Chapter 14
The Importance of Parents' Own Reading for 10-Year Old Students' Reading Achievement in the Nordic Countries

Hildegunn Støle, Åse Kari H. Wagner, and Knut Schwippert

Abstract The Nordic education model of an inclusive school for all aims at giving children equal, and excellent, opportunities for acquiring high levels of reading ability. It is well documented that both students' and their parents' reading interest is closely and positively associated with students' reading achievement. There is therefore cause for concern when reading interests seem to be in decline both among parents and among today's students. Family socio-economic background is also well known to relate strongly to students' reading achievement. Especially children of parents with low education are likely to be deprived of opportunities of beneficial reading activities, such as seeing their parents read, being read to by family members, and learning to enjoy reading for themselves in the early years of school. On the other hand, it is possible that parents who enjoy reading and/or read much at home, provide their children with a basis for acquiring good reading skills, regardless of their educational background. Our article analyses data from four cycles (2001–2016) of the Progress in International Reading Literacy Study (PIRLS), and several Nordic countries, in order to establish whether parental reading can compensate for low parental education levels. We find that parents' reading enjoyment, but not their frequent reading in their spare time, to some degree does compensate for lack of tertiary (high) education. However, if increasingly fewer parents like to read, more children will go without the opportunity to develop reading enjoyment themselves, and this will likely affect more children from low-SES backgrounds than from higher SES-backgrounds.

Keywords PIRLS · Parents' reading enjoyment · Nordic education · Literacy

H. Støle (✉) · Å. K. H. Wagner
The National Reading Centre, University of Stavanger, Stavanger, Norway
e-mail: hildegunn.stole@uis.no

K. Schwippert
Universität Hamburg, Hamburg, Germany

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14.1 Introduction and Background

Reading literacy is vital for the individual's success in education, and for equal participation in school, on the work market, and in society at large. The post-war Nordic model of education, an inclusive School for All (Antikainen, 2006; Telhaug, Mediås, & Aasen, 2006), aimed at giving all students equal opportunity to achieve the skills and knowledge required to enter the workforce (see Chap. 2). The new national curriculum in Norway illustrates the typically high ambitions that the Nordic countries still have for how their school systems should provide all students with "a good basics for participation in every area of education, work and social life" (Norwegian Department of Education, 2017). Schools thereby have a special responsibility to ensure that all children have equal opportunities to learn to read well. As described in Chap. 2, equity in the Nordic educational systems in the twenty-first century is anchored both in main aims of schooling and in students' legal rights to adapted education in free, public schools. This is in line with Espinoza's (2007, p. 354) idea of Equity for equal achievement: "that individuals with similar academic achievement will obtain similar job statuses, incomes and political power". Reaching this goal depends on a school system that does not segregate children of different backgrounds (intentionally or unintentionally).

The degree of success of reading education has been monitored by national and international surveys in many countries during the last decades. The Progress in International Reading Literacy Study (henceforth: PIRLS) is one such large-scale survey, measuring reading literacy among 10-year olds around the world every 5 years. Some of the Nordic countries have participated in all PIRLS cycles since 2001, whereas others have joined in later (see Table 14.1). Norwegian results from PIRLS 2001 revealed a large spread in student reading achievement (Mullis, Martin, Gonzalez, & Kennedy, 2003; Solheim & Tønnessen, 2003), meaning that early reading education during the late 90s had failed in providing equity in Norwegian 4th graders' reading ability. In Norway, the PIRLS 2001 results as well as the Programme for International Student Assessment (PISA) 2000 results, gave rise to an educational policy debate that in turn led to a new national curriculum, implemented in 2006 ("Kunnskapsløftet", often translated to the "Knowledge Promotion").

Exploring 15 EU countries participating in PISA 2000, Gorard and Smith (2004) found that Denmark, Finland and Sweden (Norway is not part of the EU), had less

Table 14.1 Nordic countries participating in PIRLS since 2001 through 2016

	2001	2006	2011	2016
Denmark		X	X	X
Finland			X	X
Iceland	X	X		
Norway	X	X	X	X
Sweden	X	X	X	X

Note: For overviews of all countries participating in each PIRLS cycle, see the respective PIRLS publications, e.g. online at https://timssandpirls.bc.edu

segregation on most indicators than the EU average. These indicators were parental occupation, family wealth, reading performance, students' sex and students' (and parents') country of origin. As mentioned, social fairness in an inclusive school for all has been a political goal in the Nordic countries since the Second World War (Telhaug et al., 2006). Around 2000, it was still hoped that a comprehensive and free education system providing equal opportunities regardless of children's social background (OECD, 2018) would yield equitable outcomes. However, as the PIRLS and PISA results documented relatively large gender and achievement gaps, at least in Norway, it appeared that equitable outcomes were not achieved. Further, Nordic education systems no longer only aim at giving students the same opportunities to acquire basic skills, but focus increasingly on performing better than average in e.g. OECD and other large-scale international skills assessments.

The Nordic countries have relatively small and homogenous populations, ranging from 360,000 in Iceland to 10.1 million in Sweden. The Nordic countries are characterised by high prosperity (Grunfelder, Rispling, & Norlén, 2018; Legatum Prosperity Index Report, 2018), and high levels of parental education (OECD, 2018). This is reflected in the PIRLS 2016 study (Mullis, Martin, Foy, & Hooper, 2017), where the Nordic countries have among the highest scores on students' home resources for learning. The composite variable "Home resources for learning" consisted in 2016 of parents' education, parents' occupation, the number of books in the home, the number of children's books, and "home study support", i.e. Internet connection and/or the child having its own room.[1] These variables are associated with high levels of reading achievement in PIRLS, as they are in most studies of the relationship between student background and reading literacy (Buckingham, Beaman, & Wheldall, 2014). The composite PIRLS home resources for learning variable represents both cultural and economic resources, and is often used as a proxy for socio-economic background in analyses of PIRLS results.

Parents in the Nordic countries report more positive attitudes towards reading than the international average (Mullis et al., 2017). Positive parental attitudes to reading is also associated with higher average reading achievement in PIRLS. The current study aims to investigate whether parents' own reading matters for students' reading proficiency independently of parents' educational level. The study contributes to the research on the relations between home factors and students' reading achievement by exploring Nordic PIRLS results across four cycles, i.e. 15 years. This approach enables conclusions both about trends as well as about consistency (or non-consistency) of our findings.

[1] Graphics of "Home Resources for Learning" from the latest PIRLS report (2017) are supplied in Appendix 14.1. The home background questionnaire addresses the parents or guardians of the child. For ease of reading, only the term "parent" is used in this article.

14.1.1 Parental Reading

Parents play an important role in preparing children for learning, not only as providers of resources but also as role models for reading engagement. Parents who enjoy reading may foster the same interest in their children and nurture an emergent positive reader self-concept, associated with high reading achievement in school (Walgermo, Foldnes, Uppstad, & Solheim, 2018). Parental attitudes to reading can thus be an important factor for equity in learning. Rowe (1991, p. 19) expressed it as follows: "regardless of family socio-economic status, age and gender, 'Reading Activity at Home' had significant positive influences on measures of students' reading achievement, attitudes towards reading and attentiveness in the classroom." Since Rowe's findings (1991), however, many things have changed regarding reading activities in the homes. Mullis et al. (2017) found a decline in parental interest in reading from PIRLS 2011 to 2016. Similarly, Norwegian findings from the PISA 2018 show that 15-year olds read less than before in their spare time (Jensen et al., 2019). Especially many boys report that they "never or almost never" choose to read for pleasure.

Adolescents who reported reading fiction performed significantly better on PISA 2009 than those who read other kinds of reading material (magazines, non-fiction, fiction, newspapers and comics) (Jerrim & Moss, 2019). Norwegian children who enjoyed reading and read in their spare time, performed better than those who did not, both on the paper-based PIRLS 2016, as well as on the online informational reading assessment (ePIRLS) in 2016 (Støle & Schwippert, 2017). Mol and Jolles (2014) found that students' enjoyment of reading was socially stratified and related to gender. Children of parents who enjoy reading do better on the PIRLS reading test than their counterparts with parents who are less interested in reading (Mullis et al., 2017, p. 156). Even though Nordic parents in average report positive attitudes to reading, the general decline in parental reading also affected students in the Nordic countries (ibid.).

14.1.2 Parents' Education and Socio-economic Status

Parents' education, their occupation, and family income constitutes a child's socio-economic status (SES) (Buckingham et al., 2014), but according to a meta-analytic review by Sirin (2005), it varies how much each of these factors contributes in predicting a child's academic success. Several studies conclude that parents' education matters substantially, and sometimes is the most salient factor in analyses of the effect of socio-economic status on children's achievement in school (Buckingham et al., 2014; Caro, Sandoval-Hernández, & Lüdtke, 2014; Yang & Gustafsson, 2004), and on reading achievement in particular (Myrberg & Rosén, 2006, 2009). In a Norwegian study of associations between a child's home language, home resources for learning to read, and reading achievement in PIRLS 2016, Strand and Schwippert

(2019) found that parents' education mattered more than books in the home, a factor well known to be associated with economic as well as cultural background, and more than the disadvantage of coming from a non-native language family.

Myrberg and Rosén (2009) explored the indirect, direct, and total effects of parents' education on Swedish 4th graders' reading achievement in PIRLS 2001. They found that the "total effect of parents' education is substantial, but that almost half of this effect is mediated through other variables, i.e. the number of books at home, early literacy activities and emergent literacy abilities…" (Myrberg & Rosén, 2009, p. 695). Myrberg and Rosén (2009) found that even though the direct effect (standardised regression coefficient) of parental education on children's reading achievement was modest, at 0.17, the total effect reached 0.34. This is because well educated parents tend to offer children more books and preschool literacy activities than do parents with only little education (Hemmerechts, Agirdag, & Kavadias, 2017). However, home literacy environments may vary considerably in low SES families (Buckingham et al., 2014; van Steensel, 2006). Positive reading attitudes among parents with low education levels may compensate for a situation of sparse resources and provide children with sufficiently good emergent literacy skills for them to develop into good readers and successful learners.

14.1.3 Books in the Home

Evans, Kelley, Sikora and Treiman (2010) found families' book ownership to matter for students' reading achievement consistently across diverse cultures and at different times in the twentieth century. They found that students from low socio-economic backgrounds gain especially from having access to books at home. Inspecting PISA data (15-year old students) from 42 nations, Evans, Kelley and Sikora (2014) again found book ownership to matter regardless of student background across the national ideologies. Similarly to Rowe (1991), Bus, van Ijzendoorn and Pellegrini (1995) found in their meta-study that children from low SES families gained as much as their wealthier peers from their parents' engaging them in joint book reading prior to school entry. They found significant associations on outcome measures of language growth, emergent literacy, and reading achievement (Bus et al., 1995). There is plentiful evidence that children's book and/or fiction reading is a strong predictor of reading achievement (Cunningham & Stanovich, 1997), also in a twenty-first century, longitudinal study which included children's reading in digital environments (Pfost, Dörfler, & Artelt, 2013), as well as in recent PISA studies (Jerrim & Moss, 2019).

14.1.4 What If Fewer Parents Like to Read?

Many factors, such as parents' educational levels, positive attitudes towards reading and home library, work together in providing children with rich opportunities for developing literacy skills needed for academic success and meaningful societal participation. However, as argued, it is conceivable that parents' engagement in reading is not always related to socio-economic background or their level of education, and thus, that even children of relatively poor backgrounds may have parents who provide them with positive attitudes towards reading. Reversely, it is likely that children adopt negative attitudes towards reading from parents who do not like to read in spite of having long educations. Further, if the decline in parental spare time reading continues, more children will grow up in families in which only little reading occurs, even if their parents actually like reading. Fewer children may benefit from a rich "family scholarly culture" (Evans et al., 2010), regardless of whether their parents are well educated or not.

14.2 This Study

The present study analyses Nordic PIRLS data from all four cycles (2001–2016) to explore associations of parents' educational level, their reading habits, and number of books at home, and students' reading achievement. Cross-sectional studies like PIRLS dip into one cohort of students at a certain point in time, making it difficult to draw conclusions with certainty. Comparing trends and countries, on the other hand, controls for spurious correlations and yield more robust findings than observations from just one survey. When similar results occur across different cohorts over time, it enables researchers to conclude more solidly about the relationship between outcome and explanatory variables. However, the variables explored across cycles need be the same. Therefore, we apply variables of e.g. home resources and parents' attitudes to reading that consist of questions that reoccur in all cycles, rather than applying the PIRLS composite variables which vary somewhat from 2001 to 2016.

We hypothesise that there is an association between parents' interest for spare time reading, including book ownership, and children's reading achievement, regardless of parents' level of education. As we explore PIRLS results across four cycles, we use parents' education as a proxy for socio-economic status (SES), in accordance with the literature presented in Sect. 14.1.2. (e.g. Caro et al., 2014; Yang & Gustafsson, 2004). Of the three most used SES-factors, i.e. parental income, occupation and education, the latter is the only variable that has been consistently probed throughout PIRLS cycles.

The composite variable "Home resources for learning" has also varied in content since 2001, which is why we let the single variable of number of books in the home represent home literacy resources in our analyses.

14.3 Methods

We address our research question through a sequence of secondary analyses using data from the Nordic cohorts participating in PIRLS 2001, 2006, 2011 and 2016. The Nordic countries are Denmark, Finland, Iceland, Norway and Sweden, albeit not all participating in every cycle (see Table 14.1). Therefore, the results presented in tables in Sect. 14.4, vary in terms of which Nordic countries appear in each calculation. Below, we describe PIRLS, the variables, and the analytical procedures.

14.3.1 The PIRLS Survey

PIRLS measures 10-year old students' reading literacy much like the better known PISA study does, through a reading test consisting of texts (literary and informational) with questions of comprehension in the form of multiple choice items and constructed response items for which students write a response based on what they have read. As in PISA, some items are repeated across cycles, thereby functioning as anchors for trends analyses. For further descriptions of the design, see PIRLS 2016 assessment framework (Mullis & Martin, 2015).

The PIRLS survey also includes background questionnaires to the school (principal or other school leader), to the teacher of the test language (i.e. English teacher in English-speaking countries, Norwegian language teacher in Norway etc.), to the home (parents or guardian), as well as to the students themselves. Together, the reading test and the background questionnaires give plentiful information about reading achievement and its associations to background factors in and across the participating countries.

In collaboration with each country's National Research Coordinator, Statistics Canada draws a representative sample of the targeted grade 4.[2] In general, the number of children who participate in PIRLS varies little, and around 4000 per country has been quite common.[3] Norway, for example, had 3211 students participating in 2011 and 4354 in 2016 (Gabrielsen & Strand, 2017).

As a general description, PIRLS uses a stratified two-stage cluster sample design. Schools are selected at a first stage, and then, at a second stage, one or more whole classes of students are selected from each of the sampled schools. All students, with very few exceptions, are expected to participate. Strict rules apply for school-level and within-school level exclusions. Methods and procedures concerning sampling, instrument development, data collection and reporting are described in detail in

[2] In addition, Norway has included a cohort of 5th grade children since 2006, because these are around 10 years of age, i.e. the same age as 4th graders in Denmark, Finland and Sweden.

[3] Occasionally larger samples are drawn. For example, Sweden had a sample of more than 10,000 in PIRLS 2001 (Myrberg & Rosén, 2009), in order to compare to the 1991 Reading Literacy Study.

separate publications from the various cycles (e.g. Martin & Mullis, 2013; Martin, Mullis, & Hooper, 2017; Mullis et al., 2003).

14.3.2 Variables

14.3.2.1 Parents' Reading

In the international PIRLS reports (e.g. Mullis et al., 2017), parental attitudes are analysed as a composite "Parents Like Reading" scale (see Appendix 14.2, from Mullis et al., 2017, p. 15). Rather than using this composite variable, we inspected "reading frequency" and "reading enjoyment" as separate phenomena (question 10 and 12 in Appendix 14.2). One reason for treating the scales separately, is that the 2016 composite "Parents Like Reading" scale has not been used consistently across the PIRLS cycles (see e.g. the composite PATR variable from PIRLS 2001, in Mullis et al., 2003).

In 2016, the PIRLS Question 10 to parents explores how much time they spend reading for themselves at home any kind of reading material, such as "books, magazines, newspapers, and materials for work (in print or digital media)". We used this frequency scale for parents' reading to group parents dichotomously: parents reading 5 h or less a typical week at home, and parents reading more than 5 h weekly. Group 1 includes parents who read little at home ("1 to 5 hours a week") and those who do not read at all ("less than one hour a week"). Group 2 includes parents who read more than 5 h but also "more than 10 hours a week" at home.

Whereas question no. 10 about reading frequency includes e.g. work documents that are read digitally, there is reason to believe that the next two questions to parents (nos. 11 and 12) about reading enjoyment, are associated by many respondents with fiction reading. Both probe parents about their enjoyment of reading: no. 11 about frequency of reading for enjoyment, and no. 12 about attitudes towards reading. Neither question indicates anything about text type or medium for reading, but it seems likely that the respondent when filling in the Home Questionnaire, will consider question 11 about reading enjoyment as something different from the previous question (no. 10) about general reading frequency of any type of material. We included only questions 10 and (parts of) 12 in our analyses.

From scale 12, we selected the three most salient variables on how much (or little) parents enjoy reading: (12a) "I read only if I have to" (reversed), (12 c) "I like to spend my spare time reading", and (12 h) "Reading is an important activity in my home". The Likert scale contains four categories from "agree a lot" via "agree", "disagree a little" to "disagree a lot". These three variables were combined and a mean was calculated if at least two questions of the three have been answered. The internal consistency for this reading enjoyment scale exceeds the value r tt >0.700 for all cycles and countries, with one exception only (Iceland 2001 r tt = 0.642). Finally, the score was z-transformed into a scale expressing parents' enjoyment of reading with a mean of zero and standard deviation of one for the regression

analyses. The distribution is skewed, since reading is well liked among Nordic parents compared to the PIRLS average.

14.3.2.2 Number of Books in the Home

PIRLS probes the number of books families have at home, both in the student questionnaire and by asking parents in the home questionnaire. We used data from the latter, and we split the scale into a dichotomous variable consisting of group 1, who have 100 books or fewer at home, and Group 2, who have more than 100 books. The question only probes print books and does not include reading material such as magazines, e-books, or children's books.

14.3.2.3 Parents' Educational Level

The PIRLS questionnaire to parents surveys their level of education by asking them to select among nine alternatives ranging from no education to doctorate degrees ("not applicable" is a tenth alternative, see Appendix 14.3). In the Nordic countries, it is common that parents have comparatively high levels of education. Parents having really low levels, i.e. no education or none after primary school, is rather uncommon. Our goal is to find out whether parents' reading can compensate for little parental education, but when exploring low education yet plentiful reading, we found this group too small for conclusions. Therefore, we made a dichotomous variable of education level by combining the two lower levels, primary school or secondary school only, as one, low parental education group. Parents who completed some tertiary education made up the other, high parental education group. For the analyses, we used the highest reported level of education of one parent.

14.3.2.4 Analytical Procedures

For the multivariable analysis, we used multiple linear regression (ordinary least square). In multivariable regression analyses, we included variables known to matter for children's reading achievement: number of books in the home and parents' level of education. These are often associated with social background or SES. We also included two variables less commonly studied: parents' enjoyment of reading and parents' frequency of reading at home. We decided to apply the regression model for the whole population rather than considering the class or school structure, since we are interested in the overall effects in a country and not in average effects in schools or classes. For the calculation of the regression models – and later also the cross-tables and mean differences – we used the IDB-Analyser of the IEA Hamburg. This tool offers the possibility to calculate the appropriate standard errors of the statistics by taking the special structure of the data into account (weighting

and jack-knifing). For all analyses that included reading achievement scores, all five plausible values have been taken into account.

14.4 Results

14.4.1 Hypothesis: Parents' Reading Matters Independently of Their Education Level

Is there an association between parents' reading at home and children's reading achievement, regardless of the educational level the parents have reached? Tables 14.2, 14.3, 14.4, and 14.5 show our findings from the Nordic countries participating in all PIRLS cycles from 2001 through 2016. The dependent variable is the PIRLS student achievement score in overall reading achievement. Please note that all calculations are based on data from 4th grade Norwegian students, who are 1 year younger than 4th graders in the other Nordic countries and whose reading achievement scores therefore are lower than those of the others.

Table 14.2 shows expected student achievement (Intercept) when controlling for number of books in the home and parents' education. It reveals that only one of the two parental reading variables contributed significantly to the reading achievement of the Nordic children who participated in PIRLS 2001. When parents reported that they enjoyed reading, it predicted a significant gain in student score. In Iceland, the expected gained score was approximately 3.6 point, in Norway it was 5.8, and in Sweden 8 points. To illustrate, a gain of 8 points equalled the differences between eight countries (Latvia's average score 545, Canada Quebec, Lithuania, Hungary, the USA, Italy, Germany and the Check republic's average score 537) in 2001 (Mullis et al., 2003, p. 36). Parents' reading frequency, on the other hand, did not

Table 14.2 Multivariable regression Nordic PIRLS 2001

		Reading enjoyment[b]			Reading >5 h/ week[c]			> 100 books[c]			Min. tertiary education[c]		
2001	Intercept	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.
Iceland	490.57	3.59	*	1.33	1.41	n.s.	3.29	21.85	*	2.99	33.63	*	2.98
Norway	469.60	5.84	*	2.15	7.81	n.s.	4.14	19.99	*	4.49	29.02	*	4.39
Sweden	546.81	8.04	*	1.02	1.43	n.s.	2.62	14.28	*	3.64	21.09	*	2.85

Expected student achievement (Intercept) in relation to parents' reading enjoyment (high), reading frequency (more than 5 h per week), the number of books in the home (101 or more) and parents' level of education (minimum tertiary)

Notes: [a]Significance is marked with an asterisk*; non-significance as "n.s." Significance level is 5%

[b]For the variable "reading enjoyment", the coefficient indicates the change in the Intercept once parental reading enjoyment increases by one standard deviation

[c]The regression coefficients for the dichotomous variables "reading >5 h/w", ">100 books" and "min. tertiary education" indicate the mean differences in the Intercept compared with the reference group

Table 14.3 Multivariable regression Nordic PIRLS 2006

		Reading enjoyment[b]			Reading >5 h/ week[c]			> 100 books[c]			Min. tertiary education[c]		
2006	Intercept	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.
Denmark	526.20	10.04	*	2.27	−5.86	n.s.	3.49	20.13	*	3.79	22.04	*	3.39
Iceland	492.78	7.21	*	1.74	4.52	n.s.	3.03	10.88	*	3.34	28.08	*	2.83
Norway	473.23	5.03	*	1.69	1.91	n.s.	3.15	16.15	*	3.75	29.28	*	3.00
Sweden	529.39	7.39	*	1.75	1.39	n.s.	3.27	18.81	*	3.23	23.22	*	3.03

Expected student achievement (Intercept) in relation to parents' reading enjoyment (high), reading frequency (more than 5 h per week), the number of books in the home (101 or more) and parents' level of education (minimum tertiary)

Notes: [a]Significance is marked with an asterisk*; non-significance as "n.s." Significance level is 5%

[b]For the variable "reading enjoyment", the coefficient indicates the change in the Intercept once parental reading enjoyment increases by one standard deviation

[c]The regression coefficients for the dichotomous variables "reading >5 h/w", ">100 books" and "min. tertiary education" indicate the mean differences in the Intercept compared with the reference group

Table 14.4 Multivariable regression Nordic PIRLS 2011

		Reading enjoyment [b]			Reading >5 h/ week[c]			> 100 books[c]			Min. tertiary education[c]		
2011	Intercept	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.
Denmark	531.08	7.37	*	1.57	5.83	*	2.74	21.83	*	2.73	16.70	*	2.78
Finland	546.71	8.43	*	1.40	2.84	n.s.	3.10	15.74	*	3.18	21.61	*	2.98
Norway	484.86	7.92	*	1.71	6.59	n.s.	3.54	15.56	*	3.77	19.36	*	3.65
Sweden	522.83	9.48	*	1.65	−2.09	n.s.	2.90	21.46	*	2.60	23.34	*	2.82

Expected student achievement (Intercept) in relation to parents' reading enjoyment (high), reading frequency (more than 5 h per week), the number of books in the home (101 or more) and parents' level of education (minimum tertiary)

Notes: [a]Significance is marked with an asterisk*; non-significance as "n.s." Significance level is 5%

[b]For the variable "reading enjoyment", the coefficient indicates the change in the Intercept once parental reading enjoyment increases by one standard deviation

[c]The regression coefficients for the dichotomous variables "reading >5 h/w", ">100 books" and "min. tertiary education" indicate the mean differences in the Intercept compared with the reference group

contribute significantly to reading achievement in any of the Nordic countries in 2001.

As expected, we found that books in the home contribute strongly to how well students perform on reading achievement. This is in accordance with previous research, e.g. Evans et al. (2010, 2014) concerning the importance of a home library, i.e. a "scholarly culture" providing children with learning resources, regardless which social class they belong to. Table 14.2 shows that owning more than 100 books yielded an expected gain in student achievement of around 21.9 points in Iceland, 20 points in Norway, and 14.3 points in Sweden (relative to families owning 100 books or fewer). 20 points can be interpreted as approximately half a year of schooling.

Table 14.5 Multivariable regression Nordic PIRLS 2016

		Reading enjoyment[b]			Reading >5 h/ week[c]			> 100 books[c]			Min. tertiary education[c]		
2016	Intercept	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.
Denmark	519.04	7.44	*	1.46	−2.86	n.s.	3.23	20.10	*	3.38	28.45	*	3.87
Finland	544.87	10.56	*	1.48	3.32	n.s.	2.82	14.68	*	2.68	23.25	*	3.07
Norway (4)	476.21	6.64	n.s.	4.14	0.52	n.s.	9.69	31.63	*	10.68	31.81	*	8.10
Sweden	533.00	8.59	*	1.89	2.85	n.s.	3.66	17.38	*	3.82	26.26	*	3.74

Expected student achievement (Intercept) in relation to parents' reading enjoyment (high), reading frequency (more than 5 h per week), the number of books in the home (101 or more) and parents' level of education (minimum tertiary)

Notes: [a]Significance is marked with an asterisk*; non-significance as "n.s." Significance level is 5%

[b]For the variable "reading enjoyment", the coefficient indicates the change in the Intercept once parental reading enjoyment increases by one standard deviation

[c]The regression coefficients for the dichotomous variables "reading >5 h/w", ">100 books" and "min. tertiary education" indicate the mean differences in the Intercept compared with the reference group

The great effect of parents' level of education was obvious in the Nordic countries participating in PIRLS 2001. This finding is also as expected from research such as that by Myrberg and Rosén (2009), or Strand and Schwippert (2019) analysing PIRLS 2001 data in Sweden and PIRLS 2016 data for Norway, respectively. Table 14.2 shows that Nordic children whose parents had tertiary education, i.e. university level, performed much better than those who did not have highly educated parents in PIRLS 2001. In Iceland, the expected achievement gain was 33.6 points, in Norway 29 points, and in Sweden the gain was 21.1 points.

The finding that parents' reading enjoyment matters for students' reading achievement was true of Iceland, Norway and Sweden in 2001, but is it also in the later cycles, and is it true in the other Nordic countries? Further, is it consistent that it does not matter how often parents read? We followed the same procedure with PIRLS data from Nordic countries in later cycles.

In 2006, Denmark entered the PIRLS assessment. Table 14.3 shows similar results as the calculations of the 2001 data: Also in 2006, parents' reading enjoyment mattered significantly for student achievement when accounting for both the number of books in the home and parents' education. Like earlier, parents' reading frequency did not contribute significantly to student results. Parents who reported to enjoy reading contributed 10 score points on student achievement in Denmark, 7.2 in Iceland, 5.0 in Norway and 7.4 in Sweden. To illustrate, a 10 point gain in average reading achievement would have lifted Denmark's international ranking seven places (Mullis, Martin, Kennedy, & Foy, 2007, p. 37).

Again, of course, the number of books in the home and parents having high educational levels contributed substantially to student achievement. In Denmark, access to a rich home library (101 books or more) was almost as important as having parents with high levels of education, yielding 20.1 points gain in student achievement score (books) and a 22.0 points gain (education) respectively.

PIRLS 2011 again witnessed some changes in the Nordic country participation: Iceland withdrew, while Finland participated for the first time. Still, the calculations based on PIRLS 2011 data confirm the patterns from 2001 to 2006. Parents' enjoyment of reading contributed significantly to student achievement in all four countries, whereas their reading frequency at home did not. This holds true independently of the number of books in the home and parents' level of education. The latter factors contributed more than the reading variables. This is in accordance with the literature on the strong associations of SES-related factors and student achievement.

Interestingly, having plenty of books mattered more to Danish children than having highly educated parents in 2011 (21.8 and 16.7 expected score points respectively). In Denmark 5 years earlier, in 2006, books mattered almost as much as parents' education (20.1 and 22.0 respectively; Table 14.3). Similarly for Sweden in 2011: Plenty of books yielded an expected gain of 21.5 points and high parental education 23.3 points, i.e. a mere couple of points more. This pattern occurs again 5 years later, in 2016, but this time for Norway: Many books gave an expected gain of 31.6 student achievement points; high parental education gave the same-size expected gain of 31.8 points (Table 14.5).

As earlier, the positive outcome of parents' reading enjoyment was far from ignorable in 2011. In Denmark, the expected gain from having parents who enjoyed reading was 7.4 student score points, in Finland it was 8.4, in Norway it was 7.9 and in Sweden 9.5.

Bearing in mind the decline in parents' interest in reading (Mullis et al., 2017) from PIRLS 2011 to 2016, we performed an identical regression analysis also of data from the latest PIRLS cycle in 2016.

In PIRLS 2016 the patterns observed previously, appear again, with one exception: Parents' reading enjoyment ceased to be significant in Norway's grade 4 sample. This might simply be caused by the large errors of measurement (S.E.).[4] In the other three countries, parents' reading enjoyment contributes significantly to student achievement, with an expected gain of 7.4 student score in Denmark, 10.6 in Finland, and 8.6 in Sweden. As before, the amount of time parents spent reading "books, magazines, newspapers, and materials for work (in print or digital media)" did not contribute significantly to student reading achievement.

The number of books in the home (more than 100) and parents' education (high) yield substantial contributions to student achievement; in Norway these variables are equally important with 31.6 score points for books and 31.8 for high education. In Denmark, Finland and Sweden, parents' educational level mattered more than a rich home library in 2016.

[4] We checked and found that the large S.E.s are not due to a small sample size or low participation rates. However, the jack-knifing procedure entails that the standard errors are of less importance than in some other calculations.

14.4.2 Does Parents' Reading Enjoyment Matter for Children of Parents with Low Education Levels As Well as for Children of Parents with High Education Levels?

Having established that the variable "reading enjoyment" contributes significantly to Nordic students' reading achievement throughout the PIRLS cycle, we proceeded to explore parental reading enjoyment further. We dichotomised the variable in order to compare across groups of parents with low (maximum secondary) versus high (minimum tertiary) education. The mean scale was thus split into: (1) those parents scoring below the maximum of possible reading enjoyment (low reading enjoyment), and (2) those parents whose scores indicate a maximum mean of possible reading enjoyment (high reading enjoyment). The bar chart in Fig. 14.1 illustrates the relationship between parental reading enjoyment in two education level groups, and student reading achievement in PIRLS 2016 in four countries.

Figure 14.1 illustrates, as expected, that children of parents with high education levels score better on the PIRLS assessment than children of parents with low education (maximum secondary school). However, in all four Nordic countries, parents' reading enjoyment plays a significant role regardless of their education level. The confidence interval bars (confidence level at 95%) in Fig. 14.1 show that there are significant differences in students' reading achievement (y-axis) between children of parents who do not enjoy reading (less than maximum on our reading enjoyment variable) and children of parents who do enjoy reading in their spare time (maximum on reading enjoyment). Notably, the achievement gap is eradicated in both Denmark and Finland between children of parents with low education yet high

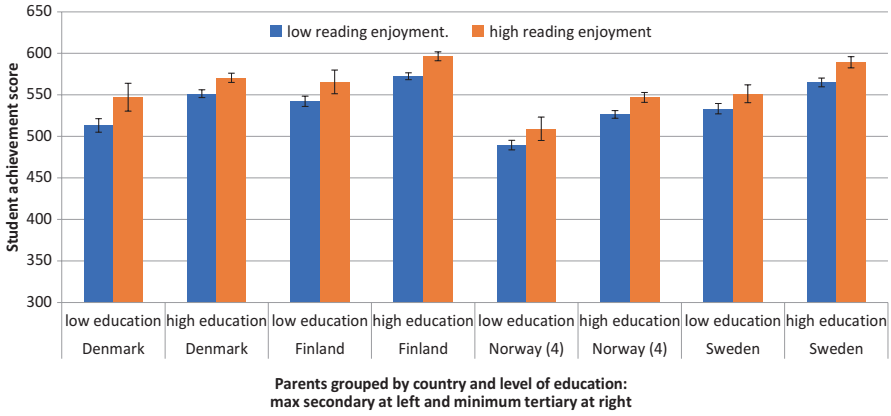

Fig. 14.1 Parental education and reading enjoyment in four Nordic countries in PIRLS 2016. (Note: light grey columns represent parents scoring less than maximum (of mean) on the variable reading enjoyment. Dark grey columns represent parents who score maximum reading enjoyment. For each country, parents with low education levels (maximum secondary) appear at left and parents with high education levels (university level) to the right. The bracketed (4) after "Norway" serves as a reminder that this is the 4th grade sample only

reading enjoyment and children of well-educated parents with low reading enjoyment. In other words, it appears that parental reading enjoyment did compensate for little education, or SES, in these countries in 2016.

14.5 Discussion

In sum, our findings regarding parental education, books, parents' reading and children's reading achievement turn out to be stable across countries and time. Thus, the correlations appear solid and results can be discussed more generally.

Our study of the relationship between home factors and student reading achievement in PIRLS showed that parents' education level matters much for how well students read in the Nordic countries across the assessment cycles. This is well-known from the literature about the contribution of social background on student learning (Myrberg & Rosén, 2009; Strand & Schwippert, 2019). Our analyses also show that having plenty of books in the home (>100) has contributed substantially to student achievement in all Nordic countries that have participated in PIRLS since 2001. This is no surprise, either. Books can be seen as cultural capital, and the home library factor has been found to be consistently associated with reading achievement, regardless of social background (Evans et al., 2010, 2014).

Controlling for the number of books in the home and parents' level of education, we found that parents' reading enjoyment contributes significantly to children's reading achievement as measured in all four PIRLS cycles in all Nordic countries. In contrast, parents' reading frequency, that is how much parents read (e.g. newspapers, work documents, journals, on screen or paper) was not significant for student results in PIRLS. Whereas the questions about reading enjoyment in the questionnaires (both student and home questionnaires) will most likely be associated with reading books for pleasure in the spare time, the question about how much parents read in a typical week includes various genres and both print and electronic media. It thus seems likely that reading enjoyment is associated with the cultural capital of a family, also reflected in the number of books in the home. Further, reading for pleasure is usually associated with long form fiction reading, most typically novels. This is the kind of reading known to be beneficial for children's development of reading ability, in contrast to their reading of other kinds of texts (e.g. Jerrim & Moss, 2019; Pfost et al., 2013).

Decades of research has provided evidence of the strong link between extracurricular reading and reading comprehension. In a longitudinal study, Cunningham and Stanovich (1997) found that children's book reading predicted reading ability 10 years later. Pfost et al. (2013) analysed spare time reading habits in both print and electronic media (also in a longitudinal study), finding that book reading affected reading ability positively, whereas e.g. online chatting had a negative effect on reading achievement. Through regression analyses controlling for a great number of variables, Jerrim and Moss (2019) found a strong link between teenagers' voluntary fiction reading and their reading achievement in the PISA Reading survey from

2009. The same was not true of other types of texts, i.e. magazines, non-fiction, newspapers and comics.

Mol and Jolles (2014) documented that among Dutch secondary school children ($n = 1071$), leisure reading frequency was especially low among students in the pre-vocational track compared to the higher, pre-academic track, and in general, boys reported to read less than girls. However, Mol and Jolles (2014, p. 1) also found that "Non-leisure readers who reported that they enjoyed reading got higher school grades in the higher educational [pre-academic] track", as was also true for girls (but not boys) in the lower educational track. This finding indicates that adolescents who cease to read for pleasure in their teens, may still experience a positive effect of already established positive attitudes towards reading. It resembles our finding that parents' enjoyment of reading matters more for their children's reading performance than does the actual parental reading frequency.

The PIRLS composite scale "Parents like reading" documents a decline in parents' positive attitudes toward reading between 2011 and 2016 in all four Nordic countries. Conversely, more parents report to "not like reading" in 2016 than in 2011 (Mullis et al., 2017, p. 157). However, our study shows that even parents with little education, may contribute positively to their children's reading development if these parents enjoy reading. Therefore, in terms of equity, i.e. overcoming social background (OECD, 2009), it is especially important for children of parents with low education levels that their parents enjoy reading and provide a home library (Evans et al., 2010, 2014; Pfost et al., 2013; Rowe, 1991). These parents may not be able to provide the same support as highly educated parents when it comes to their children's education and/or homework, but if they like reading, they may pass positive attitudes towards leisure reading on to their children and thus help them develop high reading literacy. It is also likely that parents who like reading engage their young children in shared reading and other literacy activities that contribute to vocabulary development and print-knowledge, factors known to benefit early literacy development as well as later reading achievement (Buckingham et al., 2014).

Recently, a decline in spare-time voluntary reading was documented among Norwegian PISA students (15 year-olds) (Jensen et al., 2019). Significantly more teenagers than before reported that they "never or almost never" read in their spare time. This was particularly true of boys. Analysing PISA results, Jerrim and Moss (2019) found that the positive effect of spare-time reading on reading achievement stems from fiction reading only. Other genres and types of reading material (e.g. comics and newspapers) do not contribute to reading development. Therefore it is important that children learn to appreciate fiction early. Pleasure reading can be stimulated by e.g. shared book reading in the home and/or in kindergarten.

Children and adolescents will most likely only read books if they find it pleasurable (Guthrie, Wigfield, Metsala, & Cox, 1999), and children's motivation for reading is developed early (Schiefele, Stutz, & Schaffner, 2016). When parents do not enjoy reading, their children will likely never see them read books, and thus miss out on the opportunity to discover leisure reading as a pleasurable experience for themselves. For the purpose of equity through education, it may be that schools have to take on more of the responsibility of teaching children to enjoy reading long

form texts. This is particularly true of boys from disadvantaged families, since more boys than girls report to not like reading, and more boys than girls perform at the lower end of reading achievement scales in studies like PIRLS and PISA. Kindergarten teachers, school teachers and school librarians can act as adult role models for pleasure reading, giving all children, regardless of their home background or gender, equal chances of obtaining high levels of reading literacy. The foundations for positive attitudes toward reading should be laid already in kindergarten and the early grades of school (Bus et al., 1995), bearing in mind especially those children who do not come from a family culture with positive attitudes towards pleasure reading. In the long term, reading books will benefit both the children themselves and their own children in the future.

14.5.1 Implications

The Nordic ideal of a "School for All" must also cater for those children who are not rich in home resources for learning, be it financial riches or well-educated parents who provide their young ones with early literacy activities at home, help with homework after school entry and the latest in digital devices. A school for students who do not have such resources to draw on (and they are not only immigrant children, neither only poor children), needs to provide these students not with the "same-size" opportunities but with compensating didactics to ensure equitable outcomes of education.

14.5.2 Limitations

Our study only includes the Nordic countries, and the significant associations we have found between parents' reading enjoyment and student achievement might be different in other countries, where e.g. parents report less interest in reading than the very positive attitudes reported among Nordic parents (Mullis et al., 2017).

We would ideally have liked to inspect three groups of parental education levels: low (primary school only or less, i.e. Groups 1–3 in Appendix 14.3), middle (completed secondary education), and high (parents with tertiary education). Few Nordic parents have only primary school or less, and we found that in Scandinavia combined (Denmark, Norway and Sweden), there were fewer than 10 parents in 2016 with only primary school yet reporting high levels of reading enjoyment. This number was too small for analysis, but we encourage researchers to explore the effect of parents' reading enjoyment on student reading achievement in other countries.

Appendices

Appendix 14.1: Composite Variable "Home Resources for Learning" in PIRLS 2016 (Mullis et al., 2017) Comprises Five Items

Item	Options
Number of books at home (students)	0–10 11–25 26–100 101–200 More than 200
Number of home study supports (students)	None Internet connection or own room Both
Number of children's books at home (parents)	0–10 11–25 26–50 51–100 More than 100
Highest level of education of either parent (parents)	Finished some primary or lower secondary Finished lower secondary Finished upper secondary Finished post-secondary education Finished university or higher
Highest level of occupation of either parent (parents)	Has never worked outside home for pay, general labourer or semi-professional (skilled agricultural or fishery worker, craft or trade worker, plant or machine operator) Clerical (clerk or service or sales worker) Small business owner Professional (corporate manager or senior official or professional, technician or associate professional)

Appendix 14.2: Composite Variable "Parents Like Reading" in PIRLS 2016 (Mullis et al., 2017)

In question no. 12, variables (a) and (d) are reversely coded. In our analyses for the present study, we used scales 10 and 12, but not 11. We employed those variables from question 12 that have the strongest association with student reading achievement, i.e. variables a), (c) and (h) (see Sect. 14.3.2).

Question wording for "Literacy at home" section	Options
Question 10 – In a typical week, how much time do you usually spend reading for yourself at home, including books, magazines, newspapers, and materials for work (in print or digital media)?	Less than 1 h a week 1–5 h a week 6–10 h a week More than 10 h a week
Question 11 – When you are at home, how often do you read for your own enjoyment?	Every day or almost every day Once or twice a week Once or twice a month Never or almost never
Question 12 – Please indicate how much you agree with the following statements about reading.	(a) I read only if I have to (b) I like talking about what I read with other people (c) I like to spend my spare time reading (d) I read only if I need information (e) Reading is an important activity in my home (f) I would like to have more time for reading (g) I enjoy reading (h) Reading is one of my favorite hobbies

Appendix 14.3: Parents' Level of Education, from PIRLS 2016 (Mullis et al., 2017)

What is the highest level of education completed by the child's father (or stepfather or male guardian) and mother (or stepmother or female guardian)?

1. Did not go to school
2. Some primary education (ISCED Level 1) or lower secondary (ISCED Level 2)
3. Lower secondary education (ISCED Level 2)
4. Upper secondary education (ISCED Level 3)
5. Post-secondary, non-tertiary (ISCED Level 4)
6. Short-cycle tertiary (ISCED Level 5)
7. Bachelor's or equivalent (ISCED Level 6)
8. Master's or equivalent (ISCED Level 7)
9. Doctor or equivalent (ISCED Level 8)
10. Not applicable

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