Growing up with Frisian and Dutch: The role of language input in the early development of Frisian and Dutch among preschool children in Friesland

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2 Language input and bilingual language proficiency

In line with the theme of this dissertation, this chapter explores literature concerning early bilingual language development (§ 2.1). Next, previous studies in early language acquisition in the Frisian-Dutch context are described (§ 2.2). The role of language input in the early bilingual development of vocabulary (§ 2.3) and morphosyntax (§ 2.4) is addressed, followed by a section on the relation between morphosyntax and lexicon within and across languages (§ 2.5). The chapter ends with the construction of the two conceptual models (§ 2.6) with our expectations of the outcomes of the studies, and the research questions and hypotheses (§ 2.7).

2.1 Early bilingual language development

It is estimated that about half of the world population is bilingual or multilingual (Appel & Vermeer, 2000). In bilingual language acquisition, a distinction is often made between simultaneous and successive language acquisition. In simultaneous language acquisition children are regularly exposed to both languages from birth onwards (Yip & Matthews, 2007; Genesee, Paradis & Crago, 2004; Appel & Vermeer, 2000). In successive language acquisition, children start learning a second language after the acquisition of the first language has already begun. Children are therefore already familiar with some structures of their first language before the development of the second language starts (Yip & Matthews, 2007; Genesee et al., 2004; Appel & Vermeer, 2000). Some studies take the age of three years as a cut-off point (Genesee et al., 2004; Appel & Vermeer, 2000; McLaughlin, 1978) to mark the distinction between these two categories of bilingualism, while other studies tend to set this point at an older age, e.g. five (De Houwer, 2009). While acknowledging the important differences in these two types of bilingual acquisition, Yip and Matthews (2007) view the two extremes, i.e. simultaneous and successive acquisition, as part of a continuum rather than as a dichotomy. Furthermore, even within simultaneous language acquisition, many different input contexts are possible. For example, instead of from birth onwards, the second language may
be introduced at daycare before the age of three. De Houwer (2009) therefore suggests a distinction within the concept of simultaneous acquisition between ‘bilingual first language acquisition’ in which the child is regularly exposed to language A and B from birth onwards, and ‘early second language acquisition’ in which the child is regularly exposed to language A and the exposure to language B begins at a later age, e.g. at 1;6 years.

The studies in the current project comprised children from families where predominantly only one language was spoken by the parents, i.e. either Frisian or Dutch (see § 3.2). It is a question of debate whether these children are simultaneous or successive language learners. As stated in § 1.3, many children with Frisian as their home language are also exposed to Dutch from birth onwards, e.g. through Dutch television and radio, Dutch-speaking relatives or friends, at daycare, etc. This exposure may thus be regular, although not always in the form of interpersonal communication. Consequently, they undergo some kind of simultaneous acquisition of both languages, often with an unbalanced bilingual language input, i.e. with substantially more input in Frisian than in Dutch. Also young children with Dutch at home who grow up in a mostly Frisian or bilingual language context outside their home and family are likely to experience an unbalanced input in both languages. In line with De Houwer (2009), one might call these two groups of children early second language learners. In contrast, some children with Dutch as their home language may have exposure to the Frisian language for the first time only at preschool or even later. If they are then sufficiently exposed to Frisian so that they acquire Frisian as a second language, these children would then fall into the category of successive language learners.

For reasons of clarity, it is important to mention that in this dissertation the term L1-Frisian refers to Frisian acquired as a first language by children. Thus, L1-Frisian children refer to children who have Frisian as their home language. Additionally, regardless whether this group of L1-Frisian children learns Dutch simultaneously, or whether they are early second language learners of Dutch, the term L2-Dutch is used to refer to Dutch as a second language. The same goes for the term L1-Dutch that refers to Dutch as the home language, and L2-Frisian that is used to refer to Frisian as second language.

Whether children grow up as bilinguals largely depends on the language patterns and language choice of parents for their children (De Houwer, 2007). De Houwer (2007) showed that if one or both parents used the non-majority language at home, the chance of their children speaking both languages was high. As stated in § 1.1, language input is crucial for language acquisition.
Within language input, it seems that home language is more influential than, for example, school language (Gathercole & Thomas, 2009). The role of home language in vocabulary and morphosyntax is further discussed in respectively § 2.3 and § 2.4.

The language input outside the home and family may differ from the home language, e.g. the language at preschool or at daycare may be different to the one used at home. The input from preschool teachers is relevant in language development. For example, Huttenlocher, Vasilyeva, Cymerman and Levine (2002) revealed that there is a relation between the syntactic input of preschool teachers and the syntactic growth of children. Bowers and Vasilyeva (2011) confirmed this relation between teacher input and preschoolers’ language. They stressed the role of teacher input for both monolingual and bilingual preschoolers: young bilinguals needed short simple sentences with a high number of basic words that were repeated several times in order to increase their vocabulary, whereas the number of different words in the teacher’s speech was important for the vocabulary growth of their monolingual peers. Further, Hickey (1997) showed that the quality of Irish spoken by the preschool teachers was directly linked to the Irish proficiency of the preschoolers. In addition, Deunk (2009) argues that teachers play an important role in situations in which they stimulate children to use language at the preschool. Because children use language when participating in these activities, the teachers may also affect the development of that language use. The current project divides the participants’ language input into home language and outside home exposure. The home language refers to the interactional input from the parents. The outside home exposure refers to the interactional input from caregivers other than the parents, e.g. grandparents, preschool teachers, daycare providers, etc. (see also § 3.2).

Although the development of both languages in bilinguals usually follows the same path as that of a monolingual in each language (e.g. Gathercole & Hoff, 2007; Genesee et al., 2004; Pearson & Fernández, 1994; De Houwer, 1990), the rate of development in both languages of bilinguals is often slower compared to monolinguals (e.g. Gathercole, Thomas & Hughes, 2008; Pearson et al., 1997). In studies where bilinguals’ proficiency is compared to that of monolinguals, bilinguals are often found to lag behind (a.o. Hoff et al., 2012; Thordardottir, 2011; Gathercole et al., 2008). This is not surprising considering the fact that the bilingual language proficiency of young children largely depends on the amount of language input they receive in each language (Unsworth, 2012; Thordardottir, 2011; Yip & Matthews, 2006). Unlike
monolinguals, the input of bilingual children is divided between two languages. Clearly their input in each of their languages will be less than that of monolingual children receiving input in only one language (Thordardottir, 2011).

Several studies indicate that a critical mass of input in a second language is needed for the acquisition of that language (e.g. Thordardottir, 2011; Gathercole & Thomas, 2009; Gathercole & Hoff, 2007; Gathercole, 2002; Oller & Eilers, 2002; Pearson et al., 1997). For example, Gathercole and Thomas (2009) use the critical mass in input as an explanation for the catch-up in English by L1-Welsh and L1-Welsh-English bilinguals. Pearson et al. (1997) suggest a 20% input as being the minimum amount of input in the second language needed for development, at least in the productive domain. In contrast, Thordardottir (2011) showed that in productive vocabulary more than 60% of L2-input was needed before the performance in productive vocabulary was similar to the corresponding monolingual group. For receptive vocabulary, this percentage was 40%. The difference in percentages between the two studies can be explained by the fact that the 20% L2-input of Pearson et al. (1997) is the minimum input needed to get the L2-development efficiently started, while Thordardottir’s (2011) percentages refer to the minimum amount of input needed for mastering the L2 at the same level as monolinguals.

Language input is not the only factor that contributes to (bilingual) language development. Other factors are also important, for example the intelligence of children (a.o. Paradis, 2011; DeThorne & Watkins, 2006; Tellegen, Winkel, Wijnberg-Williams & Laros, 2005b; Hickey, 1997; Genesee & Hamayan, 1980). Cognitive skills, such as nonverbal reasoning, were found to be important predictors of individual differences in kindergarten children acquiring French as a second language (Genesee & Hamayan, 1980). Paradis (2011) confirmed these results in a more recent study among children at the age of 4;10-7;0 years learning English as a second language. Paradis’ study showed that analytic reasoning was a significant predictor for vocabulary as well as for verb morphology in English. These studies show that intelligence should always be considered in research on bilingualism. The results in the current research will thus be controlled for this variable.

Before discussing prior research with respect to the influence of language input on vocabulary (§ 2.3) and morphosyntax (§ 2.4), the next section (§ 2.2) will first describe previous studies on early language acquisition in the Frisian-Dutch context.
2.2 Previous studies on early language acquisition in the Frisian-Dutch context

Until now, little research has been done on the language development of the young Frisian bilingual child. Although several studies have been conducted with school-aged children, only a few have focused on preschool-aged children. One study is a non-academic descriptive case study of a young girl aged between 1;3-6;0 years old, growing up in the 1960s in Friesland (Boelens, 1974a, b, c, d, e, f). In his study, Boelens focused on the girl’s Frisian language development, although her first Dutch words, her differentiation between the two languages and her language choice in different situations are also mentioned. Because this study is based on parental notes, and the parents had no linguistic background, this description is fragmental and anecdotal in nature.

Ytsma (1999) studied the Frisian and Dutch language proficiency of children in their first year of primary education (age 4-5 years). The participants were tested at the beginning and at the end of that first year in both Frisian and Dutch, while taking their home language into account. The children were tested with respect to phonological knowledge, receptive vocabulary, productive vocabulary, syntax and text comprehension. A standardized Dutch battery of tests was translated and adapted to Frisian for this purpose. The L1-Frisian children showed significant growth in all Frisian measures. In addition, apart from the Dutch phonological test, they also showed significant growth in the Dutch measures. The L1-Dutch children also showed significant progress in Frisian, with the exception of Frisian productive vocabulary. However, their growth in Frisian was substantially smaller, compared to the growth in Dutch of the L1-Frisian children. Ytsma (1999) therefore concluded that the second language (i.e. Dutch) of Frisian-speaking children was further developed than the second language (i.e. Frisian) of children with Dutch as their first language. The children using Frisian as their home language seemed therefore more balanced bilinguals than their peers with Dutch as their home language. Ytsma’s (1999) results were confirmed by Jongbloed (2005). She compared the active vocabulary of L1-Frisian children, L1-Dutch children and children from families where one parent used Frisian and the other Dutch (L1-Frisian-Dutch). She assessed children in their first year of primary education (age 4-5 years) with a self-developed vocabulary test. Children saw a picture and had to say the appropriate word, first in Dutch than in Frisian. In each language, two attempts for giving the correct response were allowed. The L1-Frisian children and the L1-Frisian-Dutch (bilingual) children knew significantly more words
in Frisian compared to the L1-Dutch children. In contrast, there were no significant differences in Dutch between the three groups.

In 2008 a frequency-based study was conducted on the Frisian morphosyntax of young children between 1;9-4;3 years old (Dijkstra, 2008). The study resulted in a Frisian version of the English language instrument LARSP (Crystal, Fletcher & Garman, 1989), providing an overview of the order in which Frisian morphosyntactic language structures emerge. Comparison with one of the Dutch versions of LARSP (Schlichting, 2005c) revealed that, in general, both languages showed similar acquisition of morphosyntactical structures, although there are some language-specific differences. It is beyond the scope of this dissertation to give a detailed description of these differences (see Dijkstra (2008) for an overview).

As briefly discussed in § 1.1, other studies were conducted with older children in primary education, i.e. research that investigated their Frisian proficiency (Ytsma, 1995) and educational studies by de Jager et al. (2002a, b, c) and van Ruijven (2006) that looked at Dutch proficiency in primary education. Ytsma (1995) conducted a cross-sectional study with L1-Frisian children (N=208) and L2-Frisian (L1-Dutch) children (N=202). The participants were in their fifth (age 8-9 years) or eighth year (age 11-12 years) of primary education. They were assessed in five linguistic features of Frisian, i.e. breaking (phonologic feature), diminutive formation (morphological feature), je-verb conjugation (morphological feature), lexical knowledge (lexical feature), and verb-raising (syntactic feature). It must be noted, however, that Ytsma (1995) always restricted his analyses to the effect of age, gender and language environment within the L1-Frisian group and the L2-Frisian group separately and did not compare the proficiency between the L1-Frisian and L2-Frisian children with each other. Lexical knowledge was tested with a self-developed productive vocabulary test. Results showed that the L1-Frisian children obtained a mean score of 31.9 points on this vocabulary test, which was close to the maximum of 34 points. In contrast, the L1-Dutch children had a mean score of 18.2 points. The lexical knowledge of this last group also varied considerably. In general they knew few Frisian words. Some of them failed to name even one single Frisian word, whereas others had acquired quite an extended vocabulary in Frisian. The lexical knowledge of L1-Dutch children clearly increased when their language environment was more Frisian. As for the two morphological features, Ytsma (1995) found similar results: the L1-Frisian children scored close to the maximum score, whereas the L2-Frisian children scored substantially lower. The test for verb-raising showed that both groups scored equally low. Ytsma (1995) attributed this last result to
the fact that verb-raising might be subject to language change due to language
contact with Dutch. Although Ytsma (1995) never compared the proficiency
between the L1-Frisian and L2-Frisian children with each other, it is a clear ob-
servation from his study that home language plays an important role in Frisian
proficiency, particularly with respect to Frisian productive vocabulary.

Van Ruijven (2006) conducted an educational study in which children’s
performance in Dutch and math in fourth year of primary education (age 7-8
years) were investigated, using data from de Jager et al. (2002a, b, c). Dutch
was assessed in 1076 pupils with a standardized educational test (Taalschaal
E4, CITO). This test assesses Dutch morphology, syntax, function words and
vocabulary. Her study showed that the children in the fourth year of primary
education scored slightly above the average scores of their peers in the rest of
the Netherlands.

This overview of studies in language acquisition in the Frisian-Dutch
context shows that to date, there is no study investigating bilingual input and
language proficiency among preschool-aged children. Studies with older chil-
dren (aged four years or older) have shown that home language seems to be
important in the development of Frisian, whereas it does not play a significant
role in Dutch after the age of seven or eight. For the L2-Frisian development,
the language environment was important, i.e. the L1-Dutch children had
higher scores on the Frisian productive vocabulary test when their language
environment involved more Frisian.

2.3 The role of language input in the early bilingual
development of vocabulary

Input is crucial in vocabulary development (Unsworth, 2012; Dixon, 2011;
Thordardottir, 2011; Dixon, 2011; Bohman et al., 2010; Quiroz et al., 2010;
Gathercole & Thomas, 2009; Duursma et al., 2007; Hoff & Naigles, 2002;
Weizman & Snow, 2001; Nicoladis, 1998; Hickey, 1997; Pearson et al., 1997;
Huttenlocher, Haight, Bryk, Seltzer & Lyons, 1991). From the perspective of
minority-majority language contexts, studies show that especially in the de-
velopment of the minority language, the home language(s) of children play(s) an
important role, for example in the vocabulary development of Irish (Hickey,
1997) or Welsh (Gathercole & Thomas, 2009). Hickey (1997) tested bilingual
preschoolers in Irish-medium preschools in Irish receptive and productive
vocabulary. Her study showed that home language was an important factor
in both receptive and productive vocabulary. Children growing up in Irish-only homes (N=13) significantly outperformed children from bilingual Irish-English homes (N=46) in both Irish receptive and productive vocabulary. Furthermore, participants from bilingual homes obtained significantly higher scores in Irish productive vocabulary compared to participants from English-only homes (N=165). Only in Irish receptive vocabulary were no differences found between participants from bilingual homes and English-only homes. In other words, children who had more Irish exposure at home obtained higher scores on the vocabulary tests. Similar results were found by Gathercole and Thomas (2009) for Welsh receptive vocabulary referring to several studies in the Welsh-English context (Gathercole et al., 2008; Gathercole & Thomas, 2005; Gathercole, Thomas & Laporte, in preparation). These studies demonstrated that children who received higher input in Welsh at home had a stronger command of Welsh receptive vocabulary, compared to their peers with low Welsh language input.

In addition, school language, i.e. whether children attended a bilingual-medium schools or a Welsh-medium school, did not have an effect on Welsh receptive vocabulary in any of the age groups (3-5;6, 6-8, 8;6-11 years). Furthermore, Hickey (1997) showed that the community language of the children did not play a substantial role in Irish receptive vocabulary, i.e. the children living in districts where Irish was the main community language did not differ significantly in Irish receptive vocabulary from children from English-speaking districts. Regarding productive vocabulary in Irish, an effect was found for the community language, with children from Irish-speaking districts outperforming children from English-speaking districts.

As for the development of the majority language, the influence of home language decreases as children grow older (Gathercole & Thomas, 2009). Although home language was important in the age group 3-5;6 years, with L1-English and L1-Welsh-English children outperforming the L1-Welsh children, its influence on the development of English receptive vocabulary decreased over time. In the oldest age group (8;6-11 years), no effect of home language was found. There was no effect found for school language in the first two age groups (3-5;6 and 6-8 years). However, school language appeared to play a large role in the oldest age group (8;6-11 years), with children from bilingual-medium schools outperforming those from Welsh-medium schools in English receptive vocabulary. Gathercole and Thomas (2009) argue that this catch-up in English might be explained by the fact that the L1-Welsh children reach a critical mass of English input in primary education.
Gathercole and Thomas’ findings with regard to the catch-up in English were contradicted in a later study by Rhys and Thomas (in press). Rhys and Thomas investigated vocabulary in both English and Welsh among L1-Welsh and L1-Welsh-English pupils following Welsh-medium primary education and compared their results with the English performance of a monolingual control group following English-medium education in Wales. The L1-Welsh and L1-Welsh-English participants in their study did not show a catch-up in English as in the Gathercole and Thomas study. On the contrary, L1-Welsh and L1-Welsh-English participants (age 10-11 years) still performed more than one standard deviation below average according to the monolingual norms of the English vocabulary test, while their L1-English and monolingual English peers scored within the age-appropriate ranges. Since the participants of both studies lived in the same area in Wales, the authors do not have a solid explanation for the discrepancies found.

However, while in the Welsh-English context the L1-Welsh and L1-Welsh-English children showed a catch-up in English after the age of nine (Gathercole & Thomas, 2009) or later (Rhys & Thomas, in press), the Frisian studies indicated that in the Frisian-Dutch context this catch-up seems to occur slightly earlier, i.e. by the age of seven or eight (van Ruijven, 2006; de Jager et al., 2002a, b, c). This slightly earlier catch-up might be explained by the fact that Frisian and Dutch are closely related languages, while Welsh and English are less closely related. Frisian and Dutch have, for example, considerable overlap in vocabulary and morphosyntax, which might facilitate the earlier catch-up in Dutch for children with Frisian as their home language.

The catch-up in the majority language may also be explained by other factors than receiving a critical amount of L2-input. Other moderating variables such as language status and language attitude may also play a role. However, it seems impossible to measure the language status or language attitudes of preschool-aged children toward Frisian or Dutch; they are too young to indicate whether they think one language has a higher prestige, or whether they prefer one language over the other. An alternative would be to observe the participant’s language use in different situations since language use is regarded as an aspect of language attitude (Baker, 1992). However, not using the second language does not necessarily unify a negative attitude towards that language; it might also suggest that these young children are not yet proficient enough to feel confident in using the L2. The possible moderating variable of language attitude is therefore not studies in the current project.
As stated in § 2.1, the rate of development in a bilingual’s two languages is generally slower than the developmental rate for a monolingual. An alternative for obtaining two separate vocabulary scores for bilinguals, i.e. one in each language, is the use of a conceptual vocabulary score (Pearson, 1998; Pearson, Fernández & Oller, 1993). This score focuses on the concepts known by the bilingual child, i.e. if the bilingual knows a word and a translation equivalent, both of these words are counted only once as a doublet. Each singlet is also counted, so the result is a conceptual vocabulary score reflecting the number of concepts that are lexicalized in one or both languages within the bilingual (Pearson, 1998). The conceptual vocabulary scores of Spanish-English bilinguals were similar in size to the vocabulary score of the Spanish and English monolinguals (Pearson et al., 1993). Although these findings were confirmed by research with German-English bilinguals (Junker & Stockman, 2002), Thordardottir, Rothenbergh, Rivard and Naves (2006) found contradicting results. The conceptual vocabulary scores of their French-English bilinguals did not reach monolingual normal reference ranges. Thordardottir et al. (2006) claimed that this discrepancy was due to a difference in participant selection. Pearson et al. (1993) and Junker and Stockman (2002) included children from highly variable bilingual backgrounds whereas Thordardottir et al. (2006) only included children with balanced input between both languages. Although the conceptual vocabulary score seems a reliable measure for measuring general language development in bilinguals, it was not used within the vocabulary study of the current project, since the focus of this study was on vocabulary growth in both languages separately, i.e. the vocabulary growth in Frisian, next to the vocabulary growth in Dutch. Instead, the vocabulary scores of the two languages were used to measure the effect of language input on each language score separately. Furthermore, a bilingual’s language input in one language may be restricted to certain context-specific lexicons, e.g. at home, while the other language is mainly used in other contexts, e.g. at preschool. Consequently, bilingual children often develop different contextual lexicons in both languages. If some words are part of a bilingual’s vocabulary in one language and if these concepts are not yet acquired in the other language, i.e. these words do not have translation equivalents in the other language, we speak of a ‘distributed characteristic’ (Oller, Pearson & Cobo-Lewis, 2007; Oller, 2005; Oller & Pearson, 2002). It is important to keep this distributed characteristic in mind when testing bilingual children. Some test items may elicit incorrect responses while they would have elicited correct responses in the other language. This distributed characteristic and bilinguals’
lower amount of input in the target language are important reasons why the results of young bilinguals on language tests cannot simply be compared to monolingual norms. In the current study we will therefore not compare the test results with the standardized monolingual norms for Dutch. Instead, we will focus primarily on the vocabulary growth in both languages.

To summarize, both receptive and productive vocabulary largely depend on language input. There is an effect of home language in receptive vocabulary in the minority language (Gathercole & Thomas, 2009; Hickey, 1997). The home language effect decreases in the development of the receptive vocabulary in the majority language (Gathercole & Thomas, 2009). Regarding productive vocabulary, there was an effect for home language in the minority language (Hickey 1997).

Furthermore, no effect for school language (Gathercole & Thomas, 2009), or for community language (Hickey, 1997) was found in the receptive vocabulary development in the minority language. Conversely, school language had an effect on the receptive vocabulary development in the majority language (Gathercole & Thomas, 2009). Additionally, there was an effect found for community language (Hickey, 1997) in the productive vocabulary development in the minority language.

### 2.4 The role of language input in the early bilingual development of morphosyntax

Language input is not only important in vocabulary development, it also influences the morphosyntactic development whether measured as inflectional morphology, gender-marking, sentence imitation, or mean length of utterance (MLU) (Hoff et al., 2012; Unsworth, 2012; Hadley, Rispoli, Fitzgerald & Bahnsen, 2011; Bohman et al., 2010; Paradis, 2011; Gathercole & Thomas, 2009; Cornips & Hulk, 2008; Gathercole & Hoff, 2007; Huttenlocher, Vasilyeva, Waterfall, Vevea & Hedges, 2007; Yip & Matthews, 2006; Gathercole, 2002; Huttenlocher et al., 2002, Oller & Eilers, 2002; Hart & Risley, 1992; Wells, 1985). However, the role of language input seems to be different in morphosyntax than in vocabulary as shown by Bohman et al. (2010). They explored the relationship between language input, language output and several measures for vocabulary and morphosyntax in English and Spanish among young bilinguals in the United States. They demonstrated that input was highly related to these language measures. Whereas vocabulary mostly relied on input,
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morphosyntax, in their study operationalized as the development of inflec-
tional morphology, relied on both input and output. These findings were con-
firmed by Unsworth (2012) who showed that input as well as the amount of
English that the children spoke themselves was important in the acquisition of
English inflectional morphology and vocabulary of Dutch-English bilinguals
in the Netherlands. Input in Dutch was further found to be a significant pre-
dictor of Dutch gender-marking in these children (Unsworth, 2012).

Gathercole and Thomas (2009) summarized various studies on mor-
phosyntactic structures or features in Welsh (Gathercole & Thomas, 2005;
Gathercole, Laporte & Thomas, 2005; Gathercole et al., in preparation). Home
language appeared to be influential in the development of Welsh, resulting in
L1-Welsh children outperforming L1-English children and L1-Welsh-English
children performing inbetween those two groups. School language also af-
fected abilities to some extent, i.e. the children in Welsh-medium education
outperformed the children in bilingual education. This was particularly true
for the L1-English children.

From the perspective of a minority-majority context, home language
seems important in the development of morphosyntactic structures in Welsh.
An additional effect is found for school (Gathercole and Thomas, 2009). No
studies are available for the majority language though, at least not in the Irish-
English or Welsh-English context.

2.5 The relation between morphosyntax and vocabulary
within and across languages

Although not directed linked to input, the relation between morphosyntax
and vocabulary is an interesting aspect in early language development. Sev-
eral studies confirm the existence of a strong relation between morphosyntax
and lexicon whether assessed by parental reports or on the basis of spon-
taneous speech (a.o. Trudeau & Sutton, 2011; Simon-Cereijido & Gutiérrez-
Clellen, 2009; Stolt, Haataja, Lapinleimu & Lehtonen, 2009; Conboy & Thal,
2006; Szagun, Steinbrink, Franik & Stumper, 2006; DeThorne, Johnson &
Loeb, 2005; Devescovi, Caselli, Marchione, Pasqualetti, Reilly & Bates, 2005;
Marchman, Martínez-Sussmann & Dale, 2004; Thordardottir, Weismer &
Evans, 2002; Ukrainetz & Blomquist, 2002; Bates & Goodman, 1997; Rollins,
Snow & Willett, 1996). This finding indicates that both language compo-
nents influence each other and that they are interdependent and therefore
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inseparable (Bates & Goodman, 1997). In early language development, children do not begin to combine words until their vocabulary reaches several hundreds of words (see Bates & Goodman, 1997). The interdependence between morphosyntax and vocabulary supports the assumption of a single language mechanism (Tomasello, 2003). Support for the relation between morphosyntax and vocabulary has been found within several languages, e.g. in Quebec French (Trudeau & Sutton, 2011), Finnish (Stolt et al., 2009), German (Szagun et al., 2006), English and Italian (Devescovi et al., 2005), English and Spanish (Marchman et al., 2004), and Icelandic (Thordardottir et al., 2002).

During language development, the child’s utterances consist of more and different words, i.e. new content words and new function words. The lexical diversity within the child’s speech in a speech sample is often expressed as the number of different or unique words (NDW). Mean length of utterance (MLU) is widely used as a measure for morphosyntax. MLU is known to be strongly related to NDW (Simon-Cereijido & Gutiérrez-Clellen, 2009; Conboy & Thal, 2006; DeThorne et al., 2005; Marchman et al., 2004; Ukrainetz & Blomquist, 2002; Rollins et al., 1996). Ukrainetz and Blomquist (2002) reported a high correlation between mean length of utterance in morphemes (MLUm, see § 3.3.5) and NDW ($r=.88$, $p<.01$). DeThorne et al. (2005) confirmed this strong relation ($r=.75$, $p<.01$). Moreover, the regression analysis in their study supported the influence of lexical development on MLUm: NDW alone accounted for 51% of the observed variance in MLUm.

The strong relation between morphosyntax and lexicon within languages was also found in bilingual acquisition. Marchman et al. (2004) compared spontaneous speech samples of 22 Spanish-English bilingual toddlers living in the United States. They found strong significant within-language correlations between mean length of utterance in words (MLUw, see § 3.5.5) and NDW (Spanish: $r=.92$, $p<.001$; English: $r=.85$, $p<.001$). This strong relationship was confirmed by Conboy and Thal (2006) and Simon-Cereijido and Gutiérrez-Clellen (2009). Conboy and Thal (2006) used multilevel modeling to analyse the relation between vocabulary measures and morphosyntactic measures retrieved from the Spanish and English MacArthur-Bates Communicative Development Inventories (CDI), an instrument that is based on parental reports, among 31 Spanish-English bilinguals while they were aged between 20- to 30-months old. Their longitudinal study showed that within each language the increase in vocabulary from 20 to 30 months accounted for significant variance in the grammatical scores. Simon-Cereijido and Gutiérrez-Clellen (2009) investigated correlations between morphosyntax and vocabulary among 44 bilingual
Spanish-English preschool and school-aged children. Their study showed that MLUw and NDW were significantly correlated within each language (Spanish $r=.71, p<.001$; English: $r=.64, p<.001$).

Although there is a strong relation between expressive measures of morphosyntax and vocabulary, i.e. MLU and NDW, the relation between MLU and receptive vocabulary seems to be less strong. In the study of Ukrainetz and Blomquist (2002), the relation between MLU and a receptive vocabulary test was moderately positive ($r=.36, p<.05$). DeThorne et al. (2005) did not find a significant relation between MLU and the scores of a receptive vocabulary test ($r=.17, p>.05$). Additionally, the relation between NDW and receptive vocabulary test was low and non-significant ($r=.26, p>.05$). DeThorne et al. (2005) proposed that the expressive measures, such as MLU and NDW, are also affected by additional skills, e.g. oral motor abilities, whereas receptive abilities are not.

Studies on the cross-linguistic relations between morphosyntax and vocabulary among bilinguals show different findings. Marchman et al. (2004) found a relation between English MLUw and Spanish NDW (English MLUw and Spanish NDW: $r=.55, p<.05$). However, this relation was absent in the opposite direction (Spanish MLUw and English NDW: $r=.34, p>.05$). Conboy and Thal (2006) went against the cross-linguistic outcomes of Marchman et al. (2004). They found a relation between Spanish grammar and English vocabulary only. Their study showed that the number of new words produced in English in the last test round, i.e. the increase in English vocabulary between 28-30 months, accounted for additional variance in Spanish grammar. In addition, Simon-Cereijido and Gutiérrez-Clellen (2009) found no significant correlations across the two languages (English MLUw and Spanish NDW: $r=.18, p>.05$; Spanish MLUw and English NDW: $r=.15, p>.05$). They argued that the lack of cross-linguistic correlations between bilingual lexicon and grammar in their study might be associated to other variables influencing lexical and morphosyntactic development in bilinguals, i.e. variables that they did not control for in their cross-sectional study. Simon-Cereijido and Gutiérrez-Clellen (2009) proposed the use of longitudinal methods to examine these relations further.

Within languages there is a strong relationship between morphosyntax and vocabulary, especially between MLU and expressive vocabulary measures such as NDW or productive vocabulary scores. The relation between MLU and receptive vocabulary is less strong. The results regarding cross-linguistic relationships between morphosyntax and vocabulary are contradicting.
If a cross-linguistic relation is found, it is in one direction only. In Frisian-Dutch speaking children, the relation between morphosyntax and vocabulary has not yet been investigated. Such a study contributes to the debate on the relations between these two language components within and across languages.

2.6 Conceptual models

Two conceptual models were developed, based on the literature described in the previous sections (§ 2.2-§ 2.5). The first model concerns our expectations with respect to the influence of language input and the second model focuses on the expected relation between morphosyntax and vocabulary in Frisian and Dutch.

As discussed in § 2.3 and § 2.4, language input is one of the most important factors in bilingual language development. In any bilingual context, the quantity of input in each language varies. This especially applies to the input in a context where one language is dominant over the other, such as minority-majority language contexts. In Friesland, children growing up with Frisian at home are often far more exposed to Dutch, compared to the exposure to Frisian of children who have Dutch as their home language (see § 1.3). Therefore, the current project divides language input into input at home, i.e. home language, and input outside the home and family (from here on also called outside home exposure) for the purpose of investigating the influence of both input variables in the total input of children in Friesland Dutch (see § 3.2 for a detailed description of the quantification of these two variables).

The current project assesses participant’s bilingual language proficiency in three vocabulary measures and one morphosyntactic measure for each language. The vocabulary measures are receptive vocabulary, productive vocabulary, and number of different words (NDW) (see § 3.5.2, § 3.5.3, and § 3.5.4 respectively). The morphosyntactic measure is mean length of utterances in words (MLUw) (see § 3.5). These four language measures are the dependent variables within this project.

Figure 2.1 illustrates the conceptual model in which the assumed relation between dependent and independent variables is shown.
According to prior studies, there seems to be an asymmetry in the effect of home language on the minority language and the majority language (see § 2.3 and § 2.4). Home language is important in receptive vocabulary in the minority language (Gathercole & Thomas, 2009; Hickey, 1997), whereas its influence decreases over time in receptive vocabulary in the majority language (Gathercole & Thomas, 2009). Although home language was still important among four-year-olds (Gathercole & Thomas, 2009) in Welsh, due to the slightly earlier catch-up in Dutch (van Ruijven, 2006; de Jager et al., 2002a, b, c) compared to English in the Welsh-English study (see § 2.3), we expect that for Dutch the decreasing trend of home language also sets in earlier. As the arrows in Figure 2.1 show, it is therefore expected that a home language effect will be found for Frisian receptive vocabulary, but not for Dutch receptive vocabulary. In line with Hickey (1997) it is further expected that a home language effect will be found for Frisian productive vocabulary. No prior studies for productive vocabulary in the majority language were found in the Irish-English or Welsh-English context. In the Frisian-Dutch context, van Ruijven (2006) and de Jager et al. (2002a, b, c) showed that children in Friesland showed equal performance in Dutch compared to their peers in the rest of the Netherlands (see § 2.2). However, these studies were conducted among older children (age 7–8 years). At the preschool ages (2;6–4;0 years), we expected that we would still find a home language effect in Dutch productive
vocabulary among our participants. No prior studies were found on the role of home language in NDW. However, since NDW is also a measure in the productive domain, similar results are expected for NDW and productive vocabulary. Home language was important in the acquisition of Welsh morphosyntactic structures (Gathercole & Thomas, 2009). In line with this finding, we also expected to find an effect for home language on Frisian MLUw. This was supported by the general observation that children with Dutch at home hardly speak Frisian (see § 1.3), in contrast to the children with Frisian as their home language. They do speak Dutch. In line with that observation, it is expected to find a decreased effect for home language in Dutch MLUw, as in productive vocabulary.

As for the influence of outside home exposure on receptive vocabulary, we expect to find no additional outside home exposure effect for Frisian, in line with the findings of Gathercole and Thomas (2009) and Hickey (1997). In line with Gathercole and Thomas (2009), an additional effect of outside home exposure is expected for Dutch receptive vocabulary. Hickey (1997) found an effect for community language in Irish productive vocabulary. Furthermore, language environment also seemed to play a role in the L2-acquisition of Frisian with older children (Ytsma, 1995). Thus, an additional effect of outside home exposure was also expected for Frisian productive vocabulary. There is no literature available on the influence of outside home exposure on the development of the productive vocabulary in the majority language. However, since an additional effect of outside home exposure is expected for Dutch receptive vocabulary, we expect a similar effect for Dutch productive vocabulary. With respect to Welsh morphology, school language seemed to play a role to some extent (Gathercole & Thomas, 2009). It was therefore expected that outside home exposure would also play a role in Frisian MLUw. Since NDW and MLUw are measures in the productive domain, we expect similar findings on the influence of outside home exposure on Dutch NDW and MLUw as for Dutch productive vocabulary. As for the Frisian NDW, an effect on outside home exposure is expected as with Frisian productive vocabulary.

The second model presents our expectations with respect to the relationship between morphosyntax and vocabulary within and across Frisian and Dutch. The model is displayed in Figure 2.2.
In line with previous studies (a.o. Trudeau & Sutton, 2011; Simon-Cereijido & Gutiérrez-Clellen, 2009; Stolt et al., 2009; Conboy & Thal, 2006; Szagun et al., 2006; DeThorne et al., 2005; Devescovi et al., 2005; Marchman et al., 2004; Thordardottir et al., 2002; Ukrainetz & Blomquist, 2002; Rollins et al., 1996), a strong relation is expected between morphosyntax and vocabulary within languages. As discussed in § 2.5, prior studies did not show a consistent cross-linguistic relation between the morphosyntax and vocabulary. Marchman et al. (2004) found a relation between English MLUw and Spanish NDW, however not in the opposite direction. In contrast, Conboy and Thal (2006) found a relation between Spanish grammar and English vocabulary only. Simon-Cereijido and Gutiérrez-Clellen (2009) found no significant correlations across the two languages. In line with Simon-Cereijido and Gutiérrez-Clellen (2009), we expect that there will be no cross-linguistic relations between the two language components in the current study. The next section (§ 2.7) will discuss the research questions and hypotheses.


2.7 Research questions and hypotheses

As stated in § 2.6, the current project investigates the role of language input, i.e. home language and outside home exposure, in the development of a vocabulary and morphosyntax in both Frisian and Dutch among preschoolers (age 2;6-4;0 years). Little is known about the early bilingual language development of Frisian-Dutch preschoolers (see § 2.2). It is the general observation that before they enter preschool, children in Friesland had most of their exposure in their home language. When they start preschool, their world broadens. From that moment on, some of them will learn to interact for the first time in a language other than the one spoken at home. This means that it is important to measure their abilities more than once during the preschool period so that their progress in both languages can be monitored. Since intelligence also influences language development (see § 2.1), all vocabulary and morphosyntactic measures will be controlled for non-verbal intelligence.

The first research question focuses on the vocabulary development in both languages and is formulated as follows:

1 What is the influence of language input, i.e. home language input and outside home exposure, in the development of a bilingual (Frisian/Dutch) vocabulary of children living in Friesland, during the age range 2;6-4;0 years?

 Twelve hypotheses were formulated in order to answer this research question, i.e. four hypotheses per vocabulary measure. The first four hypotheses concern the influence of home language and outside home exposure on receptive vocabulary:

1A During the observation period (age 2;6-4;0 years) there is an effect of home language in the development of Frisian receptive vocabulary.

1B During the observation period (age 2;6-4;0 years) the effect of home language in the development of Dutch receptive vocabulary is absent.

1C During the observation period (age 2;6-4;0 years) there is no additional effect of outside home exposure in the development in Frisian receptive vocabulary.

1D During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure in the development of Dutch receptive vocabulary.
The hypotheses on productive vocabulary are:

1. During the observation period (age 2;6-4;0 years) there is an increasing effect of home language in the development of Frisian productive vocabulary.

2. During the observation period (age 2;6-4;0 years) the effect of home language in the development of Dutch productive vocabulary is decreasing.

3. During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure in the development in Frisian productive vocabulary.

4. During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure in the development in Dutch productive vocabulary.

The last four hypotheses give statements on the influence of home language and outside home exposure on NDW. These hypotheses are:

5. During the observation period (age 2;6-4;0 years) there is an increasing effect of home language on the development of Frisian NDW.

6. During the observation period (age 2;6-4;0 years) the effect of home language in the development of Dutch NDW is decreasing.

7. During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure on the development in Frisian NDW.

8. During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure on the development in Dutch NDW.

The hypotheses under investigation are derived from previous literature concerning the influence of home language, school language and community language on receptive and productive vocabulary within the Welsh-English (Gathercole & Thomas, 2009) and Irish-English context (Hickey, 1997) (see § 2.3) as well as research among school-aged children in the Frisian-Dutch context (van Ruijven, 2006; de Jager et al., 2002a, b, c; Ytsma, 1999, 1995) (see also § 2.2). They are explained in Figure 2.1 in § 2.6.

Hypothesis 1e stated that an increasing effect of home language is expected in Frisian productive vocabulary. The statement that this effect increases over time is based on the studies of Ytsma (1999, 1995) and the general observation that preschoolers with Dutch as their home language hardly use Frisian (§ 1.3). We therefore expect that over time the differences between both home language groups will become larger. Since productive vocabulary and NDW are both lexical measures in the productive domain, it is expected
that the influence of home language on Frisian NDW will also increase over time (Hypothesis 1i), similar to Frisian productive vocabulary. Because of the slightly earlier catch-up in Dutch (van Ruijven, 2006; de Jager et al., 2002a, b, c) compared to English (Gathercole & Thomas, 2009), we expect that the decreasing trend of home language in productive measures, such as productive vocabulary and NDW (Hypotheses 1f and 1j), sets in before the age of four.

The second research question and corresponding hypotheses concern the morphosyntactical development in both languages:

2. What is the influence of language input, i.e. home language input and outside home exposure, in the acquisition of a bilingual (Frisian/Dutch) morphosyntax of children living in Friesland, during the age range 2;6-4;0 years?

The four hypotheses on MLUw are formulated as follows:

2A. During the observation period (age 2;6-4;0 years) there is an increasing effect of home language in the development of MLUw in Frisian.

2B. During the observation period (age 2;6-4;0 years) the effect of home language in the development of MLUw in Dutch is decreasing.

2C. During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure in the development of MLUw in Frisian.

2D. During the observation period (age 2;6-4;0 years) there is an additional effect of outside home exposure in the development of MLUw in Dutch.

The hypotheses on MLUw are derived from prior research regarding the influence of language input on the morphosyntactic development (see § 2.4). There were no studies available concerning the influence of home language or outside home exposure on the morphosyntactic development in a majority language, at least not in the Irish-English context (Hickey, 1997), or the Welsh-English context (Gathercole & Thomas, 2009). However, it is the general observation that children with Frisian as their home language speak Dutch, although they sometimes mix both languages. Moreover, most children with Dutch as their home language hardly speak any Frisian (see § 1.3). It is therefore expected that the effect of home language and outside home exposure for MLUw (Hypotheses 2A-2D) will be similar to those for productive vocabulary in both languages.
As well as these two research questions on the influence of language input, a third research question and hypotheses were formulated with respect to the relationship between morphosyntax and vocabulary:

3 Is there a relation between the early morphosyntax and vocabulary within and across Frisian and Dutch among children (age range 2;6-4;0 years) in Friesland?

Hypotheses on the relationship between MLUw and lexical measures are:

3a Morphosyntax (MLUw) and vocabulary (receptive and productive vocabulary and NDW) in bilingual acquisition of Frisian and Dutch are positively related within each language.

3b Within languages, the relationship between MLUw and productive vocabulary and NDW is stronger than the relationship between MLUw and receptive vocabulary.

3c Morphosyntax (MLUw) and vocabulary (receptive and productive vocabulary and NDW) in bilingual acquisition of Frisian and Dutch are not related across both languages.

Hypotheses 3a and 3c are based on previous studies on the relation between morphosyntax and vocabulary within and across languages (see § 2.5 and Figure 2.2 in § 2.6). Hypothesis 3b is based on studies by DeThorne et al. (2005) and Ukrainetz and Blomquist (2002), who found that the relationship between MLUw and expressive lexical measures, such as productive vocabulary and NDW, was stronger than the relationship between MLUw and receptive vocabulary (see § 2.5).

As stated in § 2.6, the current study divided language input into home language and outside home exposure. The home language is defined as Frisian (HL-Frisian) if both parents predominantly use Frisian with the participant, or Dutch (HL-Dutch) if that is the language predominantly used by both parents. The outside home exposure refers to the exposure the participants received from caregivers other than the parents, e.g. grandparents, preschool teachers, daycare providers, etc., and also consists of two categories: exposure to the same language as at home (OH-same language), or exposure to the other language (OH-other language), depending on how many mornings and/or afternoons the participant was exposed to Frisian or Dutch outside the home and family (see § 3.2 for the classification of participants to both variables). Translating the hypotheses to the subgroup performances, we hypothesize...
that the HL-Frisian participants will show higher language scores in Frisian compared to the HL-Dutch participants, and the HL-Dutch participants are expected to show higher language scores in Dutch compared to the HL-Frisian participants. Furthermore, it is expected that, due to the additional influence of outside home exposure, the HL-Dutch participants with OH-other language exposure will perform better than the HL-Dutch participants with OH-same language exposure in L2-Frisian. Likewise, for L2-Dutch it is expected that the HL-Frisian participants with OH-other language exposure will obtain higher language scores than the HL-Frisian participants with OH-same language exposure. However, it is important to mention here that our analyses will not focus on the differences between the four conceptual subgroups, i.e. HL-Frisian participants with OH-other language exposure (Dutch), HL-Frisian participants with OH-same language exposure (Frisian), HL-Dutch participants with OH-other language exposure (Frisian), and HL-Dutch with OH-same language exposure (Dutch). Instead the focus of the hypotheses lies on the effect of the two input variables home language and outside home exposure.