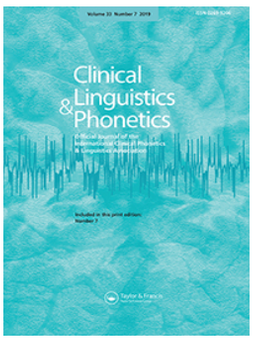

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Exploring the Relationship between Native Language Skills and Foreign Language Learning in Children with Developmental Language Disorders

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ABSTRACT

Learning English as a foreign language (FL) is mandatory for children with developmental language disorders (DLD) in elementary education in the Netherlands. Because of their difficulties in acquiring their first language, learning an FL at school can be challenging. To date, almost no literature on children with DLD and FL learning exists. The aim of this study is to investigate the relationship between language proficiency in Dutch of monolingual and multilingual children with DLD and learning English as an FL.

A cross-sectional study was conducted in four special education schools for children with DLD. Thirty-five sixth graders (mean age 12;3 years) participated in this study. Twenty-two children were monolingual, and 13 children were multilingual. Correlation analyses between scores on standardised Dutch language tests and a standardised test for English proficiency were performed. Because the English proficiency test partly relies on reading skills, scores on a Dutch word decoding test were included in the analyses. Results show that the children with DLD performed poorly on the FL proficiency test when compared to typically developing children. Significant positive relationships were found between Dutch and English language skills of children with DLD, with no significant differences in FL proficiency between the monolingual and multilingual groups. Possibly, children with DLD cannot achieve acceptable proficiency levels of English as an FL, because of poor word decoding skills and impaired morphosyntactic skills in Dutch. Future research should focus on oral English proficiency of the children, because the English proficiency test only uses written and auditory presented tasks.

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Correlation analysis; foreign language proficiency; developmental language disorders; specific language impairment

Introduction

Developmental language disorders (DLD) are common in childhood, with an overall prevalence rate of 7.4% in kindergarten populations (Tomblin, Records, Buckwalter, Zhang, & O'Brien, 1997). Children with DLD can have difficulties with phonology, morphosyntax, semantics and pragmatics (Leonard, 2014). These language problems cannot be attributed to hearing loss, neurological damage or poor cognitive functioning (Bishop, 1992). In the Netherlands, special schools for children with hearing impairments and DLD exist. Some of the children visiting these schools may also have an autism

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spectrum disorder (ASD). Until 2012, learning English as a foreign language (FL) was facultative for Dutch children with DLD that were enrolled in special education. However, the Dutch government places great importance on an adequate English proficiency for all citizens and decided that from August 2012 all children have to learn English as an FL in primary schools. According to Ganschow, Sparks, and Javorsky (1998), being proficient in English is regarded as a necessary competence in an increasingly multilingual society and global economy.

The Dutch educational system is divided into several types of schools: mainstream schools for typically developing (TD) children and different special education settings for children with special educational needs, such as children with learning disabilities or children with DLD. To date, the literature about FL learning in these different Dutch education settings is very sparse. As of 2007, monitoring of skill levels in English of children enrolled in mainstream education and in some special education settings started. This monitoring showed that the majority of TD children achieved a minimum skill level in English as a FL on vocabulary, reading and listening skills. Adequate levels in English vocabulary and reading skills were obtained by 50% of mainstream students, rising to 66% for English listening skills (Thijs, Trimbos, Tuin, Bodde, & de Graaff, 2011). Although information on FL skill levels of children with DLD is currently lacking, the available information on children with learning disabilities in special education settings indicates that most children achieved rather poor skill levels in English as an FL. Their reading, listening, speaking and written vocabulary skills were comparable with the lowest 10^{th} percentile of children in mainstream schools. Furthermore, no significant differences in English language skills between monolingual and multilingual children with learning disabilities were reported (Geurts, Hemker, & Vrijs, 2014).

To date, considerable variation exists in FL achievement of students, and several personal factors influencing learning an FL have been identified. Research has shown that TD mainstream students' difficulties in learning an FL are related to problems with learning their native language (Ganschow et al., 1998; Grigorenko, 2002; Sparks, Patton, Ganschow, Humbach, & Javorsky, 2006). In particular, difficulties with phonology and morphosyntax appear to impede FL learning (Ganschow et al., 1998; Grigorenko, 2002). General intelligence also seems to impact on FL learning and could be regarded as a predictor of successful FL learning in mainstream students (Jaekel, Schurig, Florian, & Ritter, 2017; Sparks et al., 2006). In addition, affective, personality and demographic factors predicted FL achievement. Overall, academic achievement was the best predictor, explaining 11.5% of the variance in FL achievement, with FL anxiety as the second best predictor, explaining 10.5% of the variance (Onwuegbuzie, Bailey, & Daley, 2000). FL anxiety was related to the performance of students in oral examinations, to their productive vocabulary and to teachers' ratings of achievement. Furthermore, motivation has been widely accepted as one of the key factors influencing the rate and success of FL learning (Dörnyei, 1998, 2003). In this context, motivation refers to a student's attitude towards, the interest in and the effort invested in learning an FL (Gardner, Tremblay, & Masgoret, 1997). A survey by the Dutch Central Institute for Educational Testing (Centraal Instituut voor Toetsontwikkeling; cito) showed that students in their last year of elementary education in mainstream schools and in special education settings had a positive attitude towards English (Geurts et al., 2014). It was also demonstrated that, in the Netherlands, informal learning of English is quite common outside of the school context, due to an

abundance of English in television programmes, computer games, movies, music and social media. In the Netherlands, television programmes, computer games and movies in FLs are not dubbed but are mostly subtitled.

Not only personal factors, but also school-related factors may influence the proficiency of English as a FL, such as the frequency and duration of the English lessons and the teaching method used. In the Netherlands, these school-related factors tend to vary greatly among schools (Geurts et al., 2014; Thijs et al., 2011). Some schools use self-developed teaching materials instead of specific methods and programmes. The exact grade or age when Dutch students start to learn English, as well as the dosage of teaching hours are not clearly defined (Thijs et al., 2011). The majority of mainstream schools and special education settings for children with DLD provide English lessons in the last two years of primary school. However, there is a tendency in mainstream schools to start much earlier, already in kindergarten (Thijs et al., 2011). Despite common conviction that younger children are better language learners, research on FL learning in mainstream schools has shown that older children make faster progress in classroom language learning, potentially due to higher levels of cognitive maturity and their ability to learn language through explicit instruction (Jaekel et al., 2017). Therefore, it is not so clear whether learning an FL in schools at an early age is really advantageous, and we are completely in the dark what the best age to start learning an FL for children with DLD would be. Teachers in Dutch mainstream secondary education attribute the huge variation in English proficiency of their students at the start of secondary education to all these different approaches currently practiced in elementary schools (Herder & Bot, 2005).

Yet another factor influencing learning English as a FL is the linguistic difference between native and FLs. Each particular dimension of a FL might introduce specific difficulties for students' FL learning (Grigorenko, 2002). English and Dutch differ on a number of dimensions. For instance, English orthography is known to be very opaque, whereas Dutch orthography is rather transparent. On the other hand, the verb and noun inflectional systems, as well as the determiner system of English are relatively simple. Dutch has somewhat richer verb and noun morphology paradigms and a more complex determiner system. Another contrast between the two languages is that Dutch is a verb-second language, meaning that the inflected verb always takes second position in main clauses and has to appear clause-final in subordinate clauses. This may cause difficulties in learning the correct word order in English sentences.

One last aspect to be discussed concerns FL learning by multilingual children. In the Netherlands, multilingual children constitute a very heterogeneous group with a huge variation in language background. Often, these children will learn English in elementary special education as a third – or perhaps even fourth – language. Research has shown that TD bilingual children can learn an FL as a third language more easily than monolingual children learn an FL as a second language, due to their well-developed strategies in language learning (Keshavarz & Astaneh, 2004; Thijs et al., 2011). Furthermore, the affinity between the native language(s) and the FL appears to determine the ease with which multilingual children can learn an FL (Thijs et al., 2011). However, we do not know to what extent these findings on FL learning by TD multilingual children also hold for multilingual children with DLD. Children with DLD, irrespective of their language background, may have a stronger impediment in learning an FL, because of the difficulties they already encounter in acquiring their native language (and a second language).

The findings on FL learning from international studies cannot be easily generalised to the Dutch situation, because of clear differences in populations and educational programmes in elementary schools. Currently, professionals in Dutch special education for children with DLD have many questions concerning the organisation of English lessons. Although teaching English to children in special education settings is mandatory, teachers are concerned whether children with DLD are able to master English as an FL at an acceptable level because of their language impairment. To date, no research exists on Dutch children with DLD learning English as an FL. The present study aims to explore the relationship between DLD and learning English as an FL by looking at the language profiles of Dutch children with DLD and their proficiency in English. The primary research question was whether oral and written native language proficiency and learning English as an FL are related in Dutch children with DLD in sixth grade[1] of primary special education. The sub-questions were (1) what are the skill levels in reading, listening and vocabulary in English of children with DLD in sixth grade of special education? and (2) do we find differences in FL proficiency between monolingual and multilingual children with DLD in sixth grade of special education?

Method

Study design and participants

This cross-sectional study was conducted in four special schools in the Netherlands for children with DLD. Children with DLD can be admitted to special education when they score within the normal range on non-verbal intelligence tests and obtain scores of −1.5 standard deviation on at least two language domains (i.e. phonology, semantics, morpho-syntax, pragmatics) measured with standardised language tests. In addition, they have to perform below the 10th percentile on reading and/or math tests, and six months of speech and language therapy in regular health care could not resolve the language difficulties. The children with DLD started learning English in fifth grade and received 30–45 minutes of English lessons per week. The teaching methods of English as an FL were different in each school. Two out of four schools gave homework focused on English vocabulary and also assessed these home assignments. The other two schools did not give homework. Initially, 60 children were included in the study. However, 25 children from the participating schools were excluded from the study. Nine children did not have an identifiable language disorder based on recent scores on norm-referenced language tests, 13 children were also diagnosed with ASD, two children had a hearing impairment and one participant was a native speaker of English. The final study sample consisted of 35 children in the sixth grade. The mean age of the participants in the study sample (24 boys, 11 girls) was 12.3 years (SD = 6 months, age range 11.4–13.3 years). Twenty-two children were monolingual, and 13 children were multilingual from various linguistic backgrounds (Moroccan, Berber, Arabic, Surinam, Afghan, Dari, Ethiopian, Mandingo, French, Turkish, Cape Verdean, Mandarin). We do not have information on their language development in the preschool years. In any case, all children learned Dutch on entering

[1]Sixth grade in the Netherlands is the highest grade of elementary school. This group was chosen because at that age, the children have had some classroom experience in learning an FL.

elementary education at the age of 4 years. The Medical Research Ethics Committee judged that this study was in accordance with the Medical Research Involving Human Subjects Act. Parents of all participants provided written informed consent.

Procedure

The children completed the Cito Me2! Test in English (Alberts, Egberink, Feddema, & van Zuijlen, 2007) in their classrooms in the mornings on two consecutive days. The CitoMe2! is a standardised test developed to measure English proficiency in the higher grades of elementary education. More information on the test can be found in the 'Materials' section. The speech language therapists (SLTs) of the schools provided the additional language test data and information about language backgrounds (multilingualism) of the children. Language test scores that were missing at the start of this study were obtained by the first author, who is qualified as a SLT. The teachers or internal supervisors provided the scores from non-verbal intelligence tests and tests for word decoding skills of the participants. Unfortunately, the scores on non-verbal intelligence tests originated from three different tests. Because these tests were not sufficiently comparable, a mean non-verbal IQ score could not be computed for use in the analyses.

Materials

The following tests were used to assess oral and written Dutch and English proficiency of the participants.

CELF-4-NL

The Dutch language abilities were assessed with the CELF-4-NL (Kort, Schittekatte, & Compaan, 2010). The CELF Core Language Score was calculated for each participant. This score indicates the severity of the language disorder and is a compound score of the results from the four subtests 'concepts and following directions', 'recalling sentences', 'formulated sentences' and 'word classes'. 'Concepts and following directions' is a test for language comprehension. The child is asked to designate a collection of images in a certain order. 'Recalling sentences' assesses expressive morphosyntax. The child is asked to repeat sentences of increasing length. 'Formulated sentences' also assesses expressive morphosyntax. The child is presented with a picture and is then asked to make a sentence with a given word. 'Word classes' measures receptive and expressive semantics. The child must indicate which pairs of words belong together and also has to explain why. This test consists of a receptive and an expressive component; total scores of both components were used.

Peabody picture vocabulary test-III-NL (PPVT-III-NL)

The Dutch PPVT-III-NL (Schlichting, 2005) is a picture selection test at word level. The test measures receptive vocabulary, which has been shown to correlate positively with reading comprehension and is generally considered to be a good predictor of overall language proficiency (Dunn & Dunn, 2005).

Three minutes test (Drie Minuten Test; DMT)

The DMT (Verhoeven, 1995) measures the Dutch word decoding skills in children. Decoding skills are a prerequisite for understanding written texts (Krom, Jongen, Verhelst, Kamphuis, & Kleintjes, 2010). The child has to read words with an increasing level of difficulty within a limited time period.

Me2! Cito Test English

The Me2! Cito Test English (Alberts et al., 2007) for the sixth grade, a multiple-choice paper and pencil test, was used to assess English language proficiency. FL mastery usually assumes the formation and development of five basic skills, namely, pronunciation, listening, speaking, reading and writing (Grigorenko, 2002). Two of these five basic skills, i.e. listening and reading skills, can be tested with the Me2! Cito Test English. The test consists of two sections, each with two subtests. Section one measures listening skills and auditory vocabulary, and section two assesses reading skills and written vocabulary. In each subtest, the child has to read questions with their multiple-choice answers. In the subtest listening skills, information must be retrieved from English spoken video fragments to identify the main idea and indicate the meaning of the key elements. In the subtest auditory vocabulary, spoken high-frequency English words and phrases must be recognised and understood. In the subtest reading skills, the child has to derive, the topic, the main theme and meaning of the key elements from written English texts. The subtest written vocabulary contains questions such as 'What is the Dutch meaning of this English word?', 'What is the opposite of the underlined word?', 'To which category does the underlined English word belong?' and 'Choose the right English word to describe the picture'. The Me2! Cito Test English provides norm-referenced scores. The test score of each participant was converted into a percentile range, in order to compare them with students in mainstream education.

Primary study outcomes

The primary study outcomes were significant correlations (a) between the scores on the PPVT-III-NL and the scores on the subtests of the Me!2 Cito Test English, (b) between each CELF subtest and each Me2! Cito Test English subtest and (c) between Dutch word decoding skills and the scores on the subtests of the Me2! Cito Test English.

Statistical methods

Descriptive statistics were used for the whole study sample (35 children) to present participant characteristics and test results. Analyses of variance (ANOVAs) were used to investigate differences between the monolingual and multilingual groups on their mean scores on the English proficiency subtests and on mean scores of the written and oral Dutch language tests. Prior to the analyses of variance, the variables of the same subtest of each group were tested for homogeneity. Based on Levene's test, a one-way ANOVA was used when population variances were equal ($p > .05$) and the Welch's test was used when the homogeneity assumption was violated ($p < .05$). As a second step in the analysis, bivariate correlation analyses were performed to examine possible linear relationships between the subtests of the Me2! Cito Test English and the subtests of the CELF-4-NL.

The same procedure was repeated with the Me2! Cito Test English and receptive vocabulary of the PPVT-III-NL as well as between Dutch word decoding skills measured with the DMT and the Me2! Cito Test English. In the analysis, raw scores were used. Unfortunately, we had some missing data, because two children were absent during one of the test moments. As a result, the correlation analyses for the two subtests written vocabulary and reading skills were performed with the remaining 33 children.

Prior to the correlation analyses, the variables of the different subtests were tested for normality. Based on Q–Q plots and Shapiro–Wilk tests, the Spearman correlation coefficient was used for not normally distributed variables ($p < .05$) and the Pearson correlation coefficient for normally distributed variables ($p > .05$) to see if relationships were significant at $p < .05$ and were positive or negative.

Results

Firstly, the results of both spoken and written Dutch language skills of the study sample are presented. We also looked at possible differences in Dutch language skills between the monolingual and multilingual children with DLD. Descriptives of the scores on the standardised Dutch language tests are presented in Table 1. The mean quotient scores of the PPVT-III-NL and of the subtests 'word classes' and 'formulating sentences' of the CELF-4-NL were just outside the normal range. The mean quotient score of the subtest 'concepts and following directions' deviated more than −1.5 SD from the norm data. The lowest scores were obtained on the Core Language Score and the subtest 'recalling sentences' (SD > −2). The mean raw score on the DMT test for Dutch word decoding skills was far below average compared with the norm data and corresponded with the lowest 20 percentile of students in mainstream education.

Concerning the comparison between the monolingual and multilingual DLD groups, one-way ANOVA yielded no significant group differences ($p < .05$) on the DMT test for Dutch decoding skills, $F(1, 33) = 1.642$, $p = .209$, partial $\eta^2 = .047$. However, significant group differences ($p < .05$) between the monolingual and multilingual DLD groups were found on the comprehension tasks PPVT-III-NL, $F(1, 33) = 5.350$, $p = .027$, partial $\eta^2 = .140$, and the

Table 1. Means, standard deviations, ranges of age, DMT raw scores, quotient scores of the CELF-4-NL subtests, PPVT-III-NL of the total DLD group, and of the monolingual and multilingual DLD groups.

	Range		Mean (SD)	
	Total (n = 35)		Monolingual (n = 22)	Multilingual (n = 13)
Age (months)	148.0 (5.9)	136–159		
DMT – Dutch word decoding skills (raw scores)	237.3 (74.8)	37–341	225.0 (78.7)	258.2 (65.2)
Dutch language tests (Q scores)				
CELF-4-NL Core Language Score	68.2 (9.4)	55–85	69.9 (9.5)	65.2 (8.9)
CELF-4-NL Concepts and following directions	71.8 (14.7)	55–100	75.4 (16.1)	65.6 (9.9)
CELF-4-NL Recalling sentences	67.5 (9.1)	55–85	68.4 (8.2)	66.1 (10.5)
CELF-4-NL Formulated sentences	81.6 (13.0)	55–105	80.4 (12.1)	83.5 (14.7)
CELF-4-NL Word classes	82.3 (13.8)	56–110	85.5 (15.1)	77.0 (9.7)
PPVT-III-NL – Receptive vocabulary	84.4 (11.3)	56–108	87.6 (9.9)	79.0 (11.8)

Notes: The maximum raw score for the DMT is 420. The quotient scores of the CELF and PPVT language tests have a mean of 100 and a standard deviation (SD) of 15. A quotient score > 85 is considered an average score, and 55 is the minimum score.

CELF-4-NL subtest 'concepts and following directions', $F(1, 33) = 3.920$, $p = .033$, partial $\eta^2 = .106$. The monolingual children with DLD performed better on these two tasks.

Secondly, we present the Me2! Cito spoken and written English language skills test scores and differences between monolingual and multilingual groups. The descriptives are presented in Table 2. The children obtained equally poor scores on all four subtests, and the mean raw score of each subtest corresponds with a percentile score ranging from 20 to 25. The distribution of the different subtests scores per percentile range is presented in Figure 1.

The third part of our analysis concerned the relation between spoken and written Dutch language proficiency and English language skills. As can be seen in Table 2, one-way ANOVA yielded no significant difference between the monolingual and multilingual DLD groups in their scores on the subtests listening skills, $F(1, 33) = 0.038$, $p = .85$, partial $\eta^2 = .001$, auditory vocabulary, $F(1, 33) = 0.248$, $p = .62$ partial $\eta^2 = .007$, reading skills, $F(1, 31) = 3.243$, $p = .08$, partial $\eta^2 = .095$, and written vocabulary, $F(1, 31) = 0.673$, $p = .42$, partial $\eta^2 = .021$ of the Me2! Cito Test English. Because we found no group differences, correlation analyses were performed with the total DLD group ($n = 35$). As illustrated in Table 3, significant positive correlations were found between word decoding skills,

Table 2. Means and standard deviations of the Me2! Cito Test English subtests of the total DLD group, the monolingual and multilingual DLD groups and *p*-values for one-way ANOVA with the monolingual and multilingual groups.

	Max score	Range	Mean (SD)		
	Total		Monolingual	Multilingual	*p*-Value
English language skills					
Listening skills ($n = 35$)	22	11.7 (3.0)	6–17	11.6 (3.1)	11.8 (3.0)	>.05
Auditory vocabulary ($n = 35$)	38	19.0 (6.7)	7–36	18.6 (6.2)	19.8 (7.7)	>.05
Reading skills ($n = 33$)	20	9.4 (3.2)	2–18	8.6 (3.2)	10.6 (3.0)	>.05
Written vocabulary ($n = 33$)	40	20.9 (6.3)	11–36	20.2 (5.7)	22.0 (7.2)	>.05

Notes: $n = 35$, there were two missing values for reading skills and written vocabulary (total: 33 participants).

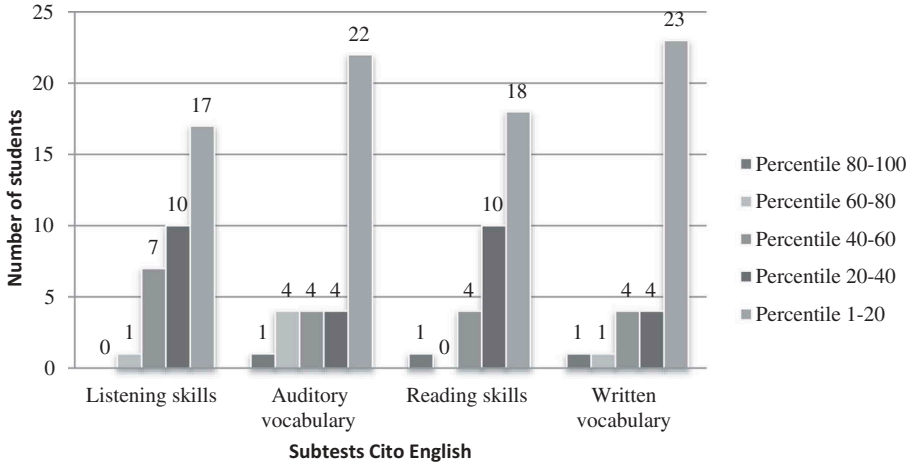

Figure 1. Percentiles per subtest Me2! Cito Test English. A percentile score from 1 to 20 indicates a low score, from 40 to 60 an average score and from 80 to 100 a high score compared to students in mainstream schools.

Table 3. Spearman correlations between word decoding skills in Dutch measured with the DMT and the subtests of the Me2! Cito Test English, and between formulated sentences of the CELF-4-NL and the subtests English.

		Monolingual and multilingual children with DLD combined			
		DMT Word decoding skills in Dutch		CELF-4-NL Formulated sentences	
Cito Me2! English subtests:	*N*	*r*	*p*-Value	*r*	*p*-Value
Listening skills	35	.292*	.045	.288*	.047
Auditory vocabulary	35	.114	.257	−.085	.313
Reading skills	33	.267	.067	.235	.094
Written vocabulary	33	.404**	.010	.268	.066

* Correlation is significant at the 0.05 level (1-tailed).
**Correlation is significant at the 0.01 level (1-tailed).

measured with the Dutch DMT, and the subtests listening skills and written vocabulary of the Me2! Cito Test English. The relationship was weak between word decoding skills in Dutch and listening skills in English (r (33) = .292, p < .05). The correlation was moderate to strong between word decoding skills in Dutch and written vocabulary in English (r (31) = .404, p < .05). Furthermore, as presented in Table 3, a significant but weak positive relationship was found between formulated sentences of the CELF-4-NL, measuring morphosyntactic skills in Dutch and listening skills of the Me2! Cito Test English (r (33) = .288, p < .05). No significant correlations were found between the CELF-4-NL subtests 'concepts and following directions', 'recalling sentences' and 'word classes' and the subtests of the Me2! Cito Test English. Also no significant correlations were found between receptive vocabulary measured with the PPVT-III-NL and the subtests of the Me2! Cito Test English.

Summary of the results

The monolingual and multilingual children with DLD were analysed together as one group, because no significant group differences were found in their spoken and written English language skills. The only group difference between the monolingual and multilingual children with DLD was found for two comprehension measures on the Dutch standardised language tests, where the monolingual children obtained higher scores.

The results of the Me2! Cito Test English show that the English language skills of children with DLD are poor when compared with mainstream children. Furthermore, no differentiation in skill level between the four Me2! subtests is observed. Significant and moderately strong positive correlations are found between word decoding skills in Dutch and English language skills in written vocabulary, and significant weak positive correlations are found between listening skills in English and Dutch word decoding skills and morphosyntactic skills.

Discussion

The goals of this study were to determine (a) the skill levels in English reading, listening and vocabulary of Dutch 12-year-old children with DLD enrolled in elementary education,

(b) to investigate the relationship between oral and written Dutch language proficiency and learning English as an FL and (c) whether the English language skills of monolingual and multilingual children with DLD differed.

This study shows that Dutch children with DLD perform poorly compared to TD peers on a standardised test measuring English as an FL. Results on the four subtests show that they perform equally poor on the auditory and written English language tasks. Also, no difference is found between the monolingual and multilingual children with DLD. Word decoding in Dutch is positively correlated with English listening skills and written vocabulary. Morphosyntactic skills in Dutch are positively correlated with English listening skills. The results of this study are partially in line with Ganschow et al. (1998) who found that morphosyntactic difficulties in the native language impact on FL learning in TD students. Ganschow et al. also concluded that phonological problems in the native language negatively influenced FL learning. However, we had no information on the phonological skills in Dutch of our participants, and the Me!2 Cito Test English does not measure oral proficiency. Therefore, we cannot elaborate on this aspect. The results from the present study are also partially comparable to Geurts et al. (2014) who measured English skill levels in listening, reading, written vocabulary and speaking of Dutch children with learning disabilities. Similar to Geurts et al. (2014), the children with DLD also scored below average in our study, but in some comparable tasks, such as listening, reading and written vocabulary, the children with DLD appear to outperform the learning disabled children. An explanation for this difference might be found in differences in the test materials that were used. Geurts et al. used self-constructed test assignments, where we used a standardised test. It is also possible that the DLD group performed better compared to the learning disabled group because of the higher cognitive level of the DLD group. However, the non-verbal IQ scores of our participants originated from three different non-verbal IQ tests, making statistical comparisons unsuitable. In our study, no significant differences in English language skills were found between the monolingual and multilingual children with DLD. This result is also comparable with Geurts et al. (2014), who found similar results in their group of children with learning disabilities. However, bilingual advantages in FL learning have been suggested in the literature (Cenoz, 2003; Keshavarz & Astaneh, 2004). Perhaps, it is the case that these advantages do not extend to children with DLD or children with learning disabilities.

At this point, discussion of the usefulness of the Me2! Cito Test to measure English proficiency in children with DLD is appropriate. This standardised test has been designed for TD children in mainstream schools and builds upon their well-developed reading skills. The test may therefore not be entirely suitable to assess the English language skills of children with DLD. Poor decoding skills at word and sentence level of the children with DLD may have negatively affected their results on the different subtests. In addition, the test has a limited response time for the two auditory tasks. Some of the participating children showed frustration during assessment because of the time pressure. Children with DLD have been found to have a slower processing speed than TD peers on many tasks, and may therefore be disadvantaged on tests that reward rapid responding (Miller, Kail, Leonard, & Tomblin, 2001; Miller, Leonard, Kail, Tomblin, & Francis, 2006), Furthermore, the Me2! Cito Test English does not measure oral English skills, whilst especially these skills are practised most often during the English lessons. Therefore, a test assessing

oral language without time constraints which also allows more teacher involvement might be better suited for children with DLD. In further research, measuring oral English language proficiency in children with DLD could be incorporated by using English versions of language tests such as PPVT, CELF or TROG (Bishop, 2003). Of course, no norms for Dutch children are available, but these tests could provide a more complete picture of their FL skills.

Children with DLD, their parents, teachers and society all strongly value a good proficiency in English. In secondary education, as well as in vocational education in the Netherlands, English is used more and more. To date, there is nothing to suggest that learning English in elementary school could be harmful for the language development of monolingual and multilingual children with DLD. Because of the exploratory nature of this study, it is not easy to give directions on how to improve effective FL learning for children with DLD. The current practice in the special schools to start relatively late with FL learning receives some support from our correlation analyses, showing that word decoding skills and morphosyntactic skills were positively correlated with their FL skills. Investing in optimal first-language development of children with DLD in the lower grades may be beneficial for their FL learning later on. However, more research is needed to answer questions about appropriate FL teaching methods, the optimal frequency and duration of lessons and possible advantages of starting early with FL education in schools for children with DLD.

FL learning by children with DLD is a relatively new field. Hopefully, this exploratory study will inspire more research into possible predictors of FL achievement and the development of fruitful approaches for successful FL learning in children with DLD.

Conclusion

Dutch children with DLD in the sixth grade of elementary school have poor English language skills compared to TD children. Significant and positive relationships were found between word decoding skills in Dutch and English language skills in listening and written vocabulary and between morphosyntactic skills in Dutch and listening skills in English. No differences in FL skills were found between monolingual and multilingual children with DLD. Possibly, children with DLD may not be able to learn an FL on an acceptable level, because of their poor word decoding skills and impaired morphosyntactic skills in their first language.

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Statement of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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