Exploring the interplay of socioeconomic status, teachers' expectations and a child's reading engagement towards the level of reading comprehension in children between eight and twelve years old

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Abstract

Background. Being able to write and read is considered to be an essential skill in our society. Research showed that it helps students to cope with difficulties in school and beyond. Despite this, reading comprehension levels seems to decline. It is assumed that the child's engagement towards a reading task, as well as the socialemotional status (SES) of the parents and the teacher's expectations play an important role in their overall academic performance. However, research dedicated to study the interplay between child and environmental factors, is still scarce. In this study, we explored whether the teachers' expectations mediated the relationship between SES and reading comprehension and if this mediation was moderated by a child's engagement towards a reading task. **Methods.** To test the hypothesis that a child's engagement could function as a 'buffer' in the negative relationship between SES, teachers' expectations and reading comprehension, a moderated mediation was performed (using PROCESS macro Model 8; Hayes, 2013). 86 children between eight and twelve years of age were included ($Mage$ = 9.56 SD = .895). SES (SD = .85), teachers' expectations (SD = .83), and the child's engagement (SD = .88) were measured using different questionnaires. The standardized Dutch school test (CITO LVS 3.0) was used to determine the level of reading comprehension. **Results**. Teachers' expectations to reading comprehension showed a significant effect (B = 15.35, SE = 3.47, p = <.05). SES to teachers' expectations (B = .22, SE = .39, p = .56) as well as SES to reading comprehension (B = -22.37, SE = 12.31, p = .07) were not significant. **Conclusion**. Teachers' expectations did influence the child's reading comprehension. Higher expectations resulted in better reading comprehension and vice versa. SES did not predict reading comprehension. Also, no relationship was found between SES and teachers' expectations. Altogether, this study provided a well-founded beginning for further research. Moreover, our findings highlighted the importance of developing interventions that address the impact of expectations and how to cope with this. Consequently, this might have a positive effect on children's and their reading performances.

Keywords: Socioeconomic status, expectancies, reading engagement, reading comprehension, interplay, children.

Introduction

Being able to write and read is an essential skill in our society. Evidence indicated that good reading comprehension helps students not only to deal with difficulties throughout their school years, but also beyond (Toste et al., 2020). However, “Only half of the children who finish primary school reached the level which is needed in our society” (Educational Inspection The Netherlands, De Waal, 2023). Recently, a worrisome reading comprehension score of the Dutch population was released by the Program for International Student Assessment (PISA). More and more fifteen-year-old students did not reach the requested reading comprehension score (Meelissen et al., 2023). This is remarkable, since there is a solid educational system in the Netherlands. Moreover, major individual differences within reading levels were reported (De Waal, 2023). It remains unclear which factors contributed to this big variation.

Parents and teachers are key adults and play a crucial role in the academic experience of children (Ran & Chiang., 2019). For example, growing up with parents who have a high socioeconomic status was positively related to academic achievement in their children (Denessen, 2017). With regard to teachers, their expectations and how they act to them, also played a role in the child’s academic achievement (Denessen, 2017). Also, one’s social economic status (SES) seems to have an effect on these expectations (Speybroek et al., 2012). Moreover, child factors, such as their engagement, should also be considered in predicting reading skills.

Research of how these environmental and child factors interplay with each other is still scarce. It is important to gain more insight in reading comprehension performances and its underlying factors. This will give us a better understanding of how to improve reading comprehension in school-age children. Consequently, this might lead to an educational system in which the provided reading classes are better tailored to the needs of the developing and learning child.

Here, reading comprehension of children between eight and twelve in relation to parents SES, teachers' expectations and the child's engagement (towards reading) was explored.

Reading comprehension

Reading comprehension involves reading literacy and text comprehension. Reading literacy can be defined as the ability to understand, use and reflect on written texts in order to achieve one's goals, to develop one's knowledge, and to participate effectively in society (Becker et al., 2010). Secondly, text comprehension is an essential element of reading and can be defined as the 'active process of constructing a meaning from a text' (Becker et al., 2010; Durkin, 1993). Being able to see the cohesion within the whole text, and being able to give meaning to this, depends on your own world knowledge (Kintsch, 1998; Becker et al., 2010; Septiyana et al., 2021). Many variables can have impact on the comprehension a person entails. Examples of these are: cognitive abilities (e.g., attention, memory, reasoning), interests, background knowledge and motivation (Catts, 2022). These variables interact with social and cultural contexts, which includes factors like the personal value of reading, the frequency of reading activities, and the amount of support children feel (Catts, 2022). Previous research that tried to address predictors of reading comprehension, mostly focused on a single context and/ or factor. This is remarkable since reading comprehension is subject to many influencing factors (Catts, 2022). Looking into the interplay of different factors can contribute to better understanding the relations and possible resilience/buffer functions

Socioeconomic status

Socioeconomic status (SES) can be defined as "the social standing or class of an individual or group" (American Psychological Association, 2023). The SES is known to be contributing factor in school achievement (Villiger et al., 2012). In the past, a decline in academic performance was mostly attributed to school factors, such as cognitive abilities and motivation (Villiger et al., 2012). Thereby, a higher SES was related to a better school environment (Chiang & Ran, 2019). Parents with a higher SES payed more attention to the

education of their child(ren), visible, in for example, showing more enthusiasm, affection and energy towards their children and their school activities. This might result in expressing more emotional support to their children, which thereby enhances their academic performance and reading ability (Chen et al., 2018). On the other hand, it is assumed that low SES families face more financial pressure along with emotional exhaustion (Chiang & Ran, 2019). These are associated with a lower income and self-efficacy (Chiang & Ran, 2019). Consequently, this might lead to unpleasant relationship between child and parent, caused by the use of negative education strategies of the parents (Chen et al., 2018). Chen et al. (2018) stated that the higher the parents' educational level, the higher the children's' reading ability, and vice versa. Besides the described relation between SES and the child's academic performance, the SES can also influence the teachers' expectations of a child (Denessen, 2019; Gentrup et al., 2020). From this point of view, the home environment (e.g. parents) influence the school environment (e.g. teachers' expectations). Given these findings, it is crucial to include both school and home factors when looking at the academic performance of children.

Teacher expectations

Not surprisingly, teachers also play an important role in the child's academic development. Not only by teaching them, but also by their approach and the expectations they have towards children. The Pygmalion effect, is a theory that explains the teachers' expectations towards children. It is a form of self-fulfilling prophecy, thus confirming behavior of a person towards your own expectation (Rosenthal, 1974). For example, having a high expectation as a teacher of a certain child leads to a high(er) academic performance of the child. Consequently, the formed expectations can influence the behavior of a teacher towards a child and can ultimately affect a child's academic development (Gentrup et al., 2020). The question that arises is how expectations ultimately influences academic achievement. It is thought that the following applies: teachers form an (in)accurate expectation, which leads to different kinds of approaches and lastly children react in a confirming way. Thus, so that children with a high

expectancy perform better, whereas children with a lower expectancy perform worse (Jussim et al., 2009).

Considering the relation between SES and the teachers' expectations, research indicated that the child's socioeconomic background effects the teacher's expectations. Generally, teachers have lower expectations of children from parents with a lower SES (Dusek & Joseph 1983; Speybroek et al., 2012). Since these expectations can be seen as a possible link to the child later outcomes (e.g., reading comprehension), this study attempts to unravel the complex interplay between SES, expectations and reading engagement.

Reading engagement

Student engagement is fundamental for academic achievement (Reyes et al., 2012). Engaged students are students that actively participate in the classroom, for example during discussions. Furthermore, engaged students put effort in class activities, show interest and motivation to learn (Reyes et al., 2012). On the other hand, disengaged students are characterized by being more disruptive in class, being more passive, and they can report emotions such as boredom, anxious feelings. They might also show symptoms of anger to be in the classroom (Reyes et al., 2012). It is imaginable that more motivated students will show more engagement, which can lead to a better academic achievement. Also, many studies investigated how teachers form expectations based on students' behavior and their characteristics (Johnston et al., 2022). According to this finding, motivated/engaged students could create a positive expectation by teachers. The importance of engagement and the relation to later academic achievement is gaining more and more attention and a positive relation has been showed (Bowden et al., 2019; Reyes et al., 2012; Stewart, 2007). Barber et al. (2020), showed that reading comprehension was partially mediated by reading engagement. Thus, a higher reading engagement effects good reading comprehension skills. Taking it all together, the assumed relation of SES and teacher expectations towards reading comprehension seems to

be influenced by engagement of children towards reading. If so, the engagement of children is a protective factor or so called 'buffer'.

Present study

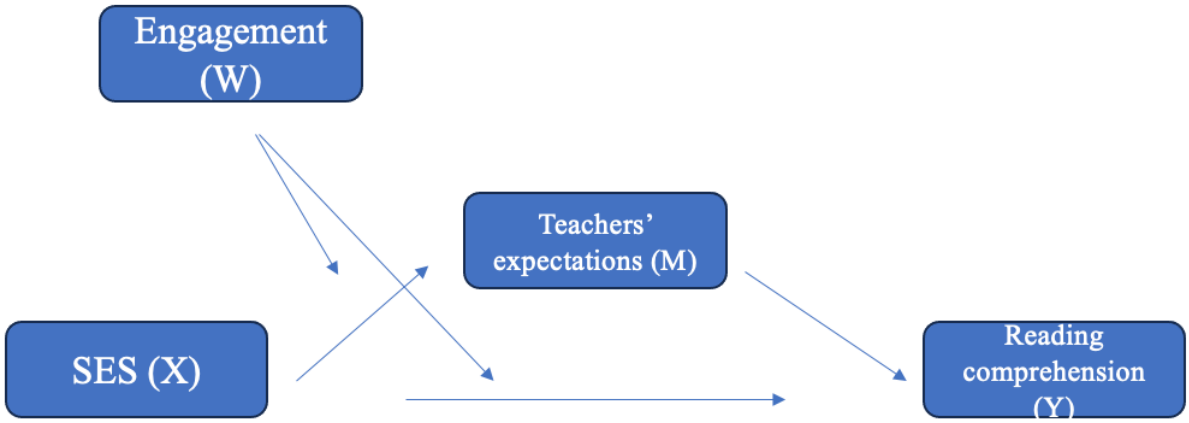
Children between eight till twelve years of age gather multiple important reading skills. For example, children not only improve reading speed and fluency, but they also connect what they read to personal experiences. They further develop reading skills, which they can use to develop in other areas (Morin, 2024). As reading is very important in school but also in daily life, more clarity about influences on reading comprehension is necessary. This research focuses on the interaction between three different domains; the teachers' expectations, SES, and the child's reading engagement. As mentioned above, earlier research showed the impact of SES and expectations on children's academic achievement (Denessen, 2017; Gentrup et al., 2020). However, it remains unclear how SES impacts reading outcomes exclusively and to what extent this is also predictive for teachers' expectations towards reading comprehension. Therefore, the research questions in the current study are: 1) how is the socioeconomic status (SES) related to the reading comprehension of children, 2) is this relation mediated by teachers' expectations, and lastly 3) is the influence of the educational level of parents on reading comprehension and on teachers' expectations moderated by the reading engagement of the child?

With regard to the first question, it was expected that a low SES was related to a lower level of reading comprehension. With regard to the second question, it was expected that teachers' expectations strengthens the relation between SES and reading comprehension. A low SES could result in a lower expectation of the teacher towards the child, which was hypostatized to result in a lower level of reading comprehension. With regard to the third research question, it was thought that if a child was highly engaged and motivated to learn, the possible negative academic outcome (as result of the SES and behavior of the teacher) could be 'buffered' by his or her engagement. On the other hand, it was expected that a low engagement of a child could

work against a high SES and possible high expectations of a teacher. To test these hypotheses, a moderated mediation was performed (see Figure 1).

Figure 1

Illustrative model used for predicting reading comprehension in children



Note. Model used during this research where the 'X' represents the SES. The 'Y' represents the reading comprehension of children. The 'M' represents the teachers' expectations. And the 'W' indicates the double moderation role of a child's engagement.

Methods

Research design

This is a quantitative study with a correlational research design. This study aimed to look into the prediction roles towards reading comprehension. The data is part of PhD project called 'Road to Resilience' (https://wil.sites.uu.nl/home/) and was collected with use of questionnaires and cognitive measures of reading comprehension.

Participants

The participants for this research were children from primary school in the Dutch educational school system. The sample consisted of 128 students (63 boys and 65 girls) between the ages of eight to twelve years old, who are currently in grade three till five. The average age was 9.56 years (SD = .895). This study only used data collected in the first wave, since data collection of other waves is still ongoing (as part of the PhD project). The first selection criteria was the exclusion of anthroposophical schools and schools for special education because they use different methods for assessing reading comprehension. Secondly, all the included schools need to use CITO LVS 3.0, a Dutch standardized test, that is completed at least two times during a school year. It is used to follow the progress of children until they go to secondary school (*LVS 3.0 | Primair onderwijs*, z.d.).

Table 1

Overview of distributed participants in grade

Grade	Frequencies	Percentage
3	68	53,1%
4	37	28,9%
5	23	18%
Total	**128**	

Note. Grade 3, 4 and 5 relate to grade 5, 6 and 7 within the Dutch school system.

Instrumentation

The variables of interest in the present study are gained from a broader study, namely, Road to Resilience, which contained more variables. This study focuses on four variables: reading comprehension, SES, teachers' expectations and engagement of children.

Reading comprehension

The outcome variable reading comprehension is measured with the use of CITO LVS 3.0, specified to reading comprehension. This is a long term follow up measure that is used during primary school. The test is taken by the school itself at least two times during a school year. The outcomes of the test were shared by the school. The test consists of two tasks, the time per task was between 30-45 minutes (CITO, *begrijpend lezen volgen*). Prior research supported the validity and reliability (a = 0.80) of this test (Feenstra et al., 2010). In total, the scores of three assessments from each child were shared. Here, the decision was made to only use the score of the second assessment. This was because of the fact that for this assessment, the data was most complete.

Educational level of parents (SES)

A questionnaire measured the SES (See Appendix A). The questions aimed to indicate what the highest level of education of each parent was. The construct consists of three or four items, depending on the country in which the highest level of education was reached. The educational level of both parents was asked for. However, there were a lot of missing's regarding the educational levels of partners. Therefore, we only used data from the direct informant (e.g. the parent that filled in the questionnaire). These scores were automatically transferred to nominal data (lowest educational level = 0; highest educational level =11) in the used data set. However, looking into the scores normally used, the distribution was different. To be able to compare the scores to different studies, the scores were transformed to a 1 to 5 scale (1 = primary school, 2 = lower level high school and freshman year higher level, 3 = high

school , 4 = Bachelor degree, 5 = Master degree), similar to the scoring used by Centraal Bureau voor de Statistiek (z.d.).

Teachers' expectations

Teachers' expectations were based on a selected reading task the child performed. Here the child had to read an informative text as good and as fast as possible. Immediately afterwards, the child was asked to tell what they learned. Teachers' expectations were assessed using a questionnaire with a total of nine items. The last three items, that were specifically focused on the reading quality of a child were used (see Appendix B). for example, the teacher had to indicate if he or she expected that the child would make reading mistakes. The teachers used a 5-point Likert scale to indicate the child's reading comprehension, 1; this does not apply at all, and 5; this applies at all. After the data was collected, a confirmatory factor analysis was performed to test if the items represent the construct well enough. A chi-square (X^2) test value of <.05 was accepted. Also, the reliability was checked. A COTAN criterion of Cronbach's alpha <.70 was considered to be reliable (Evers et al., 2010). The chi-square score was X^2 = .005. The construct has a Cronbach's alpha of .811, which indicated a good internal consistency. The factor analysis illustrated that all three items represent the constructs, with scores of .903 (item 1), .907 (item 2) and .734 (item 3).

Engagement of children

The engagement of children was measured using a self-report questionnaire for children (see Appendix C). The questionnaire consisted of nine items. For current research, the four items focused on reading engagement were used. The items were constructed by the main researcher of Road to Resilience. Again, a 5-point Likert scale was used to assess reading engagement. A score of 1 indicated that this did not apply at all, whereas a 5 indicated that this applies at all. After the data was collected the confirmatory factor analysis was performed to test if the items represented the construct. Therefore, a chi-square (X^2) test value of <.05 was

statistically accepted. Also, the reliability was checked. A COTAN criterion of Cronbach's alpha <.70 was seen as reliable (Evers et al., 2010). The chi-square score was $X^2 = <.001$. The factor analysis showed a low score on item 3 (.048) with a Cronbach's alpha of .505. Given the low score on item 3, the decision was made to delete this item. The Cronbach's alpha afterwards was still low (.675) and this need to be taken into account while interpreting the results. The factor analysis illustrated that the other three items represented the construct well, with scores of .643 (item 1), 857 (item 2) and .823 (item 4).

Procedure

The data originates from 'Road to Resilience' PhD project, which was approved by the FERB (see Appendix D). The procedure started with collecting participants, which was done by contacting primary schools, school boards, language institutes, clinical practices, and by the use of advertisements. Prior to signing in, online informed consent was obtained from the parents. Additionally, children were asked to give verbal consent prior to their participation. Thereafter, the project reached out to the teachers to inform which child was included to the project. Teachers shared participant's results on the child's CITO LVS 3.0 score in reading comprehension. Moreover, teachers, parents, and children received the questionnaires online. For this, the program Qualtrics was used. The questionnaires could be filled in on their own preferred time and place. The time invested in the questionnaires was about 30 minutes for the children and parents, and 15 minutes for the teachers.

Data analysis

To answer the research question: 'How is the educational level of the parents (SES) related to the reading comprehension of children and is this relation mediated by teachers' expectations towards reading?' With the sub question: 'Is the influence of the SES and the teachers' expectations moderated by the reading engagement of the child?' A moderated mediation model was used (see Figure 1). The analysis was performed with the use of

PROCESS macro Model 8 (Hayes, 2013). The regression coefficients that PROCESS produces are in unstandardized form, therefore no standardized scores were reported. To run the model, the standardized mean CITO LVS scores were used. Also, the normalized score of SES, the mean score of teachers' expectations and the mean score of engagement were used. In case of missing data, the data was analyzed to identify systematic or random missing's (Little & Rhemtulla, 2013). When systematic missing's were identified, the missing data was excluded.

Three assumptions were tested before running the analysis, 1) linearity, 2) homoscedasticity and 3) normality (Garson, 2012). For every grade a different Cito was used. Therefore, 'grade' was added as a covariate in the analysis. The direct effects, the interaction effect, as well as the full moderated mediated effect were considered to be significant when $p < .05$.

The pseudonymized data was stored on a separate drive which was and still is only accessible for the researchers working on the study. The collected personal data (names, addresses) will be deleted immediately after the data collection ends (July 2026).

Results

128 participants were included in this study sample. However, not all participants completed the tasks needed to run our analyses. The eventual analysis were performed with 86 participants (67% of the original data set).

Prior to the moderated mediation analysis, assumptions for the outcome variable Reading Comprehension were verified. Cook's distance was used to detect outliers (Cook, 1977). A Cook's distance with a value > 3 was considered to be a meaningful outlier. The results showed one outlier. However, with a Cook's distance of .138, this was not considered to be influential. Multicollinearity was checked with the variance inflation factor (VIF) and tolerance scores. Here, a VIF of 10 or higher was considered to reflect multicollinearity (Field, 2009). There were no indications for any form of multicollinearity (see Table 2).

Table 2

Collinearity stastistics

	Tolerance	VIF
SES	.972	1.028
Expectations	.865	1.156
Engagement	.847	1.181

To test for homoscedasticity, a scatterplot was used. The score of Kolmogorov-Smirnov was significant ($p < 0.05$). This indicated that the data was not normally distributed. However, looking at the plot and diagram of the standardized residuals of reading comprehension, this showed an acceptable distribution. The other assumptions were met; therefore, the analysis was performed.

Table 3 reveals a relatively high presence of missing data. For example, almost a quarter of the data for teachers' expectations were missing (23.4%). Additionally, the data revealed

systematic missing's. It was discovered that in certain schools, some participants did not fully complete the questionnaires about engagement or expectations. In other schools they failed to provide the reading comprehension data from their CITO LVS 3.0 log systems. Because of this, the decision was made to exclude participants with incomplete dataset.

Table 3

Percentages of missing data

	Reading Comprehension	Socioeconomic status	Engagement	Expectations
Valid	112	123	115	98
Missing	16	5	13	30
Total	128	128	128	128
Percentage missing	12.5%	3.9%	10.2%	23.4%

Table 4

Descriptive overview of distribution of variables

Variable	N	Mean	SD	Minimum	Maximum
Reading comprehension	112	177.25	29.15	116	294
SES	123	3.95	.85	1	5
Teachers' expectations	98	3.97	.83	1.78	5
Children's engagement	115	3.41	.88	1	5

Note. N = 86.

Table 4 shows a descriptive overview of the variables. The mean reading comprehension score was 177.25 (SD = 29.15), with scores ranging from 116 to 294. This indicated a broad

variation in reading comprehension levels among the children in the study. SES and teachers' expectations' both showed a high mean score (SES *M* = 3.95, teachers' expectations *M* = 3.97), with a maximum score of 5. This indicated that the data represented parents with a relatively high educational background and teachers with relatively high expectations. The mean engagement score was 3.41 (SD = .88).

Table 5

Correlation matrix

		Reading comprehension	*SES*	*Engagement*	*Expectations*
Reading comprehension	Pearson Correlation	1	.148	.393**	.513**
	Sig. (2-tailed)		.124	<.001	<.001
	N	112	109	102	90
SES	Pearson Correlation	.148	1	.053	.156
	Sig. (2-tailed)	.124		.575	.131
	N	109	123	115	95
Engagement	Pearson Correlation	.393**	.053	1	.393**
	Sig. (2-tailed)	<.001	.575		<.001
	N	102	115	115	93
Expectations	Pearson Correlation	.513**	.156	.393**	1
	Sig. (2-tailed)	<.001	.131	<.001	
	N	90	95	93	98

Note. **. Correlation is significant at the 0.01 level (2-tailed).

Correlations between different variables were shown in Table 5. Taking a closer look at reading comprehension, a positive correlation was found between reading comprehension and teacher expectations (r = .513, p = <.001) and reading expectations (r = .393, p <.001). No significant correlation was found between reading comprehension and SES (r = .148, p = .124).

For SES, no significant correlations were found between all the variables (see Table 4). Teacher expectations and reading engagement were positively correlated (r = .393, p = <.001).

Table 5

Findings/ correlation matrix

Variable	*Statistics*		
	B	*SE*	*p*
SES > RC	-22.37	12.31	.07
SES > Teachers' expectations	.22	.39	.56
Teachers' expectations > RC	15.35	3.47	<.05
Mediation effect	-	-	-
Engagement on SES-RC	6.86	3.70	.07
Engagement on SES-Expectations	--.03	.12	.83

Note. N. =86. Model for the a-path R^2 = .15 F (3, 82) = 4.956, p = .00, Model for b-path and c'-path R^2 = .31 F(4, 81) = 9.236, p < .00.

With regard to the research question, the overall moderated mediation model was not supported by the index of the moderated mediation = -.40, 95% percentile CI [-4.98, - 3.58]. This provided evidence for a non-significant moderated mediation meaning that a child's engagement did not influence the strength or direction of the mediation effect (SES to expectation of a teacher to reading comprehension). The moderation model dedicated to the relation of SES to teachers' expectations, moderated by engagement was significant (a-path), F(3, 82) = 4.95, *p* = .00. The model explained 15,35%. Also, the full model was tested, giving a significant result, F(4, 81) = 9.24, *p* = .00 (also, see Table 6).

Direct effect SES on Reading Comprehension

The result indicated that the direct effect of socioeconomic status to reading comprehension was not significant (B = -22.37, p = .07). This implied that SES could not predict the level of reading comprehension.

SES on Expectations

No significant relation of SES on teachers' expectations was found (B = 0.22, p = .58). In contrast to our hypothesis, this implied that SES could not predict the teachers' expectations.

Teachers' expectations on Reading Comprehension

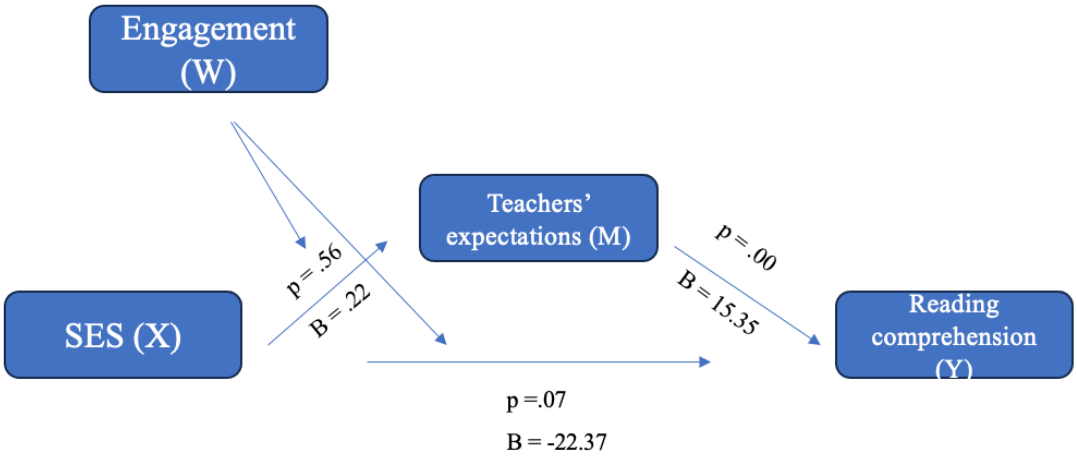
The influence of teachers' expectations on reading comprehension was significant (B = 15.34, p < 0.00). As expected, this indicated that teachers' expectations influenced the level of reading comprehension.

Interaction (SES * Engagement) on Reading Comprehension

As the direct effect of SES towards Reading comprehension was not significant, the interpretation of the interaction of SES * Engagement towards reading comprehension could not be performed. Therefore, no conclusions were drawn.

Figure 2

Statistical illustrative model predicting Reading Comprehension



Note. Because path a and path c, are bot not significant, results of the possible 'buffer' role of Engagement are not interpreted and therefore not visible in the figure.

Discussion

Children between eight and twelve years of age gather multiple important reading skills. It is thought that environmental and child factors, such as cognitive abilities, parental support and motivation could influence their reading comprehension (see for example, Catts, 2022; Villiger et al., 2012). Despite this knowledge, the interplay between these factors remains to be unknown. Therefore, this study explored factors influencing children's reading comprehension. Previous research often examined single factors, like teachers' expectations (Gentrup et al., 2020) and socioeconomic status (Villiger et al., 2012). Here we focused on broader interactions, by taken into account three domains, namely: SES, teacher expectations, the child's engagement towards reading and their interplay. To explore this, a moderated mediation analysis was used.

First of all, it was expected that a lower SES would result in a lower-level reading comprehension and vice versa. However, the results did not show a relationship. This indicated that the SES of the children's parents did not necessarily influenced the reading level of their child. This is not consistent with earlier research, in which an effect of SES on school achievement was found (Chiang & Ryan, 2019; Villiger et al., 2012). A possible explanation for the differences between these findings might be found in the distribution of our data set. The sample is homogenous, representing an 'elite' group of high educated people (e.g. higher SES), which is not representative for the Dutch society. Due to this reason, solely insight in the link between children with a high SES and reading comprehension could be provided. Therefore, even if our result had been meaningful, the data should always be approached with caution before drawing any conclusions.

More specific on reading, Chen et al. (2018) found that a higher SES was associated with better reading performances. Moreover, Schneider et al. (2022) stated that reading abilities were moderated by age, such that the influence of SES was stronger in younger children. This is reasonable, since younger children spend more time with their parents, and therefore the parental approach plays an important role in providing a strong foundation in their developing

children (Ainsworth et al., 2015). Nevertheless, we cannot exactly pinpoint what the reason is for these different findings. This emphasizes the need for more research dedicated to this.

Secondly, a relation was expected between SES and teachers' expectations, indicating that the background of children would have an influence on creating positive or negative expectations (Dusek & Joseph, 1983; Speybroek et al., 2012). Again, this hypothesis was not confirmed, since no predictive relation was found. This finding indicated that SES did not play a role in the expectations of the teacher. In itself, this is a promising result. On one hand you would expect that teachers would take the scientifically found relation between SES and performance into account while shaping their expectations. However, one the other hand, this might imply that expectations were based on actual performances of the child only (and not SES). Of course, this is the preferred approach. Although promising, this is just speculation and the above showed that findings were not consistent. Again, a possible explanation could lie in the homogeneity of the SES group.

A debate is going on about the interplay between teachers' expectations and academic performance. In the third hypothesis, it was expected that positive teachers' expectations were related to higher reading comprehension levels, and vice versa (Speybroek et al., 2012; Auwarter & Aruguete, 2008). This hypothesis was confirmed. This is an important finding to consider into multiple levels of society. For example, this underlines the importance to pay attention to the role of prejudice during courses and also while teaching. We cannot exactly clarify the impact of reading comprehension on the development of expectations. It is imaginable that this is a reciprocal relationship, given the fact that academic outcomes seem to be stable over time (Schaars et al., 2019) and assuming that teachers monitor the reading development of the children. Thus, it could be that the relationship is the other way around, in which teachers behave in reaction to the academic outcomes of the child. Thereby, it is plausible that expectations are not solely based on SES, but also on previous academic outcomes of the

child (and more). For example, student attractiveness, conduct and race were related (Dusek & Joseph, 1983), but also environmental factors, such as school setting (Brault et al., 2014).

Lastly, it was expected to found an interplay between reading engagement and SES towards teachers' expectations. Although, no research is dedicated to this subject yet, it was hypothesized, that a high level of engagement could 'buffer' lower expectations of a teacher based on a lower SES. Logically, this hypothesis could not be tested, since no relation was found between SES and expectations in the first place.

Implications

An implication might lie in interventions developed for teachers, focusing on managing their own expectations effectively. De Boer et al (2018) already made a start and studied different interventions created for teachers. They specifically looked into three interventions: 1) changing teacher behavior, 2) creating awareness of the effects of teacher expectations and 3) the existence of the teacher expectation bias. Results showed that teachers gain insight of their own expectations and adapt their behavior towards this. Thereby, an increase in student achievement was found as well (De Boer et al., 2018). With our findings in mind, knowledge about the working mechanisms of specific interventions is wished for.

Strengths and limitations

This study has several important strengths. To begin with, this was one of the first studies that was addressed to investigate the interplay of different factors in relation to reading comprehension, compared to more isolated studies performed earlier on (for example, Bowden et al., 2019; Catts, 2022; Jussim et al., 2009;). Concretely, gaining insight in the role of SES in creating expectations of a teacher and their influence on reading comprehension, and how a child's engagement would interfere in this. Another strength was the use of CITO LVS 3.0, a widely used and reliable method to assess reading comprehension in the Netherlands (van Til et al., 2018). Moreover, this study has some limitations that need to be addressed in future

research as well. First, as mentioned before, the study was performed using a homogenous group in relation to SES, in where mostly high educated parents with higher SES were included. Also, the loss of participants due to missing data might have affected the representativeness of our sample. Consequently, the generalizability of our findings can be debated.

Nonetheless, our findings implied that living in a promising environment might positively affect expectations of their teachers. Thereby, it is encouraging to observe that – within this group – SES is not predictive for reading performances. Future research including a more representative group could help to see if SES is indeed not decisive.

Secondly, it should not be left unmentioned that the socioeconomic status is only based on the educational level of the parents. This is not comprehensive as SES also encompasses income, occupational prestige and subjective perceptions of social status and social class (APA, 2023). Among studies, the measurement of SES and the way SES should be operationalized does not receive much attention (Broer et al., 2019). Also, there seems to be very limited discussion over why certain indicators are included, while others have been left behind (Bornstein & Bradley 2014). Nevertheless, parental education is widely used to reflect SES and it is considered to be a strong predictor of SES (Munir et al., 2023). However, using a more comprehensive measurement in which – for example – income is also included, would better reflect SES as a construct. In order to do this efficiently, researchers should also strive to get a consensus about SES, its operationalization and what it should include.

Thirdly, objectively measuring the child's engagement for reading is challenging, especially when using a (subjective) questionnaire. Although these questions where carefully selected, it would be more ideal to use a standardized questionnaire that was evaluated by – for example –the COTAN (a Dutch acronym for 'Commissie Testaangelegenheden Nederland'). Thereby, Barros et al., (2017) studied the validity and reliability of multiple self-report questionnaires for children between the age of seven to ten. They concluded that we have to be aware of the accuracy of questionnaires answered by children (Barros et al., 2017).

Therefore, we have to take in mind that children might find it difficult to assess their own engagement for reading. It might be of value to consider adding more (objective) measurement methods to assess the child's reading engagement.

Lastly, reading comprehension and school achievement in general, are influenced by many factors. It not only depends on SES, parental expectations and the child's reading engagement. Genetics (Olsen et al., 2013; Petrill, 2006), parental characteristics (Zahedani et al., 2016), stressful life events (Roberts et al.,2018) and the child's socioemotional and physical wellbeing (Berger et al., 2011), also influences the child's academic achievements. Taking into account all possible influencing factors is ambitious, if not impossible. Nevertheless, striving to be as complete as possible, based on earlier findings, could help us to better understand reading comprehension and its underlying mechanisms.

Conclusion

This study addressed how SES, teacher expectations, and children's engagement in reading affect reading comprehension. It was found that teachers expectations did influence the child's reading comprehension. Higher expectations resulted in better reading comprehension, and vice versa. Nevertheless, it should not be left unmentioned that the participants represented a homogeneous group with relatively high educated parents. Contrary to expectations, SES did not directly influence reading comprehension, possibly due by the homogeneity of the sample. Similarly, no relationship was found between SES and teachers' expectations. This indicated that teachers might base their expectations on student performance rather than SES.

An implication that comes with our finding that teachers' expectations affect reading comprehension, includes developing interventions to help teachers manage expectations effectively. One might think about interventions, such as those focusing on changing teacher behavior and increasing awareness of the 'expectation bias'.

Altogether, this study provided a well-founded beginning for further research on predicting reading comprehension by exploring the interplay between SES, reading engagement and teachers expectations.

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Appendix A

IntroSES Nu volgen er een aantal vragen over uw eigen opleiding (en indien van toepassing over de opleiding van uw partner)

SES1 Heeft u een diploma behaald in Nederland?

- ○ Ja, ik heb in Nederland mijn opleiding afgerond (1)
- ○ Ja, ik heb in Nederland, én in een ander land een opleiding afgerond (2)
- ○ Nee (3)

Display This Question:

If Wat is uw geboorteland? = Nederland

Or Heeft u een diploma behaald in Nederland? = Ja, ik heb in Nederland mijn opleiding afgerond

Or Heeft u een diploma behaald in Nederland? = Ja, ik heb in Nederland, én in een ander land een opleiding afgerond

SES2 Wat is uw hoogst behaalde diploma in Nederland?

- ○ Geen / basisschool niet afgemaakt (1)
- ○ Basisonderwijs (basisschool) (2)
- ○ Lager beroepsonderwijs (NL: IBO/LBO/VBO/VMBO beroepsgericht; basis en kader) (3)
- ○ MBO niveau 1 of 2 (4)
- ○ Middelbaar algemeen voortgezet onderwijs (NL: MULO/MAVO/VMBO-theoretisch en gemengd) (5)
- ○ HAVO (6)
- ○ MBO niveau 3 of 4 (7)
- ○ VWO: Atheneum of Gymnasium (8)
- ○ Hoger beroepsonderwijs (NL: HBO) (9)
- ○ Universitair onderwijs bachelor (10)
- ○ Universitair onderwijs master of hoger (11)
- ○ Anders, namelijk (12) _____
- ○ Weet ik niet / vul ik liever niet in (13)

Display This Question:

If Heeft u een diploma behaald in Nederland? = Ja, ik heb in Nederland, én in een ander land een opleiding afgerond

Or Heeft u een diploma behaald in Nederland? = Nee

SES3 In welk buitenland heeft u uw diploma behaald?

- ○ Turkije (1)
- ○ Marokko (2)
- ○ Polen (3)
- ○ Anders, namelijk (4) _____

Display This Question:

If In welk buitenland heeft u uw diploma behaald? = Turkije

SES4T Wat is uw hoogst behaalde diploma in Turkije?

- ○ Geen / basisschool niet afgemaakt (1)
- ○ Basisschool - Turks: ┣lkokul (2)
- ○ Middelbare school, Lager beroepsonderwijs (ongeveer vanaf 10 jaar)-Turks: Ortaokul (3)
- ○ Middelbaar voortgezet onderwijs, vergelijkbaar met HAVO - Turks: Genel Ortaöğretim, Lise Diploması (4)
- ○ Vervolgopleiding , vergelijkbaar met HBO - Turks: Ön Lisans Programları (5)
- ○ Universitair onderwijs Bachelor - Turks: Lisans Programlar┣ (6)
- ○ Universitair onderwijs Master - Turks: Y╤ksek Lisans Programlar┣ (Tezli) (7)
- ○ Weet ik niet / vul ik liever niet in (8)

Display This Question:

If In welk buitenland heeft u uw diploma behaald? = Marokko

SES4M Wat is uw hoogst behaalde diploma in Marokko?

○ Geen / basisschool niet afgemaakt (1)

○ Basisschool - Arabisch: (2) التعليم الابتدائي

○ Middelbare school (3 jaar, leeftijd 12-15 jaar) Onderbouw, ook wel ‘college’ genoemd. Diploma: Brevet d’Enseignement Collégial - Arabisch: (3) التعليم الثانوي الإعدادي

○ Lager beroepsonderwijs (2 jaar, vanaf leeftijd 15 jaar). Arabisch: شهادة التكوين المهني التخصص (4)

○ Bovenbouw middelbare school (vanaf 15 jaar, 3 jaar). Ook wel ‘lycee ‘ genoemd. Diploma: Baccalauréat. Arabisch: (5) الباكالوريا

○ Vervolgopleiding/beroepsopleiding, vergelijkbaar met MBO 4 of associate degree (2 jaar) - Arabisch: (6) دبلوم تقني

○ Vervolgopleiding, vergelijkbaar met HBO (vanaf 18 jaar, 3 jaar) - Arabisch: شهادة التقني العالي دبلوم التقني المتخصص (7)

○ Universitair onderwijs Bachelor - Arabisch: (8) إجازة العلوم و التقنية

○ Universitair onderwijs Master. - Arabisch: (9) دبلوم الماستر

○ Anders, namelijk (10) _____

○ Weet ik niet / vul ik liever niet in (11)

Display This Question:

If In welk buitenland heeft u uw diploma behaald? = Polen

SES4P Wat is uw hoogst behaalde diploma in Polen?

- ○ Geen / basisschool niet afgemaakt (1)
- ○ Basisschool - Pools: Szkoła podstawowa [wykształcenie podstawowe] (2)
- ○ Lager beroepsonderwijs (ongeveer vanaf 13 jaar, 3 jaar), vergelijkbaar met vmbo of onderbouw middelbare school - Pools: Gimnazjum (dawniejsza szkoła ponadpodstawowa) (3)
- ○ Voortgezet onderwijs (ongeveer vanaf 16 jaar), vergelijkbaar met HAVO of bovenbouw middelbare school - Pools: Liceum (szkoła ponadpodstawowa; dawiejsza szkoła ponadgimnazjalna) (4)
- ○ Vervolgopleiding (ongeveer vanaf 19 jaar,1-2 jaar) - Pools: Zasadnicza szkoła zawodowa; Szkoła policealna (5)
- ○ Universitair onderwijs Bachelor - Pools: Studia pierwszego stopnia -licencjackie (6)
- ○ Universitair onderwijs Master - Pools: Studia drugiego stopnia- magisterskie (7)
- ○ Anders, namelijk (8) _____
- ○ Weet ik niet/ vul ik liever niet in (9)

Display This Question:

If In welk buitenland heeft u uw diploma behaald? = Anders, namelijk

SES4Other Omschrijf uw hoogst afgeronde opleiding van dit land (bijv. basisschool, voortgezet onderwijs, of hoger beroepsonderwijs):

_____

Display This Question:

If Welke ouders of verzorgers zijn er in uw huishouden? = Twee oudergezin

SESpartner1 Heeft uw partner een diploma behaald in Nederland?

- ○ Ja, mijn partner heeft in Nederland een opleiding afgerond (1)
- ○ Ja, mijn partner heeft in Nederland, én in een ander land een opleiding afgerond (2)
- ○ Nee (3)
- ○ Weet ik niet / vul ik liever niet in (4)

Display This Question:

If Wat is het geboorteland van uw partner? = Nederland

Or Heeft uw partner een diploma behaald in Nederland? = Ja, mijn partner heeft in Nederland een opleiding afgerond

Or Heeft uw partner een diploma behaald in Nederland? = Ja, mijn partner heeft in Nederland, én in een ander land een opleiding afgerond

SESpartner2 Wat is zijn/haar hoogst behaalde diploma in Nederland?

- ○ Geen / basisschool niet afgemaakt (1)
- ○ Basisonderwijs (basisschool) (2)
- ○ Lager beroepsonderwijs (NL: IBO/LBO/VBO/VMBO beroepsgericht; basis en kader) (3)
- ○ MBO niveau 1 of 2 (4)
- ○ Middelbaar algemeen voortgezet onderwijs (NL: MULO/MAVO/VMBO-theoretisch en gemengd) (5)
- ○ HAVO (6)
- ○ MBO niveau 3 of 4 (7)
- ○ VWO: Atheneum of Gymnasium (8)
- ○ Hoger beroepsonderwijs (NL: HBO) (9)
- ○ Universitair onderwijs bachelor (10)
- ○ Universitair onderwijs master of hoger (11)
- ○ Anders, namelijk (12) _____
- ○ Weet ik niet / vul ik liever niet in (13)

Display This Question:

If Heeft uw partner een diploma behaald in Nederland? = Ja, mijn partner heeft in Nederland, én in een ander land een opleiding afgerond

Or Heeft uw partner een diploma behaald in Nederland? = Nee

SESpartner3 In welk buitenland heeft uw partner zijn/haar diploma behaald?

- ○ Turkije (1)
- ○ Marokko (2)
- ○ Polen (3)
- ○ Anders, namelijk (4) _____
- ○ Weet ik niet / vul ik liever niet in (5)

Display This Question:

If In welk buitenland heeft uw partner zijn/haar diploma behaald? = Turkije

SESpartner4T Wat is zijn/haar hoogst behaalde diploma in Turkije?

- Geen / basisschool niet afgemaakt (1)
- Basisschool - Turks: İlkokul (2)
- Middelbare school, Lager beroepsonderwijs (ongeveer vanaf 10 jaar)-Turks: Ortaokul (3)
- Middelbaar voortgezet onderwijs, vergelijkbaar met HAVO - Turks: Genel Ortaöğretim, Lise Diploması (4)
- Vervolgopleiding , vergelijkbaar met HBO - Turks: Ön Lisans Programları (5)
- Universitair onderwijs Bachelor - Turks: Lisans Programları (6)
- Universitair onderwijs Master - Turks: Yüksek Lisans Programları (Tezli) (7)
- Weet ik niet / vul ik liever niet in (8)

Display This Question:

If In welk buitenland heeft uw partner zijn/haar diploma behaald? = Marokko

SESpartner4M Wat is uw hoogst behaalde diploma in Marokko?

○ Geen / basisschool niet afgemaakt (1)

○ Basisschool - Arabisch: (2) التعليم الابتدائي

○ Middelbare school (3 jaar, leeftijd 12-15 jaar) Onderbouw, ook wel ‘college’ genoemd. Diploma: Brevet d’Enseignement Collégial - Arabisch: (3) التعليم الثانوي الإعدادي

○ Lager beroepsonderwijs (2 jaar, vanaf leeftijd 15 jaar). Arabisch: شهادة التكوين المهني التخصص (4)

○ Bovenbouw middelbare school (vanaf 15 jaar, 3 jaar). Ook wel ‘lycee ‘ genoemd. Diploma: Baccalauréat. Arabisch: (5) الباكالوريا

○ Vervolgopleiding/beroepsopleiding, vergelijkbaar met MBO 4 of associate degree (2 jaar) - Arabisch: (6) دبلوم تقني

○ Vervolgopleiding, vergelijkbaar met HBO (vanaf 18 jaar, 3 jaar) - Arabisch: شهادة التقني العالي دبلوم التقني المتخصص (7)

○ Universitair onderwijs Bachelor - Arabisch: (8) إجازة العلوم و التقنية

○ Universitair onderwijs Master. - Arabisch: (9) دبلوم الماستر

○ Anders, namelijk (10) _____

○ Weet ik niet / vul ik liever niet in (11)

Display This Question:

If In welk buitenland heeft uw partner zijn/haar diploma behaald? = Polen

SESpartner4P Wat is uw hoogst behaalde diploma in Polen?

- ○ Geen / basisschool niet afgemaakt (1)
- ○ Basisschool - Pools: Szkoła podstawowa [wykształcenie podstawowe] (2)
- ○ Lager beroepsonderwijs (ongeveer vanaf 13 jaar, 3 jaar), vergelijkbaar met vmbo of onderbouw middelbare school - Pools: Gimnazjum (dawniejsza szkoła ponadpodstawowa) (3)
- ○ Voortgezet onderwijs (ongeveer vanaf 16 jaar), vergelijkbaar met HAVO of bovenbouw middelbare school - Pools: Liceum (szkoła ponadpodstawowa; dawiejsza szkoła ponadgimnazjalna) (4)
- ○ Vervolgopleiding (ongeveer vanaf 19 jaar,1-2 jaar) - Pools: Zasadnicza szkoła zawodowa; Szkoła policealna (5)
- ○ Universitair onderwijs Bachelor - Pools: Studia pierwszego stopnia -licencjackie (6)
- ○ Universitair onderwijs Master - Pools: Studia drugiego stopnia- magisterskie (7)
- ○ Anders, namelijk (8) _____
- ○ Weet ik niet/ vul ik liever niet in (9)

Display This Question:

If In welk buitenland heeft uw partner zijn/haar diploma behaald? = Anders, namelijk

SESpartner4Other Omschrijf zijn/haar hoogst afgeronde opleiding van dit land (bijv. basisschool, voortgezet onderwijs, of hoger beroepsonderwijs):

Appendix B

Verwachting lezen In het onderzoek vragen we deelnemende leerlingen een informatief verhaal over een tekenbeet zo snel en goed mogelijk te lezen. Aan het einde van het verhaal vragen we het kind ons te vertellen wat ze geleerd hebben van de tekst.

Hoe verwacht u dat deze leerling het doet op deze taak?

Ik verwacht dat deze leerling...

	Helemaal oneens (1)	Oneens (2)	Neutraal (3)	Eens (4)	Helemaal eens (5)
weinig leesfouten maakt (4)	○	○	○	○	○
de tekst vlot leest (5)	○	○	○	○	○
goed in staat is te vertellen waar het verhaal over ging (6)	○	○	○	○	○

Appendix C

School engagement Deze vragen gaan over je gedrag tijdens de les. Geef telkens aan in hoeverre elke uitspraak klopt voor jou.

	Helemaal niet waar (1)	Niet echt waar (2)	Tussenin (3)	Best wel waar (4)	Helemaal waar (5)
Als ik een tekst lees, dan doe ik mijn best om goed te begrijpen wat er staat (1)	○	○	○	○	○
Als ik een moeilijke tekst lees, dan raak ik snel afgeleid (2)	○	○	○	○	○
Als ik een moeilijke tekst lees, dan lees ik het soms meerdere keren (3)	○	○	○	○	○

Als ik een tekst niet goed begrijp, dan kan ik lastig mijn aandacht erbij houden (4)	○	○	○	○	○

Appendix D

P.O. Box 80140, 3508 TC Utrecht The Board of the Faculty of Social and Behavioural Sciences Utrecht University P.O. Box 80.140 3508 TC Utrecht	**Faculty of Social and Behavioural Sciences** Faculty Support Office Ethics Committee **Visiting Address** Padualaan 14 3584 CH Utrecht

Our Description Telephone E-mail
Date

Subject

22-0612
030 253 46 33 FETC-fsw@uu.nl 01 September 2022 Ethical approval

ETHICAL APPROVAL

Study: op weg naar Weerbaarheid in Lezen (WiL) / road to Resilience in Reading (RiR)

Principal investigator: S.C.T. Appels

This research project does not belong to the regimen of the Dutch Act on Medical Research Involving Human Subjects, and therefore there is no need for approval of a Medical Ethics Committee.

The study is approved by the Ethics Committee of the Faculty of Social and Behavioural Sciences of Utrecht University. The approval is based on the documents send by the researchers as requested in the form of the Ethics committee and filed under number 22-0612. The approval is valid through 31 October 2026. Given the review reference of the Ethics Committee, there are no objections to execution of the proposed research project, as described in the protocol. It should be noticed that any changes in the research design oblige a renewed review by the Ethics Committee.

Yours sincerely,

nd or type unknown

Peter van der Heijden, Ph.D. Chair

Image not fou

Appendix E (assignment 4, Academic integrity)

Before doing research, it is important to look into possible issues, risks, and/ or dilemmas. The sample used during this present research originates from the PhD project 'Road to Resilience'. Because of that, several risks and dilemmas are (already) looked into while designing this project and the possibility to change procedures is not possible. However, it is still important to reconsider and reflect before using the data for the present study. First of all, the sample characteristics and consent procedures. The characteristics of the participants is already defined, children between eight and twelve years old, currently in primary school. The consent procedure is integrated the moment the child is registered. The risk to not get consent, or forget to ask consent is not possible with this procedure. Yet, the fact that the research target group is children between eight and twelve years old, is something to be aware of. If the questions are formulated in an understandable way/ do they already have the reflection to answer certain questions about their behavior. To manage this possible risk, the data can be 'cleaned' by categorizing the data on age. Getting insight in the differences between age can be a way to measure levels of reflection and the different levels between this range. Secondly, the use of personal data. The participant entry list with personal data and the key for identifying participants will be stored on the faculty server in separate folder, which is a separate location from the data (those are on the O-drive). The identifiable data (names and addresses) will be deleted right after data collection has ended (July 2026) (Road to Resilience procedure). However, this longitudinal PhD study is not comparable with the present study, which will be done around June 2024. The risk lies in the fact that data is used, even if it is pseudonymized, and results will be shared, while the longitudinal study is not finished yet. It is even more important to have an extra eye on the data that is used in the present study, and the importance to delete the personal data right away. In this case, the data set used for the present study will not wait until July 2026. Thirdly, this research is making use of questionnaires and the scores of the CITO LVS 3.0. The use of the 5-point scale in the

questionaries limits the risk to possible sensitivity experienced by the participants with the consequence of missing values. Added to that, the questionnaires are filled in with the use of an online program (Qualtrics), the setting that all the answers need to be filled in to continue is a way to prevent missing values. Yet, what should be taken into account is the understandability of the questions, especially towards the children. For example: are they able to distinguish the levels in a 5-point scale. As mentioned before, by filtering the collected data on age, insight into the level/ means of an age group is managed. The different levels can be taken into account when analyzing the data.