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The role of home and classroom literacy environment and expectations in early vocabulary development in bilingual primary education

Hedi Kwakkel, Mienke Droop, Ludo Verhoeven and Eliane Segers

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ABSTRACT
This study examined the unique contribution of Home Literacy Environment (HLE), Classroom Literacy Environment (CLE), and parent and teacher expectations to the development of Dutch (L1) and English (L2) vocabulary in children in Dutch-English bilingual primary education. The children (n = 106) were tested on vocabulary in both languages in kindergarten (Mage = 5–10) and grade 1 (Mage = 6–10). Their parents (n = 106) and teachers (n = 16) filled out questionnaires on respectively HLE and CLE, and shared their expectations of children’s future L1 and L2 achievement through a second questionnaire. Results indicated that L2 HLE correlated with L2 vocabulary and number of L1 books at home correlated with L1 vocabulary. L1 vocabulary development was predicted by teacher expectations, but not by parent expectations, HLE or CLE. L2 vocabulary development was predicted by parent expectations, but not by teacher expectations, L1 vocabulary level in kindergarten, HLE or CLE. These findings highlight the importance of parent and teacher expectations in early bilingual vocabulary development. They suggest a unique but also combined role of two systems in which children learn and develop a second language: the home and the classroom.

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KEYWORDS
Home literacy environment; classroom literacy environment; expectations; vocabulary; bilingual education

Being able to speak and understand more than one language has become the norm in this globalised world. In schools, the student population has become more linguistically heterogeneous, and the curricula and classrooms themselves have become more linguistically diverse too (Muñoz & Singleton, 2019). Both home and school environment play a role in the development of first (L1) and second (L2) languages. A rich Home Literacy Environment (HLE) and high parent expectations have been associated with better L1 and L2 vocabulary development (Martini & Sénéchal, 2012; Sénéchal & LeFevre, 2014). In addition, children of parents who engage in HLE activities in the L2 show higher scores on vocabulary in that second language (Kalia &...
Reese, 2009; Yeung & King, 2016). Once children start kindergarten, the classroom becomes a second main environment in which language is learned. Expectations of teachers and teaching quality have been found to explain differences in learning outcomes (Rubie-Davies, 2009). HLE and CLE have often been studied separately. An exception is a study by Altun et al. (2018), who found that early literacy scores were related to initial literacy scores, mother’s educational level and CLE. They found no relation with HLE. Other research on preschoolers did show evidence that classroom quality moderated the relation between HLE and language skills (Pinto et al., 2013). While both HLE and CLE have been shown to be important factors in early L1 and L2 vocabulary learning, the unique contribution of each is yet unclear, especially when considering that HLE and CLE are related to expectations that parents and teachers have (Davis-Kean, 2005; Tsiplakides & Keramida, 2010).

The current study explored this further by focusing on children in bilingual Dutch/English primary education in The Netherlands. Building on existing theoretical frameworks of the unique relation between HLE and CLE, and language development, the aim of the current study was to examine the combined roles of parent expectations and HLE on the one hand, and teacher expectations and CLE on the other hand, in vocabulary development in the L1 and L2 from bilingual kindergarten to grade 1.

L1 and L2 vocabulary development

By the time a child is 4 years old, their vocabulary size has been largely determined by the number of different words used by the parents (Biemiller, 2006). Vocabulary development starts with receptive vocabulary knowledge, which is easier to learn and consequently affects productive vocabulary use (Nation, 2001). Vocabulary level is found to be very stable over the years, both in monolingual children and L2-learners (Melby-Lervåg et al., 2012). When parents’ language differs from that used at school and/or in society, children tend to have weaker L2 vocabulary skills and do not necessarily catch up with their monolingual peers in the early primary school years (Simos et al., 2014). This was also found by Karlsen et al. (2017), although L1 vocabulary level predicted L2 vocabulary growth in L2 learners. Besides L1 vocabulary, number of books at home and the time of introduction to the L2 also predicted vocabulary growth in these L2 learners.

HLE and vocabulary development

Vocabulary is most successfully learned in context (Ellis & Shintani, 2013). To gain deeper understanding of word meanings, children need to be exposed to linguistic input like (verbal) interactions and sources (Clark, 2009). The home environment of a child, in which factors such as parent’s educational level, number of books and literacy activities are included, is a strong predictor of vocabulary level (Fernald et al., 2013). More specifically, the HLE, including shared-reading activities and parent-child conversation and interaction, plays a significant role in children’s expressive and receptive vocabulary development from a very young age (Schmitt et al., 2011). Children with high socioeconomic status (SES) backgrounds tend to have more stimulating HLEs:
they have a larger number of books at home and participate in HLE activities more frequently than those with low SES backgrounds (Van Steensel, 2006). Although differences in children’s L1 vocabulary development can be partly explained by parents’ SES (Davis-Kean, 2005; Van Steensel, 2006), it has also often been found that the relationship between SES and literacy development is mediated by the nature and amount of time spent on HLE activities (Martini & Sénéchal, 2012). Literacy activities can focus on print and alphabetic skills (formal literacy activities), or on oral language and word meaning (informal literacy activities) (Martini & Sénéchal, 2012). Informal activities are directly connected to vocabulary development (Sénéchal & LeFevre, 2002). The best-known example of informal literacy activities is shared book-reading with focus on story comprehension (Serpell et al., 2005). Although young children’s vocabulary might also benefit from watching television (when an adult is present to help identify new words) (Krcmar et al., 2007), it has not been found to be related to vocabulary size increase like shared reading has (Patterson, 2002).

Many studies have focused on the role of L2 HLE activities in families that speak the L1 at home. It has been found that the more the L2 was present in the home, e.g. shared book-reading or home teaching, the better the child acquired L2 vocabulary at school (Kalia & Reese, 2009; Yeung & King, 2016). In L2 French immersion education, it was found that the more L1 English home activities were done, the better the children scored on L1 in kindergarten and grade 1 even though the children were not taught in the L1 at school (Sénéchal & LeFevre, 2014). Another, more recent, study showed that HLE and activities in the L2 (e.g. shared reading, singing songs and watching television) was positively associated with L2 vocabulary (Lau & Richards, 2020).

**CLE and vocabulary development**

It has been found that classroom quality (the way a programme is structured, learning activities are carried out and interactions observed), moderated the relation between HLE quality and children’s early language skills (Pinto et al., 2013). In line with HLE, CLE involves vocabulary activities and conversations and interaction between teacher and child or between classmates. CLE has a more systematic and professional structure than HLE due to it being designed by trained professionals (Altun et al., 2018). There usually are specific settings (e.g., within the large group or activities in smaller units) each day, which provide children with different opportunities to practice language and literacy skills (Baroody & Diamond, 2016). Teacher-child conversations (e.g., during circle activities or individually when helping a child) lead to gains in vocabulary size when those conversations have a high concentration of teacher elicitations and extensions (Cabell et al., 2015). Shared book-reading, especially the conversations that were had as a result, has been found to be associated with children’s vocabulary levels as well (Zucker et al., 2013). Students of teachers who were responsive and who spent more time on literacy activities in the classroom showed stronger vocabulary skills than students of teachers who were less responsive and spent less time on literacy activities (Connor et al., 2005).

Little is known about foreign language or bilingual CLE and its relation to L2 vocabulary development, especially in early primary education. Regardless of the
quality of teaching, however, the more time spent on the L2, the better the learning outcomes (Campbell et al., 1985).

**Parent and teacher expectations**

Apart from the importance of HLE and CLE, many studies have emphasised the importance of high and realistic expectations of children’s learning outcomes from both teachers and parents (Loughlin-Presnal & Bierman, 2017; Rubie-Davies, 2009). It might be tempting to interpret relations between expectations and learning outcomes as “high expectations for all children lead to high learning outcomes”, but it seems more likely that parent and teacher expectations are related to knowledge and observations of children’s learning capacities and strategies. Socio-economic factors (e.g. parents’ educational level) seem to be indirectly related to learning outcomes through parents’ beliefs and behaviours. In a study by Davis-Kean (2005), it was found that for European Americans the overall total effect of parents’ education on child achievement was much stronger than that of income. The relation between parents’ years of education and their expectations of their child, and between expectations and actual achievement of the child, was moderate, indicating that parents’ academic expectations of their children do not solely come from their own educational background. It seems more likely that certain home activities, such as helping with homework or visiting the library, will show stronger relations with achievement. In another study, it was found that HLE in kindergarten predicts achievements in grade 8 only via kindergarten achievement, which indicate that early parent expectations have long-term effects on children’s academic achievement (Froiland et al., 2012). Teacher expectations are the beliefs that teachers hold about the level their pupils will most likely achieve in the future. Those expectations are linked to teachers’ characteristics and school context, and are related to instructional practices and classroom climates (Rubie-Davies et al., 2012). The way teachers shape learning environments, make pedagogical decisions and adopt teaching strategies is strongly associated with their beliefs and expectations (Young, 2014). When teachers have low expectations of students, those students tend to have lower achievements because they are less challenged by their teacher (Weinstein, 2002). This effect could be a self-fulfilling prophecy: teachers’ beliefs affect students’ performance in such a way that they actually change, or the expectations of teachers are just very persistent and sustain even though student achievements might contradict them (Good & Brophy, 2003).

**Current study**

Both literacy environment and expectations have been found to be important factors in L1 and L2 development in young children. Most studies, however, focus on a single specific setting at a given moment (either the home or the school environment). The unique effects of HLE and CLE combined with expectations of parents and teachers, have not yet been studied in one design, especially not in a situation in which the L2 learned at school is not the majority language. Therefore, the present study attended to the two different learning environments young children spend most of their time in
and strived to examine the unique contribution of parent expectations and HLE, and teacher expectations and CLE on L1 and L2 vocabulary development in bilingual primary education while controlling for SES.

In the current study, we assessed children on vocabulary in kindergarten and in grade 1 of bilingual primary education in The Netherlands. Parents and teachers filled out questionnaires on HLE and CLE respectively and their expectations of individual children in kindergarten, to assess the role of HLE, CLE, and parent and teacher expectations in the acquisition of Dutch (L1) and English (L2) vocabulary in Dutch-English bilingual education, to investigate the following research question: How do HLE and CLE, and parent and teacher expectations play a role in L1 and L2 vocabulary development from kindergarten to grade 1?

It was expected that both HLE and CLE would predict vocabulary development from kindergarten to grade 1 in both languages. Previous research has shown that besides positive effects of L1 HLE on language learning, parents also tend to engage in L2 activities at home which have positive effects on L2 acquisition (Lau & Richards, 2020; Van Steensel, 2006). At school it was found that the more time was spent on literacy activities and conversation, the higher the vocabulary scores of the children were (Connor et al., 2005; Zucker et al., 2013). Since most parents speak the L1 at home and therefore seem able to correctly estimate learning capacities of their child in that language, it was expected that parents’ expectations would predict L1 vocabulary levels in grade 1. CLE and teachers’ expectations were hypothesised to relate to both L1 and L2 vocabulary in grade 1, since both languages were present within the classroom and because it has been found that, regardless of the language taught, the way teacher shape their learning environment and use teaching strategies is strongly related to their beliefs and expectations of children (Rubie-Davies et al., 2012; Young, 2014).

**Method**

**Participants**

A total of 106 children (\(M_{\text{age}} = 5-10, \ SD = 0.32\) in kindergarten, \(M_{\text{age}} = 6-10, \ SD = 0.32\) in grade 1), 49 boys and 57 girls, from four different schools (11 classes) in The Netherlands participated in this study. Each of these schools participated in the bilingual primary education pilot (Appendix A) and offered a bilingual Dutch/English programme in which 30-50% of the educational time was taught in the L2 English. All children who were in kindergarten at those schools were asked to participate, but only those with active consent did. The children participating in this study came from relatively high socioeconomic backgrounds: almost 72% of mothers had a higher professional or university degree, 20% of mothers finished senior vocational education and 8% reported only to have a high school diploma. Most children came from monolingual Dutch families (92.5%), the others spoke another language besides Dutch at home. Children who used English as (one of) the language(s) at home and children who did not speak any Dutch at home were excluded from this study.

Sixteen female teachers participated in this study. Ten were co-teachers: each teaching the same class part-time. One would speak mainly Dutch, the other mainly
English in the classroom. Six teachers worked full time in one class and switched between Dutch and English during the week. All teachers were native Dutch speakers. The teachers estimated their English language level between the B1 and C2 level of the Common European Framework of Reference for languages (CEFR). All teachers’ teaching experience ranged from 1 to 40 years (\(M = 14.88\); \(SD = 14.85\)), with up to 5 years in bilingual primary education (\(M = 2.75\); \(SD = 1.69\)).

**Materials**

**Vocabulary**

Receptive vocabulary was assessed with the Peabody Picture Vocabulary Test (PPVT-III-NL for Dutch, Dunn & Dunn, 2005; PPVT-IV for English, Dunn & Dunn, 2007). The tests for Dutch and English vocabulary each contained 17 sets of 12 items with increasing difficulty. The children had to indicate which of four pictures corresponded to a word that was orally presented. The standardised individual administration was done according to the manual. A start set was selected according to the child’s age. Scores were calculated by subtracting the total number of errors from the highest item the child had completed. The same versions of the tests were used at both time points of testing, starting with the set matching the child’s age at the time. The English PPVT-IV had coloured illustrations, whereas the Dutch PPVT-III had black-and-white illustrations. Both tests have been found to be reliable measures of receptive vocabulary (Dunn & Dunn, 2005, 2007; Van Hout et al., 2018).

**Parent questionnaires**

Parents were asked to fill out a digital questionnaire specifically developed for this study. The first part involved general information about the child, the language spoken at home, and parents’ educational degree. In part two, parents were asked to estimate the number of books they had in each language on a five-point scale: less than 10 (1), 10–25 (2), 25–50 (3), 50–100 (4), more than 100 (5) and how often their child was involved in certain informal HLE activities like shared reading, playing (computer) games, watching TV or videos, listening to and singing songs and conversations with adults and peers. Eight questions were asked for both Dutch and English (Appendix B). A number of books were viewed as a separate measure, the activity items were combined into one factor for HLE. Scores on “conversations with adults and peers” in the L1 were disregarded, since Dutch was the main language used at home and showed almost no variation. The skewness of conversations with adults was found to be −3.89 and of conversations with peers −2.82, indicating that both item’s distribution was left-skewed. Regarding English, however, parents would need to actively organise these conversations with peers and adults, therefore making it an appropriate L2 HLE activity. Parents answered on a four-point scale: never (1), once a week (2), multiple times per week (3) and every day (4). Cronbach’s alpha was 0.59 for L1 HLE and 0.77 for L2 HLE. Principal component analyses were conducted on the items that measured L1 and L2 HLE. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was 0.60 for the L1 HLE factor and 0.69 for the L2 HLE factor. According to Field (2005), a factor is reliable when at least 4 of the items show higher loading than 0.60, which is the case for both factors in this study (Table 1). L1 shared reading and L1 watching videos/TV have low loadings on
the L1 HLE factor. When these items were not included in the factor, the results of the analyses did not change. Because of the lack of dispersion in these items (they showed less variance than the other items in the L1 HLE factor) they only attributed a little to the L1 HLE factor. Based on common theories about L1 HLE and the way the L2 HLE factor was constructed, we decided to keep them in the factor and in the analyses. Average scores were calculated for each factor and used in the analyses, since all items were equal in weight.

In part three of the questionnaire, parents were asked to predict their child’s performance on Dutch and English language skills in the near future. They answered the question “How well do you think your child will perform on … a year from now?” on a four-point-scale: weak (1), below average (2), above average (3) and excellent (4). This was asked for listening, speaking, reading and writing in both languages (Appendix C). Reliability of both questionnaires was excellent (Cronbach’s $\alpha = 0.95$ for both). The four items were combined into one factor for Dutch (KMO = 0.76) and one for English (KMO = 0.73). All factor loadings were between 0.91 and 0.95.

**Teacher questionnaires**

The teachers of the 11 classes were also asked to fill out a digital questionnaire. This was a parallel version to the questionnaire for parents used in this study, but focused on the educational situation and classroom environment instead of the home environment. The first part involved general information about themselves, their teaching practices, their teaching experience and their estimated language level. In the second part they filled out questions about the CLE (Appendix D) and were asked to estimate how much the children in their class were involved in language-related activities during school hours. This list consisted of the same activities as the HLE questionnaire: shared reading, playing (computer) games, watching TV or videos, listening to and singing songs, conversations with peers and adults. Each of the eight items was rated for the whole class on a four-point-scale: never (1), once a week (2), multiple times per week (3) and every day (4). Cronbach’s $\alpha$ was 0.54 for the L1 CLE questionnaire and 0.48 for L2 CLE questionnaire. The eight items were combined into one factor for L1 CLE (KMO = 0.72) and one for L2 CLE (KMO = 0.50) for data efficiency and comparability (Table 2).

The KMO for L2 CLE is low, but still reliable according to Field (2005) since at least 4 items showed loadings higher than 0.60.

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**Table 1.** Results from factor analyses of the HLE questionnaire.

<table>
<thead>
<tr>
<th></th>
<th>L1 HLE Factor loadings</th>
<th>L2 HLE Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared reading</td>
<td>0.225</td>
<td>0.511</td>
</tr>
<tr>
<td>Educational games</td>
<td>0.688</td>
<td>0.649</td>
</tr>
<tr>
<td>Adventure/sports games</td>
<td>0.680</td>
<td>0.502</td>
</tr>
<tr>
<td>Watching videos/TV</td>
<td>0.282</td>
<td>0.515</td>
</tr>
<tr>
<td>Listening to songs</td>
<td>0.760</td>
<td>0.559</td>
</tr>
<tr>
<td>Singing songs</td>
<td>0.650</td>
<td>0.705</td>
</tr>
<tr>
<td>Conversations with adults</td>
<td>—</td>
<td>0.732</td>
</tr>
<tr>
<td>Conversations with peers</td>
<td>—</td>
<td>0.649</td>
</tr>
</tbody>
</table>

Note. $N = 106$. The extraction method was principal components unrotated factor solution with a fixed number of 1 factor. L1 = Dutch; L2 = English.
A separate form was sent to the teachers to score their expectations for each of the children in their class on Dutch and English language development (Appendix E). They filled out how they expected the individual children in their class to perform in the future on listening, speaking, reading and writing in both Dutch and English. They were asked to make predictions on a five-point-scale: weak (1), below average (2), average (3), above average (4) and excellent (5). Reliability of both questionnaires was good (Cronbach’s $\alpha = 0.88$ for L1 and Cronbach’s $\alpha = 0.90$ for L2). The four items for each language and were combined into one factor for Dutch expectations (KMO = 0.82) and one for English expectations (KMO = 0.79). All factor loadings were between 0.79 and 0.92.

**Procedure**

The study was approved by the Ethics Committee of the Faculty of Social Sciences at our university (ECSW2017-2808-532). For all children participating in this study, active consent was obtained from their parents before parents were asked to fill out the questionnaire. Tests were administered in quiet rooms at the schools by research assistants (Educational Sciences students who received a 4-h training with practice sessions to prepare them for the assessments). All testing took place when participants were in their final semester of kindergarten and one year later when they were in grade 1. English and Dutch were tested on separate days, preventing exhaustion and boredom. Order of administration was counterbalanced: half of the group had the Dutch tests first, the other group the English tests. The 16 participating teachers all gave active consent before being asked to fill out the questionnaires on CLE (digitally) and expectations (either digitally or on paper).

**Data analyses**

$T$-tests were conducted to examine whether HLE, CLE, parent and teacher expectations differed significantly in the L1 and L2. To examine relations between variables, Pearson’s $r$ correlations with pairwise exclusion of cases to include all available data per test, were calculated for all measures.

Multilevel analyses were conducted to answer the main research question while checking whether the fact that the children were nested in different classroom would not account for most of the variability within the data. The multilevel model used was

<table>
<thead>
<tr>
<th>Table 2. Results from factor analysis of the classroom literacy environment questionnaire.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 CLE Factor loadings</td>
</tr>
<tr>
<td>Shared reading</td>
</tr>
<tr>
<td>Educational games</td>
</tr>
<tr>
<td>Adventure/sports games</td>
</tr>
<tr>
<td>Watching TV/videos</td>
</tr>
<tr>
<td>Listening to songs</td>
</tr>
<tr>
<td>Singing songs</td>
</tr>
<tr>
<td>Conversations with adults</td>
</tr>
<tr>
<td>Conversations with peers</td>
</tr>
</tbody>
</table>

*Note. $N = 16$. The extraction method was principal components unrotated factor solution with a fixed number of 1 factor. L1 = Dutch; L2 = English.*
a two-level fixed intercepts hierarchical regression model with vocabulary in grade 1 as the outcome variable. This approach took into account that children (level 1) were nested within classrooms (level 2). A third level for schools was not added because the sample size was too small with only 11 classes divided over 4 schools (the smallest 2 schools have 2 classes participating in this study), which would have led to an inaccurate estimation of the school’s variability (University of Bristol, 2023). MLwiN software was used for the estimation (Tables 6 and 7). Educational level of the mother was used as a control variable for SES and years of teaching experience was added to the model to control for teacher backgrounds. Analyses were set up with similar models for each language, starting with a 0-model to show individual and class variance levels. In model 1 control variables “home language” (monolingual Dutch or not) and “educational level mother” (SES) were added, together with vocabulary level of the previous year (kindergarten). In model 2, the HLE factor, “number of books” and “parent expectations” were added and in model 3 the CLE factor and “teacher expectations” were added, as well as “teaching experience”.

Results

Descriptive statistics

Table 3 shows the means and standard deviations of the factor variables HLE, CLE, parent expectations and teacher expectations in the L1 and L2 as well as the results of the t-tests. L1 HLE scored higher than L2 HLE. There were more Dutch books in the homes than English ones. Most families had more than 50 Dutch books (67%) whereas only 17% had more than 50 books in English. T-tests showed significant differences between HLE in the L1 and L2 and parent and teacher expectations in the L1 and L2. Both parents and teachers have higher expectations for learning outcomes in the L1 than L2. L1 CLE scored higher than L2 as well.

Table 4 shows the standardised scores for L1 and L2 vocabulary in kindergarten and grade 1. T-tests showed significant development of L1 vocabulary, \( t(95) = -8.73, \)

Table 3. Descriptive Statistics of HLE, CLE, parent expectations and teacher expectations and paired samples T-test results.

<table>
<thead>
<tr>
<th></th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>HLE</td>
<td>106</td>
<td>3.05</td>
</tr>
<tr>
<td>Number of books at home</td>
<td>106</td>
<td>3.99</td>
</tr>
<tr>
<td>CLE</td>
<td>84</td>
<td>3.10</td>
</tr>
<tr>
<td>Parent expectations</td>
<td>106</td>
<td>2.66</td>
</tr>
<tr>
<td>Teacher expectations</td>
<td>105</td>
<td>3.63</td>
</tr>
</tbody>
</table>

Note. L1 = Dutch; L2 = English.

Table 4. Descriptive Statistics of L1 and L2 vocabulary (raw scores).

<table>
<thead>
<tr>
<th></th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>105</td>
<td>87.27</td>
</tr>
<tr>
<td>Grade 1</td>
<td>96</td>
<td>96.95</td>
</tr>
</tbody>
</table>

Note. L1 = Dutch; L2 = English.
Correlation analyses

Table 5 shows correlations (Pearson’s $r$) between the variables. L2 HLE correlated with L2 vocabulary. Number of books correlated with L1 but not L2 vocabulary. Parent and teacher expectations showed high correlations and both correlated with L1 and L2 vocabulary scores. L1 and L2 vocabulary scores in kindergarten correlated with L1 and L2 vocabulary scores in grade 1. No significant correlations were found between L1 vocabulary in kindergarten and L2 vocabulary in grade 1, and neither between L1 and L2 vocabulary in grade 1.

Multilevel analyses

Separate analyses were conducted for L1 Dutch and L2 English. Multilevel modelling in MLwiN requires no missing data. Ten of the participants lacked vocabulary data in grade 1, therefore reducing the actual number of participants of 106 to 96 for the analyses in Table 6 and 7. When looked at both models 0 presented in Table 6 and 7, most of the variance of Dutch and English vocabulary in grade 1 was explained by individual differences and not by classroom. The residual variance on classroom level turned to zero in the final model of Table 6 and in model 1 in Table 7.

In model 1 of Table 6, SES and L1 vocabulary level the previous year accounted for a significant amount of variation on Dutch vocabulary in grade 1, home language (being monolingual of bilingual) did not. When HLE, number of books and parents’ expectations were added in the second model, only L1 vocabulary level in kindergarten was still a significant predictor. In model 3, CLE and teacher expectations were added, while controlling for years of teaching experience. Teacher expectations significantly predicted L1 vocabulary in grade 1 on top of L1 vocabulary in kindergarten thus predicting L1 vocabulary development.

Neither home language nor SES predicted English vocabulary in grade 1 (Table 7). Only L2 vocabulary in the previous year did. In model 2, when HLE and parent expectations were added, parent expectations predicted L2 vocabulary in grade 1 on top of L2 vocabulary in kindergarten, therefore predicting L2 vocabulary development. This was still the case when the classroom variables were added in model 3. L1 vocabulary level in kindergarten did not predict L2 vocabulary level in grade 1.

Discussion

The aim of this study was to examine the unique contribution of parent expectations and HLE on the one hand, and teacher expectations and CLE on the other hand, on L1 and L2 vocabulary development. Multilevel analyses were done to predict vocabulary development in each language. The results partially supported our hypotheses. Parents’ expectations predicted L2 vocabulary development and teachers’ expectations predicted L1 vocabulary development. Neither HLE nor CLE predicted vocabulary development in the L1 or L2. L1 vocabulary in kindergarten predicted L1 vocabulary
Table 5. Correlations for HLE, CLE, parent expectations, teacher expectations and vocabulary in kindergarten and grade 1 in L1 and L2.

<table>
<thead>
<tr>
<th></th>
<th>L1 HLE</th>
<th>L1 Books at home</th>
<th>L2 HLE</th>
<th>L2 Book at home</th>
<th>L1 CLE</th>
<th>L2 CLE</th>
<th>L1 Parent expect</th>
<th>L2 Parent expect</th>
<th>L1 Teacher expect</th>
<th>L2 Teacher expect</th>
<th>L1 Vocab.K</th>
<th>L2 Vocab. K</th>
<th>L1 Vocab. Gr 1</th>
<th>L2 Vocabulary grade 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 Number of books at home</td>
<td>0.094</td>
<td>—</td>
<td>—</td>
<td>0.022</td>
<td>0.111</td>
<td>0.143</td>
<td>0.065</td>
<td>0.081</td>
<td>−0.026</td>
<td>0.013</td>
<td>−0.159</td>
<td>0.152</td>
<td>0.045</td>
<td>0.037</td>
</tr>
<tr>
<td>L2 Number of books at home</td>
<td>0.500**</td>
<td>0.589**</td>
<td>0.011</td>
<td>0.232*</td>
<td>0.300**</td>
<td>0.120</td>
<td>0.241*</td>
<td>0.165</td>
<td>0.435**</td>
<td>0.330**</td>
<td>0.525**</td>
<td>0.376**</td>
<td>0.330*</td>
<td>0.119</td>
</tr>
<tr>
<td>L1 CLE</td>
<td>0.022</td>
<td>0.121</td>
<td>—</td>
<td>0.300**</td>
<td>0.173</td>
<td>0.300**</td>
<td>0.215*</td>
<td>0.191*</td>
<td>−0.061</td>
<td>0.030</td>
<td>0.114</td>
<td>0.151</td>
<td>0.072</td>
<td>0.135</td>
</tr>
<tr>
<td>L2 CLE</td>
<td>0.011</td>
<td>0.173</td>
<td>—</td>
<td>0.290**</td>
<td>0.168</td>
<td>0.815**</td>
<td>0.153</td>
<td>0.177</td>
<td>0.274**</td>
<td>0.294</td>
<td>0.099</td>
<td>0.123</td>
<td>0.142</td>
<td>0.123</td>
</tr>
<tr>
<td>L1 parent expectations</td>
<td>0.111</td>
<td>0.232*</td>
<td>0.011</td>
<td>0.290**</td>
<td>0.316**</td>
<td>0.065</td>
<td>0.362**</td>
<td>0.081</td>
<td>−0.003</td>
<td>0.002</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.279**</td>
</tr>
<tr>
<td>L2 parent expectations</td>
<td>−0.026</td>
<td>−0.061</td>
<td>0.143</td>
<td>0.168</td>
<td>0.300**</td>
<td>0.114</td>
<td>0.215*</td>
<td>0.191*</td>
<td>0.274**</td>
<td>0.258</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.294</td>
</tr>
<tr>
<td>L1 teacher expectations</td>
<td>0.013</td>
<td>0.300**</td>
<td>0.153</td>
<td>0.300**</td>
<td>0.555**</td>
<td>0.065</td>
<td>0.362**</td>
<td>0.081</td>
<td>−0.003</td>
<td>0.002</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.279**</td>
</tr>
<tr>
<td>L2 teacher expectations</td>
<td>−0.045</td>
<td>−0.072</td>
<td>0.139</td>
<td>0.340*</td>
<td>0.497**</td>
<td>0.114</td>
<td>0.215*</td>
<td>0.191*</td>
<td>0.300**</td>
<td>0.258</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.294</td>
</tr>
<tr>
<td>L1 vocabulary kindergarten</td>
<td>0.152</td>
<td>0.151</td>
<td>0.123</td>
<td>0.340*</td>
<td>0.387**</td>
<td>0.114</td>
<td>0.215*</td>
<td>0.191*</td>
<td>0.300**</td>
<td>0.258</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.294</td>
</tr>
<tr>
<td>L2 vocabulary kindergarten</td>
<td>−0.045</td>
<td>−0.072</td>
<td>0.139</td>
<td>0.340*</td>
<td>0.488**</td>
<td>0.114</td>
<td>0.215*</td>
<td>0.191*</td>
<td>0.300**</td>
<td>0.258</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.294</td>
</tr>
<tr>
<td>L1 vocabulary grade 1</td>
<td>0.037</td>
<td>0.119</td>
<td>0.279**</td>
<td>0.011</td>
<td>0.231*</td>
<td>0.030</td>
<td>0.310**</td>
<td>0.135</td>
<td>−0.056</td>
<td>0.139</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.279**</td>
</tr>
<tr>
<td>L2 vocabulary grade 1</td>
<td>0.011</td>
<td>0.173</td>
<td>0.011</td>
<td>0.290**</td>
<td>0.300**</td>
<td>0.011</td>
<td>0.362**</td>
<td>0.081</td>
<td>−0.003</td>
<td>0.002</td>
<td>0.158</td>
<td>0.158</td>
<td>0.142</td>
<td>0.294</td>
</tr>
</tbody>
</table>

Note. L1 = Dutch; L2 = English.
* p < 0.05; ** p < 0.01.
in grade 1 and L2 vocabulary in kindergarten predicted L2 vocabulary in grade 1. There was significant development in vocabulary levels between kindergarten and grade 1.

**The role of HLE and CLE in L1 and L2 vocabulary development**

We hypothesised that both HLE and CLE would predict L1 and L2 vocabulary development from kindergarten to grade 1. The results did not support this hypothesis. L1 HLE correlated with L2 HLE, and L2 HLE correlated with L2 vocabulary in both grades,
but HLE did not predict L1 or L2 vocabulary development. Number of L1 books at home correlated with L1 vocabulary in kindergarten and grade 1, but did not predict vocabulary scores or development. Similar to a study by Altun et al. (2018) we found that mother’s educational level (measure of SES) was significantly related to L1 vocabulary development, although in our study that relation ceased to exist when HLE, CLE and parent and teacher expectations were taken into account. We found no predictive value of HLE, but did find correlations between L2 HLE and vocabulary levels. The L2 is not the home language of the families in this study, L2 HLE thus may consist of more intentionally chosen activities that could better fit the child’s learning stage. This seems to be in line with previous research that showed that parents tend to adapt their HLE according to their child’s needs or academic level (Majorano & Lavelli, 2014). This argument requires parents to adequately estimate their child’s developmental stage and form realistic expectations about their child’s achievements (Davis-Kean, 2005), therefore tying HLE closely to parental expectations. Some studies might have overestimated the predictive value of HLE because of parental expectations embedded within the HLE factor (as in e.g., Majorano & Lavelli, 2014; Sénéchal & LeFevre, 2002; Serpell et al., 2005). Froiland et al. (2012) found that the indirect effect for parent expectations in kindergarten on 8th grade achievements was twice as large as the indirect effect of early parent involvement (HLE activities). In our study we also separated the two factors, showing the unique contribution of parents’ expectations to children’s L2 vocabulary development.

In contrast to our hypothesis, CLE did not predict vocabulary levels in either language. A relation was observed between CLE and L2 vocabulary in kindergarten, implying that the way teachers design their classrooms and activities is related to vocabulary level in kindergarten. Even though teachers in bilingual primary education might have high expectations of the programme, this might not translate directly to classroom practices or CLE (Heyder & Schädlich, 2014). It was also found that teacher expectations correlated strongly with the reported numbers of books at home (SES) in both languages. Teachers establish their expectations by considering not only their knowledge of the child’s abilities but also, to some extent, the child’s socio-economic background, a trend found in several previous studies (Rubie-Davies et al., 2012; Tsiplakides & Keramida, 2010).

It is interesting to note the strong predictive value of earlier vocabulary skills on later vocabulary skills that was found only for the two languages separately: L1 vocabulary in kindergarten did not correlate with L2 vocabulary in grade 1. Possibly, the L2 vocabulary is still at such a primary level in kindergarten and grade 1 that no benefit is gained yet from overlap between the languages, even though Dutch and English do have specific phonological and semantic connections (Goriot et al., 2021; Pérez et al., 2010). More exposure to language-shared phonological contrasts is necessary to become sensitive to phonetic features and representations (Kuo & Anderson, 2010).

The role of parent and teacher expectations in L1 and L2 vocabulary development

It was expected that parent expectations would relate to the L1 and that teacher’s expectations would predict both L1 and L2 vocabulary development. Contrary to our
expectations, we found that parent expectations predicted children’s L2 vocabulary development, but not L1 vocabulary development. Without proper reference or standardised measures, it might be difficult for parents to correctly estimate their child’s vocabulary development, even if it is their first and home language. Recent research by Dos Santos (2019) showed that parents’ motivations to enrol their child(ren) in a bilingual primary education programme were based on their own interests and not necessarily on the appropriateness of the programme for their specific child. The children in the current study were also intentionally enrolled in bilingual education, even though monolingual options were widely available. This implies that this choice may have been based on the interest of the parents and that they will likely encourage their child’s L2 acquisition. Our findings are consistent with findings in other research where parent expectations had a long-term positive effect on children’s academic achievement through early HLE engagement (e.g., Froiland et al., 2012). We indeed found a relation between parent expectations and vocabulary for the L2 in the current study.

Regarding teacher expectations, we hypothesised that they would predict both L1 and L2 vocabulary development. Our results showed that teacher expectations only predicted L1 and not L2 vocabulary development. Finding this just for the L1 might be partly consequential to the Dutch pilot of bilingual primary education being novel, with only few participating schools, and a small number of teachers choosing to teach in this particular educational setting. All participating teachers were native speakers of the L1, had been trained in the L1 and had easy access to L1 standardised tests. As for the L2, they were capable of estimating current levels, but may not yet have been experienced enough to accurately predict L2 vocabulary development, since the programme was only established three years before this study was conducted. Previous research has found that experienced teachers’ predictions of achievement were highly accurate and significantly more accurate than novice teachers (Mulholland & Berliner, 1992). On top of that, self-fulfilling prophecies might have affected the student’s performance. Teacher’s expectations, that were generally high, might have been very persistent even though their student’s actual achievement might have been contradictory (Good & Brophy, 2003). Actual reasonable expectations on L2 vocabulary development were difficult to form due to lack of standardised monitoring instruments or experience in L2 teaching. Foreign language teachers also tend to have extremely positive attitudes towards multilingualism and language learning (Heyder & Schädlich, 2014).

**Limitations**

A first limitation of this study is the uniqueness of the Dutch situation in terms of bilingualism and bilingual education. Transfer of the findings to other situations or countries should be done with caution. Bilingual education in, for example, Canada relies on immersion situations in which children are almost completely taught in the L2, which is not the language spoken at home or in society, but nevertheless an official language of the country. Although English is not an official language of The Netherlands, its status is very high and the language is omnipresent in Dutch society. Even outside of school, children are likely to encounter the English language.
A second limitation would be the way in which vocabulary was measured. We used the PPVT-III in Dutch and the PPVT-IV in English, both of which measured receptive vocabulary only. Outcomes of the study regarding predictive value of HLE or even the relation between L1 vocabulary in kindergarten and L2 vocabulary in grade 1 could have been different when productive vocabulary would have been included, since receptive vocabulary knowledge is known to affect productive vocabulary use (Nation, 2001).

A third limitation is the small number of teachers participating in this study. Children were in 11 classes at 4 different schools, which made it difficult to measure certain (indirect) effects of CLE. The sample size was fairly small to conduct multilevel analyses with, but we did want to take the multilevel structure of the data into account. On top of that, the relatively high SES of our sample and the fact that most children came from monolingual Dutch families, make it difficult to generalise our findings to a more diverse population with children who enrol in bilingual education from a multilingual background.

Lastly, using the same set of activities for CLE as for HLE could be viewed as a limitation as well. We measured informal literacy activities at home and at school and aimed for a generic approach regardless of methodology used in the classroom. CLE was measured in kindergarten, a pre-literate year in The Netherlands. The items in the questionnaire cover the most important elements of the language/literacy curriculum in kindergarten, but might have missed the specifics of each classroom and teacher. The fact that shared reading did not load high on the L1 HLE factor could be seen as a limitation of the way we operationalised HLE in this study. Although L1 shared reading as an individual item did not relate to L1 vocabulary either, the conceptualisation of the L1 HLE factor was not as good as we had hoped for. In our sample with children from high SES monolingual Dutch families, some of the L1 HLE activities (shared reading and watching videos or TV) were done every day by almost all parents and could therefore not explain the variance in vocabulary development, even though this finding is contradictory to common knowledge and previous studies. This study should therefore be seen as a first step in examining the unique contribution of CLE and HLE to vocabulary development in bilingual primary education.

Future research could examine the possible mediation effects of CLE on vocabulary. A larger and more diverse number of teachers will be needed to participate then. That, together with the use of observations instead of questionnaires, should give a more solid and reliable representation of classroom practices in bilingual primary education. On top of that, measuring HLE, CLE and expectations of parents and teachers at a second time point would give insight in how they might change over time and establish a strong foundation for causal conclusions regarding vocabulary development. It could also be investigated whether signs of language transfer will appear in older children in bilingual primary education, when they have had more exposure to the L2 than the children in the current sample.

Implications

Implications of this study might be of interest to both parents and teachers of children in bilingual education since they emphasise the effect of expectations on actual
language development of children. Teachers should be aware of their expectations and are advised to take that into account when communicating these expectations with parents and with their students. Forming expectations is an inevitable part of teaching and parenting, but it is difficult to do so reasonably and to correctly interpret them. Teachers should accept and acknowledge this and be aware of the potential negative consequences of low expectations, but also the potential positive consequences of high and realistic expectations regarding their pupils’ language development. On top of that, teachers will most likely shape their learning environment and activities according to their expectations and are therefore invited to critically reflect on how their expectations relate to their daily classroom practices and be aware of self-fulfilling prophecies. Since the home and the classroom are the two main environments in which young children grow and develop, it is of utmost importance that the adults in those systems are aware of their unique but also their combined roles.

To conclude, the results of this study demonstrate that parent and teacher expectations play an important role in vocabulary development from kindergarten to grade 1 of bilingual primary education in The Netherlands. L2 vocabulary was related to HLE and CLE, but not predicted by either. Earlier vocabulary skills predict later vocabulary skills in each language separately, but no language interdependency signs were found in these early years of bilingual primary education.

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Disclosure statement

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References


**Appendix A. Context of bilingual primary education pilot in The Netherlands**

In 2014, 17 primary schools in The Netherlands participated in a bilingual primary education pilot, in which 30–50% of the time the language of instruction was English (L2), and 50–70% of the time the language of instruction was Dutch (L1). Bilingual Dutch/English education has been around in secondary education in The Netherlands since 1990 and has been a success: children attending a bilingual secondary programme demonstrate considerably higher levels of English than children in regular schools (European Platform, 2013). In this pilot, children start learning the L2 from the age of 4, the time they start kindergarten (children start kindergarten when they turn 4 years old in The Netherlands, any time during the school year new 4-year-olds join an existing class). Therefore, the amount of exposure to the L2 differs from the regular Dutch educational situation (non-pilot schools), in which children usually start learning English around grade 5 (when they are 10–11 years old) and instruction is limited to a maximum of 15% for foreign language teaching. That said, however, English is widely available, even to young children, within Dutch society: television, videos and even in day-to-day life children might encounter people in stores and restaurants who communicate in English. The language has a high status and many Dutch parents see the benefits of teaching their children English from a young age, resulting in a lot of interest in the bilingual primary education pilot and the schools that have been participating in it.
Appendix B. Parent HLE questionnaire

<table>
<thead>
<tr>
<th>Scale:</th>
<th>1 Below average</th>
<th>2 Average</th>
<th>3 Above average</th>
<th>4 Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix C. Parent expectations questionnaire

Q: How well do you expect your child to develop and academically achieve in the future (at least a year from now) assuming they will still be in the educational setting they are in now?
Appendix D. Teacher CLE questionnaire

<table>
<thead>
<tr>
<th>Scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many books do you approximately have in your classroom (including library books and E-books)?</td>
<td>&lt;10</td>
<td>10–25</td>
<td>25–50</td>
<td>50–100</td>
<td>&gt;100</td>
</tr>
<tr>
<td>How often are your students involved in the following activities (alone or together with you)?</td>
<td>Never</td>
<td>Once a week</td>
<td>Multiple times a week</td>
<td>Every day</td>
<td></td>
</tr>
</tbody>
</table>

Shared reading
- English
- Dutch
Educational (computer) games
- English
- Dutch
Adventure/Sports (computer) games
- English
- Dutch
Listening to songs
- English
- Dutch
Singing songs
- English
- Dutch
Conversations with adults
- English
- Dutch
Conversations with peers
- English
- Dutch
Watching TV/videos
- English
- Dutch

Appendix E. Teacher expectations questionnaire

How do you expect the children in your group* to develop and academically achieve in regard to their language skills in both Dutch and English?

Please fill out the names of the children in the left column. Please make an estimation for each child for each subskill using the following scale:

1 = weak
2 = below average
3 = average
4 = above average
5 = excellent
<table>
<thead>
<tr>
<th>Name child:</th>
<th>Dutch</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Listening</td>
<td>Speaking</td>
</tr>
</tbody>
</table>

* Only children who have their parents’ consent to participate in this research.