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## CHILDREN READING FICTION BOOKS BECAUSE THEY WANT TO

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## **ABSTRACT**

### **Children Reading Fiction Books Because They Want To\***

This paper investigates the reading of fiction books by 15-year-olds in 18 OECD countries. It appears that girls read fiction books more often than boys, whereas boys read comic books more often than girls. The intensity by which children read fiction books is influenced by parental education, family structure, and the number of books and TVs at home. Reading comic books does not affect the reading of fiction books. Parents who want their children to read fiction books frequently should have a lot of books at home and at most one television.

JEL Classification: L82 and Z11

Keywords: books, PISA-data and reading

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## **Children reading fiction books because they want to**

### **Abstract**

This paper investigates the reading of fiction books by 15-year-olds in 18 OECD countries. It appears that girls fiction books more often than boys, whereas boys read comic books more often than girls. The intensity by which children read fiction books is influenced by parental education, family structure, and the number of books and tv's at home. Reading comic books does not affect the reading of fiction books. Parents who want their children to read fiction books frequently should have a lot of books at home and at most one television.

Keywords: Reading, books, PISA-data

JEL-codes: L82, Z11

## **1 Introduction**

Reading books isn't always fun. Especially for young people there may be more attractive ways to spend leisure time: watching television, surfing on the internet, gaming on a Play Station, chatting through mobile phones et cetera. Still, governments, schools and a lot of parents consider reading and especially the reading of books to be an activity that should be stimulated among children. After all, if children read when they are young, this will have a positive influence on their reading levels later on in life. Governments can stimulate book-reading through subsidies for libraries, tax concessions on the sale of books, and measures to increase the production of book titles (see Canoy et al. (2005) for details). Children who were once library members later have a stronger preference for literary books than individuals who were no library member in their youth (Kraaykamp, 2003). Both parents and literature teachers influence the reading level of children; the higher the parents' reading level, the higher the child's reading level and the higher the number of hours of literacy education the higher the reading level of children (Verboord, 2003). Schools

may also encourage book reading by stimulating pupils' cultural interest. Parents may stimulate reading of their children through buying books, taking them to public libraries and by instruction, i.e. by reading to them and by talking about reading. People who were stimulated to read in their childhood more often like literary books and parents who read literature relatively often turn out to develop a literary taste in their children; reading of romance fiction is almost completely determined by the direct transfer of taste from parents to children (Kraaykamp, 2003).

Comic books are not always funny but many children - and some adults - love to read them. They can tell stories about imaginary heroes like Superman and Spiderman which are read all over the world but have an American flavor since the heroes have some sort of 'super power'. Comics books can also tell funny stories about heroes like Lucky Luke or Asterix and Obelix. These too are read in many countries. In some countries the comic books are very popular but hardly read outside that country; like Manga in Japan. For a long time reading comic books was not much appreciated. When, for example, in the 1940s in the Netherlands Dick Bos – a detective character – was popular among children, in 1948 the Dutch Minister of Education sent out a letter to the directors of all Dutch schools about comics books. The Minister indicated that 'unfortunately' he could not take legal action against distributors of comic books, but he was counting on the school teachers to prevent their pupils from taking comic books to school and distribute them, since these books are 'merely sensational without any added value'.

Various studies indicate that time spend reading - including book reading - has diminished in the past decades. The shift from a word-oriented culture to an image-oriented culture may be underlying this decline and if so it will manifest itself in the generations which have grown up or are growing up with television (Van der Voort, 1991). Investigating the evolution of reading time in the Netherlands over several decades Knulst and Van den Broek (1998) conclude that increased opportunities to watch television are the main determinant of the decline in reading time.<sup>1</sup> How-

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<sup>1</sup>The increased opportunities concern the introduction of television in the Netherlands in the 1950s, and the expansion of the number of tv channels later on, including the introduction of

ever, the introduction of PC and Internet use does not seem to have had a separate downward effect on the book reading (Knulst and Van den Broek, 2003).

A well-established fact in the reading of books is that women read more than men.<sup>2</sup> Tepper (2000) investigates why in the US women are more than twice as likely to be readers of fiction than men. He has two competing hypotheses. One hypothesis is that women read more fiction because cultural norms and patterns of socialization emphasize fiction reading as an appropriate activity for young girls. The other hypothesis is that women read more because they develop the cognitive skills necessary to read at an earlier age than boys do and remain more proficient readers throughout their lifetimes. In other words, the two competing hypotheses are that women read more fiction either because they are encouraged to read by parents and teachers, or because they are better readers. Tepper concludes that the data provide strong support for the socialization theory and virtually no support for the cognition arguments: many American parents view fiction reading as an appropriate activity for girls and as inappropriate for boys.

This paper investigates reading behavior of 15-year-old girls and boys focusing on fiction books. The analysis is based on information from 18 countries collected in the year 2000 through the OECD Program for International Student Assessment (PISA). PISA 2000 is focussed towards assessing literacy in reading (as well as in mathematics and science). As a “by-product” PISA also collects information about reading activities.<sup>3</sup> It turns out that there is a positive relationship between reading for enjoyment and reading skills. On average in each country keener readers are also better readers (OECD 2001).<sup>4</sup> In the current paper the information about the book-reading behavior of children and the information about their family characteristics

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commercial tv channels.

<sup>2</sup>Knulst and Van den Broek (1998) find that in 1955 Dutch men read more than Dutch women, which was reversed in 1995.

<sup>3</sup>Note that in the PISA 2003 survey this information is not available.

<sup>4</sup>This paper ignores the issue of reading skills and focuses on reading for enjoyment. See for recent examples of studies that investigate reading literacy using PISA data Vandenberghe and Robin (2004) and Fertig and Wright (2005).

is used to investigate the determinants of children’s book-reading behavior. And information about the school characteristics is used to establish the importance of the educational environment. Also, because of the cross-country nature of the PISA-dataset it is possible to investigate to what extent cross-national cultural and policy differences affect reading behavior of children.

The set-up of the paper is as follows. Section 2 provides a description of the PISA-data, with a focus on the information about the book-reading behavior of the children. Section 3 presents stylized facts derived from the PISA-data. This concerns book-reading activities and potential determinants of reading behavior. This section also discusses cross-country differences in book markets and book market policy. Section 4 presents the results from the empirical analysis. Section 5 concludes.

## 2 PISA-data

PISA-2000 is a large scale survey aimed at measuring reading literacy of 15-year-olds on a cross-national basis. As part of the survey students were subject to pencil and paper standardized tests that focus on their capacity to use knowledge in the areas of reading literacy (as well other types of literacy). Furthermore, information was collected from the students about their family background while information about the schools the students attend was collected from principals and other school administrators. Concerning reading behavior two questions in the student questionnaire are relevant.

- Question 34: “Each day, about how much time do you usually spend reading for enjoyment?” with the following possible answers: I do not read for enjoyment, 30 minutes or less each day, more than 30 minutes to less than 60 minutes each day, 1 to 2 hours each day, more than 2 hours each day.
- Question 36: “How often do you read these materials because you want to?” with the following categories: Magazines, comic books, fictions (novels, narratives, stories), non-fiction books, emails and Web pages, newspapers. The

possible answers are: never or hardly ever, a few times a year, about once a month, several times a month, several times a week.

The question about reading for enjoyment is difficult to interpret since this might include reading of emails and web pages but might not include all book reading. In theory because ‘reading’ is more general than ‘reading fiction books’ the percentages of ‘never readers’ should always be lower than the percentages of ‘never readers of fiction books’. However, this is rarely the case. In most countries the percentages of ‘non-readers of fiction books’ are substantially lower than the percentage of ‘non-readers’, which is logically inconsistent.<sup>5</sup> In the U.S. for example 31% of the girls indicate never to read for enjoyment while only 21% of the girls indicate never to read a fiction book ‘because they want to’. Because of these problems of interpretation the question about reading for enjoyment is ignored in this paper. The focus in the analysis is on regular reading which is defined as reading at least once a month.

### **3 Book reading and its determinants - stylized facts**

Figure 1 shows cross-country and gender differences in the regular reading of fiction books. In every country girls read more frequently than boys but there does not seem to be even a weak positive cross-country correlation between the reading of girls and boys. So if there are cross-country differences in the structure of the book market or the nature of the book market policy they don’t show up in cross-country gender differences in fiction books reading. Figure 2 shows that there is a strong positive cross-country correlation between girls and boys reading comic books. Apparently, cross-country cultural differences are more important than gender differences.

Whether or not and if so with what intensity children want to read fiction books depends on their preferences, the costs of reading and restrictions on their time use. Children that like to read will read more and more often than children that do not

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<sup>5</sup>Unless, of course, one would be willing to accept that ‘reading for enjoyment’ is different from ‘reading because you want to’; it could be that some children read books because they want to but they still do not enjoy it.



like to read. The costs of reading may differ between children. If it is easy for a child to get access to a book - for example because there are many books at home - it is less costly to read. If a child grows up in an environment that stimulate reading the costs of reading are low too. There may also be restrictions on the time use of children. They may prefer to watch television themselves but if they can't get access to their favorite program because their parents occupy the only television at home they may read books instead. And it may be that the time children spend reading comic books is at the expense of the time spend reading comic books.

The reading behavior of children may be influenced by the reading behavior of their parents. Because there is no direct information about the reading behavior of parents, the educational level of the parents is used as a proxy variable.<sup>6</sup> Also, the family structure may affect the reading of children. In nuclear families parents may have more time to stimulate their children to read fiction books than in single-parent families.

From a comparison of Figures 1 and 2 it is clear that at the level of countries there is no indication of a relationship between the reading of fiction books and the reading of comic books. After all, there is no cross-country relationship for fiction books between the reading of boys and girls while there is a clear positive relationship for comic books. The lack of cross-country correlation between the reading of fiction books and the reading of comic books, however, does not rule at that there is such a relationship within countries.

Furthermore, school characteristics may be important. It may be that in some schools there is a policy to stimulate reading of fiction books, either through teachers' influence or through the existence of excellent library facilities or because the student-teacher ratio is relatively low. The geographical location of a school may be relevant as well. In cities there may be more distraction for children affecting book reading negatively, or more easy accessible library facilities than in villages affecting book reading positively.

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<sup>6</sup>Canoy et al. (2005) provide information for adults about the positive correlation between educational attainment and reading intensity.

## 4 Reading - empirical analysis

The quantitative analysis is done for 18 countries. Immigrants and immigrant children are removed from the sample because they may face potential language problems and thus may exhibit a reading behavior which is completely different from the native population. Furthermore, families without a television at home are very rare as are families without any book at home. Because these families may have reading behavior that is completely different from the ‘normal’ families that have at least one television and one book, the non-television and non-book families are removed from the sample. After removing individuals for which essential information is missing and after removing immigrants and immigrant children as well as families without a television and families without books, samples of 31,384 girls and 29,941 boys remain.<sup>7</sup>

The stylized facts in the tables and graphs indicate that boys have a different reading behavior than girls. Furthermore, it appears that the differences in fiction book reading between boys and girls are country-specific. Therefore, the estimates are done separately for boys and girls.

### 4.1 Explanatory variables

The explanatory variables relating children’s book reading behavior to family circumstances are the following:

- Parental education; continuous variables using the ISCED classification - separately for mothers and fathers.
- Family structure; dummy variable for a nuclear family; reference category = non-nuclear family (single, mixed)
- Number of books at home; dummy variables for 11-50, 51-100, 101-250, 251-500, more than 500 books; reference category = 1-10 books at home.

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<sup>7</sup>Note that not removing families without a television and families without a book at home and including dummy variables for these families does not alter the parameter estimates a lot.

- Number of televisions at home; dummy variables for 2 and more than 2; reference category = 1 television at home.
- At least 1 computer at home; dummy variable; reference category = no computer at home.

The main assumption in the empirical analysis is that all these characteristics are exogenous to the decision of the child to read books. For parental education there is no problem with respect to this assumption since most of the parents will have completed their education before the children came to be. Nevertheless, if there is an effect of parental education on reading behavior it is not clear where this effect comes from. It could be nature or nurture but in the context of the current paper this is not very important. The exogeneity assumption is less clear for the number of books at home. It could be that only parents decide about the number of books at home. However, it cannot be ruled out that a child who is a fanatic book reader will buy a lot of books and therefore influence the number of books at home. Also, it cannot be ruled out that fanatic book reading children stimulate their parents to buy a lot of books. Still, since the income of boys and girls of age 15 will not be very high and borrowing books from the library is a cheap alternative, it does not seem likely that this reversed causality is a major problem. The exogeneity assumption may be more problematic when it come to the number of televisions at home. If a child does not like to read it may persuade its parents to buy more than one television so that it can watch programs separately from the parents or use the television as an extension to a Play Station. To a lesser extent this line of reasoning may also hold for the presence of a computer at home. Unfortunately there is no obvious way to account for this reversed causality and therefore it is ignored. In the PISA survey no information is collected about family income or wealth. The educational level can be thought of as a proxy variable for wealth. Furthermore, the presence of televisions and computers may be an indicator for income or wealth. However, if this would be the case then televisions and computers should have the same effect on reading behavior. Finally, note that there is no reason why girls are born in different families

than boys. Therefore, for the model to explain differences in reading behavior, some of the estimated parameters must be different for boys and girls.

Governments, schools and parents can stimulate children to read fiction books. The information available is on the level of individual children but the PISA data also contain information about schools and of course the country is known as well. The empirical strategy is to use information about individual behavior and relate that to family circumstances where fixed effects for country and for schools account for the influence of government policy and school policy. Later on, to establish the effect of government policy the country fixed effects are related to book market characteristics and book market policy. And, to establish the effect of school the school fixed effects are related to school characteristics including the geographical location of the school.

The first step is to establish whether or not country fixed effects and school fixed effects matter at all. For this a fixed effects logit model is used with  $\Pr(r_i = 1) = \Lambda(\alpha_k + \beta'x_i)$  and  $\Pr(r_i = 0) = \Lambda(-\alpha_k - \beta'x_i)$ , where  $\Lambda$  is the symbol for the logistic distribution and  $r_i$  indicates whether ( $r_i = 1$ ) or not ( $r_i = 0$ ) individual  $i$  reads fiction books regularly. The  $\alpha_k$  represent school fixed effects ( $k$  refers to school,  $i \in k$ ), which by nature also include country-specific differences (since a particular school is never in more than one country). Therefore, the  $\beta$ -parameters represent the effect of family characteristics conditional on differences in country and school-characteristics.

The parameter estimates are shown in columns (1) and (4) of Table 1.<sup>8</sup> For girls the education of the parents does not affect the regular reading of fiction books. Furthermore, girls in nuclear families read fiction books more regularly. The number of books at home has a positive effect while the number of televisions has a negative effect, while a computer at home has a positive effect. For boys the education of both parents has a positive effect on the frequency of fiction book reading. The effects of family structure, the number of books and television are similar as those for girls.

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<sup>8</sup>As shown the datasets contain information from 2,817 schools for girls and 2,745 schools for boys. The parameters of the fixed effects logit model are estimated using Chamberlain's conditional likelihood method. Some schools are deleted from the estimates because all girls or all boys at these schools read regularly or none of them does. In such cases there is no contribution to the likelihood.

The presence of a computer at home has no effect on the regular reading of fiction books by boys.

Table 1 also presents estimates of binomial logit models where the fixed effects for the schools are ignored.<sup>9</sup> As shown the parameter estimates are not very much affected by this which indicates that the effects of family characteristics are orthogonal to the school-effects and the country-effects.

Finally, an ordered logit model is estimated using the five categories of intensity by which fiction books are read: never or hardly ever, a few times a year, about once a month, several times a month, several times a week.. The contribution to the likelihood of category  $j$ ,  $Pr(y_i = j) = \Lambda(\mu_j - \beta'x_i) - \Lambda(\mu_{j-1} - \beta'x_i)$ , where  $j$  refers to the discrete number of choices ( $j=1,\dots,5$ ) that are possible, and the  $\mu$ 's are ancillary parameters.<sup>10</sup> Some parameter estimates in this ordered logit specification are slightly different but most of them, in particular those of the presence of books and televisions are not affected by the more detailed specification of reading behavior.

Comparing the parameter estimates for the number of televisions with the parameter estimate for the presence of a computer it is clear that televisions and computers do not reflect family income or family wealth since they have opposite signs.

For the logit estimates it was also investigated whether the country fixed effects are correlated with the book market characteristics presented in Table 1. Replacing the country fixed effects by the per capita number of book titles and the per capita number of public library services points did not improve the interpretation of the results.<sup>11</sup> The number of book titles had insignificant positive effects on the reading intensity, while the number of service points had insignificant negative effects. So, it is not possible to get a clear-cut relationship between book market characteristics and reading behavior of 15-year-olds.

Two issues remain, the possible interaction between reading of comic books and reading of fiction books, and the effect of school characteristics. Comic books represent an image orientation rather than a word orientation so it is interesting to

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<sup>9</sup>Note that country fixed effects are included but not reported.

<sup>10</sup>Note that  $\mu_0=-\infty$ ,  $\mu_1=0$ ,  $\mu_5=\infty$ ; the estimates of the ancillary parameters are not reported.

<sup>11</sup>Information concerning these book market characteristics is derived from Canoy et al. (2005).

investigate whether the reading of comic books has a negative effect on the reading of fiction books. If there is substitution from word orientation to image orientation it should be present as a substitution from fiction books to comic books.

To investigate this issue in more detail bivariate probit models are estimated. The contribution to the likelihood of individuals that read both fiction books and comic books is  $\Phi_2(x_f\beta_f, x_c\beta_c; \rho)$ , where  $\beta_f$  represents the vector of parameters for regular reading fiction books, and  $\beta_c$  represents the vector of parameters for regular reading comic books. Note that in addition to  $x$ ,  $x_f$  contains a dummy variable that indicates whether or not the individual reads comics books regularly.<sup>12</sup> Furthermore,  $\Phi_2$  refers to a bivariate probit specification and  $\rho$  represents the correlation between the effects unobserved characteristics affecting both the reading of fiction books and the reading of comic books. The other combinations of regular reading and non-regular reading of comic books and fiction books are specified similarly.

The additional variables concerning the school characteristics of the children are the following:

- School location: dummy variables for ‘small town’ (3,000 - 15,000 inhabitants), ‘town’ (15,000 - 100,000 inhabitants), and ‘city’ (more than 100,000 inhabitants); reference group: ‘village’ (less than 3,000 inhabitants)
- Excellent library: dummy variable based on the answers ‘not at all’ to the question ‘In your school, how much is the learning of 15-year-old students hindered by lack of instructional materials in the library?’
- Percentage of girls among the pupils of a school
- Student-teacher ratio

The parameter estimates are shown in Table 2. Conditional on the effect of the family characteristics, the school characteristics and accounting for correlation

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<sup>12</sup>Note that the identification of the effect of reading comic books on the reading of fiction books comes from the functional form of the bivariate probit model.

through unobservables regularly reading comic books does not affect – neither negatively or positively – the regular reading of fiction books. The effects of family characteristics on regular reading of fiction books are very similar to the effects presented in Table 1. The effects on regular reading of comic books are similar as well. Father’s education has a positive effect on comic book reading of their daughters, while son’s behavior is influenced by mother’s education. More books at home have a positive effect on the regular reading of comic books, but the effect is much smaller than for fiction books. The number of televisions at home has – mostly insignificant – negative effects on comic book reading. The geographical location of the school is not very important. Girls that attend village schools read more than other girls, while boys that attend village schools generally read less than other boys. However, only for a few parameter estimates the geographical effects differ significantly from zero. Concerning the other school characteristics, only the percentage of girls is relevant. A higher percentage of girls at school has a positive effect on the reading of fiction books, for girls as well as boys. More girls at school stimulate boys to read comics books more regularly, while girls are discouraged to read comic books. Finally, conditional on the effect of the family and the school characteristics there is a positive correlation between unobservables that affect fiction book reading and comic book reading. However, only for girls this correlation differs from zero at conventional levels of significance.

## 5 Conclusions

This paper investigates reading behavior of 15-year-olds focusing on fiction books. The analysis is based on information from 18 OECD countries and shows that there are big cross-country and gender differences in book-reading. Girls read fiction books more often than boys while boys read comic books more often than girls. Conditional on these differences, reading is (positively) influenced by parental education, (positively) by the availability of books at home and (negatively) by the number of tv’s at home. It also appears that the regular reading of comic books has no negative effect

on the regular reading of fiction books. Finally, school characteristics do not seem to matter much.

If one wants to stimulate fiction book-reading among children this study provides a number of policy alternatives. It appears that there are large cross-country differences in fiction book reading but there is no correlation in the reading of girls and boys. Therefore, for governments there is no particular advice apart from the obvious remark that educational programs should be set-up in a way that promotes reading. For parents the policy recommendations are also clear: more books at home and less televisions. Concerning the number of books there are diminishing returns: having more than 250 books at home has hardly any additional positive effect on the intensity of reading of fiction books compared to having in between 100 and 250 books. For televisions there do not seem to be no such diminishing returns, i.e. homes with just one television are optimal. In short: Parents who want their children to read fiction books frequently should have a lot of books at home and at most one television.



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## A Descriptive statistics

Table A1 presents information about the reading of fiction books phrased as “because you want to”. There are large cross-country differences and girls read fiction books more often than boys. The “never read fiction books” category for girls is smallest in Denmark (9%) and largest in Belgium; for boys the extremes are in Australia (28%) and Austria (58%). Cross-country differences in regular reading of fiction books (at least once a month) are also quite large. For girls the extremes are in Spain (46%) and Sweden and Norway (71%), while for boys the extremes are in Finland and Norway (23%) and Australia and Italy (44%).

As also shown in Table A1 cross-country differences in the reading of comic books are very large. In Scandinavian countries (except for Sweden) reading of comic books is very popular, while it is also quite popular in Belgium, Sweden, the Netherlands and France. In English and German speaking countries reading comic books is not very popular. In every country reading comic books is more popular among boys than among girls.

Table A2 shows the cross-country differences in the numbers of books that the children in the PISA-survey have at home. The range is quite large. Whereas in Greece and Portugal the average number of books is about 130-140, in Australia and Sweden the average number of books at home is about 240. Table A2 also gives information about the numbers of televisions and computers at home. As shown there are only a couple of families that have no television at home. In the UK and the US 96% of the families have more than one television at home while in Belgium only 69% have more than one television at home. Concerning the number of computers at home there is again a lot of cross-country variation. While in Sweden and the Netherlands about 95% of the families has a computer at home in Greece this is only 45%.

**Table 1 Parameter estimates logit models; reading fiction books<sup>a)</sup>**

	Girls			Boys		
	Regular reading		Ordered logit (3)	Regular reading		Ordered logit (6)
	Fixed effects (1)	Binomial logit (2)		Fixed effects (4)	Binomial logit (5)	
<i>Education</i>						
Mother	0.02 (1.7)	0.01 (0.9)	0.00 (0.5)	0.05 (3.5)*	0.04 (3.6)*	0.03 (3.6)*
Father	0.01 (0.9)	0.02 (1.5)	0.02 (2.3)*	0.06 (4.6)*	0.08 (6.7)*	0.08 (8.1)*
Nuclear family	0.10 (3.2)*	0.10 (3.4)*	0.08 (3.0)*	0.08 (2.4)*	0.08 (2.6)*	0.10 (3.8)*
<i>Books</i>						
11-50	0.45 (7.6)*	0.42 (7.8)*	0.51 (10.6)*	0.40 (5.7)*	0.38 (6.0)*	0.44 (9.1)*
51-100	0.75 (12.8)*	0.74 (13.8)*	0.81 (17.2)*	0.68 (10.0)*	0.70 (11.0)*	0.72 (15.0)*
101-250	1.06 (17.6)*	1.06 (19.2)*	1.14 (23.7)*	1.05 (15.2)*	1.09 (17.3)*	1.11 (22.9)*
251-500	1.35 (20.9)*	1.33 (22.8)*	1.42 (28.0)*	1.27 (17.6)*	1.35 (20.4)*	1.38 (26.7)*
>500	1.53 (21.8)*	1.53 (24.0)*	1.71 (31.3)*	1.43 (19.0)*	1.53 (22.3)*	1.56 (28.6)*
<i>Durables</i>						
2 tv's	-0.23 (5.5)*	-0.25 (6.5)*	-0.28 (8.8)*	-0.26 (5.4)*	-0.28 (6.3)*	-0.28 (7.6)*
> 2 tv's	-0.41 (9.6)*	-0.47 (12.0)*	-0.51 (15.6)*	-0.53 (10.9)*	-0.58 (13.2)*	-0.57 (15.3)*
Computer	0.09 (2.5)*	0.07 (2.0)*	0.03 (0.9)	-0.00 (0.1)	-0.03 (0.8)	0.07 (2.0)*
No of obs.	30,242	31,384	31,384	28,035	29,941	29,941
No of f.e.	2,817	—	—	2,745	—	—

<sup>a)</sup> The fixed effects in columns (1) and (4) concern school districts; ancillary parameters of the ordered logit models in columns (3) and (6) are not reported; estimates in columns (2), (3), (5), and (6) contain country fixed effects; t-values in parentheses

**Table 2 Parameter estimates bivariate probit model;  
reading fiction books and comic books regularly<sup>a</sup>**

	Girls		Boys	
	Fiction books	Comic books	Fiction books	Comic books
Comic books	-0.05 (0.2)	–	0.24 (1.3)	–
<i>Education</i>				
Mother	0.00 (0.6)	0.01 (1.4)	0.02 (2.9)*	0.02 (2.7)*
Father	0.01 (1.8)	0.02 (2.9)*	0.05 (6.4)*	0.00 (0.1)
Nuclear family	0.06 (3.0)*	0.02 (1.0)	0.06 (2.8)*	-0.01 (0.5)
<i>Books</i>				
11-50	0.26 (7.4)*	0.07 (1.6)	0.22 (5.7)*	0.17 (4.8)*
51-100	0.46 (13.0)*	0.11 (2.8)*	0.40 (10.0)*	0.27 (7.7)*
101-250	0.65 (18.2)*	0.18 (4.6)*	0.63 (15.6)*	0.32 (9.1)*
251-500	0.81 (21.3)*	0.21 (5.0)*	0.78 (18.0)*	0.39 (10.2)*
>500	0.92 (22.8)*	0.23 (5.2)*	0.90 (19.8)*	0.41 (10.1)*
<i>Durables</i>				
2 tv's	-0.14 (5.7)*	-0.05 (2.0)*	-0.17 (5.8)*	-0.03 (1.0)
> 2 tv's	-0.27 (10.7)*	-0.03 (1.0)	-0.36 (12.5)*	-0.04 (1.3)
Computer	0.04 (1.8)	0.04 (1.6)	-0.04 (1.4)	0.07 (3.1)*
<i>School characteristics</i>				
Small town	-0.03 (1.0)	-0.07 (2.0)*	0.01 (0.4)	0.01 (0.2)
Town	-0.12 (3.9)*	-0.04 (1.1)	0.06 (1.7)	-0.02 (0.9)
City	-0.06 (1.8)	-0.08 (2.2)*	0.11 (3.0)*	0.04 (1.0)
Excellent library	-0.00 (0.2)	0.01 (0.6)	0.03 (1.7)	0.01 (0.8)
Percentage of girls	0.18 (2.9)*	-0.13 (1.9)	0.14 (2.1)*	0.22 (4.3)*
Student-teacher ratio	-0.00 (0.9)	-0.01 (2.4)*	-0.00 (0.3)	0.00 (0.5)
$\rho$	0.26 (2.2)*		0.14 (1.3)	

<sup>a</sup>) Samples of 28,256 girls and 27,076 boys; estimates contain country fixed effects; t-values in parentheses; t-values for school characteristics corrected for clustering

**Table A1 Reading fiction books and comic books because children want to<sup>a)</sup>**

	Fiction books								Comic books							
	Girls				Boys				Girls				Boys			
	N	S	R	T	N	S	R	T	N	S	R	T	N	S	R	T
Australia	14	24	62	100	28	28	44	100	72	16	12	100	52	21	27	100
Austria	17	23	60	100	56	20	24	100	65	19	16	100	45	19	36	100
Belgium	22	27	51	100	43	29	28	100	22	25	53	100	16	17	67	100
Denmark	9	21	70	100	29	31	40	100	5	14	80	100	7	10	83	100
Finland	10	26	64	100	41	36	23	100	7	15	78	100	3	7	90	100
France	21	27	52	100	31	32	37	100	29	27	44	100	15	19	66	100
Germany	19	21	60	100	54	20	26	100	73	14	13	100	51	20	29	100
Greece	14	31	55	100	38	29	33	100	42	27	31	100	32	24	44	100
Ireland	17	29	54	100	38	31	31	100	73	15	12	100	62	19	19	100
Italy	13	23	64	100	31	25	44	100	42	23	35	100	31	21	48	100
Netherlands	20	22	58	100	43	25	32	100	39	19	42	100	21	13	66	100
Norway	14	25	71	100	51	26	23	100	10	18	72	100	7	8	85	100
Portugal	11	22	67	100	35	28	37	100	31	30	39	100	29	25	46	100
Spain	18	26	46	100	35	28	37	100	56	21	23	100	32	24	44	100
Sweden	8	21	71	100	35	27	38	100	29	25	46	100	14	18	68	100
Switzerland	12	22	66	100	45	25	30	100	45	23	32	100	25	22	53	100
United Kingdom	18	24	58	100	36	27	37	100	75	14	11	100	64	17	19	100
United States	21	24	65	100	36	27	37	100	75	12	13	100	60	17	23	100

<sup>a)</sup> N = Never, S = Sometimes ('a few times a year'), R = Regular ('at least once a month'),  
T = total

**Table A2 Number of books, televisions and computers at home**

	Books							Televisions				Computers			
	0	1-10	11-50	51-250	>250	Total	Average <sup>a)</sup>	0	1	>1	Total	0	1	>1	Total
Australia	1	4	15	41	38	100	242	1	13	86	100	10	53	37	100
Austria	2	7	20	48	23	100	174	1	19	81	100	14	58	28	100
Belgium	3	12	23	39	23	100	165	1	30	69	100	16	53	32	100
Denmark	2	9	15	44	30	100	203	0	6	93	100	9	45	46	100
Finland	1	7	23	49	21	100	159	3	11	86	100	18	56	26	100
France	3	9	22	44	22	100	164	1	20	78	100	34	52	13	100
Germany	1	6	19	44	30	100	204	1	13	86	100	12	52	36	100
Greece	2	9	28	44	17	100	139	1	16	84	100	55	38	7	100
Ireland	1	8	22	44	24	100	176	0	7	93	100	32	56	11	100
Italy	1	7	21	45	26	100	183	0	6	94	100	31	56	13	100
Netherlands	4	11	23	37	26	100	174	2	14	84	100	4	44	52	100
Norway	2	5	14	42	38	100	241	1	15	84	100	7	46	47	100
Portugal	2	14	31	37	17	100	131	0	10	90	100	42	45	13	100
Spain	1	5	19	46	30	100	205	0	11	88	100	32	55	12	100
Sweden	1	5	14	43	37	100	237	0	8	92	100	5	48	46	100
Switzerland	1	8	19	43	29	100	196	3	37	60	100	12	53	35	100
UK	1	9	23	41	26	100	181	0	4	96	100	12	46	42	100
US	3	11	23	41	22	100	162	0	4	96	100	20	50	31	100

<sup>a)</sup> Average number of books calculated using the midpoints of the available 7 intervals and assuming that the category ‘more than 500’ contains 625 books.

Figure 1: Cross-country differences in reading fiction books regularly; girls and boys

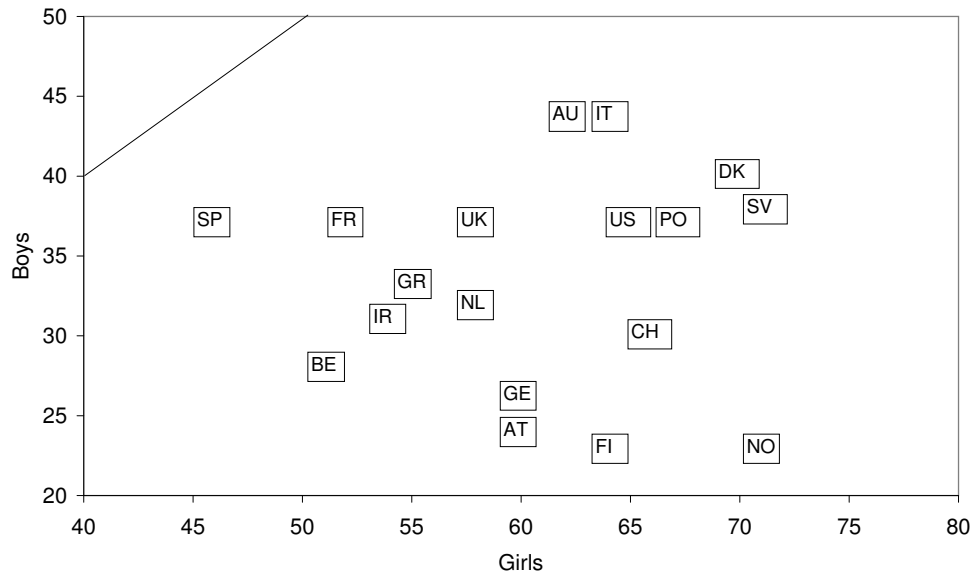


Figure 2: Cross-country differences in reading comic books regularly; girls and boys

