) and 55% (Turkish-Dutch group) of the variance in Dutch receptive academic language.

Table 6 shows the models fitted to predict Turkish-Dutch children's Dutch academic language production based on their L1 academic language production. The Moroccan-Dutch group was not included, due to the fact that the majority switched to Dutch during the task, despite repeated prompts to tell a narrative in Tarifit-Berber. Outliers equal or greater than two and a half standard deviations were excluded (1.85%). Results showed that Turkish-Dutch children's L1 academic language proficiency positively impacted their Dutch academic language production ($\beta = .31$, $p < .05$), even when controlling for SES, Dutch reading frequency and children's verbal short-term

Table 6. *Hierarchical Regression Analyses Predicting Dutch Academic Language Skills of the Turkish-Dutch Children*

Criterion and predictor order	*B*	*SE B*	β
Step 1			
STM	.20	.10	.21
Step 2			
STM	.17	.13	.18
Dutch Reading	.01	.01	.12
SES	.18	.10	.25†
Step 3			
STM	.08	.13	.08
Dutch Reading	.01	.01	.16
SES	.18	.10	.25†
L1 Academic Language	.33	.14	.31*

Note. STM = verbal short term memory.[a] $R^2 = .04$ for Step 1; $\Delta R^2 = .09$† for Step 2; $\Delta R^2 = .09$* for Step 3. †$p < .10$; *$p < .05$; **$p < .01$.

memory. The additional variance explained by L1 academic language was significant, and the final model explained 21% of the variation in Dutch academic language production.

DISCUSSION

The purpose of the present study was to examine mono- and bilingual children's academic language development in a narrative text genre and to determine whether this proficiency related to particular patterns of language use and literacy activities in the home learning environment. We were especially interested in cross-linguistic transfer of academic language skills. We investigated children of this young age as we hypothesized that insufficient experience with the academic register may explain early arising educational disadvantages that become manifest upon introduction to primary school and have long lasting consequences for educational performance (cf. Schleppegrell, 2004). Our analysis focussed on children's receptive vocabulary, their text comprehension, as well as on their use of lexical, grammatical, and textual features of academic language in an impersonal narrative genre. In the kindergarten period, children developed their L1 as well as their L2 skills, as indicated by higher scores on all language measures on the second measurement occasion. Despite showing clear improvements, the Moroccan-Dutch and Turkish-Dutch children on average continued to score below the monolingual mean on nearly all language assessments. The bilingual immigrant children succeeded to equal their monolingual peers in performance on the Dutch (but not L1) story comprehension task only.

These findings replicate and extend previous findings on bilingual children's dual language development and highlight the persistent language disadvantages of immigrant children (Chapter 4; Hammer et al., 2009; Ivanova & Costa, 2008; Leseman & Van den Boom, 1999; Oller & Eilers, 2002; Páez et al., 2007; Shrubshall, 1997; Treffers-Daller et al., 2007; Uccelli & Páez, 2007; Uchikoshi, 2006). Given the well established link between the ability to use lexical, grammatical, and textual features of academic language and literacy development, these findings suggest that bilingual children are indeed at risk for educational delays (Chang, 2006; Cummins, 1991; De Jong & Leseman, 2001; Dufva et al., 2001; Fang et al., 2006; Guglielmi, 2008; Kiefer, 2008; Nation & Snowling, 2004, Paris & Paris, 2001; Ravid & Tolchinsky, 2002; Savolainen et al., 2008).

An important finding of the present study was that the bilingual immigrant children equalled the Dutch monolingual children in nonverbal intelligence. Hence, no deficits existed in immigrant children's domain general ability to learn. In a related study of our

lab with a different sample of native Dutch and Turkish-Dutch four-year-olds, using more extensive measures of nonverbal intelligence, digit span, and visuo-spatial working memory (Messer, et al., in press), essentially the same result was found.

The present study provided information on the kind of language input that supports children's academic language development in L1 and L2, using SFG as a framework. In SFG it is assumed that content, nature of the relationship among interlocutors, and textual mode impact the linguistic features of a narration. As academic language is characterized by an abstract and decontextualized content, authoritative stance taking, and monologic text, it affords use of high information dense sentences, explicit references to time and place, elaborate verb tense and aspect, and cohesiveness and distancing strategies. By constructing a composite score of children's academic language production that included these lexical, grammatical, and textual features of academic language, the present study contributed to recent attempts to provide a comprehensive account of the so called academic, literate or "decontextualized" language (cf Chapter 3; Curenton, et al., 2008; Curenton & Justice, 2004; Sénéchal et al., 2008; Shiro, 2003; Ucelli, Hemphill, Pan & Snow, 2006). Moreover, by assessing the literate input at home, rather than merely using a distal indicator of the home environment such as SES (Cox, Fang, & Otto, 1997; Price, Roberts, & Jackson, 2006; Sénéchal et al., 2008; Vasilyeva, Waterfall, & Huttenlocher, 2008), we were able to reveal more in detail how particular practices in the family are related to acquisition of academic language. Results of the present study confirmed the hypothesis that shared book reading, typically characterized by sophisticated, academic language input, familiarizes children with a genre that follows the linguistic features of academic language and provides them with linguistic resources to use academic language in a narrative production task themselves, as showed by the positive associations between literate language input and L1 and L2 academic language production (range $r = 0.20$, $p < .10$ to $r = 0.31$, $p < .05$).

Results on the impact of SES on academic language production were less clear cut. When the total sample was considered, the family's SES was significantly related to children's emergent academic language production, compatible with the well established relation between SES and children's language skills in general populations (Farah et al., 2008; Hart & Risley, 1995; Hoff, 2006; Hoff & Naigles, 2002; Leseman et al., 2007; Noble et al., 2007; Sénéchal et al., 2008; Vasilyeva et al., 2008). However, within the ethnic-cultural groups, no significant relations were found, except between SES and Dutch academic language in the Turkish-Dutch group. Additional analyses reveal that this lack

of association can be explained by weak to absent within-cultural-group relations between SES and literacy input (r = -.01, p > .10 for the Dutch; r = .30, p < .10 for the Moroccan-Dutch; and r = .20, p > .10 for the Turkish-Dutch group). The absence of a relation between SES and academic language production is in line with a study of Price et al. (2006), who did not find a relation between African American preschoolers' narrative production and their socioeconomic background. Note, however, that correlation analyses in the present study did indicate total group as well as within group relations between occurrences of shared book reading and L1 and L2 academic language production. Apparently, frequency of literate activities, a proximal family process, has a stronger influence on children's academic language development than SES, a distal family background characteristic.

Additionally, the current study investigated the role of L1 versus L2 use. A number of results of the current study supported the notion that parental use of L2 during literate interactions is not crucial to children's academic language achievement in L2, whereas L1 use is crucial to L1 academic language development (August, Snow, et al., 2006; Duursma et al., 2007; Hammer et al., 2009; Kohnert et al., 2005). First, correlation analyses indicated that parental use of L1 during shared book reading positively related to children's L1 academic language production, whereas it was not associated, neither positively, nor negatively, with children's academic language production in L2. Furthermore, parental use of L2 during literacy interactions related negatively to children's L1 academic language use in a narrative production task, whereas it was not associated with their children's L2 academic language production. In other words, parental usage of L1 did not impede children's academic language proficiency in L2, whereas it seems essential to foster children's L1 academic language development. Apparently immigrant children received enough L2 exposure outside home to foster their academic language development in L2.

Second, stepwise multiple regression analyses showed that Moroccan-Dutch and Turkish-Dutch children's L1 academic language proficiency predicted their L2 academic language proficiency, even when controlling for language input and verbal short-term memory (with β's ranging between .23, p < .10 and = .31, p < .05). Hence, the results of the present study provided support for the positive transfer hypothesis and, more specifically, confirmed that children's familiarity with the academic register in their L1 facilitates acquisition of academic language in an unfamiliar language (Cummins, 1991; 2000). Apparently, parents can indirectly foster their children's acquisition of L2

academic language by provision of enriched L1 academic language input that promotes their children's L1 academic language development.

Third, using mixed-design analysis of variance to examine inter-group differences in children's academic language development revealed an interesting pattern. Although Moroccan-Dutch children had experienced more L2 input at home than Turkish-Dutch children had, the analysis of variance indicated no inter-group differences in L2 academic language level. Interestingly, despite having experienced less exposure to Dutch at home, Turkish-Dutch children developed their Dutch academic language faster than Moroccan-Dutch and Dutch children did. Two findings stand out. First, this finding confirms that migrant bilingual children can catch-up, at least partly, their language delays (Chapter 4; Goldberg et al., 2008; Han, 2008; Hammer et al., 2007; Hammer et al., 2009; Hoff, 2009; Kan & Kohnert, 2005; Kohnert & Bates, 2002; Leseman, 2000; Páez et al., 2007; Silverman, 2007; Townsend & Collins, 2008; Uccelli & Páez, 2007; Uchikoshi, 2006). Second, the Turkish-Dutch accelerated L2 academic language development presumably stem from their ability to use knowledge and skills built-up in L1 (Butler & Hakuta, 2004; Cummins, 1991). Apparently, the positive transfer mechanism can compensate, at least partly, for the limited L2 language input that bilingual children experience due to their exposure to L1. This is in line with the finding of a recent study on Indian children's L2 oral language and literacy skills, which showed that high occurrence of book reading compensates for low exposure to L2 (Kalia & Reese, 2009). Based on the present findings, it might be deducted that to facilitate catch-up effects of language disadvantages in immigrant children, apparently the following precondition must be met: the children should have sufficiently developed their L1 proficiency. This confirms the Cummins' hypothesis that children need sufficient L1 proficiency to facilitate transfer (Cummins, 1991; 2000). Moroccan-Dutch children were unable to deal with the demands of a narrative production task in their L1, as indicated by their frequent usage of Dutch during the task. Furthermore, despite their relatively high exposure to Dutch, Moroccan-Dutch children did not outperform the Turkish-Dutch children in the Dutch academic language task. In contrast, Moroccan-Dutch children developed their Dutch academic language slower than the Turkish-Dutch children.

Interestingly, one-way analysis of variance indicated that Moroccan-Dutch children were more proficient in Dutch syntax and had higher Dutch vocabulary than the Turkish-Dutch children. In addition, Moroccan-Dutch children's Dutch vocabulary and morphosyntactic skills were only weakly related to their Dutch academic language

production ($r = .22$, $p < .10$; $r = .24$, $p < .10$). Children's scores on the receptive vocabulary test can be regarded as an indicator of their access to a rich, technical vocabulary considered important for successful participation in primary school. Perhaps the Moroccan-Dutch children lacked the vocabulary needed for this task. In addition, the sentence repetition task might not fully capture the more complex syntactic skills needed for narrative production. An alternative presupposition might be that Moroccan-Dutch children used their linguistic resources to produce a literate, academic text less effectively than the Turkish-Dutch children. Although the current study indicated no between-group differences in experience with literacy at age 5;10, a previous study on the same sample indicated that from age three to six, Moroccan-Dutch children were least exposed to literacy activities at home (see Chapter 4). Therefore, Moroccan-Dutch children's L2 language advantage seems to have been attenuated by a lack of familiarity with the academic register. These findings suggest that there is more to acquisition of academic language than having well developed linguistic resources such as complex syntax and specific vocabulary. Children must be able to recognise the specific ways in which to use their lexical, grammatical, and textual skills to construct an academic narrative (cf Maton & Muller, 2007; Schleppegrell, 2004). Lack of experience with the academic register may underlie difficulties experienced in recognising its situational demands and making context-appropriate linguistic choices (Ravid & Tolchinsky, 2002; Schleppegrell, 2004).

The present study contributes to our understanding of the ways in which being raised in a particular cultural and linguistic community influences young children's language development. Although further research is warranted to corroborate the findings reported in this article, the results suggest that special attention should be paid to migrant children's L1 development. This will not only lead to socio-emotional and cognitive advantages within the context of their family (Kohnert et al., 2005), current results suggest that sophisticated L1 input can compensate for the adverse effects of a division of time on two languages via facilitation of L1 to L2 cross-linguistic transfer. Studies on preschool intervention programs have reported successful prevention of L1 delays through systematic support of L1 besides L2 instruction (Rodríguez, Díaz, Duran, & Espinosa, 1995; Winsler, Díaz, Espinosa, & Rodríguez, 1999). Furthermore, comparative studies on preschool intervention programs have indicated that combined L1 and L2 exposure does not impede acquisition of L2 language and literacy, whereas L1 exposure is essential to foster L1 language and literacy skills (August, Carlo, Calderón, & Nuttall, 2006; Farver, Lonigan & Eppe, 2009; Gathercole & Thomas, 2009; Tong, Lara-Alecio, Irby, Mathes, &

Kwok, 2008). Apparently, providing children with a combination of sophisticated L1 and L2 input does not harm L2 acquisition. Although the studies did not show an L2 advantage for the group that was instructed bilingually over the group that received L2 input only, children that received bilingual education were able to compensate for their diminished time on L2, supposedly via transfer.

Besides preschool intervention programs and bilingual education programs, family-focussed intervention programs are an alternative approach to target children's L1 development. For instance, a Dutch family-focussed intervention program was effective in enhancing Turkish-Dutch children's L1 vocabulary and syntactic development via increased parental home language and literacy activities in L1 (Leseman & Van Tuijl, 2001). The results of the present study indicate that a strong emphasis on language activities that familiarize children with academic language is warranted. However, due to the unavailability of Tarifit-Berber books, Moroccan-Dutch parents have to take recourse to other language learning activities than shared book reading to stimulate their children's L1 academic language development. Oral storytelling, cognitively stimulating mealtime conversations, or reconstructing personal experiences and memories are possible alternatives, as these activities reveal linguistic features that resemble academic language use in formal instruction (Beals & Snow, 2002; Curenton et al., 2008; Weizman & Snow, 2001; Snow & Beals, 2006). Verbally reconstructing personal experiences and memories, for instance, requires clarification of the context of reference and coherent narrative ordering of the sequence of events that is reported (Beals, 1997, 2001; Gauvain, 2001; Haden, Haine, & Fivush, 1997). It is to be expected that parents who are stimulated to use complex language characterized by the use of a rich vocabulary, complex and information dense sentences, and semantically interconnected discourse can foster children's acquisition of academic language (Hoff & Naigles, 2002; Huttenlocher et al., 2002; Weizman & Snow, 2001). However, this needs to be studied further.

LIMITATIONS AND CONCLUSIONS

To conclude, the present results suggest that exposure to literate, academic language in early childhood education - at home or in school – might be a viable strategy to decrease early disparities between children in emergent academic language, which may be an important first step in reducing educational inequality. Interestingly, the indications of cross-linguistic transfer suggest that L2 use during home literacy activities is not essential for support of children's L2 academic language acquisition. It should be noted

that the present evidence should be interpreted cautiously in line with its limitations. First, the sample sizes of the three groups used in this study were modest. Future studies with larger longitudinal samples are needed to corrobate the present findings. Second, the measures of language input were based on primary caregivers' self-reports in personal interviews using semi-structured questionnaires. Answers may have been biased due to social desirability tendencies and to inaccuracies in rating the frequencies of particular language interactions at home. Observational measures of both the quantity and quality of the language input are needed to deepen understanding of the role of input in (bilingual) academic language development. Third, these children were only followed up to their entrance at primary school. Although results of a number of studies suggest that emergent academic language proficiency in kindergarten relates to later literacy development, a longitudinal follow-up is needed to investigate the interrelatedness of academic language proficiency and literacy attainment within as well as across languages. Longer term longitudinal designs and experimental studies are needed to enable multi-group latent growth modeling of how home language experiences with an academic register, patterns of language use, and academic language proficiency in L1 at school-entrance relate to immigrant children's academic language development in the language of schooling. A more detailed understanding of the ways in which immigrant children from diverse socio-cultural and linguistic backgrounds can be supported in their L2 academic language development is important to enhance language education practices and interventions.

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Appendix A.
Descriptives Productive Dutch Academic Language skills

	Dutch				Moroccan				Turkish			
	T1		T2		T1		T2		T1		T2	
Mcont	2.34	(0.54)	3.00	(0.66)	1.92	(0.50)	2.42	(0.44)	1.91	(0.52)	2.81	(0.59)
Nondeictic reference	.24	(.16)	.30	(.13)	.15	(.12)	.24	(.11)	.13	(.11)	.30	(.13)
Declarative mode	.78	(.22)	.90	(.14)	.66	(.20)	.84	(.17)	.71	(.15)	.87	(.09)
Elaborate verb use	.48	(.31)	.75	(.24)	.32	(.25)	.65	(.21)	.14	(.19)	.68	(.19)
Clause combining	.11	(.12)	.26	(.18)	.04	(.06)	.14	(.14)	.03	(.06)	.11	(.14)
Logical connectives	.02	(.03)	.04	(.04)	.00	(.01)	.03	(.02)	.01	(.02)	.03	(.03)
Textual cohesion	4.19	(1.36)	5.26	(1.40)	3.38	(1.28)	4.61	(1.10)	3.67	(1.66)	5.34	(1.20)
Abstraction level	2.85	(0.75)	3.26	(0.68)	2.65	(0.65)	3.17	(0.56)	2.47	(0.78)	3.30	(0.59)

T1 = Time 1, T2 = Time 2, Mcont= Mean content words per utterance.

Appendix B.
Descriptives Productive First Language Academic Language skills

	Dutch				Moroccan				Turkish			
	T1		T2		T1		T2		T1		T2	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Mcont	2.33	(0.66)	3.05	(0.69)	–	–	–	–	1.46	(0.40)	2.27	(0.53)
Nondeictic reference	.24	(.17)	.34	(.14)	–	–	–	–	.14	(.09)	.25	(.13)
Declarative mode	.69	(.28)	.84	(.17)	–	–	–	–	.54	(.21)	.81	(.16)
Elaborate verb use	.41	(.32)	.65	(.28)	–	–	–	–	.31	(.20)	.63	(.28)
Clause combining	.06	(.09)	.21	(.18)	–	–	–	–	.05	(.07)	.08	(.10)
Logical connectives	.01	(.01)	.03	(.03)	–	–	–	–	.00	(.01)	.00	(.01)
Textual cohesion	4.01	(1.66)	4.86	(1.10)	–	–	–	–	3.55	(1.00)	4.70	(1.47)
Abstraction level	2.62	(0.84)	3.18	(0.71)	–	–	–	–	2.43	(0.76)	2.70	(0.83)

T1 = Time 1, T2 = Time 2, Mcont= Mean content words per utterance

6

General Discussion

Chapter 6

INTRODUCTION

The present study was conducted to examine potential precursors of the persistent language delays of bilingual immigrant children. In line with Bronfenbrenner's bioecological approach (Bronfenbrenner & Morris, 1998), we hypothesized that children's language outcomes result from an interaction of distal and proximal environmental factors and child characteristics. More specifically, we assumed that immigrant children's dual language acquisition is affected by the socioeconomic (SES) and sociolinguistic context of their family via home language and literacy practices, as well as by their capacity to temporarily store verbal information. Moreover, we hypothesized that children's ability to use linguistic resources in their first language contributes to their second language acquisition (Cummins, 1991). Hence, to provide insight in the developmental delays of immigrant children, we compared the distal and proximal contexts, language learning abilities, and language outcomes of monolingual native Dutch, and bilingual Moroccan-Dutch and Turkish-Dutch children, speaking Dutch, Tarifit-Berber, a non-scripted language, and Turkish as their first language respectively. In addition, we investigated the assumption that inter-group differences in these factors lead to inter-group differences in language outcomes by examining the relationships between the different variables using structural equation modelling and regression analyses. Studying language input and language development in children from three ethnic-cultural groups that differ in language status and access to literate forms of their respective language allowed us to address how the sociolinguistic context alters patterns of language input (Bialystok, 2007a). Furthermore, assessing immigrant children's first as well as second language skills enabled us to examine cross-language transfer.

In this final chapter the main findings of the four empirical studies presented in this thesis will be summarized and further discussed. Additionally, strengths and limitations of the studies, recommendations for future research, and practical implications of the findings will be discussed.

STUDY OUTCOMES

Inter-group differences

An important finding was that, at start of the study, children's nonverbal fluid intelligence and verbal short-term memory were equal across the three ethnic-cultural groups. This finding is not coincidental, but replicates the results of another Dutch study within these ethnic-cultural communities, using different samples (Messer, Leseman,

Boom, & Mayo, in press). However, the groups differed strongly with regard to a number of contextual characteristics. First, there were considerable SES differences, with the Moroccan-Dutch families, on average, having the lowest SES and the Dutch families having the highest SES. The differences between the groups accurately reflect the present position of the Dutch, Moroccan-Dutch, and Turkish-Dutch communities in The Netherlands (Eldering, 1997; Gijsberts & Dagevos, 2009). The considerable inter-group differences in frequency of home language and literacy activities that we found with our sample mirrored SES differences: overall, Moroccan-Dutch three to six year old children least frequently experienced these language learning activities. Note, however, that by the time children enrolled primary school, the differences in *overall* exposure to literacy activities disappeared, as shown in chapter 5. Furthermore, as expected, Dutch children most frequently received first language (L1) input via literate and oral activities, and Moroccan-Dutch children least often. Although Turkish-Dutch children frequently engaged in language activities, they were least often exposed to Dutch (L2) language activities. Overall, it became clear that because of the need to divide available time for language learning over two (or more) languages, immigrant children received less exposure to language learning activities per language.

Group comparisons of children's language outcomes focussed on receptive vocabulary, narrative text comprehension and on their use of lexical, grammatical, and textual features of academic language in an impersonal narrative genre. In chapter four, we examined group differences in children's receptive vocabulary development, using multi-group latent growth modelling (LGM). Our results corroborate previous findings on bilingual children's dual language development (cf Hammer, Davison, Lawrence, & Miccio, 2009; Hoff, 2009). First, results showed that the bilingual children consistently scored below monolingual children on parallel L1 and Dutch vocabulary tests that were specifically constructed for research into bilingual development (Verhoeven, 2007). In addition, compared to their monolingual peers, bilingual children's L1 developed slower, but their Dutch vocabulary developed faster. However, despite the bilingual's relatively fast pace of Dutch vocabulary acquisition, they still lagged behind their monolingual peers at age six. Moreover, results of our fourth empirical study (chapter 5) revealed that these disadvantages were not limited to receptive vocabulary: Moroccan-Dutch and Turkish-Dutch six-year-olds scored below the Dutch mean on L1 and Dutch narrative production tasks, a L1 narrative comprehension task, and a Dutch morphosyntactic task.

Inter-group differences in L1 and L2 proficiency between the two bilingual groups to some extent reflected differences in patterns of language use these children experienced in their home context. Contrary to the Turkish-Dutch children, Moroccan-Dutch children were unable to tell narratives in their L1, despite the fact that their L1 receptive vocabulary skills barely differed from those of Turkish-Dutch children. Typically, children acquire their receptive vocabulary at an earlier stage than their expressive vocabulary and complex syntax skills (Hirsh-Pasek & Golinkoff, 1991; Marchman & Bates, 1994). Therefore, the more profound delays found in Moroccan-Dutch children's narrative production, that is, their ability to use expressive lexico-grammatical and textual skills, indicate that their L1 development lags behind that of the Turkish-Dutch. It seemed that Moroccan-Dutch children's L1 academic language production proficiency was insufficiently developed to deal with a narrative production task due to a lack of L1 literacy input. Furthermore, although Moroccan-Dutch children had a clear advantage in Dutch vocabulary and syntax skills, they did not surpass the Turkish-Dutch children in Dutch narrative skills. Moreover, they developed their Dutch narrative skills at a slower pace than the Turkish-Dutch children (Chapter 5). Taken together with the finding that Moroccan-Dutch children least often experienced oral and literacy activities, the explanation appears to be that Moroccan-Dutch children's relatively limited experience with academic language attenuates advantages caused by quantitatively more L2 input.

In sum, the findings of our group comparisons indicate that inter-group differences in language outcomes cannot be attributed to differences in children's domain-general ability to learning, but likely stem from differences in language input (Tomasello, 2000, 2003). In the next paragraph we will discuss the process through which socioeconomic and sociolinguistic factors impact children's (dual) language development via home language and literacy practices.

Language learning in context

The results of the four empirical studies of this thesis generally supported the hypothesis that home literacy, including oral and literacy activities within genres that afford the use of academic language (Price, Kleeck, & Huberty, 2009), indeed promotes children's receptive and productive academic language acquisition. More specifically, frequency of exposure to personal and impersonal narratives, through shared book reading, storytelling and personal conversations, predicted young children's ability to understand and use lexical, grammatical, and textual features of academic language in

impersonal and personal narratives (Chapter 3). In addition, in line with previous studies, these activities strongly impact *bilingual immigrant* children's L1 and L2 receptive vocabulary, at least in the language used during these interactions (Kalia, 2007; Leseman, Mayo, & Scheele, 2009; Patterson, 2002). However, within ethnic-cultural groups, these home language learning activities did not affect the rate of L1 and L2 receptive vocabulary development (Chapter 4). The children who had relatively low vocabulary scores at the first data collection developed their vocabulary at a faster rate, and vice versa. As results indicated, these low-achieving children experienced literacy activities less frequent than the children with a higher vocabulary. Thus, the enhanced vocabulary development of these children, for instance, due to increased sophisticated language input at school (cf Henrichs, 2010; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002), might have revealed the positive effects of language input on language development. In addition, the effects of input on slope might have been underestimated because we fixated the slope coefficients at zero at the first data wave (a conventional approach in longitudinal growth modelling), which caused part of the slope variance to be included in the intercept variance (cf Ven, Kroesbergen, Leseman, & Boom, submitted). Although the slope variance was statistically significant, this might have led to underestimation of the effects of language input on vocabulary slope.

Alternatively, the lack of association between input and slope in the present study could indicate that input exerts its influence on language acquisition rate at an earlier stage. The findings of our fourth empirical study stress the importance of early exposure to literacy activities. Results indicated that despite Moroccan-Dutch and Dutch children's equally frequent exposure to Dutch literacy activities at age 6, Moroccan-Dutch 6-years-old children's Dutch language proficiency lagged behind their monolingual Dutch peers, probably due to a lack of Dutch language and literacy experiences at a younger age (Chapter 5). In addition, a recent study on expressive language development in 18 to 36 months old children showed relations between socioeconomic status and rate of expressive language growth (Pungello, Iruka, Dotterer, Mills-Koonce, & Reznic, 2009). As SES generally relates to quantity and quality of language input (Farah et al., 2008; Hart & Risley, 1995; Hoff, 2006; Hoff & Naigles, 2002; Noble, McCandliss, & Farah, 2007; Pan, Rowe, Singer, & Snow, 2005), these findings indirectly demonstrated that early experiences with qualitatively rich language input is crucial to language development.

Our findings regarding the role of SES and in particular the contrast found between its impact on L1 and L2 development via patterns of language input deserves further

consideration. A considerable number of studies with monolingual children has shown that SES impacts children's language development via language input (see, for instance, Farah et al., 2008; Foster et al., 2005; Hart & Risley, 1995; Hoff, 2006; Leseman & Van den Boom, 1999; Leseman & Van Tuijl, 2006; Noble et al., 2007; Pan et al., 2005; Raviv, Kessenich, & Morrison, 2004). Our results regarding Dutch vocabulary development corroborated these findings, that is, SES was positively related to three to six-years olds' Dutch receptive vocabulary, a relation that was mediated by home oral and literacy activities (Chapter 2 and 4). However, in our bilingual sub-samples, SES was not related to L1 input. Moreover, SES even related negatively to L1 vocabulary development in the Moroccan-Dutch group (Chapter 4). Closer examination of the data indicated negative associations between SES and L1 use, which were particularly strong in the Moroccan-Berber group. This is in accordance with the findings of two recent studies on immigrant children's language acquisition (Duursma, Romero-Contreras, Szuber, Proctor, & Snow, 2007; Oller & Eilers, 2002).

A possible explanation for this negative association between SES and L1 use can be found in sociolinguistic factors such as language status and access to literacy (cf Pearson, 2007). In general, rapid acquisition of the dominant language (i.e. Dutch) is highly valued in The Netherlands (Extra & Vallen, 1997). Consequently, immigrant children's first language has a relatively low status. Parents are stimulated to learn Dutch as soon as possible to prevent educational delays of their children (Van der Laan, 2009). Higher educated parents have more opportunities to achieve this as they posses academic L1 skills, such as literacy, that facilitate L2 acquisition. Moreover, they can afford to follow Dutch language courses (if these are not already paid for by their employers) and, in contrast to the unemployed, frequently interact with Dutch-speaking colleagues. In addition, the Moroccan-Dutch parents who would like to familiarize their children with more formal, in particular literate language, have no other option than to fall back on Dutch, as their first language does not have a script. Therefore, the negative association between SES and Moroccan-Dutch children's L1 receptive vocabulary development can be explained by the unavailability of literate, academic forms of Tarifit-Berber.

The sociolinguistic context in which Turkish-Dutch children develop their L1 is quite different. Language maintenance is considered especially important in the Turkish immigrant community (Backus, 2005). Due to the overall higher level of education of Turkish-Dutch parents, mostly received in Turkey by the present sample, and the availability of examples of academic Turkish language use, such as in newspapers, books,

and picture books for young children, parents have more opportunities to facilitate their children's L1 academic language acquisition (Backus, 2005; Eldering, 1997; SCP, 2009). Our results showed that Turkish-Dutch parents indeed make use of these opportunities, as indicated by their more frequent use of L1 compared to the Moroccan-Dutch parents (Chapter 2, 4 and 5). As L1 input is positively associated with L1 acquisition, our finding that Turkish-Dutch parents provide more L1 input explains the less extensive loss of L1 among Turkish-Dutch children compared to their Moroccan-Dutch peers (Backus, 2005, Extra & Yagmur, 2009).

Moreover, from the results of the fourth study it can be tentatively deducted that Turkish-Dutch children's relatively high exposure to (L1) literacy activities indirectly supported their acquisition of L2 academic language as well: they acquired their L2 academic language skills at a faster rate than their Dutch and Moroccan-Dutch peers. This seems to indicate that Turkish-Dutch children's familiarity with literacy and their ability to use L1 skills when acquiring L2, indicated by cross-language associations between L1 and L2 academic language, can compensate, at least partly, for the reduced L2 language input they experienced due to their frequent exposure to L1 (Cummins, 1991). The finding that Turkish-Dutch children's exposure to L1 did not negatively affect their L2 academic language skills is not incidental, but reflects the findings of a related study of our lab that investigated the relation between these children's emergent mathematical ability and math talk (Leseman, Kroesbergen, Mayo, & Scheele, 2009). In addition, our results are in line with the finding of a recent study on Indian children's L2 oral language and literacy skills, which showed that high occurrence of L1 book reading compensated for low exposure to L2 (Kalia & Reese, 2009). We should, however, be aware of the fact that despite the faster pace of Dutch academic language development of the Turkish-Dutch children, the differences with regard to Dutch monolingual children's academic language proficiency were still considerable. Furthermore, it remains uncertain whether Turkish-Dutch children's high initial rate of development continues and if it will eventually lead them to fully make up their language disadvantages. Unfortunately, results of a national monitor on immigrant primary school children's language performance suggest this is not the case (Gijsberts & Dagevos, 2009).

In sum, in this paragraph we discussed how monolingual and bilingual children's language development is affected by the socioeconomic (SES) and sociolinguistic context of their family via patterns of language use and home literacy practices. In the next paragraph we will discuss the mechanism of cross-language transfer.

Cross-language transfer

The results of our empirical studies indicated positive cross-language transfer effect of skills built up in L1 on the acquisition of skills in L2, thereby confirming the linguistic interdependence hypothesis (Cummins, 1991). This transfer was not restricted to the semantic level, but involved more complex linguistic structures and academic use of language as well, as was shown in chapter 5. Moreover, the cross-language relation remained significant even when the effects of socioeconomic status, second language literacy input, and children's verbal short-term memory skills were taken into account. Multiple regression analyses showed positive cross-language relations between L1 and L2 receptive and productive academic language skills at age 6. To the best of our knowledge, there is only one study that similarly controlled for contextual as well as cognitive factors when examining transfer. In this study, 179 Turkish-Dutch children were tested on a range of L2 phonological, semantic, morphosyntactic and textual skills, and L1 semantic and morphosyntactic skills (Verhoeven & Vermeer, 2009). Their findings showed that after controlling for children's cognitive skills and L2 exposure, L1 did not significantly predict L2. In several respects, our fourth study differed from this study. First, the children that were included in our study were one year older and had experienced ample L2 exposure in school in order to profit form their L1 in acquiring L2 (cf. Cummins, 1991). The Turkish-Dutch children included in Verhoeven and Vermeer's study, were tested just upon entrance at primary school and their Dutch language skills substantially lagged behind their L1 skills. Perhaps, the children in Vermeer and Verhoeven's study had experienced *too little* L2 input to facilitate transfer. Second, following Schleppegrell (2004), we focussed on transfer of academic language comprehension and production in narrative tasks and the L1 and L2 composite scores included similar variables.

Interestingly, although the immigrant children involved in our study were second language learners that were predominantly exposed to L1 at home at the start of the study, their L2 receptive vocabulary and academic language proficiency equalled or even surpassed their L1 language skills at age six. In this respect our findings differ from a number of studies that did not find indications of cross-language transfer of lexical, grammatical, and narrative skills in *balanced* bilingual children aged two to six (Bialystok, 2007c; Bialystok & Herman, 1999; Conboy & Thal, 2006; Simon-Cereijido & Gutiérrez-Clellen, 2009). Note that the children involved in those studies experienced L1 as well as L2 input at home from a young age. Consequently, they were more balanced in

their bilingualism at an earlier age than the children involved in our study, who were second language learners that experienced limited L2 input before they entered primary school. Possibly, transfer is more eminent in case of second language acquisition than in balanced bilingual acquisition. However, this needs to be further investigated.

Several authors have argued that children's L1 proficiency should be sufficiently developed in order to facilitate transfer (August, Carlo, et al., 2006; Butler & Hakuta, 2004; Cummins, 1979; 2000; Elbers, 2010). Our studies seem to support the argument that the differences in L2 academic language development between Moroccan-Dutch and Turkish-Dutch children can be explained by differences in their opportunities to use linguistic resources in the first language as support for acquiring a second. Results of our study seem to indicate that Moroccan-Dutch children faced difficulties in the achievement of L1 academic language because of the lack of experience with rich and elaborate L1 literacy input, caused by the unavailability of books in Tarifit-Berber. We therefore suggest that Moroccan-Dutch children were unable to catch-up with their monolingual Dutch peers in L2 academic language because their limited knowledge of an academic register in L1 which limited the support of L1 for acquiring L2. This is in accordance with the hypothesis that children's L1 should be sufficiently developed to enable transfer.

CHALLENGES AND FUTURE DIRECTIONS

It should be noted that the results of our studies should be interpreted cautiously as there are a number of limitations. Our sample size was quite small and might have left some relationships between variables unnoticed as they failed to reach statistical significance. For instance, the relatively small slope variance of vocabulary development possibly led to an underestimation of the effects of SES and language input on vocabulary slope (see Chapter 4). Furthermore, some of the inter-group differences might have been obscured due to the limited sample size. In addition, the fairly small sample size of the three ethnic-cultural groups limited the number of variables that could be included in the structural equation models. Therefore, we decided not to include verbal short-term memory as a control variable in the structural models on cross-language transfer but to focus on the division of L1 and L2 input instead (see Chapter 2 and 4). As a consequence, the cross-language transfer in the final structural models we constructed could be partly due to children's capacity to store verbal information. Nevertheless, results of our fourth study indicated L1 to L2 transfer effects even when controlling for children's verbal short-term memory capacity. In addition, we decided to average the home language input

through either reading or oral language activities across the four measurement occasions in order to reduce data. Although the construct was relatively stable, as indicated by moderate to strong intercorrelations across measurement times, effects of developmental shifts in language input patterns on language development could not be detected. Larger scale longitudinal studies are needed to allow for longitudinal examination of transfer while controlling for both contextual as cognitive factors, as well as modelling developmental trends in language input and its effect on language development.

A further limitation might be that home language and literacy practices were measured by primary caregivers' self-reports in personal interviews and, therefore, vulnerable to inaccuracies in rating the frequencies of particular language interactions and social-desirability response tendencies. However, self-report is widely used in studies on the impact of language input on children's language development, and a great number of studies have demonstrated significant positive associations between self-reported literacy activities and children's language outcomes (c.f. Deckner, Adamson, & Bakeman, 2006; Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005; Rodriguez et al., 2009; Sénéchal & LeFevre, 2002; Sonneschein & Munsterman, 2002). Moreover, reported parental book reading frequency positively associates with parental recognition of children's storybook titles, and diary and observational assessments of the home literacy environment (cf. Farver, Xu, Eppe, & Lonigan, 2006).

Another limitation of questionnaire data is that it only provides indications of frequency of qualitatively rich language input and no objective assessment of the quality of language input. However, our results on the questionnaire data can be corroborated by linguistic in-depth studies with sub samples of the DASH research project. In these studies, parent-child shared book reading and personal conversations were analysed to enhance understanding of the role of academic language input in academic language acquisition. Their findings indicated that parents' lexical diversity, grammatical complexity, and rate of nonpresent talk are the most saliently influencing language characteristics of importance for children's academic language production skills (cf. Henrichs, 2010, p. 249). These features of academic language are typically present in shared book reading, oral storytelling, and personal conversations about past events, that is, the variables that we included as indicators of proximal processes that foster language development (Beals, 1997, 2001; Beals & Snow, 2002; Curenton, Craig, & Flanigan, 2008; Deckner et al., 2006; Gauvain, 2001; Haden, Haine, & Fivush, 1997; Hoff & Naigles, 2002; Price et al., 2009; Weizman & Snow, 2001; Snow & Beals, 2006).

Furthermore, as observational studies indicate that children who receive most language input also receive the *kind of language input* that is most effective for language learning, e.g., language input characterised by lexical diversity, complex syntax, and cohesive discourse, our results provide indirect evidence for the hypothesis that experience with the academic register is crucial to academic language acquisition (Gee, 2001; Hart & Risley, 1995; Hoff & Naigles, 2002). Nonetheless, further longitudinal linguistic in-depth studies are needed to strengthen this tentative conclusion.

The present study focused only on the primary caregiver's language input, always the mother in the present sample. Fathers were not involved, because we anticipated that being interviewed by female assistants might be perceived as a violation of cultural and religious customs for some of the parents in the immigrant groups. For future research it might be desirable to include additional language input measures, for instance provided by peers, daycare teachers, and older siblings, as previous studies have indicated that they play an important role in language acquisition as well (Bridges & Hoff, 2009; Duursma, Pan, & Raikes, 2008; Huttenlocher et al., 2002).

Finally, our data collection finished when the children entered primary school. Although results of a number of studies suggest that bilingual children's language proficiency in kindergarten relates to later literacy development and school achievement (Guglielmi, 2008; Kieffer, 2008), a follow-up is needed to investigate the interrelatedness of academic language proficiency and literacy attainment within as well as across languages. In addition, longer term longitudinal designs and experimental studies are needed to provide a stronger basis for causal inferences about the role of language input in academic language acquisition. Longitudinal in-depth studies would allow for multi-group latent growth modeling of how home language experiences with an academic register, patterns of language use, and academic language proficiency in L1 at school-entrance impact immigrant children's academic language development in the language of schooling.

We will conclude this discussion chapter with some practical implications that follow from our findings. At age 3, Moroccan-Dutch and Turkish-Dutch immigrant children in general have similar language learning abilities as their Dutch peers (Chapter 3). However, due to limited early language and literacy experiences, they consistently lack behind in L1 and L2 language skills. Whether or not these children should be supported in L1, L2 or a combination of both is widely debated by researchers, educationalists, and policymakers. In The Netherlands, educational support for minority languages has been

recently abandoned, as it is assumed that support for L1 will harm the development of L2. In addition, parents are stimulated to learn and use Dutch as soon as possible in order to prevent language disadvantages in their children (Van der Laan, 2009). In this final paragraph we will discuss how our findings add to the discussion regarding the impact of language choice on language development.

Results of our studies reveal two opposite mechanisms: time spent on L1 takes away time on L2 but, if sufficiently supported, provides children with linguistic tools and semantic knowledge that support L2 acquisition. In chapter 5 we investigated the effect of language use during shared book reading on Turkish-Dutch 6-year-olds' L2 academic language production. Our findings suggest that experience with sophisticated L1 input partly compensates the adverse effects of a division of time on two languages via facilitation of L1 to L2 cross-language transfer: Turkish-Dutch children managed to decrease their Dutch academic language disadvantage compared to their monolingual Dutch peers. Results showed that Turkish-Dutch children's Dutch academic language proficiency was not associated with parental use of Turkish during shared book reading, whereas parental use of Dutch was negatively associated with the children's Turkish academic language proficiency. Moreover, once they were exposed to a substantial Dutch language input due to their entry at kindergarten, their academic language skills developed at a faster pace than those of their Moroccan-Dutch peers, who had limited overall experience with literacy activities but were relatively more often exposed to L2 shared book reading due to the higher percentage of Dutch language use by Moroccan-Dutch primary caregivers. This seems to suggest that Turkish-Dutch children's relatively fast rate of academic language development results from their familiarity with the academic register through L1 literacy experiences.

Note, however, that the children were assessed over a limited time-period, and initial advantages in acquisition rate may not hold over time. Our findings suggest that children must sufficiently develop their academic language skills in L1 in order to profit from these skills when acquiring their L2 academic language (Cummins, 2000; Elbers, 2010). This implies that children need to acquire L2 and simultaneously need to further develop their L1 in order to continue to profit from their L1 knowledge and skills. It remains uncertain whether Turkish-Dutch children actually will be able to do so. Findings of studies comparing teachers' and parental use of academic language features indicated that teachers used lexical, grammatical, and textual features of academic language considerably more frequent than parents did (Henrichs, 2010). Furthermore, at age 6,

Turkish-Dutch parents used L2 during book reading more frequently than L1. Therefore, it seems unlikely that Turkish-Dutch children will continue to develop their L1 at a similar rate as their L2, and thus might not be able to further benefit from their L1. In fact, our findings suggest that Turkish-Dutch children developed their L2 academic language skills at a higher rate than their academic language skills in L1 (Chapter 5). Hence, L1 support for L2 academic language acquisition may become limited as children grow older and become more dominant in L2 (c.f. Swanson, Rosston, Gerber, & Solari, 2008).

Nevertheless, our results suggest that supporting Turkish-Dutch parents in adapting L1 use to the changing needs of their children, that is encouraging them to familiarize their children with academic language use, along with sufficient exposure to the majority language at school, may be a viable strategy to provide a basis for enduring transfer which will lead to partial compensation of the loss of exposure time on Dutch. In addition, supporting parents in providing sophisticated language input may result in a more balanced bilingualism, which brings about cognitive advantages, such as enhanced metalinguistic awareness and executive control, as well as socio-emotional advantages within the context of their family (Bialystok, 2007b; Bialystok & Feng, 2009; Bialystok & Senman, 2004; Bialystok & Viswanathan, 2009; Davidson, Raschke, & Perez, 2009; Kim, 2009; Kohnert et al., 2005; Kovelman, Baker, & Petittio, 2008; Luo, Luk, & Bialystok, 2009; Xuereb, 2009). Interestingly, a Dutch family-focussed intervention program was effective in enhancing 4 to 6 years-old Turkish-Dutch children's L1 vocabulary and syntactic development via increased parental home language and literacy activities in L1 *without impeding L2 acquisition* (Leseman, & Van Tuijl, 2001). This is in line with our finding that L1 use during storybook reading was not negatively associated with Turkish-Dutch children's L2 academic language proficiency. It should be noted, however, that for the resources for provision of Tarifit-Berber academic language input are limited. Therefore, it seems unlikely that Moroccan-Dutch parents will be able to continuously provide sufficiently elaborate L1 input in order to facilitate balanced bilingualism and enduring transfer.

Results of the present thesis indicate which type of language activities should be targeted by interventions in order to foster academic language acquisition: activities that afford the use of linguistic features of academic language, such as storytelling, shared book reading, and personal conversations (see chapter 3). Family interventions that target immigrant children's language disadvantages should try to increase parental use of a rich vocabulary, complex and information dense sentences, and semantically interconnected

discourse via stimulation of shared book reading, storytelling, and of conversations about personal experiences (Golova, Alario, Vivier, Rodriguez, & High, 2009; Hoff & Naigles, 2002; Huttenlocher et al., 2002; Weizman & Snow, 2001). However, it must be taken into consideration that not all immigrant parents have the ability to provide their children with sophisticated language input, as many of them might have attained only a basic level of education and illiteracy rates are high (Elbers, 2010). For Moroccan-Dutch families of Berber descent, provision of L1 literacy is barely possible, as Tarifit-Berber does not have a written script. Therefore, special programs need to be designed to overcome the limited early exposure to literacy input. Provision of L1 and L2 interactive electronic storybooks, voiced by the computer and supplemented with sounds, video animation, and music, could be an effective strategy to familiarize immigrant children with literacy in L1 as well as L2. Research has shown that exposure to L2 multimedia books enhances immigrant children's L2 vocabulary, narrative comprehension and production (Verhallen, Bus, & De Jong, 2006). However, the effect of early experiences with electronic storybooks in L1 has not yet been studied.

GENERAL CONCLUSIONS

Despite equal domain general abilities for learning and positive cross-language L1 to L2 transfer of lexical-grammatical and textual skills, Turkish-Dutch and Moroccan-Dutch three to six year old children persistently scored below the monolinguals on first and Dutch language assessments. The main outcomes of this thesis reveal that low-SES bilingual immigrant children's language delays stem from limited exposure to language specific literacy and oral language activities due to the division of time spent on these activities over two languages. Inter-group differences in language input patterns are related to background characteristics, including the status of the minority languages involved, and explained a substantial part of the differences in children's language proficiency.

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Samenvatting

(Summary in Dutch)

Door de wereldwijd toenemende migratie groeien steeds meer kinderen tweetalig op. Dit stelt hoge eisen aan hun taalontwikkeling: om zowel op school als thuis goed te kunnen functioneren moeten ze twee talen beheersen. Vooral de school context vraagt veel van hun taalvaardigheid, omdat kinderen daar kennis verwerven over abstracte onderwerpen, zoals aardrijkskunde, biologie en geschiedenis. Onderzoek heeft uitgewezen dat migrantenkinderen al op jonge leeftijd achterlopen in hun taalontwikkeling: de achterstand ontstaat al in de voorschoolse periode en wordt gedurende de basisschoolperiode niet volledig ingehaald.

Het doel van dit proefschrift was om meer inzicht te verkrijgen in de achtergrond van de taalachterstand van tweetalige migrantenkinderen. We hebben ons specifiek gericht op de ontwikkeling van die aspecten van taalvaardigheid die bijdragen aan een succesvolle participatie in kennisoverdracht op school: zogenaamde schooltaalvaardigheid. Schooltaal verwijst naar een register van taal dat speciaal bedoeld is voor informatieoverdracht via mondelinge en schriftelijke communicatie in formele instructiesituaties. Omdat de taalachterstand van migrantenkinderen zich over het algemeen al vroeg manifesteert, waren we in het bijzonder geïnteresseerd in de ontwikkeling van de taalvaardigheid bij 3- tot 6-jarige kinderen. Om te kunnen onderzoeken of de hardnekkige taalachterstand van migrantenkinderen terug te voeren is op sociaaleconomische en sociolinguïstische omgevingskenmerken selecteerden we gezinnen uit drie ethnisch-culturele groepen die verschilden in sociale status van hun eerste taal en toegang tot geschreven taal: Nederlandse, Marokkaans-Nederlandse en Turks-Nederlandse gezinnen. Aangezien het merendeel van de Marokkaans-Nederlandse gezinnen in Nederland Tarifit-Berber als eerste taal spreekt, richtten we ons op die gezinnen die thuis Tarifit-Berber spreken. Bovendien vormt deze taal een interessant contrast met het Turks, omdat het van oudsher een orale taal is waarvoor nog geen wijdverbreid schrift bestaat dat in scholen wordt onderwezen. Het Turks is wel een geschreven taal en kent een lange academische en literaire traditie. Turkse ouders in Nederland kunnen door de aanwezigheid van Turkse prentenboeken in principe hun kinderen in de moedertaal voorlezen. Marokkaans-Nederlandse ouders hebben deze mogelijkheid niet.

Na vergelijking van de sociaal-economische status van de gezinnen, het taalgebruik in de gezinnen, het voorkomen van allerlei vormen van mondelinge en geletterde taalactiviteiten en de taalontwikkeling van de kinderen, onderzochten we de samenhang tussen deze factoren met behulp van structurele modellen en regressieanalyses.

Hierdoor konden we nagaan in hoeverre verschillen in taalontwikkeling verklaard kunnen worden uit verschillen in taalaanbod. Daarnaast controleerden we of de kinderen uit de verschillende culturele groepen verschilden in domein algemeen (taal)leervermogen, met name verbaal korte termijngeheugen en non-verbale intelligentie. Bij onderzoek naar de taalontwikkeling van tweedetaalverwervers is het van belang ook rekening te houden met de mogelijkheid dat de eerste taal de verwerving van de tweede taal beïnvloedt. Om dit na te gaan hebben we ook de relatie tussen de eerste en tweede taal onderzocht.

Aan het onderzoek deden 58 Nederlandse, 46 Marokkaans-Nederlandse en 55 Turks-Nederlandse 3- tot 6-jarige kinderen en hun ouders mee. De deelnemers werden geworven via deur-tot-deur werving door studentassistenten met dezelfde culturele achtergrond als de te werven gezinnen, aan de hand van adressenlijsten die de gemeenten Utrecht en Tilburg hadden verstrekt. Er vond ook nog een kleine, aanvullende werving plaats via peuterspeelzalen in Amsterdam. Gedurende een periode van 3 jaar zijn de deelnemende gezinnen op verschillende momenten thuis bezocht. Tijdens deze bezoeken zijn interviews afgenomen met de primaire verzorger van het kind en is een batterij instrumenten afgenomen bij de kinderen. Om de taalvaardigheid te onderzoeken die van belang is voor succes op school, namen we een genormeerde receptieve woordenschattaak af die speciaal ontwikkeld is voor het meten van de *schoolwoordenschat* van tweetalig opgroeiende kinderen. Er waren naast de Nederlandse versie, ook een Turkse en Tarifit-Berber versie van de test beschikbaar. De woorden van de test zijn woorden waarvan leerkrachten hebben aangegeven dat ze belangrijk zijn voor succesvolle deelname in het basisonderwijs en voor het begrip van schoolvakken. Daarnaast namen kinderen deel aan drie taken die ontwikkeld waren om het gebruik van ‘schooltaal’ te stimuleren. In deze taken lieten we de kinderen verhalen vertellen aan de hand van een prentenboek, een zelf meegemaakte gebeurtenis dicteren ten behoeve van het schrijven van een brief voor een dierbare, zoals de grootmoeder van het kind, en een handpop aan de hand van een foto instructies geven voor het bouwen van een blokkenconstructie met Duplo. De video opnames van deze taken zijn naderhand gebruikt om het taalgebruik van de kinderen te coderen op het voorkomen van lexicale, grammaticale en tekstuele aspecten van schooltaal: het gebruik van lexicale verdichtingstrategieën, expliciete plaats- en tijdverwijzingen, samengestelde zinsstructuren met logische voegwoorden om complexe betekenissen te kunnen uitdrukken en middelen om de semantische samenhang tussen zinnen te creëren en om de opbouw van een betoog te structureren. Door middel van semi-gestructureerde interviews met de moeders werd informatie verkregen over het taalaanbod

in het gezin en ander gezinskenmerken. De migrantenouders gaven daarbij ook aan in welke taal deze activiteiten plaatsvonden.

In *Hoofdstuk 2* onderzochten we de verschillen in en de relatie tussen taalactiviteiten en receptieve woordenschat bij 3-jarige Nederlandse, Marokkaans-Nederlandse en Turks-Nederlandse kinderen aan de hand van structurele vergelijkingsmodellen (SEM). Ondanks gelijke nonverbale intelligentie, scoorden de Nederlandse kinderen hoger op een Nederlandse woordenschattest dan de migrantenkinderen op woordenschattests in het Nederlands en in hun eerste taal. Het taalaanbod thuis, in zowel de eerste als tweede taal, werd bepaald door middel van interviews met de moeders, met aandacht voor de frequentie van voorlezen, het voeren van gesprekken en vertellen van verhalen. De structurele modellen lieten sterke effecten zien van taalspecifiek aanbod op receptieve woordenschat. Dit gold zowel voor de eerste als de tweede taal. Tevens werden in een apart structureel model voor de migrantengroepen aanwijzingen gevonden voor *competitie* tussen aanbod in de eerste en de tweede taal, evenals aanwijzingen voor een positieve beïnvloeding van opgebouwde kennis in de eerste op de tweede taal, oftewel *transfer*.

In *Hoofdstuk 3* onderzochten we mogelijke genrespecifieke relaties tussen de thuistaalomgeving en de ontluikende schooltaalvaardigheid van 3-jarige Nederlandse kinderen in de genres persoonlijk en onpersoonlijk narratief en in het instructie genre. Hierbij werd de receptieve en productieve schooltaalvaardigheid van de kinderen gemeten met behulp van geprotocolliseerde taken. De receptieve schooltaalvaardigheid van kinderen werd vastgesteld aan de hand van hun antwoorden op vragen over een voorgelezen prentenboek (onpersoonlijk narratief), een voorgelezen brief van de handpop aan zijn fictieve oma, waarin hij een persoonlijk meegemaakte gebeurtenis beschrijft (persoonlijk narratief), en het volgen van instructies voor het bouwen van een vogel met plastic Duplo® stenen (instructietaak). De productieve schooltaalvaardigheid in het genre *onpersoonlijk narratief* werd vastgesteld aan de hand van twee subtaken: het navertellen van het voorgelezen verhaal en het zelf bedenken en vertellen van een verhaal aan de hand van een prentenboek. Daarnaast stelden we de productieve schooltaalvaardigheid in het genre *persoonlijk narratief* vast door de kinderen een brief over een zelf meegemaakte gebeurtenis te laten dicteren aan de handpop, die dit zichtbaar voor het kind opschreef. Ten slotte werd de schooltaalvaardigheid in een *instructiegenre* in kaart gebracht door de kinderen de in de receptieve taak opgebouwde Duplo® vogel af te laten breken en stap voor stap aan de handpop uit te laten leggen.

De kinderen gebruikten de meeste kenmerken van schooltaalvaardigheid tijdens het (na)vertellen van een verhaal, het genre onpersoonlijk narratief. Ze hadden het meest moeite met het volgen en geven van de instructies voor het bouwen van een vogel: ze scoorden lager op de receptieve instructietaak, gaven vaak korte, veelal deictische instructies en gebruikten minder kenmerken van schooltaal in vergelijking met de narratieve genres. Een regressieanalyse toonde aan dat het thuistaalaanbod specifiek voorspellend was voor het verhaalbegrip en gebruik van schooltaal in de genres persoonlijk en onpersoonlijk narratief, dat wil zeggen, aanbod in deze genres voorspelde specifiek de receptieve en productieve vaardigheid in deze genres. Echter, de resultaten van het instructiegenre waren minder eenduidig: thuistaalaanbod in dit genre hing wel samen met het volgen van instructies (receptief), maar niet met het gebruik van schooltaal tijdens het geven van instructies (productief). Uit deze bevindingen kan worden afgeleid dat ouders hun kinderen al vroeg kunnen voorbereiden op het gebruik van schooltaal op school door activiteiten te ondernemen die kinderen bekend maken met schooltaal, zoals prentenboeken voorlezen, het voeren van gesprekken over meegemaakte gebeurtenissen, het praten over kennisonderwerpen en het vertellen van verhalen.

Hoofdstuk 4 betrof een longitudinale studie naar de effecten van de thuistaalomgeving op de ontwikkeling van de receptieve woordenschat van de Nederlandse, Marokkaans-Nederlandse en Turks-Nederlandse kinderen. Er waren gegevens van vier meetmomenten beschikbaar. De resultaten lieten zien dat de Nederlandse kinderen op alle meetmomenten aanzienlijk hoger scoorden op de Nederlandse woordenschattest dan de tweetalige migrantenkinderen, die ook wat betreft de woordenschat in hun eerste taal beduidend achterbleven. Om de voorspellende waarde van omgevingsfactoren op taalontwikkeling vast te kunnen stellen onderzochten we de associaties tussen de sociaal-economische status van de gezinnen, de thuistaalomgeving en de woordenschatontwikkeling van de kinderen met behulp van structurele latente groeimodellen (LGM). We vonden dat de mate waarin ouders in een bepaalde taal voorlezen, persoonlijke gesprekken voeren en verhalen vertellen inderdaad sterk samenhangt met het *niveau* van woordenschat van hun kinderen, maar het taalaanbod was niet gerelateerd aan de *groei* van de woordenschat. Wat betreft relaties tussen de eerste en de tweede taal lieten de analyses zien dat het *niveau* van de eerste taal voorspellend is voor het *niveau* van de tweede taal, maar dat er geen relatie is tussen de *groei* in beide talen.

In *Hoofdstuk 5* onderzochten we de ontwikkeling van de schooltaalvaardigheid van de Nederlandse, Marokkaans-Nederlandse en Turks-Nederlandse kinderen, met speciale

aandacht voor het verband tussen de schooltaalvaardigheid in de eerste en de tweede taal. Voor deze studie maakten we gebruik van de gegevens van 54 Nederlandse, 38 Marokkaans-Nederlandse en 54 Turks-Nederlandse kinderen, met metingen op de leeftijd van 4;3 jaar en de leeftijd van 5;11 jaar. Om de receptieve en productieve schooltaalvaardigheid te meten lieten we kinderen vragen over een voorgelezen prentenboek beantwoorden en het voorgelezen verhaal aan een handpop navertellen aan de hand van de plaatjes in het prentenboek.

Het onderzoek liet zien dat de frequentie van voorlezen samenhing met de mate waarin kinderen in de verteltaak kenmerken van schooltaal gebruikten. De resultaten toonden verder aan dat academisch gebruik van de eerste taal in migrantengezinnen significant samenhing met de schooltaalvaardigheid van de kinderen *in de eerste taal*, maar niet met hun schooltaalvaardigheid in het Nederlands, en dat academisch gebruik van het Nederlands in het gezin (weinig frequent) evenmin de schooltaalvaardigheid in het Nederlandse kon voorspellen. Turks-Nederlandse kinderen werden het minst vaak blootgesteld aan Nederlands in de thuisomgeving, terwijl Marokkaans-Nederlandse kinderen thuis het minst in aanraking kwamen met hun eerste taal. De Nederlandse kinderen scoorden hoger op de Nederlandse schooltaaltaken dan de migrantenkinderen op de schooltaaltaken in het Nederlands en in de eerste taal. De Marokkaans-Nederlandse en Turks-Nederlandse gebruikten in ongeveer gelijke mate schooltaal in de Nederlandse naverteltaak. Het merendeel van de Marokkaans-Nederlandse kinderen slaagde er echter niet in om een verhaal in hun eerste taal, het Tarifit-Berber, na te vertellen, terwijl de Turks-Nederlandse kinderen bij de naverteltaak in het Turks wel kenmerken van schooltaal gebruikten. Een groepsvergelijking liet zien dat de Turks-Nederlandse kinderen zich het snelst ontwikkelden in Nederlandse schooltaalvaardigheid. Meervoudige regressie analyses toonden aan dat schooltaalvaardigheid in de eerste taal samenhangt met schooltaalvaardigheid in de tweede taal, ook na het controleren voor effecten van de sociaal-economische status van het gezin, het taalaanbod in het Nederlands en het verbaal korte termijn geheugen van de kinderen.

Samengevat draagt dit proefschrift bij aan een beter begrip van de achtergrond van de vroege taalachterstanden van migrantenkinderen in Nederland. Het thuistaalaanbod dat migrantenkinderen ervaren hangt samen met de sociale status van hun eerste taal en de toegang tot geletterde en meer formele mondelinge activiteiten in die taal. Marokkaans-Nederlandse ouders kunnen hun kinderen niet in hun eerste taal, het Tarifit-Berber, voorlezen omdat de taal geen wijdverbreid schrift heeft. Turkse ouders kunnen dit wel.

We zagen dan ook aan de ene kant frequenter gebruik van de eerste taal, het Turks, in de Turkse gezinnen en aan de andere kant een grotere mate van Nederlands taalaanbod in de Marokkaanse gezinnen. Door de verdeling van een beperkte hoeveelheid beschikbare tijd voor taalactiviteiten over twee talen ervaren tweetalige kinderen per taal minder aanbod dan eentalige kinderen. De Marokkaans-Nederlandse en Turks-Nederlandse kinderen scoorden daardoor stelselmatig lager op taaltests in eerste taal, maar ook op equivalente tests in het Nederlands dan de Nederlandse kinderen, ondanks gelijke nonverbale intelligentie en de positieve transfer van opgebouwde kennis in de eerste taal op de tweede taal.

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Pan, thank you very much for taking time to talk about my work. Monica, thanks for helping me to find my way around in Boston. I especially enjoyed our weekend trip! Deirdre, our Bostonian landlady, what a wonderful and cosy house you have. You have the ability to make people feel at home instantly and make them roll over with laughter.

De collega's van de onderzoeksgroep en mede-aio's wil ik ook hartelijk danken voor de prettige samenwerking en gedachtenwisseling. Annika, je bent een vrolijke noot in het Langeveldgebouw, met jouw droge humor krijg je me vaak aan het lachen! Linda, als kamergenootjes hebben we niet alleen veel van elkaars promotietraject meegemaakt, maar ook persoonlijke ervaringen gedeeld. Zo heb ik ook je huwelijk met Wolfgang in het pittoreske Elburg mogen bijwonen. Succes met de vervolmaking van je proefschrift! Mirjam, als stagiaire ben je nauw betrokken geweest bij de ontwikkeling van een verkort DASH codeerschema om de data te kunnen verwerken en heb je heel wat uren van de Nederlandse interacties gecodeerd. Bedankt voor je inzet en je gezellige aanwezigheid! Ook de scriptiestudenten en codeurs wil ik hierbij graag hartelijk danken voor de uren dat ze geduldig in het videolab of achter de laptop de filmfragmenten omtoverden in te analyseren data.

Annemarie en Marielle, mijn tot paranimf gebombardeerde metgezellen. Annemarie, heerlijke zwier, krachtvrouw, wat fijn dat je naast me staat. Marielle, we vormden een hecht duo op de Uithof. Onze associatieve gesprekken bleven niet beperkt tot het onderwerp van ons proefschrift maar bestreken bijvoorbeeld ook relationele verwikkelingen, de wonderlijke werking van het brein, en de deels ondoorgrondbare binnenwereld des medemens. Onze uitstapjes op congresbezoeken brachten bizarre en heugeniswaardige taferelen met zich mee, zoals een wel zeer schaars geklede doch volledig onschuldig nachtelijk rondhuppelende Bamberger en een toekomstvoorspellende en serenade tentoonspreidende Afro-Amerikaanse dame in een oude aftandse jazz-kroeg in Harlem, New York. Marielle, naast deze plezierige momenten hebben we beide ook ervaren dat een promotietraject met een intensieve en longitudinale dataverzameling een zware kluif is. Wat een feest dat het ons gelukt is deze te verorberen. Ik zie er naar uit om straks bij je verdediging ook aan jouw zijde te staan. Yes, we can!

Lieve vrienden, familie en schoonfamilie. Dank voor jullie warmte, steun en bemoedigende woorden! Moeders, naar het schijnt heb je me met het vertellen van je zelfverzonnen levendige avonturen van Fienemientje en Jacquelientje voorbereid op academisch taalgebruik. Vaders, jouw zakelijk inzicht en managementtips kwamen me bijzonder goed van pas. Wat leuk dat ik in 't Zeeuwsche over mijn onderzoek mocht

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Amsterdam, april 2010

Curriculum Vitae

Anna Scheele was born in Oostburg on December 14, 1978. She graduated from high school (Athenaeum, Zeldenrustcollege in Terneuzen) in 1997. From 1997 to 1998 she studied Medical Biology at the Free University of Amsterdam. Thereafter, from 1998 to 2004, she attended the University of Amsterdam and obtained a master's degree in Pedagogical Sciences and a minor degree in International Development Studies. In 2004, she started a PhD project at the Research Centre 'Development and Education of Children with (Mild) Cognitive and/or Motor Disability' of Utrecht University. From 2004 to 2009 she worked on her dissertation about mono- and bilingual children's academic language development and presented her work at several national and international conferences. In April 2009, she visited Prof. dr. Catherine E. Snow at Harvard University, where she attended research meetings and presented her work.