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[0907] The Early Bilingual Acquisition of a Minority and a Majority Language

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Abstract

Parents are sometimes concerned that their children will develop a delay in the acquisition of the majority language if they raise them in the minority language. However, previous research in Wales has shown that bilingual children have a strong command of the majority language, English, regardless of their home language. By contrast, they sometimes lag behind in the minority language due to little Welsh input (Gathercole and Thomas 2009). In order to answer the question whether the same trend can be observed for Frisian and Dutch, the current study investigates the role of language input in the early development of Frisian and Dutch vocabulary. In total, 80 participants aged 2;6-4;0 years were assessed in receptive and productive vocabulary in both Frisian and Dutch in three successive test-rounds. Information on home language and the language used by caregivers other than the parents was gathered with parental questionnaires.

In line with Gathercole and Thomas (2009), the results show that home language is a factor in the development of Frisian. Regarding Dutch, home language is a factor in productive vocabulary, but not in receptive vocabulary. The language used by caregivers other than the parents is not important. It is expected that in primary education the influence of home language on the acquisition of Dutch will diminish over time. Based on our findings it can be concluded that the acquisition of the minority language, Frisian, does not harm the acquisition of the majority language, Dutch.

1. Introduction

In contexts where a minority language is spoken next to a majority language, even nowadays some parents prefer to raise their children in the majority language even though they are both native speakers of a minority language. These parents might be afraid that their children's development of the majority language will be impeded by the development of the minority language. They might have concerns that their children will develop a delay in the majority language that will never be remedied. In contrast with the

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minority language, the majority language is omnipresent in a society, it carries more prestige as well as more economic advantages. These parents might therefore feel that their children will benefit more from learning the majority language as their first language.

However, research in Wales, where English is the national and majority language and Welsh is the minority language, has shown that by the end of primary education, L1-Welsh children, i.e. children with Welsh as their home language (thus as their first language), show equal skills in English compared to L1-English children (Gathercole and Thomas 2009). This raises the question whether this trend also holds for other minority languages, such as Frisian. Frisian is a minority language spoken in the bilingual region of Friesland, in the northern part of the Netherlands. In this region, Frisian is spoken next to the national language Dutch. To what extent do early bilingual speakers in this region become bilingual? What is the influence of exposure to the home language and/or the language exposure outside the home on the early acquisition of Frisian and Dutch?

2. Acquisition studies in the Frisian-Dutch context

Friesland is one of the twelve provinces of the Netherlands. The province of Friesland has about 650,000 inhabitants (2011 Jan 1), which is 4% of the 16.7 million people living in the Netherlands (CBS 2011). Frisian is a West Germanic language, together with English and Dutch. Frisian and Dutch developed independently in history, nevertheless, due to language contact, the Frisian language contains quite a few Dutch loan words and morpho-syntactical structures nowadays (Popkema 2006).

The latest large-scale survey of language use showed that 94% of the population in Friesland understands Frisian, 74% can speak Frisian, 75% can read Frisian, and only 26% can write in Frisian (Provinsje Fryslân 2007). It is commonly assumed that every adult inhabitant of Friesland has a thorough command of Dutch, since it is the main language used in education. On average 48% of the inhabitants aged between 18-49 years old speak Frisian to their children (Provinsje Fryslân 2011). This means that approximately half of the population of young children in Friesland acquires Frisian a mother tongue.

Although several studies have been conducted with school-aged children, only a few have focused on preschool-aged children. One study is a collection of columns concerning a non-academic descriptive study of a girl

aged between 1;31-6;0 growing up in the 1960s in Friesland (Boelens 1974a; b; c; d; e; f). This study described the girl's Frisian language development, although her first Dutch words, her differentiation between the two languages and her language choice in different situations were also mentioned. Since this study was based on parental notes and the parents had no linguistic background, it is fragmental and anecdotal in nature.

Studies conducted with older children showed that home language was an important factor in the development of Frisian. Ytsma (1995) investigated the Frisian proficiency among children in their fifth year (age 8-9 years) or eighth year (age 11-12 years) of primary education. Lexical knowledge was tested with a self-developed productive vocabulary test. 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, whereas the children with Frisian as their second language (L2-Frisian/L1-Dutch) had a mean score of 18.2 points. These L2-Frisian children generally knew few Frisian words, however their lexical knowledge of Frisian increased when their language environment was more Frisian. Although Ytsma (1995) did not compare the performance between both home language groups, it is a clear observation that home language played an important role in Frisian productive vocabulary.

Van Ruijven (2006) looked at Dutch proficiency in primary education using data from De Jager, Klunder and Ytsma (2002a; b; c) using a standardized educational test (Taalschaal E4, CITO). This test included Dutch morphology, syntax, function words and vocabulary. Van Ruijven (2006) and De Jager, Klunder and Ytsma (2002a; b; c) showed that children in their fourth year of primary education (age 7-8 years) scored slightly above the average scores of their peers in the rest of the Netherlands. In other words, in the fourth year of primary education, the Frisian children had caught up in Dutch and did not show any differences compared to the children in the rest of the Netherlands.

3. Language input

Previous studies have shown that vocabulary development largely depends on language input (Bohman et al. 2010; Hoff et al. 2012; Thordardottir 2011). In general, the rule of thumb is: the more exposure to a language, the higher proficiency in that language. Studies from other minority-majority

1. 1 year; 3 months

language contexts (e.g. in Wales) have indicated that the home language of children is important, especially in the development of the minority language. Gathercole and Thomas (2009) refer to several studies conducted in the Welsh-English context among children in three age groups (3-5; 6, 6-8, 8-11 years) (Gathercole Laporte and Thomas 2005; Gathercole & Thomas, 2005; Gathercole, Thomas, & Hughes, 2008; Gathercole, Thomas, & Laporte, in preparation). These studies show that the influence of the home language on English proficiency decreases in older age groups. In the youngest age group (3-5;6 years), home language is an important factor since L1-English and L1-Welsh-English children obtained higher scores in English receptive vocabulary than the L1-Welsh children. However, its influence decreases in the middle age group (6-8 years) and it diminishes in the oldest age group (8;6-11 years). Gathercole and Thomas (2009) also looked at the influence of school language, i.e. whether children attended bilingual-medium or Welsh-medium schools. No effect was found in the first two age groups (3-5;6 and 6-8 years). However, the school language proved to be a significant factor 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 the catching-up in English proficiency might be explained by the fact that these children receive a critical mass of English input in education.

Gathercole and Thomas (2009) further demonstrated that children who received higher input of Welsh at home had a stronger command of Welsh receptive vocabulary, compared to their peers with low Welsh language input. In contrast, school language did not have an effect on Welsh receptive vocabulary. As proposed by Gathercole and Thomas (2009) the difference in Welsh proficiency between the home language groups might be explained by the reduced input in Welsh that L1-English participants and L1-Welsh-English participants received compared to the L1-Welsh participants.

To summarize, in the Welsh-English context proficiency in the minority language, Welsh, is directly linked to the amount of Welsh input, whereas English proficiency is not.

4. Non-verbal intelligence

Apart from language input, other factors are also important in (bilingual) language development, for example intelligence (Genesee and Hamayan 1980; Paradis 2011). Non-verbal reasoning, a cognitive skill, is an important

predictor of individual differences in kindergarten children acquiring French as a second language (Genesee 1980). In line with these results, Paradis (2011) showed that analytic reasoning was a significant predictor for vocabulary as well as for verb morphology in children between the ages of 4;10-7;0 years learning English as a second language. These studies indicate that intelligence should always be considered in bilingualism research.

5. Research questions

Based on the above mentioned findings, the research questions for the current study are: What is the role of language input in the early acquisition of a Frisian and Dutch vocabulary? And, to what extent do young children in the Frisian-Dutch language context become bilingual? Language input is defined here as interactional adult input, i.e. the language(s) used by the parents and other caregivers. The main focus in previous acquisition studies in the Frisian-Dutch language context was on primary school children. It is unclear if the findings from these studies also apply to younger children. The current study therefore investigates the vocabulary development of preschool children, aged between 2;6-4;0 years. This study is therefore not a replication of Gathercole (2009) who focus on children from 3-11 years old. Since children's world broadens when they start to attend preschool, the present study uses a longitudinal design, in contrast to the cross-sectional design used by Gathercole and Thomas (2009). The participants' performances in both Frisian and Dutch will be controlled for non-verbal intelligence. The vocabulary data presented in this paper are the same as the data used in Dijkstra (2013). However, in the current paper they are analysed with different statistical techniques.

6. Method

6.1 Test battery

For Dutch receptive vocabulary, the Dutch version (Schlichting 2005) of the American-English Peabody Picture Vocabulary Test (Dunn and Dunn 1997) was used. With this test the participant has to select the picture that matches the stimulus word out of a set of four pictures. These stimulus words are nouns, verbs and adjectives, i.e. *hand* 'hand', or *drinken* 'to drink'. The test is standardized for the ages 2;3-90 years. Because of the young age of the participants (2;6-4;0 years), we only used the first 108 items of the test. The test was aborted using the standard procedure, i.e. when the participant made nine incorrect responses in a twelve-item set. The total score was

generated by the sum of all correct responses (maximum score = 108 points).

Dutch productive vocabulary was tested with the subtest *Woordontwikkeling* [Word Development] of the Dutch *Schlichting Test voor Taalproductie II* (Schlichting and Lutje Spelberg 2010). With this test the participant is asked to finish a stimulus sentence by naming objects and pictures. The items are nouns, verbs and adjectives. The *Woordontwikkeling* test has 70 items and is standardized for the ages 2;0-7;0 years. The test was aborted when the participant gave eight incorrect responses in succession. The total score included the sum of all correct item responses (maximum score = 70 points).

Since there were no Frisian vocabulary tests available, both Dutch vocabulary tests were adapted for Frisian by translating all the items. Next, a pilot was conducted with the preliminary versions of these adapted tests after which the final versions were used in the current study. Since Dutch and Frisian have an overlap in vocabulary, there was also an overlap in cognate items, i.e. words that have the same meaning and pronunciation in both languages. The word *auto* 'car' is an example of a cognate with the same meaning and pronunciation in both Frisian and Dutch. The Frisian receptive vocabulary test had 46 (43%) cognate items. The productive vocabulary test had 216 possible correct responses spread over 70 items, of which 56 (26%) were cognate responses. However, the cognate items did not significantly influence the results of the two Frisian vocabulary tests, nor did they influence the results of the Dutch vocabulary tests (Dijkstra 2013). Therefore, these items remained in the vocabulary tests. It is beyond the scope of the current paper to give a detailed overview of the test adaptation procedure and to discuss the presence of the cognate items in the vocabulary tests. More information on that is given in Dijkstra (2013).

We also tested the participants' non-verbal intelligence using two subtests of the *SON-R 2,5-7* (Tellegen et al. 2005). The tests were administered during the preschool sessions (see *Procedure*). Because there was only limited testing time available during these sessions, it was not possible to assess them with the entire non-verbal intelligence test. Since the ability to reason is an important characteristic of intelligence (Carroll 1993; Genesee and Hamayan 1980; Paradis 2011), we opted for the two subtests for abstract and concrete reasoning. In the subtest for abstract reasoning, the participants have to categorize cards, i.e. they have to sort cards into two groups based on a pre-given category, or choose the card with the same features as the features on the three stimulus cards. In the subtest for

concrete reasoning, the participants have to complete four drawings with complementary cards, or choose the correct card showing the part that is missing on the picture. The total score for non-verbal intelligence used in this study was the sum of scores on both subtests (max total score = 30 points). This total score for non-verbal intelligence was used as a covariate in this study, so that the cognitive competence of the participants would not influence the vocabulary results.

6.2 Participants

A total of 80 children were administered both the Frisian and the Dutch vocabulary tests. All children lived in Friesland and attended preschool for one to three sessions per week. In the Netherlands, preschool is not mandatory. A preschool session lasts 1.5-2.5 hours. The participants came from Frisian or Dutch homes, i.e. both parents predominantly spoke Frisian to them or predominantly Dutch. Children from mixed families were left out of the study, since their language input showed too much variation depending on the language of the main caregiver. In total 52 children had Frisian as home language (HL-Frisian participants) and 28 children had Dutch as home language (HL-Dutch participants).

Language exposure outside the home was investigated through detailed parental questionnaires. In these questionnaires, parents had to specify which mornings and/or afternoons during weekdays the participant spent outside the home, being taken care of by caregivers other than the parents themselves. For example, they had to indicate which mornings and/or afternoons the grandparents took care of their child (if so), or when the participant attended preschool or daycare. Furthermore, they specified the languages used by these caregivers in communication with the participant. For each participant, the total exposure pattern to Frisian and Dutch was calculated by adding the number of mornings and afternoons of reported outside home exposure to Frisian and to Dutch. This resulted in two outcomes, one for Frisian and one for Dutch. Based on the ratio between these two outcomes, the participants' outside home exposure was classified as outside home exposure to the same language as the home language, or as outside home exposure to the other language. If the amount of the participants' outside home exposure to the other language was more, or roughly equal (at maximum the exposure to the other language is two mornings/afternoons less than the exposure to the home language), to the amount of outside home exposure to the home language, the participant's

outside home exposure was classified as OH-other language. Otherwise the outside home exposure was classified as being similar to the home language (OH-same language). We will illustrate this with some examples. For example, the outside home exposure of an HL-Frisian participant was classified as OH-other language (Dutch) when the participant was exposed to Dutch for three mornings/afternoons outside the home and to Frisian for five mornings/afternoons. In contrast, an HL-Frisian participant with an outside home input of two mornings/afternoons to Dutch and five (or more) to Frisian was classified as OH-same language (Frisian).

Table 1. The characteristics of the participants per home language group.

		HL-Frisian	HL-Dutch	Total
Gender	Boy	31	12	43
	Girl	21	16	37
Intelligence	Mean	13.27	13.75	13.44
	(SD)	(3.04)	(3.09)	(3.05)
	Min-Max	7-21	9-18	7-21
Outside Home Exposure (Round 3)	Same as HL	36	15	51
	Other Language	16	13	29
Total		52	28	80

There were 43 boys and 37 girls (see Table 1). No differences were found between home language and gender ($\chi^2(1)=2.06$, $p>.05$), or non-verbal intelligence ($t(78)=-0.67$, $p>.05$). Furthermore, no differences were found between home language and outside home exposure in round 3 ($\chi^2(1)=1.93$, $p>.05$). The mean number of mornings/afternoons that the participants were taken care of by other caregivers than the parents during weekdays is 5.02 (SD 1.48, min-max 2-8) mornings/afternoons for the HL-Frisian participants and 4.04 (SD 1.93, min-max 2-8) mornings/afternoons for the HL-Dutch participants. The distribution of the participants across groups is shown in Table 1.

6.3 Language input from reading and media

The parental questionnaires revealed that the HL-Frisian participants were regularly read to in Frisian and Dutch. Dutch books were used slightly more often than Frisian books by the Frisian-speaking parents. About 85% of the

HL-Frisian participants were read to in Dutch more than once a week and 77% were read to in Frisian more than once a week. All HL-Dutch participants were read to in Dutch more than once a week. Their parents used far more Dutch books than Frisian ones. About 41% of the HL-Dutch participants were never read to in Frisian. However, 33% of the HL-Dutch participants (9 participants) were sometimes read to in Frisian whereas 22% (6 participants) were regularly read to in Frisian. This is a surprising finding, since one would not expect that Dutch-speaking parents read Frisian books to their children. The answer to this question might therefore be influenced by social desirability. All participants regularly watched Dutch television or DVDs. Frisian media were used to a much smaller degree, and mostly by the HL-Frisian participants.

In conclusion, the parental questionnaires revealed the HL-Frisian participants generally received more input in Dutch by book reading and media, compared to the HL-Dutch participants' input of these sources in Frisian. Of course, one has to consider the substantially smaller availability of Frisian books and media compared to Dutch books and media when interpreting these outcomes.

6.4 Procedure

All participants were tested within three successive test rounds. In each round, the participants were assessed in both languages. In round 1 the participants were between 2;6-3;0 years old. They were all tested in Frisian first and in Dutch a couple of weeks later. In round 2 the participants were aged between 3;0-3;6. To prevent a language order effect, the order of the languages tested was switched in round 2, i.e. the participants were tested in Dutch first and a couple of weeks later in Frisian. In round 3 the participants were aged between 3;6-4;0. The order of the languages tested was switched back to Frisian-Dutch again.

The test assistants used the one person – one language principle (Döpke 1992). In the Frisian assessments they were instructed to use Frisian only, even when the participants used Dutch. For the Dutch assessments other test assistants were used and these assistants used Dutch only.

With some exceptions, all assessments took place at preschool in the morning. The test assistant tested each participant individually outside the classroom. The age group 2;6-4;0 years is hard to test. It was therefore of great importance that the participants felt at ease. The test order was fixed to prevent anxiety. First, the participants were assessed with the receptive

vocabulary test, since this vocabulary test only requires the participants to point to pictures. Next, they were tested with the productive vocabulary test. Furthermore, it was essential to take the short attention span of these young participants into consideration. When the participants showed signs of fatigue, the test assistant included a break between the tasks by bringing them back to the playgroup and finishing the assessment later that morning.

6.5 Analysis

All results were analysed using a two-way repeated measurements ANCOVA with home language and outside home exposure as independent variables and the vocabulary score as the dependent variable. The non-verbal intelligence score was used as a covariate, so that the vocabulary scores were controlled for this variable.

7. Results

This section presents the results for all four vocabulary tests. It starts with the two Frisian vocabulary tests and it continues with the two Dutch vocabulary tests.

7.1 Frisian receptive vocabulary

Table 2 displays the mean test scores and standard deviations per home language group for the Frisian receptive vocabulary test. Since this is a very difficult age group to assess, we only succeeded in testing 71 of the 80 participants in all three test rounds. There were several reasons for this, e.g. anxiety, refusal or absence of the participants. Two participants were excluded from the analysis because of substantial underachievement in one test round, compared to their performance in previous or follow-up rounds.
As Table 2 shows, the HL-Frisian participants performed better than the HL-Dutch participants on the receptive vocabulary test for Frisian. This is not a surprising result, because the language under investigation here corresponded to their home language.

A two-way repeated measures ANCOVA with home language and outside home exposure as independent variables and non-verbal intelligence functioning as covariate indicated that there was an effect of time ($F(2,121)=12.55$, $p<.001$, $\eta^2_{partial}=.16$). Contrasts revealed that the growth of

Table 2. Frisian receptive vocabulary: mean test scores (M) and standard deviations (SD) for HL-Frisian participants (N=45) and HL-Dutch participants (N=26) over the three test rounds.

Home Language	Frisian				Dutch			
Outside Home	Frisian		Dutch		Dutch		Frisian	
N	33		12		15		11	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Round 1	33.61	(8.39)	34.92	(8.08)	26.53	(6.02)	29.63	(6.17)
Round 2	46.67	(6.94)	43.80	(7.63)	43.80	(7.63)	42.73	(9.47)
Round 3	51.76	(8.51)	54.75	(8.29)	46.20	(11.37)	46.82	(9.26)

Frisian receptive vocabulary was significant between rounds 1 and 2 ($F(1,66)=9.60$, $p<.01$, $\eta^2_{partial}=.13$) and between rounds 2 and 3 ($F(1,66)=4.95$, $p<.05$, $\eta^2_{partial}=.07$). Regarding between-subject effects, the analysis revealed that home language was a significant factor in Frisian receptive vocabulary ($F(1,66)=18.65$, $p<.001$, $\eta^2_{partial}=.22$). The outside home exposure was not significant ($F(1,66)=1.65$), $p>.05$, $\eta^2_{partial}=.02$). Another between-subject effect was non-verbal intelligence ($F(1,66)=16.73$, $p<.001$, $\eta^2_{partial}=.20$). No interaction effects were found.

In sum, for Frisian receptive vocabulary, a significant growth over time was found. In other words, all participants showed a substantial growth over time. Home language and non-verbal intelligence were also important factors. The home language effect indicates that HL-Frisian participants significantly outperformed the HL-Dutch participants. Moreover, the participants with a high non-verbal intelligence score obtained substantial higher scores on this vocabulary test compared to participants with a low non-verbal intelligence score. The exposure from caregivers other than the parents turned out to be unimportant in Frisian receptive vocabulary.

7.2 Frisian productive vocabulary

The mean test scores and standard deviations of the Frisian productive vocabulary test are presented in Table 3. The number of participants (N) in each subgroup differs from the ones in Table 2, because not all participants could be successfully assessed with this vocabulary test. However, in

contrast to the Frisian receptive vocabulary test, there were no outliers found.

As Table 3 shows, the HL-Frisian participants obtained higher scores compared to the HL-Dutch participants on this vocabulary test. Furthermore, the HL-Dutch participants who were mostly exposed to Dutch by the caregivers other than the parents had lower standard deviations compared to the other subgroups, indicating that this subgroup showed less variation in their test scores.

Table 3. Frisian productive vocabulary: mean test scores (M) and standard deviations (SD) for HL-Frisian participants (N=46) and HL-Dutch participants (N=25) over the three test rounds.

Home Language	Frisian				Dutch			
Outside Home	Frisian		Dutch		Dutch		Frisian	
N	30		16		13		12	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Round 1	10.50	(3.94)	10.88	(4.91)	5.92	(1.44)	7.33	(3.45)
Round 2	17.23	(4.97)	17.75	(6.69)	9.46	(3.48)	9.50	(4.34)
Round 3	20.73	(4.85)	20.44	(6.32)	10.77	(2.45)	12.50	(4.52)

A two-way repeated measures ANCOVA with home language and outside home exposure as independent variables and non-verbal intelligence functioning as covariate revealed an effect of time ($F(2,118)=4.45$, $p<.05$, $\eta^2_{partial}=.06$). Contrasts showed that the growth of Frisian productive vocabulary was significant between rounds 1 and 2 only ($F(1,66)=4.98$, $p<.05$, $\eta^2_{partial}=.07$) and not between rounds 2 and 3 ($F(1,66)=0.01$, $p>.05$, $\eta^2_{partial}=.00$). The analysis further revealed between-subject effects, i.e. a home language effect ($F(1,66)=54.69$, $p<.001$, $\eta^2_{partial}=.45$) and a non-verbal intelligence effect ($F(1,66)=11.04$, $p<.01$, $\eta^2_{partial}=.14$). The outside home exposure was not a significant factor ($F(1,66)=0.34$), $p>.05$, $\eta^2_{partial}=.01$). Furthermore, an interaction effect was found ($F(2,118)=15.48$, $p<.001$, $\eta^2_{partial}=.19$). Contrasts revealed that this effect was only significant between rounds 1 and 2 ($F(1,66)=13.64$, $p<.001$, $\eta^2_{partial}=.17$) and not between rounds 2 and 3 ($F(1,66)=1.12$, $p>.05$, $\eta^2_{partial}=.02$).

In sum, a significant growth over time was found in Frisian productive vocabulary. This growth was only present between rounds 1 and 2. Home

language and non-verbal intelligence were also important factors. This means that the HL-Frisian participants significantly outperformed their HL-Dutch peers on this vocabulary test. Furthermore, the participants with a high non-verbal intelligence score obtained a higher score on this vocabulary test than their peers with a low non-verbal intelligence score. The interaction effect between home language and time indicates that over time the HL-Frisian participants showed a significant faster growth in Frisian productive vocabulary than their HL-Dutch peers. In other words, the gap between both home language groups increased over time.

7.3 Dutch receptive vocabulary

Table 4. Dutch receptive vocabulary: mean test scores (M) and standard deviations (SD) for HL-Frisian participants (N=50) and HL-Dutch participants (N=24) over the three test rounds.

Home Language	Frisian				Dutch			
Outside Home	Frisian		Dutch		Dutch		Frisian	
N	34		16		13		11	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Round 1	36.03	(8.74)	38.94	(8.57)	36.62	(7.61)	37.64	(5.05)
Round 2	43.38	(8.76)	47.44	(7.19)	47.54	(6.91)	48.27	(9.27)
Round 3	52.68	(5.74)	55.75	(9.72)	53.85	(8.14)	54.64	(10.70)

Table 4 presents the mean test scores and standard deviations of the participants' performance on the Dutch receptive vocabulary test. The number of participants (N) in each subgroup differ from the ones of the Frisian vocabulary tests (see Table 2 and 3), since not all participants were successfully tested in all three test rounds with this vocabulary test. Moreover, there was one outlier that was discarded from the analysis since this participant showed a substantial lower score in round 1 compared to the follow-up rounds.

As Table 4 shows, the mean test scores of all subgroups show small differences. The HL-Dutch participants had slightly higher scores compared to the HL-Frisian participants on this vocabulary test.

A two-way repeated measures ANCOVA with home language and outside home exposure as independent variables and non-verbal intelligence functioning as covariate indicated that there was an effect of time ($F(2,138)=5.86$, $p<.01$, $\eta^2_{partial}=.08$). Contrasts revealed that the growth of

Dutch receptive vocabulary was significant only between rounds 2 and 3 ($F(1,69)=4.32$, $p<.05$, $\eta^2_{partial}=.06$) and not between rounds 1 and 2 ($F(1,69)=2.42$, $p>.05$, $\eta^2_{partial}=.03$). Only one between-subject effect was found, i.e. non-verbal intelligence ($F(1,69)=11.92$, $p<.01$, $\eta^2_{partial}=.15$). Home language and outside home exposure were no significant factors (resp. $F(1,69)=0.02$, $p>.05$, $\eta^2_{partial}=.00$ and $F(1,69)=1.75$), $p>.05$, $\eta^2_{partial}=.03$). More specifically, as their F-values showed, both variables had almost no effect. No interaction effects were found either.

For Dutch receptive vocabulary a significant growth over time was found. This growth was only present between rounds 2 and 3. Neither home language nor the language used by caregivers other than the parents proved to be important factors in Dutch receptive vocabulary. In other words, the participants did not show significant differences in their test scores. Non-verbal intelligence turned out to be important for Dutch receptive vocabulary, indicating that participants with a high non-verbal intelligence score also obtained a high score on this vocabulary test.

7.4 Dutch productive vocabulary

The mean scores and standard deviations of the participants are displayed in Table 5. Again, the number of participants (N) differs from the other vocabulary tests, because we were not able to successfully assess all participants in all three test rounds with this vocabulary test. There were no outliers found. Overall, the HL-Dutch participants obtained higher scores compared to the HL-Frisian participants on this vocabulary test, as shown in Table 5.

Table 5. Frisian productive vocabulary: mean test scores (M) and standard deviations (SD) for HL-Frisian participants (N=48) and HL-Dutch participants (N=24) over the three test rounds.

Home Language	Frisian				Dutch			
Outside Home	Frisian		Dutch		Dutch		Frisian	
N	32		16		14		10	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Round 1	7.84	(3.14)	9.88	(4.76)	12.43	(4.35)	15.40	(5.15)
Round 2	11.94	(5.29)	13.19	(5.38)	17.36	(5.50)	19.10	(8.57)
Round 3	16.88	(5.72)	19.50	(6.14)	24.00	(3.21)	27.30	(4.65)

A two-way repeated measures ANCOVA with home language and outside home exposure as independent variables and non-verbal intelligence functioning as covariate indicated that there was an effect of time ($F(2,134)=6.57$, $p<.01$, $\eta^2_{partial}=.09$). Contrasts revealed that the growth of Dutch productive vocabulary was only significant between rounds 2 and 3 ($F(1,67)=6.97$, $p<.05$, $\eta^2_{partial}=.09$) and not between rounds 1 and 2 ($F(1,67)=0.34$, $p>.05$, $\eta^2_{partial}=.01$). The analysis further revealed two between-subject effects, i.e. home language ($F(1,67)=26.78$, $p<.001$, $\eta^2_{partial}=.29$) and non-verbal intelligence. $F(1,67)=10.22$ $p<.01$, $\eta^2_{partial}=.13$). The outside home exposure was not significant ($F(1,67)=3.66$, $p>.05$, $\eta^2_{partial}=.05$). No interaction effects were found.

For Dutch productive vocabulary a significant growth over time was found. This growth was only present between rounds 2 and 3. Home language and non-verbal intelligence were also important factors. This means that the HL-Dutch participants significantly outperformed the HL-Frisian participants on this vocabulary test. Furthermore, the participants with a high score on the non-verbal intelligence test generally also obtained a high score on this vocabulary test. The language input from caregivers other than the parents was not a factor in Dutch productive vocabulary.

8. Discussion and conclusion

The main goal of this longitudinal study was to explore the role of the interactional adult language input in the bilingual vocabulary development in Frisian and Dutch of young bilingual children. The focus was on the influence of home language and outside home exposure. Home language was defined as the language predominantly used by both parents, i.e. Frisian or Dutch. The outside home exposure was defined as the language predominantly used by caregivers other than the parents and was divided in a substantial exposure to the other language as the language used at home, i.e. Dutch for the HL-Frisian participants or Frisian for the HL-Dutch participants, and a substantial exposure to the same language as the language used at home, i.e. Frisian for the HL-Frisian participants or Dutch for the HL-Dutch participants. All participants were tested in Frisian and Dutch on two separate occasions spaced a couple of weeks from each other. They were first assessed with the receptive and productive vocabulary tests in both languages when they were aged between 2;6 and 3;0 years old. This test procedure was repeated during two follow-up rounds, i.e. in round 2

when they were aged between 3;0 and 3;6 years, and in round 3 when they were aged between 3;6-4;0 years.

Analyses revealed that home language was important in Frisian receptive and productive vocabulary and in Dutch productive vocabulary. This means that the HL-Frisian participants outperformed their HL-Dutch peers in Frisian vocabulary development. Moreover, the interaction effect between home language and time for Frisian productive vocabulary indicates that the HL-Frisian participants showed a faster growth over time in productive vocabulary of Frisian compared to the HL-Dutch participants. In Dutch productive vocabulary, the HL-Dutch participants had obtained substantially higher test scores compared to their HL-Frisian peers. However, no interaction effect between home language and time was found here, which means that both home language groups showed an equal rate in acquisition of Dutch productive vocabulary. In contrast to results on the above mentioned vocabulary tests, home language did not play a significant role in Dutch receptive vocabulary. In other words, in Dutch receptive vocabulary the HL-Frisian and HL-Dutch participants showed no substantial differences in test scores. These results are in line with the outcomes of Gathercole and Thomas (2009) who found a home language effect in receptive vocabulary of the minority language, i.e. Welsh, and a decreasing effect of home language in receptive vocabulary of the majority language, i.e. English. The finding for Dutch receptive vocabulary might be explained by the amount of L2 input that participants received from other sources than the parents and the other caregivers, for example book reading and television. The HL-Frisian participants received far more input in Dutch from these sources, than the HL-Dutch participants received in Frisian. Because the parents of the HL-Frisian participants are bilinguals themselves, they are much more inclined to read books in both Frisian and Dutch to their children than the parents of the HL-Dutch participants. The higher status of Dutch might also play a role here. Since Dutch is the national language, Frisian-speaking parents feel it is important that their children have good proficiency in Dutch alongside Frisian. Furthermore, the supply in Dutch books and media such as television programmes is much larger compared to Frisian.

Outside home exposure did not play an important role, neither in Frisian receptive and productive vocabulary, nor in Dutch receptive and productive vocabulary. This means that the language(s) used by the caregivers other than the parents did not seem important in vocabulary development of Frisian and Dutch. This contradicts the outcomes of Gathercole and Thomas (2009) who found a school language effect in English receptive vocabulary.

The finding that the outside home exposure showed no effect might be explained by our quantification of that variable. In our study outside home exposure only included interactional adult input from caregivers other than the parents. If it had also included input from other sources such as peers, television or book reading, etc., this might have led to different results.

Non-verbal intelligence, i.e. abstract and concrete reasoning which are part of non-verbal intelligence, was an important confounder in the vocabulary development of Frisian and Dutch, which confirms prior research (Genesee and Hamayan 1980; Paradis 2011). Participants with a high non-verbal intelligence score generally obtained high scores on the vocabulary tests as well. In other words, intelligence significantly influenced the vocabulary growth. This study contributes to a growing body of evidence on the important influence of intelligence on vocabulary development.

For Frisian, the vocabulary growth turned out to be significant in the test interval between rounds 1 and 2. For Dutch, this growth was only present between rounds 2 and 3. This might be explained by a 'first time' effect within the assessments. During the first test round, the participants were assessed in Frisian first and a couple weeks later in Dutch. Hence, during the Frisian assessments in round 1 the participants experienced a new situation with a stranger (the test assistant) who took them individually outside the playgroup. The first test moment might therefore have caused anxiety, although every effort was taken to prevent these feelings. By the time the participants were assessed in Dutch, they experienced the test situation for the second time and they knew what to expect. The Frisian outcomes in round 1 might therefore be a slight underestimation of their performance. Counterbalancing the participants within each round would have avoided this 'first time' effect. However, due to time limitations and financial resources this was not possible in the current study.

To what extent do early bilingual speakers in the Frisian-Dutch language context become bilingual? Results show that children of Dutch-speaking parents obtained substantially lower scores in their second language, i.e. Frisian. They showed a lower rate of acquisition compared to their HL-Frisian peers especially with respect to Frisian productive vocabulary. It is expected that these differences in Frisian proficiency between both home language groups remain during primary education. In fact, previous research (Ytsma 1995) has already confirmed this trend.

In contrast, children of Frisian-speaking parents seemed 'more' bilingual than their HL-Dutch peers. The HL-Frisian participants showed no

differences in performance on the Dutch receptive vocabulary test. In Dutch productive vocabulary, they were still behind compared to their HL-Dutch peers at the age of four years, when they entered primary education. However, the rate of acquisition of both home language groups was similar. As several studies (Kohnert and Bates 2002; Kohnert, Bates and Hernandez 1999) have shown, children need about five to seven years to develop a second language. It is therefore not realistic to expect that by the end of preschool Dutch will already be fully acquired. De Jager, Klunder and Ytsma (2002a; b; c) and Van Ruijven (2006) revealed that the children in Friesland performed similarly in Dutch in their fourth year of primary education (age 7-8 years) compared to their peers in the rest of the Netherlands. It is therefore expected that the HL-Frisian participants will catch up in Dutch after a few years of primary education.

Based on these outcomes, it can be stated that children with Frisian as mother tongue can easily acquire Dutch at the same time. This is important for Frisian-speaking parents who prefer to speak Dutch to their children because they are concerned that their child will otherwise lag behind in Dutch and will never catch up. The findings further showed that the HL-Dutch participants still accelerated in Dutch while also acquiring Frisian (receptively). It can therefore be concluded that the acquisition of Frisian does not harm the acquisition of Dutch.

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