

Language development in Turkish-Dutch Bilingual children

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Abstract

Introduction. In current literature, there is a well-established necessity for the improvement of bilingual language diagnostics. Nowadays, a majority of clinicians in Belgium still rely on standardized tests with monolingual norm-samples. It is therefore fundamental to have a detailed knowledge of the performance of bilingual children on those monolingual normed tests. Furthermore, there is also a need for unambiguous longitudinal research on the language performances of bilingual children. Therefore, this study aims to investigate the language skills of 25 Turkish-Dutch successive bilinguals compared to 25 age and gender matched monolingual Dutch children. In 9 bilinguals and 13 monolinguals longitudinal data of three years (at 6y and at 9y) were collected and compared.

Methods. The subject group consisted of 25 bilingual Turkish-Dutch children with a mean age of 9;6 years (SD: 0.26) with Turkish as the dominant home language. Language exposure to Dutch was at least 2 years. An age and gender matched control group of 25 monolingual Dutch children with same educational backgrounds was compiled. Language skills were investigated using the Dutch version of the CELF. In 22 children, language skills were reassessed three years later in a follow-up study. Data were compared using the Mann-Whitney-U-test and Wilcoxon matched-pairs signed ranks test.

Results. Language comprehension and production were significantly lower in the bilingual children compared to the monolinguals. After three years, the language delay in bilingual Turkish Dutch children remained the same. Language production in the bilingual children was mainly influenced by the profession of the mother and the home language.

Conclusion. The same language gap was found at the age of 6 and 9 years in Turkish-Dutch bilingual children compared to monolingual Dutch children.

Keywords: bilingualism, language development, Turkish-Dutch children, follow-up study

1. Introduction

The heterogeneity in language development in bilingual children is a well-established reality [1,2]. However, it is still unclear whether a bilingual child's language is developing within the expected normative age-range and moreover, at the expected pace [3,4]. The factors influencing the language development of these children are numerous and could contribute to an even more complex language environment than in monolingual peers. Besides cognitive factors and socioeconomic status, quality and quantity of language input, richness of the language environment outside school, parental language fluency in both L1 and L2, home language status and specific language-related properties are all aspects affecting the bilingual language development [5,6]. Another important contributor is the type of bilingualism. A child can be a simultaneous as well as a successive language learner. When a child learns two languages at the same time, starting from birth, this is referred to as simultaneous bilingualism. When a child has already acquired some knowledge in a first language and is sequentially exposed to a second language, normally at the start of daycare or preschool, this is called early successive bilingualism [7,8].

Due to this complicated language environment and the recognized variation in language development, it is asserted that a bilingual child's language abilities can only be validly interpreted in comparison with a reference group of bilingual children growing up in similar language-learning and sociolinguistic contexts [9,10]. Nevertheless, specific bilingual norm-referenced language batteries are very rare and so, clinicians are constrained to rely on monolingual norm-referenced language tests to examine standardized language competences at least as a part of their diagnostic procedure [6]. Therefore, detailed knowledge about bilingual performances on monolingual norm-referenced language tests is required. [11,12]

When considering the existing literature about language development of bilingual children compared to monolingual peers or monolingual norm samples, it is remarkable that most of the studies have been conducted in preschoolers and/or simultaneous language learners. The study of Hoff, et al. [13], for example, investigated the early vocabulary and grammatical development of 47 simultaneous bilingual children (Spanish-English) and 56 monolingual peers from 1;10 up to 2;6 years old, using caregiver reports. All children were from higher socioeconomic backgrounds to exclude the possible effect of this known influencing factor. Results showed that, at this age, bilinguals significantly lag behind monolinguals in both vocabulary and grammatical single language skills. However, they do not differ when their combined vocabulary knowledge is taken into account. Other authors demonstrate similar findings to those of Hoff, et al. [13] [14-16]. Although these findings are very insightful, these cannot be completely generalized to older and linguistically more developed bilingual children, to successive language learners, and to bilinguals from lower socioeconomic backgrounds.

Seeing the necessity to improve the diagnostics of language disorders in clinical practice [1,9-11], and to expand the knowledge about the language developmental patterns of bilingual children in different language learning contexts, it could be valuable to investigate the performances in the second language of successive bilingual children on standardized language tests compared to monolingual peers or monolingual norm-samples [5]. It should be noticed that the use of standardized language tests in the second language will only study the mastery of the academic register and not the language development in general. The differences between academic register and daily language use are important to consider. Firstly, academic language has its specific language characteristics at the lexical, grammatical and textual level [17-19]. Secondly, it requires cognitively complex discourse processing such as understanding the decontextualized language [20]. When children are exposed to decontextualized language, they are cognitively supposed to understand the here and now information about the focus of the language interaction and respond accordingly. All these academic demands from children are directly related to school settings or literacy rich home environments. Children's family contexts in terms of language interaction may function as a trigger for children's academic language readiness for school experience. This highlights the importance of quality and quantity of language exposure in children's language learning experiences. Studying the oral academic L2 language skills of upper elementary school children could especially be interesting as second language proficiency is a relevant contributor to social acceptance in the community [21], to academic achievement and to later occupational success [22,23]

Whether and when L2 learners reach same language proficiency levels as monolingual peers has rarely been studied. Moreover, the results from the conducted research are contradictory. Some authors suggest that the receptive and expressive vocabulary knowledge, as well as the grammatical abilities still differ significantly between monolinguals and bilinguals in the upper elementary school years [24-26]. However, language performance of bilingual children improves clearly influenced by child-internal and environmental factors, such as superior verbal short-term memory, phonological awareness, language use at home and SES. Hoff, et al. [27] indicated that the gap for vocabulary knowledge between monolinguals and bilinguals diminishes with age. Paradis, et al. [28] found that 40% of a group of English L2 learners had same verb morphology abilities as monolingual English speaking peers after 6½ years of English exposure, whilst 60% of the bilingual group still showed lower performances. To the contrary, some studies showed that bilingual children do 'catch up' with monolingual peers for oral language abilities in about four to six years of exposure to the second language [15,29,30]. In a research by Paradis and Jia [5], 21 successive Chinese L1-English L2 speakers were investigated during three years, from the age of 8½ until the age of 10½, using PPVT and CELF language tests. Results showed that the majority of the children converged on monolingual norms

after 5½ years of English exposure. As no control group was used, the authors cannot completely assure that the results of this research are actually similar to those of monolingual peers at the same schools.

Besides the necessity for more and unambiguously longitudinal research on bilinguals in different learning contexts, there is also a need for more research on different language combinations as a large part of the existing research is conducted in English L2 learners. Due to cross-linguistic transfer, it is established that bilingual children's both languages are influencing each other based on language specific features [5] and consequently the results for other L2 learners might differ from the English L2 studies.

When the different bilingual groups in Belgium are considered, the Turkish group is one of the largest groups. Currently, the rate of Turkish immigrants to the overall population in Flanders is 19 587/ 6.552.967. Although the group of Turkish immigrants in Flanders is very heterogeneous, the Turkish language has mainly been preserved as the home language in most families and is strongly related to their identity [21]. In Western Europe, Turkish has been reported to be the most ethnolinguistically vital language [31]. In addition to community-specific property, they have been reported to be the least integrated group of immigrants in Belgium and The Netherlands [32,33]. The majority of the children with a Turkish migration background are successive bilinguals with Turkish as their home language and an exposure to Dutch when they start attending daycare or school. Knowledge of the language development and language proficiency of bilingual Turkish-Dutch children is mainly based on research performed in the Netherlands [34-36] but limited in Flanders [37]. However, the results of these studies cannot be generalized to the population of Turkish-Dutch (Flemish variant) children in Flanders. Turkish-Dutch children in the Netherlands lag behind in language proficiency compared to monolingual peers. They have smaller expressive and receptive vocabularies in Turkish as well as in Dutch compared to monolingual Dutch children [34,38,39]. At the age of 4 years there is a larger acceleration in the passive Dutch vocabulary of Turkish-Dutch children compared to other immigrant groups [35]. Turkish-Dutch bilinguals have typical difficulties with Dutch morphology and syntax [38]. Verb inflection errors and article omission or errors occur more frequently compared to monolingual Dutch children. Turkish-Dutch children frequently use meaningless auxiliary verbs (i.e. auxiliaries without specific verb tense or verb aspects such as 'do' or 'go') and less complex subordinate clauses [36]. This may stem from the fact that Dutch and Turkish have very different linguistic characteristics. For example, Turkish does not have auxiliary verbs in the same manner as in Dutch. The socio-economic status of these families is an important determinant for language development. Research of Altinkamis and Agirdag [21] showed that families in Belgium with higher SES spoke more Dutch, preferred more the Dutch language across various topics and

emotions, and they perceived the Turkish language as being less important. Bilingual children from lower SES families receive less qualitative language input and might therefore be less proficient in the academic aspect of languages. The Dutch language abilities of higher SES bilingual children might therefore be better in comparison with the language abilities of lower SES bilinguals. Although there is a positive evolution in the level of education of Turkish immigrant parents, there is still a significant difference in SES between the Turkish immigrants and the native population [40,41].

The purpose of this study is to investigate the academic Dutch receptive and expressive language skills of 25 successive Turkish-Dutch bilinguals compared to 25 age and gender matched monolingual Dutch children with the same educational background, using a standardized Dutch language battery (CELF-IV-NL). The standardized assessment of L1 proficiencies was not a subject for this research as this is not in the scope of this study. Secondly, in 9 Turkish Dutch bilinguals and 13 monolingual Dutch children longitudinal data of three years (at the age of 6 years and at the age of 9 years) were collected and compared. We hypothesize that a possible Dutch language delay in Turkish-Dutch children will decrease with increasing language input and Dutch education. Finally, the impact of language environment factors, such as the home language, socio-economic status (SES), language at school, birth order, generation and gender on the language scores of the bilingual Turkish-Dutch children was measured. We expect the results of this study to be relevant for clinical purposes, to raise awareness and to contribute to a development of realistic expectations for the academic language development in the second language of bilingual children in educators and policy makers.

2. Materials and Methods

2.1 Participants

Fifty children were included in the study. All children were born in Belgium in 2007. As the subject group, 25 successive bilingual Turkish-Dutch children were recruited in elementary schools in the environment of Ghent and via snowball sampling. Subsequently, 25 monolingual Dutch speaking children, matched on gender and age, were recruited as a control group in the same elementary schools and had accordingly received the same education. The subject group, on the one hand, consisted of 11 boys and 14 girls and had a mean age of 9;6 years (range: 8;11 – 9;10 y, SD: 0.26). All bilingual participants had Turkish as their dominant home language, spoken by native Turkish parents, and were exposed to Dutch at least in their school environment. If children had an additional exposure to Dutch in their home environments, they were also included in the study. Dutch exposure had to be started at least 3 years prior to the study, either offered by daycare givers, preschool teachers or other native speakers in their near environments. The control group, on the

other hand, consisted of 11 boys and 14 girls and had a mean age of 9;7 years (range: 9;1-10;0 y, SD: 0.31). Age between bilingual and monolingual children was matched within a maximum interval of 2 months. Monolingual children were included when they were native Dutch speakers and not exposed to other languages in their home environment. All bilingual and monolingual children were born at term, followed normal education without grade retention, and had a normal cognitive development, a normal hearing function and a normal vision as reported by their parents and their teacher. Children were excluded if they were having a diagnosis of language impairment or if they were following speech language therapy for a language related disorder.

The family composition in both groups is presented in table 1. As children were recruited in the same educational environments and could therefore not be specifically matched on socioeconomic status, the SES of the children was significantly different for the two groups (pearson chi-square test, $p < 0.001$, table 2). Characteristics of the bilingual children are described in table 3. Parents rated their own and their child's language proficiency in Dutch on a 5-point Likert scale (0-5). A language environment and a language richness score was derived by assigning points for using the language respectively in different language environments and for different media devices. Per score the points were summed and divided by the highest possible score for each language which yielded a score between 0 and 1 [5]. A more detailed description of the language use and exposure is presented in table 4.

Nine bilingual and thirteen monolingual children were longitudinally observed at two measurement times with an interval of 3 years, one at the age of 6 (in 2014) and the second at the age of 9 (in 2017).

Table 1. Family construction of the bilingual and monolingual families

	Bilingual children	Monolingual children	
	Mean (SD)	Mean (SD)	p-value
<i>Number of siblings</i>	2,6 (0,73)	2,5 (0,20)	0,405
<i>birth order</i>	2,2 (1,00)	1,92 (0,91)	0,193

Table 2. SES by maternal and paternal education level and profession

Profession	Jobless, decedent	Labourer	clerk	Self-employed	Executive member	p-value
Father						<0.001
<i>Bilingual children</i>	4% (1/25)	84% (21/25)	4% (1/25)	8% (2/25)	0% (0/25)	
<i>Monolingual children</i>	0% (0/25)	16% (4/25)	60% (15/25)	16% (4/25)	8% (2/25)	
Mother						<0.001
<i>Bilingual children</i>	36% (9/25)	36% (9/25)	24% (6/25)	4% (1/25)	0% (0/25)	
<i>Monolingual children</i>	4% (1/25)	4% (1/25)	60% (15/25)	20% (1/25)	8% (2/25)	
<hr/>						
Education level	Primary school	Secondary school	Bachelor	Master		
Mother						<0.001
<i>Bilingual children</i>	28% (7/25)	68% (17/25)	4% (1/25)	0% (0/25)		
<i>Monolingual children</i>	4% (1/25*)	16% (4/25)	48% (12/25)	28% (7/25)		
Father						<0.001
<i>Bilingual children</i>	52% (13/25)	40% (10/25)	8% (2/25)	0% (0/25)		
<i>Monolingual children</i>	4% (1/25)	16% (4/25)	48% (12/25)	32% (8/25)		

Table 3. Characteristics of the bilingual group

	mean (SD; min –max)
Maternal language proficiency L2	3.8 (1.37; 2 – 5)
Paternal language proficiency L2	3.3 (1.25; 2 – 5)
Parental report child proficiency L1	4.2 (0.62; 3 – 5)
Language environment L1	0.41 (0.21; 0.14 – 0.83)
Language richness L1	0.30 (0.16; 0 – 0.67)
Language environment L2	0.59 (0.21; 0.17 – 0.86)
Language richness L2	0.70 (0.16; 0.33 – 1.0)
	N (%)
Immigrant generation	
- First	- 9/25 (36%)
- Second	- 12/25 (48%)
- Third	- 2/25 (8%)
- Fourth	- 2/25 (8%)

Table 4. Language use and exposure of Turkish and Dutch in bilingual children

<i>n</i> =25	Turkish	Turkish and Dutch	Dutch	NA
Language environment				
Home	36% (9/25)	64% (16/25)	0% (0/25)	0% (0/25)
Day-care	28% (7/25)	28% (7/25)	44% (11/25)	0% (0/25)
Close neighborhood	40% (10/25)	36% (9/25)	24% (6/25)	0% (0/25)
Classroom	0% (0/25)	8% (2/25)	92% (23/25)	0% (0/25)
Playground at school	20% (5/25)	32% (8/25)	48% (12/25)	0% (0/25)
Friends	20% (5/25)	52% (13/25)	28% (7/25)	0% (0/25)
Hobby	4% (1/25)	24% (6/25)	36% (9/25)	36% (9/25)
Language richness				
Radio	12% (3/25)	16% (4/25)	36% (9/25)	36% (9/25)
Television	32% (8/25)	52% (13/25)	16% (4/25)	0% (0/25)
Parents reading	8% (2/25)	8% (2/25)	72% (18/25)	12% (3/25)
Reading	0% (0/25)	20% (5/25)	80% (20/25)	0% (0/25)
Music	16% (4/25)	52% (13/25)	24% (6/25)	8% (2/25)
Support homework	24% (6/25)	20% (5/25)	44% (11/25)	12% (3/25)

2.2 Language measures & procedure

Before conducting the protocol, written informed consent was obtained from the parents and the study was approved by the Ethical Committee of the Ghent University Hospital. The same assessment protocol was used for the children of the subject group and for the matched children of the control group, as well as for both measurement times (at the age of 6y and at the age of 9y). All children were tested in their home environments by a trained speech language student (native Dutch speaker). Neonatal information, socio demographic data, medical history and information about language use and exposure were collected during a semi-structured interview using a parental questionnaire.

Table 5. Composition of the Core Language Index (CLI), Receptive Language Index (RLI) en Expressive Language Index (ELI) for children below and above 9 years old

Subtest	CLI < 9y	CLI > 9y	RLI < 9y	RLI > 9y	ELI < 9y	ELI > 9y
<i>Concepts and Following Directions</i>	X	X	X	X		
<i>Word Structure</i>	X				X	
<i>Recalling Sentences</i>	X	X			X	X
<i>Sentence structure</i>	X	X			X	X
<i>Receptive Word Classes</i>			X	X		
<i>Expressive Word Classes</i>					X	X
<i>Total Word Classes</i>		X				
<i>Formulated Sentences</i>			X			
<i>Expressive vocabulary</i>					X	<10y
<i>Word Definitions</i>						10y
<i>Semantic Relationships</i>				X		

To measure expressive and receptive language skills in Dutch, the children were tested with the standardized language battery CELF-IV-NL [42]. This test is frequently used by speech language therapists in Flanders to examine both monolingual and bilingual children with possible language disorders, even though its norm sample is mainly based on monolingual performances. For this study, the Core Language Index (CLI), the Receptive Language Index (RLI) and the Expressive Language Index (ELI) were calculated. The CLI serves as a measure of the general academic language abilities of a child, whereas the RLI and the ELI reflect respectively the auditory language comprehension and the oral language production. The CLI can be used to discriminate between children with and without language difficulties. The subtests that had to be conducted to compose the different indices were conducted following the instructions in the manual and varied between children below and above nine years old. An overview of the composition of the language indices per age interval is presented in table 5. Raw scores were converted to standard scores and percentile scores. The standard scores and percentile scores were compared to the Flemish norm sample offered by the manual. The cut-off score for the indices was set at – 1 SD (85 standard score), corresponding with the 16th percentile. Bilingual language performances corresponding with scores below percentile 16 were considered to overlap with the subclinical population and thus indicate possible language difficulties. Language performance scores below percentile 10 were considered to be clinical and clearly demonstrated a language delay. The authors of the CELF also collected normative data of non-Western immigrants. This norm sample consisted of 158 non-Western immigrant children who had at least one parent born abroad and have lived at least for seven years in Belgium or the Netherlands. 60% of this sample spoke another language than Dutch at home. The mean standard score for the Core Language Index was 90.34 (SD 14.68). For the Receptive and the

Expressive Language Indices the mean standard scores were respectively 92.46 (SD 14.70) and 90.33 (14.91). The standard scores of the Turkish-Dutch bilingual children were compared to these means as well.

2.3 Statistical analysis

For the statistical analysis of the data SPSS version 24.0 was used. The distribution of the scores of the continuous variables was investigated using the Kolmogorov-Smirnov and Shapiro-Wilk test. For the comparison of the data between the bilingual and monolingual children the independent samples Mann-Whitney U test was used. To compare the evolution of the language skills between the two groups, the differences in language scores between the two test moments (at the age of 6y and 9y) were calculated in both groups and compared using the related samples Wilcoxon signed rank test. Differences in socio-economic status (SES) between the bilingual and monolingual children were compared using the chi-square test (table 2). To measure the impact of home language, SES, language use at school, birth order, generation and gender on the language scores of the bilinguals, the Kruskal-Wallis test was used.

3. Results

3.1 Comparison of the language scores between bilinguals and monolinguals

The results of scores on the subtests and indices of the CELF in the bilingual and monolingual groups are presented and compared in Table 6. Bilingual children score significantly lower for all indices and subtests compared to monolingual children ($p < 0.001$). The mean scores for the three language indices of the bilingual group lie within the clinical zone ($<$ percentile 10) of the CELF. For the CLI, the bilingual group achieved a mean standard score of 75.7 (SD 9.66, 58 – 91), which is one SD lower than the established mean (90.34; SD 14.68) for non-Western immigrants. For the RLI and the ELI, the mean standard scores of the bilingual group were respectively 77.3 (SD 8.85, 64 – 95) and 75.0 (SD 12.1, 55 – 96). These scores were also 1 SD lower than the means for the non-Western immigrants (RLI: 92.46, SD 14.7 and ELI: 90.33, SD 14.91).

3.2 Comparison of the evolution in language scores between bilinguals and monolinguals

Table 7 compares the evolution of the language indices of 9 bilinguals and 13 monolinguals at the age of 6 year and at the age of 9 year. Language differences (language scores at the age of 9 – languages scores at the age of 6) for the CLI ($p = 0.186$), RLI ($p = 0.060$) and ELI ($p = 0.695$) are not significantly different between bilinguals and monolinguals.

Table 6. Results of the language scores in the 9-year-old bilingual Turkish-Dutch and monolingual Dutch children

Percentile scores	Bilingual Turkish-Dutch children						Monolingual Dutch Children						p-value
	N	Mean	Median	SD	Min	Max	n	Mean	Median	SD	Min	Max	
Core Language Index	25	8,7	4,8	9,1	0,3	27,4	25	72	80,7	25,4	4,8	97,3	<0.001
Receptive Language Index	25	9,7	6,3	10,9	0,8	36,9	25	68	74,8	28,4	4,2	96,4	<0.001
Expressive Language Index	25	9,9	5,5	11,7	0,1	39,5	25	71,8	78,8	22,9	12,9	95,8	<0.001
Concepts and Following Directions	25	14,3	16	11,9	1	37	25	66,1	75	26	9	91	<0.001
Recalling Sentences,	25	11,2	9	11,5	0,4	37	25	54,3	50	22,4	9	91	<0.001
Formulated Sentences	25	18,1	16	20,8	0,4	75	25	73,6	84	26,9	9	99	<0.001
Word Classes – Total	25	17,9	16	16,5	0,1	50	25	69	75	24,3	9	98	<0.001
Word Classes – Receptive	25	16,1	16	15,5	0,4	63	25	68,3	84	25,5	9	95	<0.001
Word Classes – Expressive	25	18,1	16	15,5	0,1	50	25	64,2	75	25,7	16	99	<0.001
Expressive vocabulary	25	14,9	9	17,5	0,1	75	25	74,1	84	20,1	25	98	<0.001
Semantic Relationships	25	17	9	16,9	1	63	24	60,1	75	29,7	5	95	<0.001
Sentence structure	1	2	2		2	2	0						/
Word structure	1	1	1		1	1	0						/
Word definitions	0						1	75	75		75	75	/

Table 7. Evolution of the languages indices (in percentiles) over 3 years in bilingual and monolingual children

Bilingual children							
	6-year old			9-year old			Difference
	Mean	SD	Median	Mean	SD	Median	Mean score
CLI	7.8	12.8	1.6	10.1	8.6	5.5	+2.29
RLI	13.9	23.5	2.7	12.4	11.5	6.3	-1.57
ELI	6.3	10.7	1.2	11.4	12.5	6.3	+5.1
Monolingual children							
	6-year old			9-year old			Difference
	Mean	SD	Median	Mean	SD	Median	Mean score
CLI	65.5	20.5	63.1	76.1	28.6	89.7	+10.57
RLI	61.7	20.2	60.5	77.8	28.3	90.9	+16.08
ELI	72	20	78.8	74.4	23.3	78.8	+2.35

3.3 Influencing factors on the languages scores of bilingual children

The impact of the parameters home language, SES, language at school, birth order, generation, and gender on the CLI, RLI and ELI scores are presented in table 8. Language scores of the indices of the bilingual children vary depending on the home language and the SES measured by the profession of the mother ($p < 0.05$). Bilinguals with a higher SES (profession of the mother: clerk) perform significantly better on expressive language skills (ELI) (figure 1). Bilingual children with Turkish and Dutch as a home language have significantly higher scores for CLI and ELI compared to bilinguals speaking Turkish at home (figure 2).

Table 8. Impact of influencing variables on the CLI, RLI and ELI in bilingual Turkish-Dutch children (p-values)

	CLI	RLI	ELI
	p-value	p-value	p-value
<i>Gender</i>	0.310	0.913	0.146
<i>Generation</i>	0.077	0.225	0.095
<i>Birth order</i>	0.608	0.543	0.813
<i>Maternal education</i>	0.226	0.719	0.332
<i>Paternal education</i>	0,412	0,273	0,106
<i>Profession mother</i>	0,080	0,710	0,016
<i>Profession father</i>	0,844	0,993	0,642
<i>Home language</i>	0.019	0.061	0.011
<i>Language at school</i>	0.490	0.559	0.307

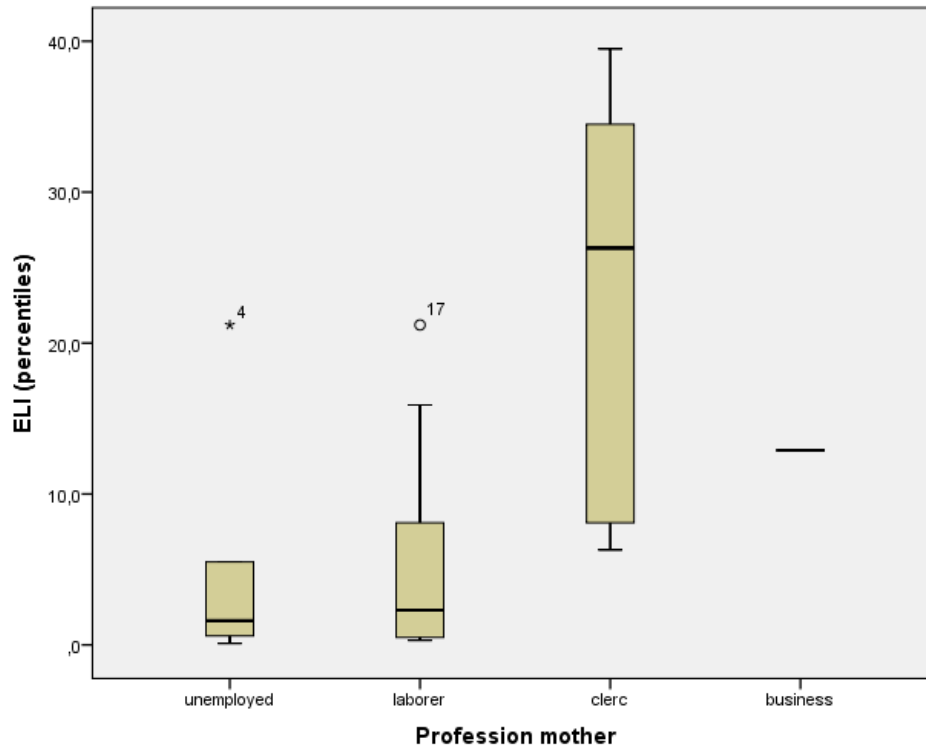


Figure 1. ELI scores by the profession of the mother in Turkish-Dutch children

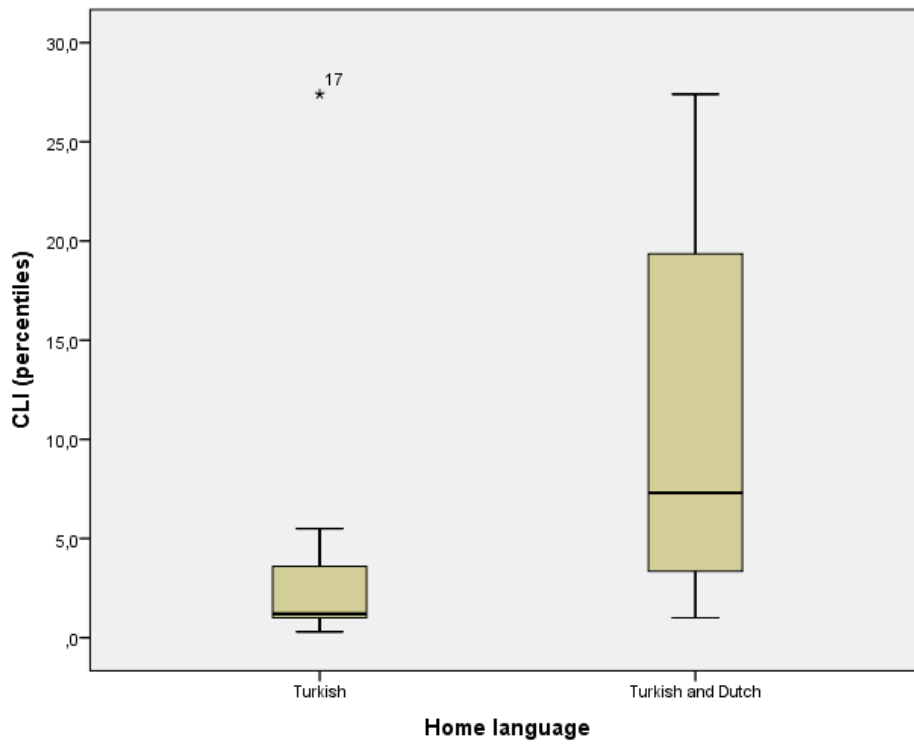


Figure 2. CLI scores by home language in Turkish-Dutch children

4. Discussion

Academic language proficiency in the host language of Turkish immigrant children is important for future school results, occupational success [22] and social acceptance in the host community [21]. The purpose of this study was to measure and compare academic Dutch receptive and expressive language proficiency between 25 Turkish-Dutch bilinguals and 25 age and gender matched monolingual Dutch children with the same educational background. The auditory language comprehension and the oral language production of these children were examined using the CELF-IV-NL language battery. Secondly, the evolution in Dutch proficiency over three years was measured in 9 Turkish Dutch bilinguals and 13 monolingual Dutch children.

The results of the study showed very low scores (< pc 10) for expressive as well as receptive Dutch language skills in Turkish-Dutch bilingual children. For all subtests, the bilingual children scored significantly lower compared to their monolingual peers. The results of this study are not completely comparable to previous conducted research, due to the differences between the study groups in age, language environment and SES [13]. In comparison with the normative data of the CELF for non-Western immigrants the Turkish-Dutch children score 1 SD lower than the mean for all indices. The mixed linguistic background of the norm sample and possible differences in SES between the norm sample and the group of Turkish-Dutch children in this study might declare the different language results. Previous research established a gap in language skills between second language learners and monolingual peers, although this gap tend to be larger for our study population. In the literature, a delay in semantics [34,35,38,43] and morphosyntax [38] was already described in Turkish-Dutch children in the Netherlands. However, the language delay for expressive and receptive semantics, morphology and syntax of the bilingual children in this study compared to other immigrants groups and compared to monolingual peers is substantial and worrying.

The scores on the language tests are in contrast with the parental ratings of the child's language proficiency in Dutch. The majority of the parents rated the child's language production and comprehension in Dutch good (resp. 60%-40%) to very good (resp. 28%-44%). No parent rated the child's language proficiency as being limited. As mentioned before, language proficiency consists of the academic as well as the everyday register. Children use the academic register mostly in school environments. However, academic language should not be regarded as an asset only limited to school contexts, initial phases of academic register begin in family contexts where children are presented literacy rich atmospheres and cognitively high level of parent-child language interactions [44]. Academic language proficiency is important for educational success and future professional perspectives. The academic register differs from the everyday register which is used in daily communication in the home environment. Scores on a standardized language battery, which

measure academic language proficiency, can be very different from the child's spontaneous communication with parents and siblings. Therefore, one should be careful with the interpretation of parental ratings on language proficiency in general and for a more holistic understanding of assessing bilingual children's language skills, both academic and daily language skills should be combined. Daily language skills were not investigated in this study and should be further investigated in future research, by conducting pragmatic language tests and analysis of spontaneous language samples.

For the interpretation of the data, one has to take into account that the SES of the Turkish-Dutch children in Belgium and in this study was significantly lower compared to native Flemish children. For the research purposes of this study, it was practically not possible to match the test group and control group for SES as they were recruited in the same schools. Nevertheless, previous research demonstrated the effect of SES on the performances of children on the CELF test. Barragan, et al. [45], for example, found that the Spanish CELF overidentified lower SES children with language impairment. Probably, this is also the case for the Dutch CELF, although this is not properly investigated yet. We compared the language scores of the bilingual children to the performances of the control group and to the monolingual norm-samples, which as well do represent monolingual children from lower SES backgrounds. Results of this study show that the bilingual Turkish-Dutch children lag behind monolingual children with same educational backgrounds and children with variable SES environments. The results of the research of Barragan, et al. [45] could provide an explanation for the very low scores of the Turkish-Dutch children in our study as most of them had lower SES backgrounds. Nonetheless, our findings show that there is an urgent need for more language training in bilingual children from lower SES backgrounds to improve the second language skills and to improve future educational and employment perspectives. Seeing the probable influence of the SES, it is important for future research purposes to match children not only for educational background, but also for socioeconomic background.

Because of increasing high quality Dutch language input and Dutch education at school, it was hypothesized that the bilingual children would catch up with their monolingual peers after some years. However, the results of this study showed that the differences in expressive and receptive Dutch language skills between both groups remained the same after 3 years. These results contradict the findings of Paradis and Jia [5], who did find that the majority of a group second language learners reached monolingual levels of performance on the CELF-IV after 5½ years of exposure to their second language. An important remark is that the SES of the participating children was mixed but skewed towards higher SES since the majority of the participant's mothers had followed post-secondary education. To the contrary, Driessen, et al. [43] showed a negative evolution in language skills in Turkish-Dutch children from the 2nd to the 4th year in primary school in The Netherlands. In his study,

the gap between monolingual Dutch children and Turkish-Dutch bilingual children even increased. The fact that the gap between monolingual children and Turkish-Dutch children in our study did not decrease is an important implication for the educational expectations and the future professional perspectives of these children.

Many variables have an impact on second language learners. In this study, the impact of the parameters home language, SES, language at school, birth order, generation, and gender on the CLI, RLI and ELI scores was measured. The results of this study showed significant differences in language scores depending on the home language and the SES (i.e. profession of the mother). Bilingual children with Dutch and Turkish as home language score significantly better for general Dutch language skills (CLI) and expressive Dutch language skills (ELI). Generation however did not have an impact on the language scores. The quality of the Dutch language input of the parents was rated by the parents themselves. The majority of the parents rated their Dutch proficiency as good or very good. However, about one third rated their proficiency for language production and perception as limited. The language proficiency of the parents and the quality of the language input in the host language should be further investigated. Although the quality of the Dutch language input is not objectively known here, speaking Dutch at home is related to better Dutch language scores. The SES was measured by the maternal and paternal profession and level of education. In this study, expressive language skills of the bilingual children varied depending on the profession of the mother. Children of mothers with a profession as clerk are more proficient in Dutch. However, the mean scores for the ELI in this group are still lower than the ELI scores of the monolingual group. The Turkish population in Flanders is still less educated compared to the native population. Altinkamis and Agirdag [21] encountered that social class was found to be a significant contributor to immigrants' attitudes towards the Dutch host language and the use of Dutch as home language. The languages spoken at school by the Turkish children did not have an impact on the results of the CELF (i.e. besides Dutch, some children also spoke Turkish on the playground and in class with other bilingual classmates, for an overview see table 4). Language outcome was also not influenced by birth order or gender. This study did not capture detailed information about the length of exposure to Dutch or the specific age of onset. It could be valuable to include these parameters as impacting factors in further research. In future research, it would also be interesting to assess the amount and the quality of the Dutch language input at home and at school and investigate the correlation between language skills and school success in this particular group of bilingual children.

The low performances of typically developing Turkish-Dutch children on language batteries are worrying and have clinical implications. Differential diagnosis between typically developing bilingual children and bilingual children with a specific language impairment is difficult and cannot be

based on norm scores of standardized language batteries. In speech language practices, there is a high risk for misdiagnosis, especially overdiagnosis, of language disorders in normal developing bilingual children [46]. Recent studies demonstrated that dynamic assessment could be a more appropriate method to avoid the linguistic and cultural bias while assessing bilingual children, although this need to be further examined [47,48]. One has to take into account to adjust their expectations for bilingual children for the performance on standardized language batteries as well as for school performances, even after a decent amount of qualitative second language input. There is a real need for guidance and language training for typically developing Turkish-Dutch bilingual children because language proficiency is important for further school success, level of education, chances on the labor market and overall quality of life.

5. Conclusion

This study investigated expressive and receptive Dutch language skills in 6-year old successive bilingual children with Turkish as heritage language and showed very low performances for all language outcomes. Differences in language proficiency between the bilingual Turkish-Dutch children and their monolingual peers remained the same at the age of 6 and 9 years old. Language production in the bilingual children was mainly influenced by the profession of the mother and the home language. Further research on larger study populations is necessary to investigate language development and language input in the host and heritage language in Turkish-Dutch children.

Statements

Statement of Ethics

Before conducting the protocol, written informed consent was obtained from the parents and the study was approved by the Ethical Committee of the Ghent University Hospital with approval number 2016/1236.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

ED and KVL developed the concept and the design of the study and defined the intellectual content. ASS and ER performed the data acquisition. The statistical analysis and the interpretation of the data

was carried out by ED, JD, ASS and ER. JD and ED drafted the manuscript with support from FA. ED, FA and KVL provided critical feedback and revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

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