

Teacher Mechanisms, Reading Attitude and Self-efficacy of Second Language Readers

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Master's thesis Educational Sciences

Universiteit Utrecht

23-06-2020

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Abstract

In recent years, the reading skills and reading pleasure of fifteen-year-old students in the Netherlands are decreased. Specifically, for second language learners reading literacy is a challenging skill. By using a part of the existing data of the Dutch PISA 2018 study, the present study aimed to get more insight into the relationship between reading attitude, self-efficacy and the reading literacy skills of second language learners. The role of the teacher is studied by looking at the effects of setting goals and giving feedback. A total of 4662 fifteen-year-old students, of which 4171 were first and 491 were second language learners, from 156 secondary schools in the Netherlands were included in the sample. The reading literacy test as well as the student questionnaire were analyzed in IBM SPSS statistics after preparing the file in the IDB Analyzer. Second language learners had a slightly more positive reading attitude than first language learners. There was no significant difference in their self-efficacy. Self-efficacy and reading attitude were both significant predictors for reading literacy skills, after controlling for parents' highest ISCED level. Reading attitude of first language learners explained their reading literacy skills whereas second language learners' reading attitude couldn't. A disadvantaged position in linguistic processes may play a stronger role in second language learners' reading literacy skills. Goalsetting and feedback by the teacher did not significantly influence the self-efficacy and reading literacy skills of second language learners. Further research should study the quality of goals set and feedback given by the teacher.

Keywords: second language learners, reading literacy, self-efficacy, reading attitude, teacher, goal setting, feedback

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Reading is one of the core competences that students acquire during their primary school years, since being able to comprehend a written text is a very important skill for formal education as well as participation in society (Lervåg & Aukrust, 2010; Van den Bosch, Segers, & Verhoeven, 2018). The results of the recent PISA rapport showed that between 2015 and 2018 the readings skills of fifteen-year-old students in the Netherlands decreased significantly. Almost a quarter of the Dutch students had insufficient reading skills to fully participate in the current society (Gubbels, Van Langen, Maasen & Meelissen, 2019). Specifically, reading literacy has been a challenging skill for children who read in their second language, such as children from language minorities for whom their home language differs from the language of instruction at school. They often experienced reading comprehension difficulties (Droop & Verhoeven, 2003; Schaars, Segers & Verhoeven, 2019). Dutch students with another home language than Dutch had significantly poorer reading skills in Dutch in comparison with students with Dutch as their home language (Gubbels et al., 2019). Since reading literacy is viewed as a complex skill, knowledge about the independent contribution of a variety of factors that influence reading comprehension is limited (Cain, Oakhill, & Bryant, 2004). Because being able to comprehend a written text is such an important skill in society and a challenging skill for second language learners (Gubbels et al., 2019), more insight in the factors influencing reading literacy and the relationship with second language learners is desired.

Reading literacy

Reading literacy refers to a broad spectrum of competences in order to applicate the skill of reading in a range of situations (OECD, 2019). It includes various cognitive and linguistic skills, such as basic decoding skills and integration of meaning with one's knowledge about the world (OECD, 2019). This view of reading literacy is based upon years

of research, since reading literacy and the factors that are related to this ability have been a topic of interest for many studies (e.g., Cain et al., 2004; Geske & Ozola, 2008; Netten, Droop, & Verhoeven, 2010; Samuels, 1983). It is generally known that decoding skills and vocabulary knowledge seem to differentiate between good and poor language learners (Cain, Oakhill, & Lemmon, 2004; Torgesen, 2000). This is in line with The Simple View of Reading, since early research by Hoover and Gough (1990) found that reading comprehension can be simply viewed as the product of decoding and linguistic comprehension skills.

Decoding is the skill to translate printed letters into phonemes, whereas linguistic comprehension is a process of interpreting lexical information, sentences and discourses (Gough & Tunmer, 1986; Perfetti, 1985). Many researchers have tried to adjust or improve this Simple View of Reading, but consensus has been reached that decoding and linguistic comprehension are the basis of reading comprehension abilities (Perfetti, Landi, & Oakhill, 2005).

In addition to these fundamental basic pillars, also background characteristics of students might contribute to the individual differences in reading literacy skills of students. One important background characteristic for reading literacy is the language spoken at home (Netten et al., 2010).

Second language learners

Second language learners are challenged with the complex task of learning to read in a language they are not used to speak before they enter primary education (Netten et al., 2010). Many studies have concluded that second-language learners lag behind their first language peers in reading literacy skills (Droop & Verhoeven, 2003; Melby-Lervåg & Lervåg, 2014; Schaars, et al., 2019). In order to understand the gap of second-language learners, Netten and colleagues (2010) have tried to discover factors that can explain the individual variation in reading literacy skills. By looking at a broad spectrum, individual factors such as word

decoding and language were connected to reading literacy skills of second language learners. However, Verhoeven and Van Leeuwe (2012) showed that The Simple View of Reading is equally valid for second-language learners as for first-language learners. In both groups of language learners, reading comprehension was highly dependent on oral language skills, especially because word decoding became more automated in higher grades of the primary school. Only one difference was found: the reciprocity of the relationship between listening comprehension and reading comprehension was less strong in the second language learners as compared to the first language learners. This means that the development of reading comprehension skills of second language learners may be more strictly dependent on their oral language proficiency as compared to first language learners (Verhoeven & Van Leeuwe, 2012). These oral language processes, or linguistic processes, are for instance the identification of word meanings, listening comprehension, sentence comprehension or drawing conclusions from a text (e.g. Verhoeven & Perfetti, 2008). Concluding, learning the skill of reading comprehension is the same process for first- and second language learners, but second language learners start out literacy instruction from a disadvantaged position in oral comprehension.

It is important to know that the Simple View of Reading is equally valid for second language learners, but besides the cognitive domain, motivation to read is also important for the development of reading literacy skills. More reading pleasure is related to more and better reading (De Naeghel, Van Keer, Vansteenkiste & Rosseel, 2012; Van Steensel, Van der Sande, Bramer, & Arends, 2016). The reading pleasure of fifteen-year-old students in the Netherlands is the lowest of all OECD countries (Gubbels et al., 2019). Studies into the cognitive domain have received much more attention in second language reading, a lot is unknown about the motivational aspects of second language reading and the relationship with their lower reading literacy skills (Yamashita, 2004). Therefore, this study will focus on the

individual factors reading attitude and self-efficacy in relation to reading literacy skills of second language learners.

Reading Attitude

Reading attitude is defined in multiple ways. Early research by Alexander and Fuller (1976) defined reading attitude as the system of feelings related to reading, resulting in actively approach or avoid reading situations. According to the literature review by Reeves (2002) reading attitude existed out of three components: cognitive, affective and conative. The cognitive component refers to personal and evaluative beliefs, the affective components are related to feelings and emotions, and the conative beliefs describes action readiness and behavioral intentions. The three components were also part of the Mathewson's model (1994), which described that reading attitude influences the intention to read or continued reading, as well as other important aspects for reading literacy such as attention, strategy use and reading comprehension

Second language reading attitudes can be viewed from an expectancy value perspective. This perspective described that individuals' expectancies for success and the value they have for succeeding are important factors of their motivation to perform different tasks (Wigfield, 1994). The model of Day and Bamford (1998) described reading ability in the second language as an expectancy factor and the attitude towards the second language as a value factor. In this view the reading attitude can motivate the decision to read in the second language. A study by Sani and Zain (2011) confirmed the expectancy value model and stated that reading attitude has a significant role in reading improvement of non-native speakers. Sani and Zain (2011) studied two hundred sixteen-year old Malay students in a setting that did not foster English as second language. Reading attitude and self-efficacy towards English were measured with a questionnaire of sixteen items. Overall, the reading attitude of second language learners in the study by Sani and Zain (2011) was not positive, but somewhat

mediocre. English was not perceived as boring, but there was a general reluctance to spend a lot of time in reading English for pleasure or at home. Second language learners often faced difficulties in reading and had lower reading literacy skills, therefore they may place a low value on reading as a way of avoiding reading frustration (Sani & Zain, 2011). However, a positive reading attitude of second language is all the more important. A positive attitude and strong value towards reading can help second language learners to persevere and succeed in reading tasks (Sani & Zain, 2011).

The present study was interested in the reading attitude of fifteen-year-old students, since students' reading attitude develops as they get older and the relationship with their reading skills can differ according to age (Sani & Zain, 2011). The reading attitude of adolescents explained more variance in reading skills than the reading attitude of younger children (Conlon, Zimmer-Gembeck, Creed, & Tucker, 2006; Kush, Watkins, & Brookhart, 2005). Among bilingual children, this may be due to the development of their reading attitude towards their home language and the increasing frequency of reading in their foreign language (Sani & Zain, 2011).

In addition to reading attitude, Sani and Zain (2011) studied the reading self-efficacy of second language learners. The results showed positive correlations between reading attitude, reading self-efficacy and reading skills of second language learners (Sani & Zain, 2011).

Self-efficacy

Self-efficacy is a part of the social cognitive theory and refers to the beliefs about one's own capabilities to learn or perform to particular standards (Bandura, 1986; 1997). Reading self-efficacy is targeting the believes of the reader about his or her capability to read effectively (Gutherie & Wigfield, 1999). Readers who are self-efficacious perform better, because they participate more easily, work harder and persist longer when they encounter

difficulties (Schunk, 2003). In the study of Sani and Zain (2011), self-efficacy was positive related to reading ability of second language learners. Overall, the reading self-efficacy of second language learners was low. Students with more positive attitudes towards reading were also more likely to show higher levels of self-efficacy in the second language (Sani & Zain, 2011).

Because second language learners start out literacy instruction from a disadvantaged position (Verhoeven & Van Leeuwe, 2012), enhancing the self-efficacy of second language learners is important. Enhancing the self-efficacy of second language learners may affect their willingness to work hard and persist when they encounter difficulties, which may benefit their reading performances. According to Schunk (2003), teachers can develop and sustain the self-efficacy of students by several feasible teaching techniques.

Teacher Mechanisms

When second language learners enter schools, they start out literacy instruction from a disadvantaged position, since they generally don't have the same depth and breadth of vocabulary and understanding of the structure of the second language (Elbers, 2010). Students with Dutch as their second language often experience difficulties following lessons and getting a grip on the subject matter (Elbers, 2010). The interesting thing is that teachers can make a difference in closing this gap, as they play a crucial part in students' development by interacting with their students (Hattie, 2003). The present study focused on how teachers can sustain the self-efficacy of second language learners as an important influential factor for their reading development, since little research into this subject has been done.

Schunk (2003) proposed that teachers can foster the academic achievement and motivation among all learners if they use efficacy-enhancing methods in the classroom. This is based on the social cognitive theory of Bandura (2001) which described human functioning as reciprocal interactions between personal factors, environmental factors and behaviors.

From this perspective, the personal factors are students' self-efficacy and reading literacy performance. Receiving feedback is an environmental factor. The actions undertaken by the student, such as using reading strategies and reactions to feedback are part of the behavioral factors. It is important that teachers are aware of the reciprocal interactions, because if they are, they are able to manipulate or change students personal and behavioral influence (Wang & Lin, 2007). As Bandura already stated in 1986, teachers should be paying as much attention to students' perceptions of competence as to their actual competence (in Ruegg, 2018).

With regard to second language learning, self-efficacy is mostly studied in relation to achievement (Ruegg, 2018). Studies into the factors influencing self-efficacy of second language readers are limited. Studies of first language reading and writing have been done and stated that setting learning or performance goals can raise self-efficacy of students (Schunk, 2003). Positive self-evaluations of one's capabilities and progress can make students believe that they are learning and capable of further progress (Schunk, 2003). Teachers play a crucial part in guiding students to set clear goals and providing them of effective feedback (Hattie, 2003). There has been argued that feedback can develop students' self-efficacy through increased verbal persuasions. By using verbal persuasion, teachers can convince students that they have the ability to succeed in a particular task (Lunenburg, 2011). This effect may not last too long, because students' actual performances had a stronger effect on self-efficacy (Schunk, 2003). Nevertheless, verbal persuasions are important to put students' performance into perspective and motivate them to persist (Ruegg, 2018).

Present study

In 2019, the Dutch advisor of the ministry, De Onderwijsraad, called for a 'reading offensive' (Raad voor Cultuur & Onderwijsraad, 2019). De Onderwijsraad stated that students should be motivated more to increase the reading literacy skills of Dutch students, since students increasingly read less and with less pleasure (Gubbels et al., 2019). Students who

have to read in their second language are challenged even more, because they start out reading literacy instruction from a disadvantaged position (Verhoeven & Van Leeuwe, 2012).

Knowledge about the factors influencing the reading development of second language learners is limited, and often have focused on the cognitive domain of reading (Yamashita, 2004). The present study aims to get more insight into the relationship between the affective factors reading attitude and self-efficacy and reading literacy skills, because these factors may affect the willingness to work hard and persevere when second language learners encounter difficulties, which may benefit their reading performances (Sani & Zain, 2011). More insight into the role of the teacher in this relationship is necessary and helpful to understand how teachers can stimulate the development of reading literacy skills of second language learners. Therefore, the present study examines the following research questions: a) To what extent is there a difference between the reading attitude and self-efficacy of fifteen-year-old first- and second language learners?, b) To what extent do reading attitude and self-efficacy predict reading literacy skills and is this different for first and second language learners?), and c) What is the influence of the teacher mechanisms of ‘setting goals’ and ‘giving feedback’ in the relationship between self-efficacy and the reading literacy skills of second language learners?

The first research question a) is explorative, since little research has been done into the potential differences in reading attitude and self-efficacy of first and second language learners in the Netherlands. Sani and Zain (2011) did not compare the reading attitude and self-efficacy of second language readers to first language readers. Therefore, no explicit hypothesis has been formulated. With regard to the second research question b), it is expected that second language learners with a higher self-efficacy and a positive reading attitude have better reading literacy skills than second language learners with a lower self-efficacy and negative reading attitude (Sani & Zain, 2011). Finally, it is expected that c) teachers’ setting

goals and giving feedback will positively impact the relationship between students' self-efficacy and reading literacy skills (Schunk, 2003).

Method

Research design

The study had an explanatory quantitative research design by analyzing and testing relationships between reading attitude, reading self-efficacy, goal setting, feedback and reading literacy skills of second language learners. In order to answer the research questions, data from the Programme for International Student Assessment (PISA) 2018 in the Netherlands were used. PISA is a program from the OECD to measure fifteen-year-olds ability to use their reading, mathematics, and science knowledge and skills in real-life situations (OECD, 2019). Every three years, PISA has a different focus. In 2018, reading was the main domain of the program. The present study only used a part of the complete data collection of the PISA program. The reading test as well as the student questionnaire were used with quantitative measure outcomes. Using quantitative data has the profits of solid data-analysis to provide a general understanding of the research problem (Ivankova, Creswell, & Stick, 2006).

Participants

In total, 4765 fifteen-year-old students from 156 secondary schools in the Netherlands participated in PISA. At first, a random sample of schools was selected from a list of all secondary school in the Netherlands. A random student sample was then drawn from all the fifteen-year-old students at each participating school with a maximum of fifty students per school (Gubbels et al., 2019). The data is representative for the Netherlands, because the response group did not systematic deviate from the national averages of exam grades (Maassen & Meelissen, 2019). After accounting for $n = 103$ missings in the data, in total $n = 4662$ fifteen-year-old students were included. If students spoke mostly a language at home

other than Dutch most of the time, they were identified as second language learners ($n = 491$).

These second languages included European languages (3%), such as German, English or

Polish, as well as non-European languages (8%), such as Arabic, Papiamentu, Chinese or

Turkish (Gubbels et al., 2019). The descriptive statistics are shown in Table 1.

Table 1

Descriptive statistics first- and second language learners

	First language learners	Second language learners
<i>n</i>	4171 (89.47%)	491 (10.53%)
Gender		
Female	2062 (49.44%)	228 (46.44%)
Male	2109 (50.56%)	263 (53.56%)
School level		
Grade 7	2 (0.05%)	2 (0.41%)
Grade 8	80 (1.92%)	53 (10.79%)
Grade 9	1542 (36.97%)	260 (52.95%)
Grade 10	2496 (59.84%)	175 (35.64%)
Grade 11	50 (1.20%)	1 (0.20%)
Grade 12	1 (0.02%)	0 (0.00%)
Highest Education of parents		
None	17 (0.42%)	27 (5.70%)
ISCED 1	30 (0.73%)	22 (4.64%)
ISCED 2	115 (2.79%)	35 (7.38%)
ISCED 3A, 4	1154 (28.00%)	123 (25.95%)
ISCED 5A, 6	2805 (68.07%)	267 (56.33%)

Note. ISCED is the International Standard Classification of Education, which was used to capture parents' highest educational level.

Most of the participated students were first language learners ($n = 4171$, 89.47%). In total, $n = 2290$ females participated, of which $n = 2062$ were first language learners and $n = 228$ were second language learners. Furthermore, $n = 2372$ males participated, of which $n = 2109$ were first language learners and $n = 263$ were second language learners. Most of the first language learners were in Grade 10 ($n = 2496$, 59.84%), whereas most of the second language learners were in Grade 9 ($n = 260$, 52.95%). The International Standard Classification of Education (ISCED) was used to capture parents' educational level. A completed ISCED Level 1 is primary education, a completed ISCED Level 2 is lower secondary education, a completed ISCED Level 3A and 4 are upper secondary education providing access to non-tertiary post-secondary education and a completed ISCED Level 5A and 6 are university level tertiary education and advanced research program. A Pearson's chi-square test was used to compare the parents' ISCED level of first and second language learners. The chi-square test was statistically significant, $\chi^2(4, n = 4588) = 255.50, p < .001$. First language learners were significantly more likely to have parents with a higher rate of years of schooling than second language learners. Since parents' educational level is related to reading literacy skill of students (Gubbels et al., 2019), this has been taken into account in current study by including the ISCED level of parents as a control variable in this study.

Instrumentation

The PISA instrumentation is based upon a framework made by an international expert group. The framework describes which skills fifteen-year-old students should possess in order to participate actively in the current and future society (OECD, 2019). To investigate the underlying structure of the PISA student-questionnaire, a principal axis factoring with promax rotation was performed for the current selected subsample. Four factors (with Eigenvalues

exceeding 1) were identified as underlying the seventeen items and named as self-efficacy, reading attitude, goal setting and feedback. In total, these factors accounted for 50.54% of the variance in the student questionnaire data.

Reading Literacy. The Reading Literacy test assessed three different cognitive reading processes: locate information, understand, and evaluate and reflect. The test consisted of four tasks. First, participants were shown a sample reading ease and efficiency task. This task took three minutes in which participants had to assess as much sentences as possible based on logic. Students had to answer the question: ‘Does the sentence make sense, yes or no?’. There was a total of 22 sentences per student so that most students would be able to complete the first tasks within three minutes. After this, a sample scenario assignment with three embedded tasks measured the different reading processes. A scenario-based assessment enhances students’ engagement with the assignments and can enable a more accurate assessment of students’ ability (OECD, 2019). Different text types were used to ensure that a range of types of reading was presented. Each of the three tasks consisted of seven questions with different response formats, such as multiple choice, highlighting in the text or writing an own answer. To ensure measurement precision, adaptive testing was used by presenting students with items that were aligned to their ability level (OECD, 2019).

Self-efficacy. The PISA student questionnaire included five items about students’ self-efficacy, shown in Table 2, Appendix A. All items were provided with a four-point scale ranging from *strongly disagree*, *disagree*, *agree*, to *strongly agree*. An example of a statement is: ‘I feel proud that I have accomplished things.’ Cronbach’s alpha for these five-items was $\alpha = .73$, which can be judged as acceptable reliability (Kline, 2000).

Reading attitude. The PISA student questionnaire included five items about students’ enjoyment of reading, shown in Table 3, Appendix A. These items were used to capture students’ reading attitude. An example of a statement is: ‘Reading is one of my favorite

hobbies.’ All items were provided with the same four-point scale ranging from *strongly disagree* to *strongly agree*. Cronbach’s alpha for these five-items was $\alpha = .86$, which can be judged as good reliability (Kline, 2000).

Teacher mechanisms. The PISA student questionnaire included four items about teacher-directed instruction which were used to capture teachers’ goal setting, shown in Table 4, Appendix A. Students had to fill in their own perception of their teachers, an example of a statement is: ‘The teacher sets clear goals for our learning.’ All items used a four-point scale ranging from *every lesson, most lessons, some lessons, to never or hardly ever*. Cronbach’s alpha for the four-items of goal setting was $\alpha = .74$, which can be seen as an acceptable reliability (Kline, 2000).

The student questionnaire also assessed students’ perception of teacher feedback with three items, shown in Table 4, Appendix A. All items used the four-point scale ranging from *every lesson to never or hardly ever*. An example of a statement is: ‘The teacher gives me feedback on my strengths in this subject.’ Furthermore, Cronbach’s alpha for the three-items of feedback was $\alpha = .86$, which indicates a good reliability (Kline, 2000).

Procedure

In the spring of 2018, specially trained research assistants have collected data in secondary schools (Gubbels et al., 2019). The students fulfilled the test as well as the student questionnaire on a laptop. Including the breaks and the instructions, the data gathering took three and a half hours. First, students made the test. Since the entire PISA test takes fifteen and a half hours, each student was randomly assigned to four clusters of the test. Two of these clusters concerned reading assignments, which took one hour. After the test, the students filled in the questionnaire. This took 35 minutes. The closed and simple open questions have been analyzed and checked directly by a computer. The remaining open questions have been checked by specially trained assessors using coding schemes (Gubbels et al., 2019).

Data analysis

In order to analyze the data, the IEA International Database Analyzer (IDB Analyzer) was used to merge the data and create SPSS syntax. The IDB Analyzer is a tool to create SPSS syntax that takes into account information from the sampling design. PISA has estimated ten plausible values for the reading literacy skills of each student, based on the fulfilled reading literacy test, since it is not possible to fulfill all reading literacy tests of the PISA database. The extent to which children can read fluently has been included in these plausible values (OECD, 2019). The IEA IDB Analyzer takes these plausible values and the school weights into account but running the analyses for answering the research questions was not possible in this program. Therefore, the ten plausible values were averaged into one reading literacy skill score and further analyses were performed with IBM SPSS Statistics. Three of the five items assessing Reading Attitude (ST160Q01IA, ST160Q04IA and ST160Q05IA) have been polarity reversed in SPSS before running the analysis.

In order to answer the first research question, an independent samples *t* test was performed to examine the differences in self-efficacy and reading attitude between first and second language learners. The second research question is tested with a moderation analysis using the PROCESS tool of Hayes (2012) with self-efficacy and reading attitude being the dependent variables, first or second language learners as moderator and reading literacy skills as independent variable. The ISCED level of the parents was a control variable. Lastly, to answer the last research question a double moderation analysis using the PROCESS tool of Hayes (2012) with reading literacy as dependent variable, goal setting and feedback as moderators and self-efficacy of second language learners as independent variable was performed. The ISCED level of the parents was also used as a control variable in this analysis.

Before running and interpreting analyses, assumptions were checked. The methodological assumption of independence is met, because the participants did not influence the participation of others.

Results

Self-efficacy and reading attitude of first and second language learners

An independent samples t test was used to compare the self-efficacy of first ($n = 3400$) and second language learners ($n = 288$). At first, the Kolmogorov-Smirnov (K-S) test indicated that the self-efficacy scores significantly differed from a normal distribution, for first ($D(3368) = 0.166, p = <.001$) as well as second language learners ($D(284) = 0.141, p = <.001$). Field (2009) has warned that this normality test can be significant in large samples even when the scores are only slightly different from a normal distribution. A closer look at the histogram, Q-Q plots and values of skewness and kurtosis showed that the distribution was very close to normal, therefore running an independent-samples t test was permitted. The Levene's test for equal variances was significant, so equal variances were not assumed. The t test was not significant, $t(315) = -1.18, p = .238$, two tailed. Second language learners and ($M = 2.98, SD = 0.57$) first language learners ($M = 2.94, SD = 0.43$) did not significantly differentiate in their self-efficacy.

An independent samples t test was also used to compare the reading attitude of first ($n = 4108$) and second language learners ($n = 475$). The K-S test also indicated that the reading-attitude scores significantly differed from a normal distribution, for first ($D(3368) = 0.122, p = <.001$) as well as second language learners ($D(284) = 0.127, p = <.001$). Following the warning of Field (2009), the histogram, Q-Q plots and values of skewness and kurtosis showed that the distribution was very close to normal, therefore running an independent-samples t test was permitted. The Levene's test for equal variances was significant, so equal variances were not assumed. The t test was statistically significant, $t(603) = -2.94, p = .003$,

two tailed. Second language learners had a significant more positive reading attitude ($M = 2.20$, $SD = 0.73$) than first language learners ($M = 2.10$, $SD = 0.77$), 95% CI [-0.17, -0.03]. The effect-size was small, $d = -0.13$.

Predicting reading literacy skills of first and second language learners

Before assessing the hypotheses, assumptions for a moderation analysis were tested. The reading literacy scores were normally distributed, and by looking at the normal probability plot and the scatterplot of standardized residuals, the assumptions of linearity, homogeneity and homoscedasticity of residuals were met. Therefore, performing a moderation analysis was permitted (Field, 2009).

A first moderation analysis was performed to test the predictive factor self-efficacy for reading literacy skills of first and second language learners, while controlling for the parents' highest ISCED level. The overall model was significant and accounted for 6% of the variability in reading literacy scores, $F(4, 3638) = 58.57$, $p < .001$, $R^2 = .06$. The reading literacy scores of first and second language learners were statistically different, $b = -60.88$, $t(3638) = -10.26$, $p < .001$. The reading literacy skills of first language learners ($n = 4171$, $M = 490.70$, $SD = 99.50$) were higher than the literacy skills of second language learners ($n = 491$, $M = 411.54$, $SD = 91.88$). Self-efficacy was a significant predictor for reading literacy skills, $b = 10.82$, $t(3638) = 2.89$, $p = .004$. There was no significant interaction effect between first and second language learners and self-efficacy, $b = -.72$, $t(3638) = -.07$, $p = .95$. The addition of the interaction between language learners and self-efficacy to the model was not significant as it accounted for 0% of the variability in reading scores, $F(1, 3638) = .00$, $p = .946$, $R^2 = .00$. The highest ISCED level of parents was significant as a covariate for predicting reading literacy skills, $b = 11.90$, $t(3638) = 9.27$, $p < .001$.

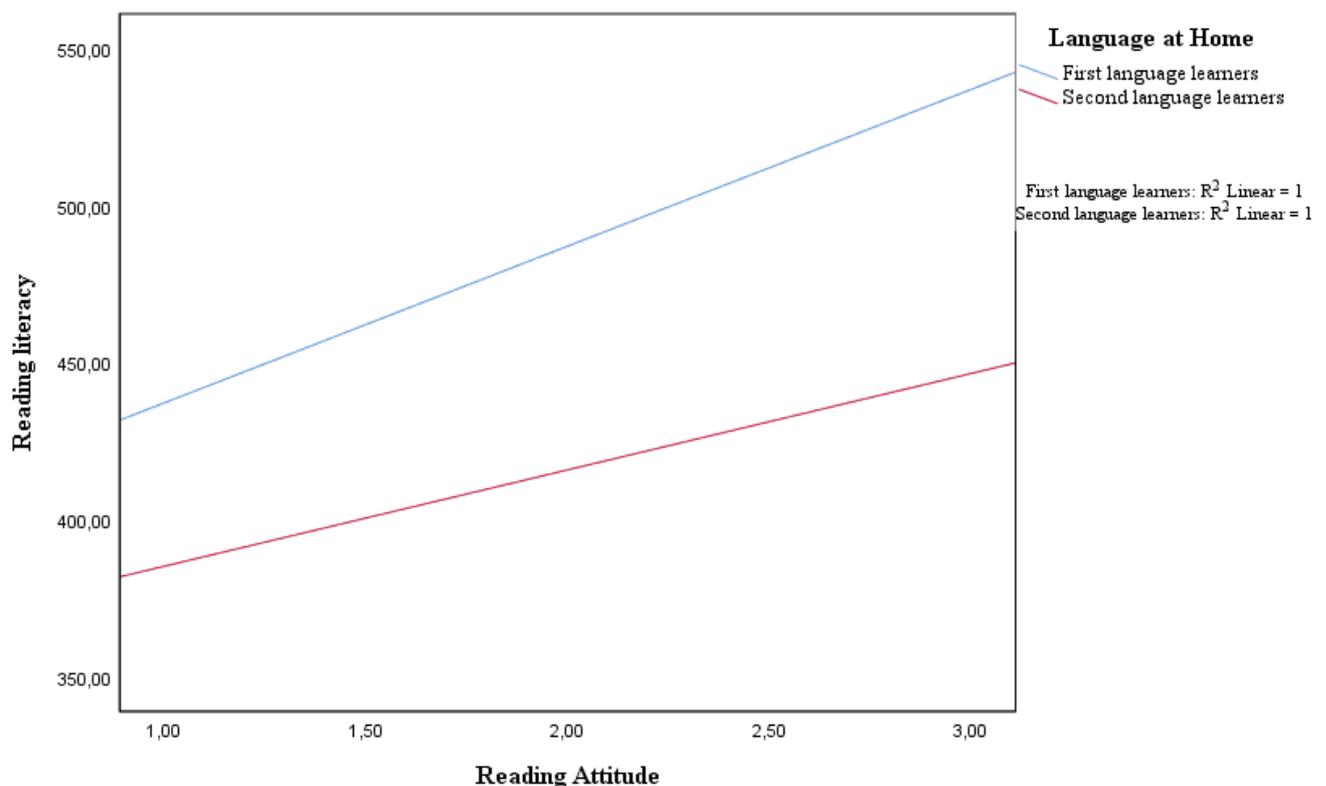
A second moderation analysis was performed to test the predictive factor reading attitude for reading literacy skills of first and second language learners, while controlling for

the parents' highest ISCED level. The overall model was significant and accounted for 22% of the variability in reading literacy scores, $F(5, 4509) = 309.06, p < .001, R_2 = .22$.

Reading attitude was a significant predictor for reading literacy skills, $b = 49.91, t(4509) = 27.40, p < .001$. Furthermore, the interaction effect between first and second language learners and reading attitude was significant, $b = -19.22, t(4509) = -3.16, p = .002$.

A closer look at the simple slopes showed that the reading attitude of first language learners reading significantly predicted their reading literacy skills, $b = 30.69, t(4509) = 5.29, p < .001$. The reading attitude of second language learners did not significantly predict their reading literacy skills, $b = 11.47, t(4509) = .98, p = .33$. The addition of the interaction between language learners and reading attitude to the model was significant as it accounted for 0.2% of the variability in reading scores, $F(1, 4509) = 10.00, p = 0.002, R_2 \text{ change} = .002$. The interaction is shown in Figure 1. The highest ISCED level of parents was significant as a covariate for predicting reading literacy skills, $b = 10.96, t(4509) = 10.70, p < .001$.

Figure 1. Moderation analysis Language Learners



Teacher mechanisms

Lastly, a double moderation analysis was performed to test the moderators setting goals and giving feedback in the relationship between self-efficacy and reading literacy skills of second language learners ($n = 279$). The overall model was not significant, $F(6, 272) = 1.26, p = .28, R^2 = .03$. Self-efficacy was not a significant predictor for reading literacy skills in this model, $b = 9.54, t(272) = .92, p = .36$. There was no significant interaction between feedback of the teacher and students' self-efficacy ($b = -1.46, t(272) = -.13, p = .89$), and no significant interaction between teachers goal setting and students' self-efficacy ($b = -24.55, t(272) = -1.70, p = .009$). The parents' highest ISCED level was not a significant covariate in this model, $b = 5.52, t(272) = 1.71, p = .09$. This means that students' perception of the teacher giving feedback and setting goals during a lesson did not significantly influence the relationship between second language learners' self-efficacy and reading literacy skills.

Discussion

Since being a proficient reader is an important competence in today's society (De Naeghel et al., 2012), the present study examined three research questions to get more insight in the relationship between reading attitude, self-efficacy and the role of the teacher in reading literacy skills of second language learners.

Self-efficacy and reading attitude of first and second language learners

The first research question was of explorative nature and compared the reading attitude and self-efficacy of first and second language learners. There was no significant difference in self-efficacy, but second language learners had a significant more positive reading attitude than first language learners, although this difference was small. Students use different sources to appraise their self-efficacy (Schunk, 2003). Past experiences are an important source, because students who have experienced successful performances in accomplishing a task tend to have higher self-efficacy (Bandura, 1997). The items regarding

self-efficacy in the student questionnaire were not specified for reading tasks, although Bandura (1997) pointed out that self-efficacy is task-specific and can differ from context to context. Therefore, it may be possible that students haven't used their reading experiences when answering questions about their self-efficacy. These results thus indicate that first and second language learners do not differ in their general academic self-efficacy. This is a positive finding, because the present study has found that self-efficacy is a predictive factor for reading literacy skills. Furthermore, studies into motivational beliefs have showed that some beliefs generalize across different learning situations, such as academic self-efficacy (Bong, 2004).

The present study has confirmed that second language learners showed significantly lower reading literacy skills than their fifteen-year-old first language peers. Following the expectancy-value perspective of Sani and Zain (2011), it could therefore be expected that second language learners may place a low value on reading as a way of avoiding reading frustration. In contrast to this hypothesis, second language learners were more positive than first language learners about reading. De Neaghel and colleagues (2012) described that reading engagement is crucial to comprehend a written text, since it functions as a behavioral pathway between students' motivation and their reading performances. It is therefore an important finding that second language learners had a slightly more positive reading attitude than their first language peers, although they had significantly lower reading literacy skills.

Predicting reading literacy skills of first and second language learners

The second question examined to what extent reading attitude and self-efficacy could predict students' reading literacy skills and whether this was different for first and second language learners. Results confirmed the hypotheses, since reading attitude and self-efficacy were both predictive factors for reading literacy skills, whereas reading attitude explained more variance than self-efficacy. These findings were in line with the study of Sani and Zain

(2011), since they have found a positive relationship between reading self-efficacy, attitudes and ability. In addition to this, it was found that the relationship between reading attitude and reading literacy skills was different for first and second language learners. Although second language learners had a slightly more positive reading attitude than first language learners, it could not predict their reading literacy scores. In contrast to this, the reading literacy skills of first language learners have been explained by their reading attitude. Reading literacy is a complex skill (Cain, et al., 2004), only having a positive reading attitude as a second language learner was not enough to predict their reading literacy skills. Research by Verhoeven and Van Leeuwe (2012) validated the simple view of reading by Hoover and Gough (1990) for first and second language learners. As children developed better word-decoding skills throughout the primary school, their development of reading comprehension skills became more constrained by their listening comprehension skills (Verhoeven & Van Leeuwe, 2012). These listening comprehension skills, or linguistic processes, included the identification of word meanings, drawing inferences out of sentence structures and identifying the underlying text structure and general main message (Perfetti et al., 2005). Since this study included a sample of fifteen-year-old students, their reading literacy development may also be more constrained by their listening comprehension skills as their decoding skills are already developed. Furthermore, the reading development of second language learners is more strictly dependent on their oral language proficiency as compared to first language learners (Droop & Verhoeven, 2003; Verhoeven & Van Leeuwe, 2011). Although second language learners had a slightly more positive reading attitude than first language learners, their disadvantaged position in vocabulary knowledge and oral text comprehension may play a more dominant role in their reading literacy skills (Droop & Verhoeven, 2003; Verhoeven & Van Leeuwe, 2011).

Teacher mechanisms

Finally, the third research question studied the role of the teacher by setting goals and giving feedback in the relationship between self-efficacy and reading literacy skills of second language learners. In contrast to the hypothesis of Schunk (2003), setting goals by the teacher for their students and giving feedback didn't significantly influence second language readers' self-efficacy and reading literacy skills. This means that students' perception of the teacher giving feedback and setting goals during a lesson did not impact their self-efficacy and its relationship with reading literacy skills. The student questionnaire assessed the frequency of teachers giving feedback and setting goals during their lessons. However, it does matter which kind of goals are set and how feedback is provided to students (Schunk, 2003). Increased teacher feedback did not always automatically lead to increased confidence of the learner (Ruegg, 2018). Furthermore, a literature review comparing expert and experienced teachers points out that expert teachers motivate students through setting goals to master rather than perform by enhancing their self-efficacy in learning. They also provide more relevant and useful feedback (Hattie, 2003). Further research should therefore study the impact of quality of setting goals and feedback by teachers rather than just the quantity to further study the relationship between self-efficacy and reading literacy skills of second language learners.

Concluding, by using a large sample of the PISA dataset this study has contributed to the knowledge about the factors influencing second language readers. By including the parents' highest ISCED level as a control variable, there is accounted for the possible differences in socioeconomic status between first and second language learners. Three limitations related to the present study should be acknowledged. Firstly, only a minimum of items was used in the student questionnaire to assess the self-efficacy, reading attitude and teacher mechanisms, although the validity and reliability were warranted. This also relates to the second point, the items assessing self-efficacy were not specified for

reading literacy. Further research examining differences in self-efficacy between first and second language readers should take into account that self-efficacy is referring to the beliefs about one's own capabilities to learn or perform a particular task, in this case reading literacy (Bandura, 1986; 1997). Lastly, when working with data from PISA it is recommended to analyze the data in the IDB Analyzer, because it is specifically developed to analyze international large-scale assessments and accounts for plausible values to get a more sophisticated picture of the reading literacy scores of students.

Despite some limitations, the present study contributed to the knowledge about reading attitude, self-efficacy and second language readers. It is found that second language readers have a slightly more positive reading attitude than first language learners, but that didn't predict their reading literacy skills. It could be interesting in future research to focus on students' reading ability level rather than their home language, since recent research suggested that the key predictors of reading literacy are even more universal than expected (Van den Bosch, Segers, & Verhoven, 2019). Furthermore, further research should examine the role of the teacher by looking at the quality of goalsetting and feedback to give insight into how students develop self-efficacy and how this affects their reading literacy skills. These results highlight the importance of teachers to create an environment where reading attitude and self-efficacy are fostered, for first as well as second language learners. However, having a positive reading attitude as a second language learner was not enough to declare their lower reading literacy skills. In secondary education, a general focus on linguistic processes in reading literacy instruction may still be important to enhance the reading literacy development of second language learners (Droop & Verhoeven, 2003).

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Appendix A

Table 2

PISA items of Self-Efficacy

Item	Statement
ST188Q01HA	I usually manage one way or another.
ST188Q02HA	I feel proud that I have accomplished things.
ST188Q03HA	I feel that I can handle many things at a time.
ST188Q06HA	My belief in myself gets me through hard times.
ST188Q07HA	When I'm in a difficult situation, I can usually find my way out of it.

Table 3

PISA items of Enjoyment of Reading

Item	Statement
ST160Q01IA	I read only if I have to.
ST160Q02IA	Reading is one of my favorite hobbies.
ST160Q03IA	I like talking about books with other people.
ST160Q04IA	For me, reading is a waste of time.
ST160Q05IA	I read only to get information that I need.

Table 4

Pisa items of Teacher-directed instruction and Feedback

Goal setting and Evaluation	
Item	Statement
ST102Q01TA	The teacher sets clear goals for our learning.
ST102Q02TA	The teacher asks questions whether we have understood what was taught.
ST102Q03TA	At the beginning of a lesson, the teacher presents a short summary of the previous lesson.
ST102Q04TA	The teacher tells us what we have to learn.
Teacher Feedback	
Item	Statement
ST104Q02NA	The teacher gives me feedback on my strengths in this subject.
ST104Q03NA	The teacher tells me in which areas I can still improve.
ST104Q04NA	The teacher tells me how I can improve my performance.

Appendix B

FETC Study Registration Form – Master thesis (plan) Educational Sciences 1920**Section 1: Basic Study Information**

1. Name student:

Simone Polderdijk

2. Name(s) of the supervisor(s):

First: Moniek Schaars, Second: Arjan van Tilborg

3. Title of the thesis (plan):

Teacher Mechanisms, Reading Attitude and Self-efficacy of Second Language Readers

4. Does the study concern a multi-center project, e.g. a collaboration with other organizations, universities, a GGZ mental health care institution, or a university medical center?

No

5. Where will the study (data collection) be conducted? If this is abroad, please note that you have to be sure of the local ethical codes of conducts and permissions.

Data collection has been conducted in secondary schools in the Netherlands.

Section 2: Study Details I

6. Will you collect data?

No → Continue to question 7

7. Where is the data stored?

The data is stored in YourData (YODA).

8. Is the data publicly available?

Yes: <https://www.oecd.org/pisa/data/2018database/>

9. Can participants be identified by the student? (e.g., does the data contain (indirectly retrievable) personal information, video, or audio data?)

No

10. If the data is pseudonymized, who has the key to permit re-identification?

The PISA study is conducted by seven researchers, see <http://www.pisa2018.nl/team-onderzoekers/>

Section 3: Participants

11. What age group is included in your study?

My study only included fifteen-year-old students.

12. Will be participants that are recruited be > 16 years?

Yes/No

13. Will participants be mentally competent (wilsbekwam in Dutch)?

Yes/No

14. Does the participant population contain vulnerable persons?

(e.g., incapacitated, children, mentally challenged, traumatized, pregnant)

Yes/No

15. If you answered 'Yes' to any of the three questions above: Please provide reasons to justify why this particular groups of participant is included in your study.

The reading literacy skills of Dutch fifteen-year-olds are decreasing in recent years and their reading pleasure is one of the lowest of all OECD countries. Therefore, it is needed to examine the factors that influence this.

16. What possible risk could participating hold for your participants?

The data was already gathered and publicly available, so there were no risks in using it again.

17. What measures are implemented to minimize risks (or burden) for the participants?

There were breaks in-between the different tests. Students with special needs did not had to fulfill all tests.

18. What time investment and effort will be requested from participants?

Students have fulfilled two hours of tests, for students with special needs this was one hour. After this, students fulfilled a questionnaire which took 35 minutes. For students with special needs this took fifteen minutes.

19. Will be participants be reimbursed for their efforts? If yes, how? (financial reimbursement, travelling expenses, otherwise). What is the amount? Will this compensation depend on certain conditions, such as the completion of the study?

After completing all tasks students received a small present. (It has not been described what)

20. How does the burden on the participants compare to the study's potential scientific or practical contribution?

The PISA study is an international comparing study and repeated every three years. It investigates how fifteen-year-old -students are being prepared to function in today's society. It allows countries to compare the results of their education to other countries and gives them insight in the development of their education over multiple years. Therefore, a large sample is needed and enable students to contribute to the quality of the Dutch education.

21. What is the number of participants? Provide a power analysis and/or motivation for the number of participants. The current convention is a power of 0.80. If the study deviates from this convention, the FERB would like you to justify why this is necessary.

(Note, you want to include enough participants to be able to answer your research questions adequately, but you do not want to include too many participants and unnecessarily burden participants.)

The sample size is determined by Westat (VS). It included 156 secondary schools and a total of 4765 students which was enough to include the Netherlands to the international comparisons of PISA 2018.

22. How will the participants be recruited? Explain and attach the information letter to this document.

Each participating school provided a list of all fifteen-year-old students in their school. PISA software determined a random sub sample of these lists.

23. How much time will prospective participants have to decide as to whether they will indeed participate in the study?

Not specified, I don't know.

24. Please explain the consent procedures. Note, active consent of participants (or their parents) is in principle mandatory. Enclose the consent letters as attachments. You can use the consent forms on Blackboard.

Information about consent procedures are not described.

25. Are the participants fully free to participate and terminate their participation whenever they want and without stating their grounds for doing so? Explain.

Information about consent procedures are not described.

26. Will the participants be in a dependent relationship with the researcher?

No

27. Is there an independent contact person or a general email address of a complaint officer whom the participant can contact?

Data gathering was performed by specially trained research assistants from KBA Nijmegen. They were in contact with the schools. More information is not specified.

28. Is there an independent contact person or a general email address of a complaint officer whom the participant can contact in case of complaints?

Data gathering was performed by specially trained research assistants from KBA Nijmegen. They were in contact with the schools. More information is not specified.

Section 4: Data management

29. Who has access to the data and who will be responsible for managing (access to) the data?

The data is already publicly available. Access to my own dataset is restricted to my supervisor and coordinators of the master thesis.

30. What type of data will you collect or create? Please provide a description of the instruments.

For this thesis I have used data from the reading literacy test and the student questionnaire. Both were performed online. The reading literacy test existed out of four tasks and took one hour. The student questionnaire existed of multiple-choice questions and took 35 minutes to fulfil.

31. Will you be exchanging (personal) data with organizations/research partners outside the UU?

No

32. If so, will a data processing agreement be made up?

X

33. Where will the data be stored and for how long?

My dataset will be stored on YODA for ten years.

34. Will the data potentially be used for other purposes than the master's thesis? (e.g., publication, reporting back to participants, etc.)

The dataset that I have used is publicly available and so it can be used for other purposes than the master's thesis.