The link between fiction and teenagers' reading skills. International evidence from the OECD PISA study.

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It is well-known that children who read more tend to achieve higher scores in academic reading tests. Much less is known, however, about the link between reading different types of text and young people's reading performance. We investigate this issue using the Programme for International Student Assessment (PISA) 2009 database, exploring the association between the frequency teenagers read five different types of text (magazines, non-fiction, fiction, newspapers and comics) and their PISA reading scores. Analysing data from more than 250,000 teenagers from across 35 industrialised countries, we find evidence of a sizeable 'fiction effect'; young people who read this type of text frequently have significantly stronger reading skills than their peers who do not. In contrast, the same does not hold true for the four other text types. We therefore conclude that encouraging young people to read fiction may be particularly beneficial for their reading skills. Interventions encouraging fiction reading may be especially important for boys from disadvantaged socio-economic backgrounds, who are less likely to read this text type.

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1. Introduction

The ability to read is a fundamental life skill, which is critical to participating effectively within both society and the workplace. In a policy-driven environment, many educationalists and policymakers have sought to develop a better understanding of the factors that are related to higher levels of reading achievement. It has long been hypothesised that encouraging young people to read more will help them to develop stronger reading skills, and the OECD has been very active in exploring this area (Kirsch et al, 2002; OECD, 2011a, 2011b.). The association between frequency of reading and higher attainment has been repeatedly demonstrated within the academic literature, with many studies exploring the role motivation plays in their interaction (Baker et al, 2000; Krashen, 2004; Topping et al, 2007; Twist et al, 2007; Taboada et al 2009; Schiefele, et al, 2012). Research suggests that differences in frequency of reading may help to explain gender and socio-economic achievement gaps (Brozo et al, 2007; Cremin et al, 2014; Krashen et al 2012; Sullivan and Brown, 2015). Yet there has been rather less research on how reading different text types – for instance the frequency young people read fiction books compared to non-fiction books – is associated with young people's reading skills (McGeown et al, 2015; Sullivan, 2015). This is the contribution that this paper makes to the existing literature, with particular attention paid to whether there is a 'fiction effect'. In other words, is the association between reading fiction and young people's academic achievement particularly strong, as compared to reading other types of text?

Why might reading one type of text (e.g. fiction) be more important for developing young people's reading skills than others (e.g. non-fiction books, newspapers and magazines)? One potential mechanism is time; to complete a fiction book simply takes more time. To get from beginning to end requires more sustained commitment than dipping in and out of a newspaper or magazine (Moss and McDonald, 2004). Second, the cognitive demands that extended narrative texts make on their readers, through exposure to new vocabulary, different syntactic structures and deeper lexico-semantic networks, may in themselves encourage the development of new competencies and increase reader capacity to handle greater textual complexity (Krashen, 2004; Oakhill et al, 2015; Suk, 2016; Westbrook et al, 2017). Third, there is some evidence that stories have a particular role in enhancing social cognition (Mar, 2018) and from this point of view fiction texts may be particularly effective in engaging young readers developing "*a clear, complete, and integrated representation of the meaning of*

a text" (Oakhill et al, 2015). Finally, they can also play a part in developing young people's social networks as "good reads" are shared amongst friendship groups (Moss, 2007).

The discussion above clearly illustrates that there are strong theoretical reasons why one would suspect that reading certain types of text may be more important for the development of young people's reading skills than others. Yet, despite these theoretical underpinnings, empirical evidence examining the link between the frequency of reading different text types and children's academic achievement remains relatively sparse. One important exception is Sullivan and Brown (2015), who investigated the association between readings books compared to newspapers and magazines/comics. They found that reading books and newspapers at age 16 is positively associated with performance in numeracy, spelling and vocabulary tests, while frequently reading comics or magazines typically had either a null or negative effect. However, this evidence is limited by the fact that it did not separate out the effect of reading fiction compared to non-fiction books, was based upon a sample of children born in 1970 (hence referring to the situation around 50 years ago) and was specific to the English national context.

The aim of this paper is to contribute to this literature. Using Programme for International Student Assessment (PISA) 2009 data, we investigate how the frequency 15-year-olds read five different text types (fiction books, non-fiction books, newspapers, magazines and comics) is linked to young people's reading skills. We find strong evidence that reading fiction is linked to higher PISA reading scores and that this positive association continues to hold even after a wide range of potential confounding characteristics have been taken into account. This holds true across almost every OECD country. Moreover, the same is not true for the reading of other text types, where null effects are typically found. We therefore conclude that regular reading of fiction books may make an important contribution to the development of teenagers' reading skills.

The paper now proceeds as follows. Section 2 describes the PISA 2009 data, followed by an overview of our empirical methodology in section 3. Results are then reported in section 4, with discussion and conclusions following in section 5.

2. Data

The data we use are drawn from the 2009 round of the Programme for International Student Assessment (PISA). PISA is an international study of 15-year-olds academic achievement conducted every three years by the Organisation for Economic Co-Operation and

Development (OECD). Participants in the PISA study complete a two-hour test covering reading, science and mathematics, as well as completing a half-hour background questionnaire. We use the 2009 data as this is the most recent occasion when reading was the subject of focus and where the background questionnaire contained our precise question of interest. Although a total of 65 countries took part in the study, our analyses focus upon the 35 members of the OECD.

A two-stage sample design is used to collect data in PISA, with schools first selected as the primary-sampling unit with probability proportional to size, and then around 30 15-year-olds randomly selected from within each school. The OECD sets strict rules regarding pupil and school responses rates, with any country missing the targets at risk of being excluded from the study. Participation rates across most countries is therefore quite high, typically around 90 percent at the school[1] and pupil levels. Total sample sizes within most countries is around 5,000 pupils, although with notably larger samples drawn in some countries in order to allow regional comparisons to be made (e.g. Australia, Canada, Mexico, United Kingdom). Further details for each country can be found in Table 1. To account for the complex PISA survey design, final student weights and balanced-repeated-replication (BRR) weighted are applied throughout our analysis.

The key outcome measure of interest in this paper is young people's PISA reading test scores. Although PISA is designed to capture children's skills in reading, science and mathematics, it uses a somewhat unusual rotated test design. Specifically, not all children answer every test question. Rather, they complete only a sub-sample of all the available test material instead. Consequently, some children were assigned to complete only reading tasks, while others were required to complete a mix of reading, mathematics and science items (see OECD 2010 for further details). Based upon children's responses to the PISA test questions, along with their responses to the background questionnaire, their latent ability in reading, science and mathematics has been estimated by the survey organisers using a one-parameter (Rasch) item-response model. However, rather than generating a single achievement estimate per pupils, five 'plausible values' are drawn for each pupil in each subject area, reflecting the uncertainty we have in their true latent proficiencies. We follow recommended practise in using these five plausible values throughout this paper, estimating each model five times (once using each plausible value) and then pooling the parameter estimates and standard

[1] PISA uses a system of replacement schools for those that refuse to participate. Response rates at the school level are around 90 percent in most countries after these replacements are included.

errors according to 'Rubin's rules' (Rubin 1987). This has been executed using the Stata 'repest' package developed by members of the OECD (Avvisati, and Keslair). Note that these plausible values each have a mean of around 500 points and standard deviation of around 100 points across OECD countries. Consequently, if one divides the parameter estimates from our preferred models by 100, then the coefficients can be interpreted in terms of an effect size.

As part of the background questionnaire, young people in all countries were asked:

'*How often do you read these materials <u>because you want to</u>?'* (emphasis in original question)

(a) Magazines
(b) Comic books
(c) Fiction (novels, narratives, stories)
(d) Non-fiction books
(e) Newspapers

Responses for each of the above were provided according to the following five-point Likert scale:

1. Never of almost never
2. A few times a year
3. About once a month
4. Several times a month
5. Several times a week

These form the key covariates used within this paper. Specifically, our primary interest is in whether young people who reported more frequent reading of each type of text achieved higher PISA reading scores.

Table 2 provides three key pieces of descriptive information about this measure, based upon the pooled international sample of 296,941 children from across the 35 OECD member states. Panel (a) illustrates how each variable is distributed across the five frequencies listed above. This illustrates how it its common for teenagers to read some of these text types several times a week (e.g. Newspapers) but not others (e.g. comics and non-fiction books). Panel (b) provides the polychoric correlation between the five variables capturing the frequency of reading the different text types. Interestingly, these correlations are generally quite low, suggesting that young people who report reading newspapers and magazines more frequently

are not the same young people who say that they read fiction a lot. The one notable exception is that there does seem to be a reasonable degree of association between children who say they frequently read fiction and non-fiction books (correlation coefficient = 0.52). This in turn suggests that it will be important for us to try and disentangle 'fiction effects' from 'non-fiction effects' upon achievement. Finally, panel (c) presents the relationship between the frequency of reading different text types with young people's reported weekly reading time. The strongest relationship can be observed between total reading time and frequency of reading fiction, with the link with other text types relatively weak. This is hence another feature of frequent fiction reading that it will be important for us to consider within our statistical analyses.

3. Methods

To investigate the link between frequency of reading different text types of teenagers' reading skills, we estimate a series of OLS regression models. These are of the form:

$$R_{ijk} = \alpha + \beta.T_i + \gamma.D_i + \delta.X_i + \theta.M_i + \tau.Z_i + \mu_j + \varepsilon_{ij} \quad \forall k$$

Where:

R_{ijk} = PISA reading test scores.

T_i = The frequency with which children read a given text type, entered as a single, linear continuous variable.

D_i = A vector of controls for children's demographic characteristics, including gender, immigrant status, socio-economic status and language spoken.

X_i = A vector of exogenous control variables, including grade repetition, whether they attended pre-school, family structure and whether they are within the most common school year group/grade within their school.

M_i = PISA mathematics test scores.

Z_i = A vector of additional control variables including whether the young person attends enrichment or remedial classes in language/reading, whether they receive tuition in reading, their perception of the disciplinary climate at their school, quality of student-staff relations at school, school teachers attempts to stimulate reading engagement and teachers use of scaffolding strategies.

μ_j = School fixed-effects.

ε_{ij} = Individual error term

i = child i.

j = school j.

$\forall k$ = The model is estimated separately within each country k.

Given that estimates from this model are to be presented across a large number of countries, we enter our text type variables into this model as continuous linear terms. This imposes an assumption of there being a linear relationship between reading frequency and children's PISA reading scores. The estimated β coefficients therefore illustrating the change in PISA scores for a one-category increase in reading frequency variable (e.g. children moving from reading a text time 'a few times a year' – category 2 – to 'one a month' – category 3). We relax this assumption in the following section to illustrate how estimates from our preferred model specification changes once a non-linear relationship is allowed.

Six specifications of this model are estimated (labelled M1 to M6) with each including a different set on controls. The first model (M1) only controls for demographic characteristics (gender, immigrant status, language and socio-economic status) and is used to provide our baseline estimates of the link between reading different text types for pleasure and children's reading achievement. Model M2 then includes a series of other controls that are likely to be exogenous to 15-year-olds reading skills, such as whether the child attended pre-school, whether they have ever repeated a year at school, their family structure and if they are in the modal school year group within their country.

Our third model includes a control for young people's scores in the PISA mathematics test. The motivation for including this variable is that it is well-known that children who are higher achievers tend to read more (Sullivan and Brown 2015). This therefore needs to be accounted for within our analyses. Ideally, prior/baseline reading test measures would be available, allowing us to estimate how reading different text types is associated with the *progress* young people make in their reading skills. However, as cross-sectional data, PISA does not allow us to do this across a large number of countries (although see below for how we are able to conduct a series of robustness test in a small number of individual countries to explore this potential problem). We therefore choose to control for young people's PISA mathematics scores to control for the fact that higher achievers also tend to be more frequent readers. Our argument is that, given the reasonably strong correlation between reading and

mathematics abilities, controlling for this variable will to a large extent account for more able children choosing to read various types of text with greater frequency[2,3].

Model M4 includes a series of additional controls, some of which might in themselves be influenced by the frequency of reading different text types. This includes whether the child receives tutoring in reading/language skills, whether they have remedial/enrichment lessons in this subject at school, along with their views and attitudes towards school such as whether they believe that their time at school is worthwhile, the disciplinary climate and staff-student relations. The purpose of including these additional factors is to try and estimate what may be considered to be conservative text-type effects (given that they could themselves be influenced by reading frequency).

It should be noted that in M1 to M4, we estimate ***separate models*** for each text type, where only one of these variables are entered into the model at any one time (e.g. the 'fiction' and 'non-fiction' variables do not appear in the model together). This is changed in model M5, where variables referring to children's frequency of reading the five different text types are included in the model simultaneously. The motivation behind estimating this model stems from the positive association observed between frequency of fiction and non-fiction reading in Table 2 panel (b). By including the various text type variables in the model together, we will be able to better establish whether it is fiction or non-fiction reading that is generating the positive effect. We have also chosen to include school fixed-effects within this model to ensure that between-school differences are not confounding our results. This model then acts as our preferred model specification throughout the paper, and the main basis of reporting our results.

Finally, we return to the fact that teenagers who read more fiction also tend to read more on average per week than other groups (recall Table 2 panel c). We feel it is important to consider whether this is driving any 'fiction effect' that is observed. In other words, do fiction readers achieve higher PISA scores due to them tending to read for longer periods of time each week? Or do we find that frequent readers of fiction achieve higher PISA scores even compared to children with the same total amount of weekly reading for pleasure time? If we

[2] We do not control for science scores as we believe that there is a plausible link between some of these text types (e.g. frequently reading magazines or newspaper articles about science) and children's performance in the PISA science test.

[3] To the extent that there is a positive association between frequency of reading the text type and the mathematics scores we control for, our estimated parameters of interest are likely to be downwardly biased.

find that latter, then this will provide further evidence that reading fiction matters per se, rather than it just being due to this group tending to read more.

It is of course important for us to recognise the limitations of this modelling approach and, indeed, more generally of the cross-sectional data we have available. In particular, the extent to which our preferred model provides causal estimates depends upon the (untestable) selection upon observables assumption. Although we have been able to control for a wide array of factors, and the R^2 of our final models is high (around 0.8 in most countries), it is impossible to rule out the possibility that there are potentially important omitted variables. We consequently place a conservative interpretation upon our results, and consider them to reflect conditional associations only, rather than necessarily capturing causal effects.

We have nevertheless conducted a series of robustness tests to explore the potential impact that omitted variable bias may have upon our results. Specifically, we believe that there are two potentially important factors our main analysis has been unable to control for: (a) prior achievement in reading and (b) parental attitudes, engagement and encouragement in reading activities. Although information on such factors is not included in the main PISA background questionnaire, some data has been captured as part of two international optional questionnaires. (These are conducted in a sub-sample of countries only, at the discretion of national governments). Specifically, the 'educational career' questionnaire included the question:

"*In your last school report, what was your mark in <test language>?*"

Where <test language> refers to the language in which the child completed the PISA test (e.g. in the United States, <test language> would be replaced by 'English').

Although our investigations have suggested that the quality of this variable is likely to vary somewhat across countries, it nevertheless seems to act as a reasonable proxy for prior reading achievement in Portugal and Latvia (see Appendix A for further details). Consequently, in this sub-set of countries we are able to estimate 'value-added' models by controlling for prior reading achievement, and thus can investigate how reading different text types is associated with the *progress* young people make in developing their reading skills.

Similarly, the parental background questionnaire (another of the international options) covered a range of topics including:

- Parental support for children's current reading activities (example question: 'How often do you or someone else in your home do the following things with your child?' Eight items including 'go to a book store or library with your child' and 'talk with your child about what he/she is reading on his/her own').
- Parents own reading engagement (example question: 'How much do you agree or disagree with these statements?' Four items including 'reading is one of my favourite hobbies' and 'I enjoy going to a bookstore or library').
- Parental reading activities with their child as they started of school (example question: '*When your child attended the first year of school, how often did you or someone else in your home undertake the following activities with her or him?'* There were nine items in total, including 'read books', 'tell stories' and 'play word game').

Hence, in countries which conducted the parental questionnaire, we can investigate the extent that omitted variable bias due to a lack of parental reading engagement and encouragement measures is likely to affect our results. (This includes Portugal; the only country where such information plus a reasonable prior reading achievement measure is available).

Further details on the analyses we have conducted using this auxiliary information can be found in Appendix A. To preview our key findings, even in countries where prior reading achievement and parental reading attitudes and behaviours are available and have been controlled, we continue to find similar results. Most notably, we continue to find a positive fiction effect, although slightly reduced compared to our main analysis (the parameter estimate declines by around ten percent).

To conclude this section, Table 3 provides some descriptive information of the frequency different genders and socio-economic groups read different text types. These figures refer to OECD averages, with full country-by-country estimates presented in Appendix B. Figures refer to average scores according to the five-point scale used for our variable of interest. For instance, a value of three would indicate that children, on average, say that they read that particular type of text about 'once a month'.

<< Table 3 >>

Starting with gender, girls report reading fiction books and magazines much more often than boys; for both text types, girls are around half a category further along the five-point frequency scale. On the other hand, boys are more likely than girls to read comic books (0.57

of a category difference) and newspapers (0.19 of a category difference). Interestingly, there is essentially no gender gap in the reading of non-fiction books.

Turning to socio-economic status, young people from the most advantaged backgrounds read each of the five different text types more than their disadvantaged peers. The difference is particularly big with respect to fiction (0.57 of a category) and non-fiction (0.41 of a category) books, though with a non-trivial difference also apparent for frequency of reading newspapers (0.28 of a category difference) and magazines (0.23 of a category difference). Together, Table 3 therefore illustrates how there are substantial differences in the frequency teenagers read different text types according to both gender and social background.

4. Results

Table 4 presents estimates from the first four specifications of our regression models. These refer to OECD averages, with full country-by-country results presented in Appendix B. Figures refer to the change in PISA reading scores associated with a one-category increase in the frequency of reading a given text type (e.g. moving from category 2 – "a few times a month" to category 3 "about once a month"). Dividing these parameter estimates by 100 provides an approximate conversion into an effect size.

<< Table 4 >>

Model M1 includes only basic controls for demographic characteristics. These results suggest that there is a strong association between frequency of reading fiction for enjoyment and young people's PISA reading skills; a one-category increase in frequency of reading this text type is associated with a 17 point (0.17 standard deviation) increase in teenagers' reading scores. A positive, through weaker, association is also found between PISA scores and frequency of reading non-fiction (10 points) and newspapers (six points). The link between reading skills and frequency of reading magazines and comics is substantially weaker (less than a three-point increase), with the latter not reaching statistical significance at conventional thresholds.

The addition of a selection of control variables in model M2, including whether the child attended pre-school, whether they have ever repeated a year at school and family structure, does not lead to any major change to the estimated coefficients or our substantive results. The same is not true with respect to model M3, however, where PISA mathematics scores are added as controls. Specifically, the estimated coefficients for our variables of interest fall by more than 50 percent between M2 and M3, with the association between reading three of the

five text types (newspapers, magazines and comics) only weakly associated with young people's performance on the PISA reading test (less than two PISA points per each category increase). On the other hand, the link between teenagers' reading skills and their frequency of reading fiction or non-fiction books continues to be positive, statistically significant and of a reasonable magnitude. In particular, a one-category increase in the frequency with which children read fiction continues to be associated with a seven-point (0.07 standard deviation) improvement in PISA reading scores. For non-fiction, the analogous association is four points. Table 4 hence provides some evidence that there is indeed a 'fiction effect', and that reading this type of text may hold particular importance for the development of teenagers' reading skills.

Recall that models M1 to M4 have been estimated separately for each of the five separate text types, and hence does not account for the correlation between them (i.e. that children who read non-fiction books tend to be the same children who read fiction books). Hence the positive association found thus far between non-fiction and reading skills could actually be due to children's fiction reading instead (or vice-versa). Consequently, model M5 is our preferred specification, where all five text types enter a single model simultaneous, with school fixed-effects also included. Parameter estimates from this model can be found in Table 5.

<< Table 5 >>

The first key point from Table 5 is that the only strong and consistent evidence of a positive effect occurs for the reading of fiction books and not for the other text types. In particular, note how a positive and statistically significant coefficient is recorded for fiction in 34 out of the 35 OECD countries, generating an average effect of around six PISA points (0.06 standard deviations) for a one-category increase in reading frequency. In contrast, the coefficients for the other text types take a range of positive, negative and null values across the 35 countries, with no clear and consistent pattern emerging. Moreover, the OECD average parameter estimates for non-fiction, magazines, newspapers and comics are all around zero, once again suggesting that frequently reading these text types is not associated with the development of stronger reading skills. Consequently, it seems that the apparent advantages of non-fiction reading previously identified in Table 4 was actually driven by the overlap between fiction and non-fiction readers. Once these variables are included in the same model only the fiction effect remains, suggesting the previous positive non-fiction estimate was due

to models M1 to M4 not accounting for the frequency with which young people read other text types.

The other notable feature of Table 5 is the cross-national variation in the estimated fiction effect. In middle-income members of the OECD, such as Chile, Turkey and Mexico, along with several Eastern European countries, the association between frequently reading fiction and PISA reading scores is comparatively weak. This is supported by additional analysis we have conducted for non-OECD countries, which are mostly developing/middle-income, where we fail to find a positive fiction effect. At the other extreme sit many of the long-standing members of the OECD such as France, Australia, Belgium and Switzerland, where a one-category increase in frequency category for fiction is associated with up to ten additional PISA reading points (equivalent to an effect size of 0.1). It is also notable how the fiction effect in all six predominantly English-speaking countries (Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States) is above the OECD average. Consequently, we infer from Table 5 that the association between frequency of fiction reading and teenagers' reading skills is particularly pronounced in higher-income, English-speaking countries.

In Table 6 we consider whether these estimates of the fiction effect are being driven by the greater amount of time that fiction readers spend reading per week. Specifically, recall from Table 2 panel (c) how frequent readers spend substantially more time (on average) reading per week. Do we therefore continue to find an association between fiction and reading performance even after this factor has been controlled?

<< Table 6 >>

The answer to this question, drawing upon the information provided in Table 6, is yes. For instance, the OECD average for the association between frequency of fiction reading and children's PISA scores has remained broadly stable between models M4, M5 and M6, highlighting how this association seems to be robust to controlling for the total amount of time that young people spend reading per week. This in turn suggests that the link between fiction and reading performance is not simply due to fiction readers tending to spend more time reading per week, but that particular types of skill might be developed from frequently reading this form of text.

Throughout our analysis thus far we have assumed there to be a linear relationship between the frequency categories and young people's reading skills. It is therefore important that we

check whether our substantive conclusions change if this assumption is relaxed and we allow there to be a non-linear relationship. We therefore re-estimate model M5, but now entering each of the five different text types as a set of categorical dummy variables, rather than as single continuous linear terms[4]. For each text type, the lowest category ('never or almost never') is used as the reference group. These results can be found in Table 7. The figures reported refer to OECD averages, with country-by-country estimates available from the authors upon request.

<< Table 7 >>

Overall, our imposition of linearity across the categories does not seem unreasonable. For fiction, the gap between each of the parameter estimates is reasonably evenly spread, and there is thus evidence of a 'dose-response' relationship (i.e. the magnitude of the association increases monotonically as one moves from the least to most frequent categories). These results also help to further highlight the substantial difference between young people in the top and bottom fiction reading categories; those who 'almost never' read fiction score, on average, around 26 test points (0.26 standard deviations) lower on the PISA test than comparable children who read fiction books several times a week. Once more we continue to observe there to be essentially no relationship between PISA reading scores and the frequency with which teenagers read the other four types of text, and no evidence of a comparable dose-response relationship. Together, these results provide us with confidence that our substantive conclusions are robust to potential non-linearities in the relationship between frequency of reading fiction reading and young people's reading skills.

To conclude, we consider whether fiction is associated with reading performance in general, or if it is particularly relevant for young people developing certain types of skill. Our preferred model has therefore been re-estimated a further five times, now using one of the following five PISA reading sub-domains as the dependent variable:

- Access and retrieve. This scale captured young people's ability to navigate a text to locate and retrieve a particular piece of explicitly stated information.
- Integrate and interpret. Young people's ability to process what they are reading to make internal sense of a text.

[4] For ease and speed of estimation, the school fixed-effects have been excluded from this model. Our experimentations suggest that our substantive conclusions are robust to whether school fixed-effects are included or not.

- Reflect and evaluate. Young people's ability to draw upon knowledge, ideas or attitudes outside of the text to relate the information provided in the text to one's own conceptual or experimental frames of reference.
- Continuous text. Test questions where young people were required to read texts that were formed of sentences that were in turn divided into paragraphs (e.g. a short story, an extract from a novel).
- Non-continuous text. Test questions where young people had to read documents, which were typically composed of a number of lists (e.g. tables, schedules, forms).

Full results for each of these five separate reading sub-scales can be found in Appendix B. In summary, we do not find any clear and consistent evidence that reading fiction is particularly important for teenagers' ability to 'access and retrieve', 'integrate and interpret' or 'reflect and evaluate' upon pieces of written information. On the other hand, we do find a difference in the association between fiction and young people's ability to read and understand continuous versus non-continuous texts. These results are summarised in Figure 1. This plots the association between frequency of fiction reading and teenagers' scores in the 'continuous text' domain on the vertical axis, while analogous estimates for the association with non-continuous texts plotted along the horizontal axis. The vast majority of data points sit above the 45-degree line, illustrating how in most OECD countries reading fiction has a particularly strong association with young people's ability to read, understand and interpret longer pieces of continuous text. Given that fiction books typically require readers to digest large amounts of long and continuous text, a particularly strong association with this particular skill may not come as a surprise. Nevertheless, given the importance of being able to read long amounts of uninterrupted text in the workplace and in personal life, it is significant that reading fiction may help young people to develop such skills.

5. Conclusions

Reading is a key skill that determines an individual capacity to effectively participate in society and the workplace. It is well-known that the frequency which children read is associated with their reading skills, with an extensive array of academic research illustrating this relationship (Kirsch et al, 2002; OECD, 2011a, 2011b; Baker et al, 2000; Krashen, 2004; Schiefele, et al, 2012; Brozo et al, 2007; Cremin et al, 2014; Sullivan and Brown, 2015). Yet there has been much less large-scale quantitative research into whether *what* children read matters for their academic achievement. In other words, is the positive association between reading frequency and achievement only observed for certain text types? This is an important

issue for both policy and recommended practise. For instance, rather than governments producing generic guidelines about the importance of reading, more specific advice might be given with respect to the amount of time young people should be reading different text types.

This paper has attempted to make this important contribution to the existing literature. Using data from the 2009 round of the PISA study we investigate how the frequency 15-year-olds read five different text types (non-fiction books, fiction books, newspapers, magazines and comics) are linked to their reading achievement. We find strong evidence that frequently reading fiction books is associated with higher PISA reading scores and that this relationship is found within almost every OECD country. This holds true even after a wide range of potential confounding characteristics have been controlled. In contrast, no such positive association is consistently observed for the other four text types, where we typically observe there to be no effect. Our key conclusion is therefore that the type of text children read potentially matters for their academic achievement, with the reading of fiction most likely to be beneficial. Consequently, if policymakers are to offer guidance about reading, it should include strong encouragement for children and young people to read this particular type of text.

These conclusions should, of course, be interpreted in the light of the limitations of this paper and the need for future research. First, although our analysis has conditioned upon an array of potential confounders, our estimates refer to conditional associations only and do not necessarily reveal cause and effect. Although we have conducted sensitivity analyses considering how our results would change if other potentially important variables are included in our models (most notably prior achievement – see Appendix A) it is vital that future work collects and analyses longitudinal data to examine how the reading of different text types and academic achievement changes over time. Second, the PISA questionnaire relies upon self-reported data from young people about their reading habits. It is likely that such reports contain measurement error – the degree of which is currently unknown. Future waves of PISA (and other data collections) may consider collection such information on children's reading habits from multiple sources (e.g. from parents as well as children themselves) to better understand this issue. Finally, the focus within this paper has been children within developed (OECD) countries only. Our exploration of the PISA data for lower and middle-income countries suggests that similar findings may not hold in these settings. Future work should consider this topic on more detail, including why one may observe different associations in the developed and developing world.

Despite these limitations, we believe that this paper has made an important contribution to the literature about the link between reading for pleasure and children's academic achievement. It is highlighted the importance of research not just considering the frequency which children read, but also the types of text that they are reading during this time. Most existing large-scale databases do not capture this level of detail in variables which measure the frequency young people read, often boiling this down to a sole indictor such as total reading time. Our results have highlighted how this practise needs to change in future data collections, with it being vital that we capture what exactly children are reading, as well as the frequency.

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Table 1. Sample sizes and response rates by country

	School response		Pupil response	Sample size
	Before	After		
Australia	98	99	86	14,060
Austria	94	94	89	6,568
Belgium	89	96	91	8,477
Canada	88	90	80	22,383
Chile	94	99	93	5,663
Czech Republic	83	97	91	6,049
Denmark	84	91	89	5,924
Estonia	100	100	94	4,727
Finland	99	100	92	5,810
France	94	94	87	4,272
Germany	99	100	94	4,979
Greece	98	99	96	4,957
Hungary	98	99	93	4,605
Iceland	98	98	84	3,635
Ireland	87	88	84	3,896
Israel	92	95	89	5,761
Italy	94	99	92	30,876
Japan	88	95	95	6,077
Korea	100	100	99	4,989
Luxemburg	100	100	96	4,622
Mexico	96	98	95	38,213
Netherlands	80	96	90	4,747
New Zealand	84	91	85	4,606
Norway	90	97	90	4,660
Poland	88	98	86	4,855
Portugal	94	98	87	6,263
Slovak Republic	93	99	93	4,555
Slovenia	98	98	91	6,135
Spain	100	100	90	25,871
Sweden	100	100	93	4,567
Switzerland	94	99	94	11,810
Turkey	100	100	98	4,996
United Kingdom	71	87	87	12,168
United States	68	78	87	5,165
OECD median	**94**	**98**	**91**	**5,414**

Table 2. Descriptive statistics for reading different text types

(a) Teenagers frequency of reading different text types

	Magazines	Comics	Fiction	Non-fiction	Newspapers
1. % Never of almost never	9	41	24	33	13
2. % A few times a year	13	23	26	29	11
3. % About once a month	20	14	20	19	14
4. % Several times a month	32	13	18	13	24
5. % Several times a week	26	10	13	6	38
Total	**100**	**100**	**100**	**100**	**100**

(b) The polychoric correlation between the frequency of reading different text types

	Magazines	Comics	Fiction	Non-fiction	Newspapers
Magazines	-	-	-	-	-
Comics	0.18	-	-	-	-
Fiction	0.13	0.20	-	-	-
Non-fiction	0.19	0.18	0.52	-	-
Newspapers	0.37	0.14	0.09	0.23	-

(c) The polychoric correlation between reading different text types and total reported reading time per week

	Correlation with time spent reading per week
Magazines	0.10
Comics	0.14
Fiction	0.60
Non-fiction	0.38
Newspapers	0.06

Notes: In panels (b) and (c), correlations above 0.3 and 0.5 shaded in light and dark grey.

Table 3. Gender and socio-economic differences in teenagers reading frequency for different text types

(a) Gender differences

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
Gender					
Girls	3.76	2.09	3.06	2.35	3.55
Boys	3.34	2.46	2.36	2.25	3.74
Gender gap	**-0.43**	**0.37**	**-0.70**	**-0.09**	**0.19**

(b) Socio-economic differences

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
Low SES	3.43	2.22	2.46	2.12	3.51
Second quartile	3.54	2.26	2.60	2.23	3.61
Third quartile	3.59	2.28	2.75	2.33	3.68
High SES	3.66	2.33	3.02	2.53	3.79
Socio-economic gap	**0.23**	**0.10**	**0.57**	**0.41**	**0.28**

Notes: Figures refer to average on the five-point scale, where 1 = never or almost never read the text type and 5 = read several times a week. Estimates are OECD averages, calculated with PISA senate weights applied. Socio-economic status based upon quartiles of the PISA Economic, Social and Cultural Status (ESCS) index.

Table 4. Regression model estimates. Models M1 to M4 (OECD averages).

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Model 1	17.3*	1.1	9.9*	1.2	5.8*	1.1	2.6*	1.2	1.2	1.1
Model 2	16.2*	1.0	9.2*	1.1	4.5*	1.0	2.0	1.1	1.9	1.0
Model 3	6.9*	0.7	3.9*	0.7	1.7*	0.6	1.5	0.7	1.1	0.7
Model 4	6.6*	0.7	3.7*	0.7	1.5*	0.6	1.2	0.7	1.1	0.7

Notes: Separate models have been estimated for each text type (they have *not* been included jointly). Figures refer to average parameter estimates and standard errors across OECD countries; see Appendix B for the country-by-country results. Grey shading with a * indicates statistically significant at the five percent level. Estimates refer to the increase in PISA test points for a one-category increase in the frequency of reading the text type. Dividing the beta estimate by 100 will convert the estimated association into an effect size (e.g. a beta coefficient of 17.3 translates into an effect size of 0.173). Model 1 includes controls for socio-economic status, language at home, immigrant status and gender. Model 2 adds controls for grade repetition, whether they attended pre-school, family structure and whether they are within the most common school year group/grade within their school. PISA mathematics scores are added in model 3. Model 4 then additionally controls for whether they attend enrichment or remedial classes in language/reading, whether they receive tuition in reading, their attitudes towards climate, their perception of the disciplinary climate at their school, quality of student-staff relations at school, school teachers attempts to stimulate reading engagement and teachers use of scaffolding strategies.

Table 5. Regression model estimates. Models M5.

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Australia	8.9*	0.4	-0.8	0.5	-0.1	0.4	-1.9*	0.4	-0.8	0.5
Finland	8.8*	0.7	-0.7	0.8	-0.3	1.0	1.8*	0.9	1.0	0.7
Switzerland	8.5*	0.7	-0.4	0.6	0.6	0.8	1.1	0.6	0.7	0.5
France	8.4*	0.6	0.3	0.8	0.6	0.6	1.2*	0.6	1.1	0.8
UK	8.2*	0.6	0.8	0.7	0.5	0.5	-0.8	0.8	-0.5	0.8
USA	8.0*	0.7	-1.8	1.0	0.4	0.7	-1.1	0.7	-0.8	0.9
Canada	7.8*	0.5	-0.3	0.5	0.5	0.4	-0.9	0.4	-0.5	0.6
Belgium	7.7*	0.7	-0.1	0.6	-0.1	0.4	1.5*	0.6	1.1*	0.5
Ireland	7.7*	0.7	1.9	1.1	-1.0	0.6	-0.8	0.8	-0.6	0.8
Luxemburg	7.7*	0.7	-0.1	0.9	0.8	0.7	0.1	0.8	-0.3	0.7
New Zealand	7.6*	0.6	-0.4	0.8	0.4	0.8	-2.8*	0.7	-0.5	0.8
Iceland	7.6*	1.0	-0.6	1.1	3.6*	1.1	0.6	0.8	0.4	0.9
Sweden	7.6*	0.9	-0.4	1.0	3.0*	0.9	0.8	0.9	0.6	0.7
Austria	7.3*	0.9	0.3	0.9	-0.4	0.8	1.0	0.9	-0.6	0.8
Japan	6.9*	0.6	0.9	0.7	0.6	0.5	-1.1*	0.5	1.0	0.6
Norway	6.9*	0.6	-1.4	0.9	1.2	0.7	-0.9	0.6	0.9	0.7
Czech Republic	6.8*	0.7	1.2	0.7	0.1	0.6	0.2	0.9	-0.2	0.7
Greece	6.8*	0.9	-1.9	1.1	0.7	0.8	1.3	0.9	-0.4	0.7
Netherlands	5.4*	0.9	1.5	0.8	0.6	0.6	1.6*	0.6	0.8	0.5
Germany	5.2*	0.7	-0.5	0.8	0.1	0.6	0.3	0.7	0.5	0.9
Denmark	5.2*	1.0	0.1	0.7	0.9	0.7	1.5*	0.7	1.5*	0.6
Israel	4.8*	0.9	0.3	0.9	0.8	0.7	2.1*	0.6	-1.6	0.9
Spain	4.8*	0.5	3.7*	0.6	-0.3	0.5	0.7	0.5	0.3	0.5
Italy	4.5*	0.4	-0.9	0.6	0.4	0.3	0.0	0.3	2.0*	0.3
Estonia	4.4*	1.0	2.1*	0.6	1.1	0.8	0.4	0.9	-2.4*	0.7
Poland	4.3*	0.7	2.0*	0.7	1.2	1.1	3.3*	0.7	-1.0	0.7
South Korea	3.9*	0.7	2.1*	0.7	1.6*	0.5	-1.1	0.9	-0.3	0.6
Hungary	3.9*	0.7	0.5	0.7	-0.1	0.7	1.7*	0.5	-0.8	0.4
Portugal	3.8*	0.8	1.6	0.8	0.1	0.7	-0.3	0.6	-0.3	0.6
Slovenia	3.7*	0.7	1.3	0.8	0.7	0.7	1.0	0.6	-1.1	0.7
Slovak Republic	3.6*	0.7	1.0	0.6	-0.5	0.9	2.0*	0.7	-0.4	0.8
Latvia	2.8*	0.9	2.7*	0.7	1.1	1.0	0.4	0.9	-2.7*	0.9
Turkey	1.7*	0.7	-0.1	0.5	1.4	0.7	-1.3	0.7	-0.8	0.7
Chile	1.4*	0.7	1.7*	0.7	1.8*	0.5	0.7	0.6	-1.5*	0.6
Mexico	0.2	0.4	1.4*	0.4	-0.3	0.3	1.1*	0.3	-0.9*	0.3
International avg.	**5.8***	**0.7**	**0.5**	**0.8**	**0.6**	**0.7**	**0.4**	**0.7**	**-0.2**	**0.7**

Notes: The five different text types have now been included jointly within a single model. See notes to Model M5 in Table 5 for a list of control variables, with school fixed-effects also included. Grey shading with a * indicates parameter estimates significantly different to zero at the five percent level.

Table 6. Regression model estimates. Models M6.

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Switzerland	9.9*	0.7	-0.8	0.7	1.4*	0.7	0.6	0.6	1.4*	0.5
Belgium	9.9*	0.7	-1.3*	0.6	-0.4	0.5	2.0*	0.6	1.1	0.6
France	9.5*	0.6	0.6	0.9	1.3	0.7	0.9	0.7	1.6	0.9
Austria	9.5*	1.0	-0.8	0.9	0.6	0.8	1.2	1.0	-1.1	0.9
Australia	9.3*	0.5	-0.9	0.6	-0.2	0.4	-2.0*	0.4	-0.7	0.5
Finland	9.2*	0.7	-0.3	0.9	0.0	0.9	1.4	0.9	0.7	0.8
Ireland	8.7*	0.7	1.5	1.1	-1.0	0.6	-0.7	0.8	-0.6	0.9
UK	8.7*	0.6	0.7	0.7	0.8	0.6	-1.1	0.8	-0.8	0.8
Luxemburg	8.6*	0.7	0.1	0.9	0.5	0.6	0.3	0.8	-1.1	0.7
USA	8.5*	0.7	-2.3*	0.9	0.2	0.7	-1.0	0.7	-1.3	0.9
Canada	8.1*	0.5	0.7	0.6	0.2	0.5	-0.8	0.5	-1.1	0.6
Sweden	8.1*	1.0	0.3	0.9	2.7*	1.0	1.2	0.9	0.4	0.7
New Zealand	7.9*	0.7	-0.6	0.8	0.5	0.8	-3.4*	0.7	0.0	0.8
Iceland	7.9*	0.9	-0.7	1.1	3.5*	1.0	1.2	0.8	0.8	0.9
Norway	7.5*	0.7	-1.3	0.9	1.0	0.8	-1.0	0.7	0.9	0.7
Czech Republic	7.3*	0.7	1.5*	0.8	0.4	0.6	-0.3	0.8	-0.3	0.7
Japan	7.0*	0.7	0.4	0.8	1.0	0.6	-0.8	0.6	1.3	0.7
Netherlands	6.9*	1.0	1.0	0.9	0.8	0.6	2.3*	0.7	0.4	0.6
Greece	6.6*	1.0	-2.5*	1.1	1.6*	0.8	1.5	1.0	-0.5	0.8
Italy	6.4*	0.5	-1.0	0.7	1.2*	0.3	-0.3	0.4	2.0*	0.4
Germany	5.8*	0.7	-0.7	0.8	0.5	0.6	-0.1	0.7	-0.1	0.9
Denmark	5.4*	0.9	-0.4	0.8	1.6*	0.8	1.7*	0.8	1.3	0.7
Spain	5.3*	0.5	3.5*	0.5	0.2	0.5	0.0	0.5	0.4	0.5
Israel	5.0*	0.9	1.7	1.0	1.7*	0.8	2.0*	0.7	-2.3*	1.0
Slovenia	4.6*	0.9	2.6*	0.8	1.3	0.7	1.2	0.7	-2.0*	0.8
Estonia	4.6*	0.9	2.8*	0.7	1.8*	0.8	0.2	0.8	-3.2*	0.8
Poland	4.4*	0.7	1.9*	0.7	1.4	1.1	3.1*	0.8	-1.2	0.8
Hungary	4.3*	0.6	0.4	0.8	0.3	0.7	2.3*	0.6	-1.2*	0.5
South Korea	4.1*	0.7	2.2*	0.8	1.5*	0.5	-1.2	0.9	-0.3	0.6
Slovak Republic	4.0*	0.8	1.5	0.8	-0.5	1.0	2.4*	0.9	-0.7	0.9
Portugal	3.7*	0.8	1.6*	0.8	0.0	0.7	-0.5	0.6	-0.6	0.6
Latvia	3.2*	0.9	2.7*	0.7	0.5	0.8	1.3	0.9	-3.0*	0.9
Chile	1.6	0.8	2.0*	0.8	1.6*	0.5	1.5*	0.7	-2.3*	0.6
Turkey	1.4*	0.7	0.0	0.5	1.6*	0.8	-1.2	0.7	-1.3	0.7
Mexico	-0.2	0.4	1.9*	0.4	-0.2	0.3	1.3*	0.3	-1.5*	0.4
OECD avg.	**6.4***	**0.7**	**0.5**	**0.8**	**0.8**	**0.7**	**0.4**	**0.7**	**-0.4**	**0.7**

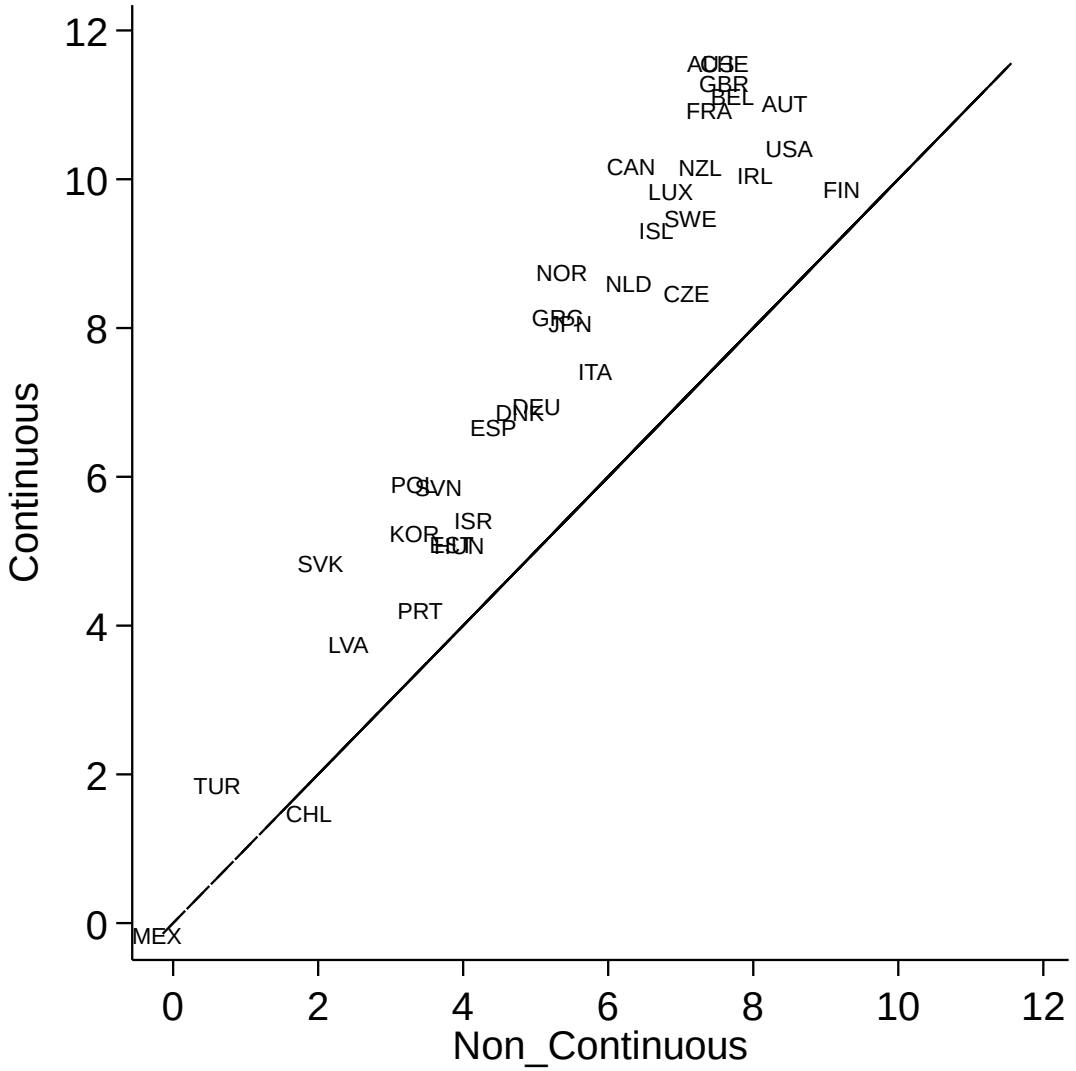
Notes: Grey-shading with a * indicates statistical significance at the five percent level. The five different text types have now been included jointly within a single model. See notes to Model M5 in Table 5 for a list of control variables. School fixed-effects have not been included.

Table 7. Exploration of non-linearities

	A few times a year		Once a month		Several times a month		Several times a week	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Fiction	9.0*	2.5	13.9*	2.9	20.1*	3.0	26.2*	3.4
Non-fiction	2.4	2.2	1.9	2.6	2.6	3.1	1.9	4.2
Newspaper	0.5	3.7	1.2	3.4	2.0	3.2	3.0	3.2
Magazines	2.0	3.7	3.9	3.6	4.0	3.5	2.4	3.5
Comics	-1.1	2.1	-2.7	2.6	-1.4	3.0	-0.6	3.5

Notes: Reference group is always 'never or almost never'. Figures refer to OECD averages. Grey-shading with a * indicates statistical significance at the five percent level. The five different text types have now been included jointly within a single model. See notes to Model M5 in Table 5 for a list of control variables. School fixed-effects have not been included. The average R^2 of the model across countries is 0.775.

Figure 1. The association between frequency of fiction reading and teenagers' performance on the PISA continuous and non-continuous text sub-domains



Notes: The vertical axis refers to the increase in PISA test points on the 'continuous text' reading subscale for a one-category increase in fiction reading. Analogous figures for the 'non-continuous text' subscale are presented along the horizontal axis. The 45-degree line illustrates where the estimated effect of fiction upon continuous and non-continuous texts is equal. Countries can be identified by their three-letter country code.

Appendix A. Investigations into the potential impact of omitted variable bias in a subset of counties.

In section 3 we noted that omitted variable bias could be a limitation of our analysis; that there are potentially important variables associated with both young people's decision to read fiction frequently and young people's reading test scores that we have been unable to control. Two specific issues stand out: (a) a lack of prior reading achievement measures and (b) a lack of information with respect to parental reading attitudes, behaviours and support. In this appendix we focus upon a subset of countries that completed either the educational career or parental background questionnaires to investigate this issue.

Auxiliary analysis controlling for prior achievement

A total of 12 OECD countries conducted the educational career questionnaire (Austria, Belgium, Hungary, Ireland, Iceland, Italy, Latvia, Mexico, New Zealand, Poland, Portugal and the Slovak Republic). This included the following question, which attempted to capture young people's prior performance in tests of their home language:

"*In your last school report, what was your mark in <test language>?*"

Where <test language> refers to the language in which the child completed the PISA test (e.g. in the United States, <test language> would be replaced by 'English').

Although responses to this question potentially allow us to control for teenagers' prior achievement, and hence allow us to investigate whether reading fiction is associated with the *progress* young people make in developing their reading/language skills, it also has some notable limitations. For instance, the quality of the information provided is dependent upon young people being able to recall and accurately report such information. Moreover, depending upon the country context, it is also possible that young people may be reporting different measures depending upon their school.

In each country we have therefore investigated the distribution of this variable and how strongly it is associated with young people's PISA reading scores. The intuition behind these investigations is that its correlation with PISA scores is likely to be attenuated to close to zero in situations where it contains significant measurement error. In summary, after conducting these investigations, we believe there are seven countries where a reasonable prior reading achievement measure is available: Hungary, Iceland, Italy, Latvia, Poland, Portugal and the Slovak Republic. A scatterplot illustrating the association between this prior achievement

measure and young people's PISA reading scores can be found in Appendix Figure 1, with the accompanying correlation coefficients reported in Appendix Table A1 (these range between 0.37 and 0.56). Note that, in both countries, this variable suffers from a modest amount of missing information (around ten percent in Latvia and eight percent in Hungary). We have imputed the country average score for these individuals so that they are retained within our analysis.

<< Appendix Figure A1 >>

As we seem to have a reasonable proxy for prior reading achievement available within these countries, we conduct some additional analyses to investigate whether controlling for this variable leads to a meaningful change in our estimate of the fiction effect. Specifically, we re-estimate model M5, but now including this prior reading achievement measure as an additional covariate. These results are presented in Appendix Table A1.

<< Appendix Table A1 >>

These results suggest that the inclusion of the prior achievement leads to only a small reduction in the estimated fiction effect; typically in the range of by 10 to 15 percent. For instance, the greatest decline is observed in Poland, where the estimated association between a one category increase in frequency of reading fiction and PISA reading scores falls from 4.4 to 3.7 points. Yet in all seven countries the fiction parameter estimates remain of moderate size and statistically significant at the five percent level. We consequently conclude that our lack of prior reading achievement measures is likely to result in only a relatively small upwards bias to our estimates of the fiction effect, likely to be in the region of around 15 percent. Nevertheless, evidence of a fiction effect does still remain.

Auxiliary analysis controlling for parental reading attitudes, behaviour and support

A total of eight OECD countries completed the parental questionnaire: Chile, Germany, Denmark, Hungary, Italy, South Korea, New Zealand and Portugal. This was typically completed by the child's mother, and asked questions about their own reading activities, the support they and their family have provided to their children, along with their engagement with and opinions of their child's school. In this appendix, we make use of the following five scales that were constructed based upon parents' responses:

- Parental support for children's current reading activities (example question: 'How often do you or someone else in your home do the following things with your child?'

Eight items including ‘go to a book store or library with your child’ and ‘talk with your child about what he/she is reading on his/her own’).

- Parents own reading engagement (example question: ‘How much do you agree or disagree with these statements?’ Four items including ‘reading is one of my favourite hobbies’ and ‘I enjoy going to a bookstore or library’).
- Parental reading activities with their child as they started of school (example question: ‘*When your child attended the first year of school, how often did you or someone else in your home undertake the following activities with her or him?’* There were nine items in total, including ‘read books’, ‘tell stories’ and ‘play word game’).
- Parental involvement in their child’s school. (Example question: ‘*The last academic year, have you participated in any of the following school-related activities?*’ There were eight items, including ‘discuss your child’s behaviour or progress with a teacher on your own initiative’, ‘appear as a guest speaker’ and ‘participate in local school government’.
- Parental perception of school quality. (Example question: ‘*How much do you agree or disagree with the following statements?*’ There were seven items, including ‘most of my child’s school teachers seem competent and dedicated’ and ‘my child’s school does a good job in educating student’.

Specifically, we re-estimate model M5, but now also include the five scales detailed above as additional covariates. Our particular interest is in whether controlling for these extra variables leads to a substantial change to our estimates of the fiction effect. One limitation with these scales, and the PISA parental questionnaire in general, is that in some countries there is quite large amounts of non-response (see Appendix Table A2 for further details). Two sets of results are therefore presented in Appendix Table A3, where we have either (a) imputed mean scores in the place of missing data or (b) use list-wise deletion and present a complete case analysis.

<< Appendix Table A2 >>

<< Appendix Table A3 >>

Similar to the results presented above, we find relatively little change to the estimated fiction effect when the parental reading attitude and engagement scales are added as additional controls. Specifically, in both panel (a) and (b), we find that the estimated fiction effect falls by around ten percent of less in each of the eight countries included in this analysis. For

instance, in the complete case analysis in Germany, the fiction effect declines from around 6.2 PISA points (0.062 standard deviations) for each category increase in the frequency of fiction reading down to around 5.7 points (0.057 standard deviations) once the various parental scales have been controlled. Moreover, in each country except Chile, we continue to find a sizeable and statistically significant fiction effect. Overall, these results therefore suggest that the impact of omitting these variables in our main analysis including all OECD countries is likely to be small, and our substantive finding of a positive and important fiction effect is likely to remain intact.

Auxiliary analysis controlling for both prior achievement and parental reading behaviours

Italy, Portugal and Hungary are the only countries where we believe there is a reasonable baseline reading achievement measure available, and also conducted the parental questionnaire. Hence, in this country, we can consider how our results change when controlling for *both* prior reading achievement and parental reading attitudes and behaviours. These results are presented in Appendix Table A4-A6.

<< Appendix Table A4 >>

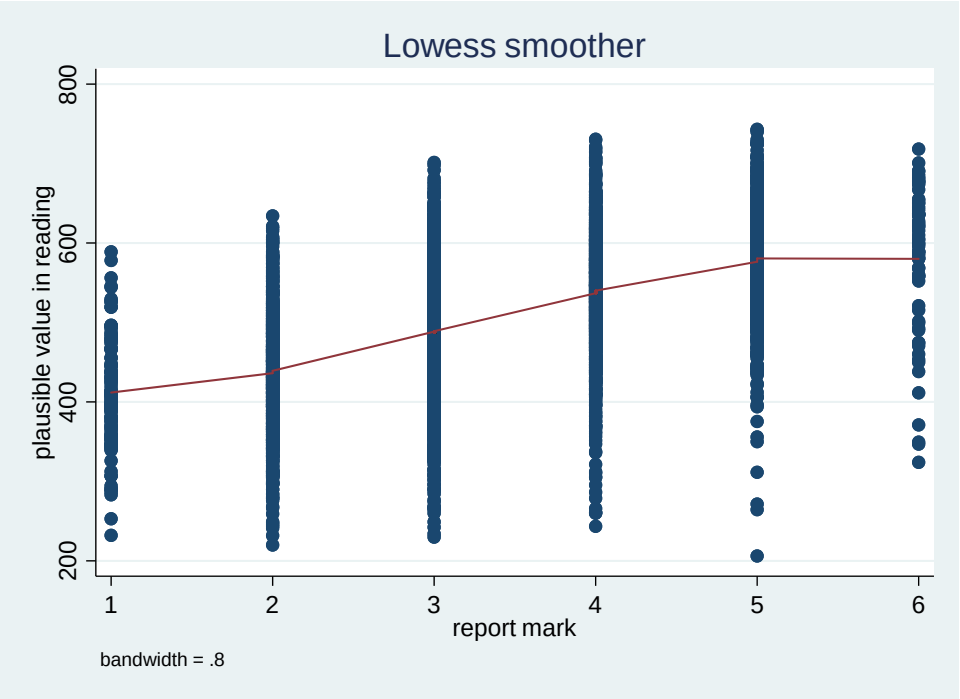
<< Appendix Table A5 >>

<< Appendix Table A6 >>

Consistent with the results presented throughout this appendix, with find that the upward bias upon our estimates of the fiction effect from not controlling for prior reading achievement and parental reading attitudes/behaviours is relatively small; in the region of 10 to 15 percent. For instance, each category increase in fiction reading is associated with an increase of 4.9 PISA points without controlling for these variables, falling to 4.2 when they are included. Similarly, the analogous figures are 4.1 to 3.7 in Hungary and 6.3 to 5.7 in Italy. Hence, although slightly attenuated, we continue to find evidence of a sizeable, positive and statistically significant fiction effect in these countries even after *both* prior reading achievement and parental reading attitudes and behaviours have been controlled. In contrast, parameter estimates for the other four text types are all smaller in terms of magnitude and inconsistent across countries. Again, we interpret these findings as supporting our conclusion that there is a positive effect of young people frequently reading fiction books, which is not the case for other text types.

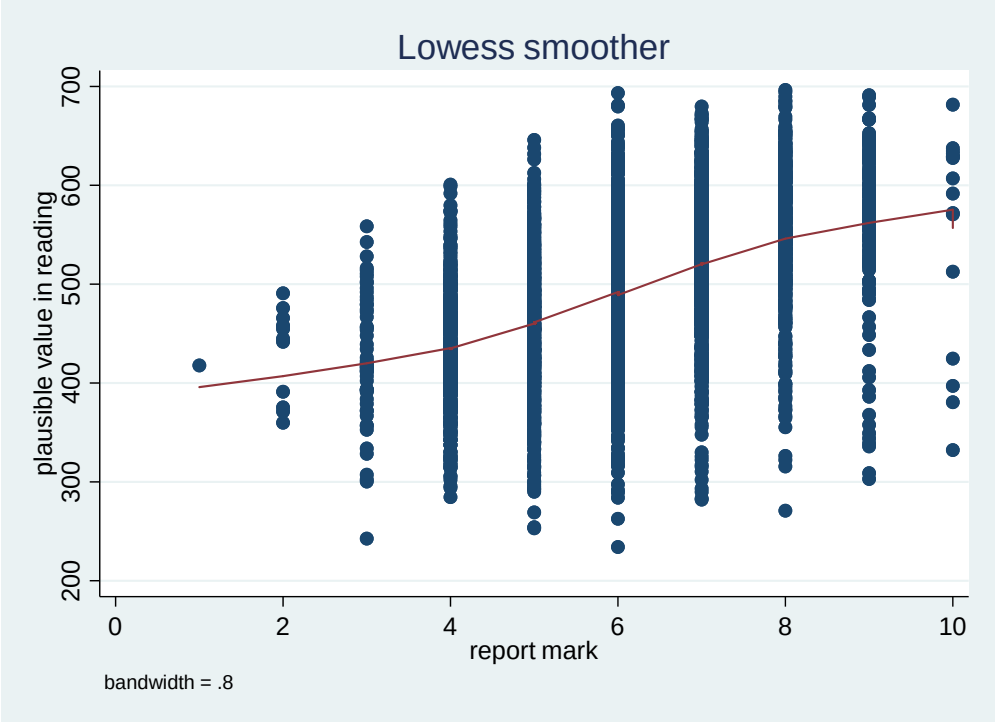
Appendix Figure A1. The correlation between baseline reading achievement measure and PISA reading scores.

Poland



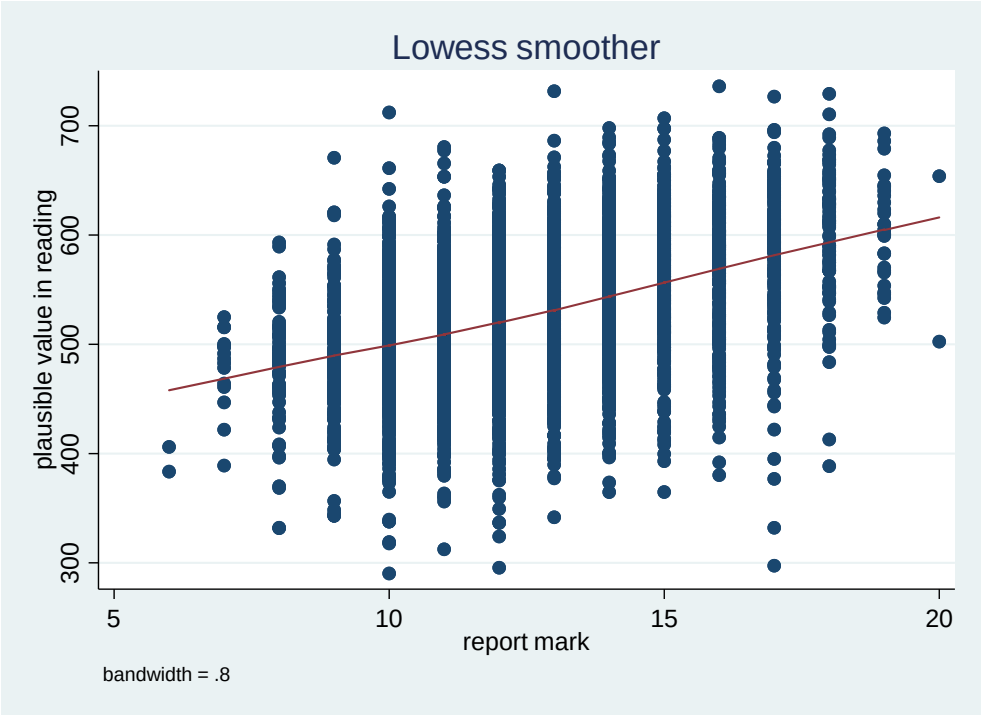
Pearson correlation = 0.56

Latvia



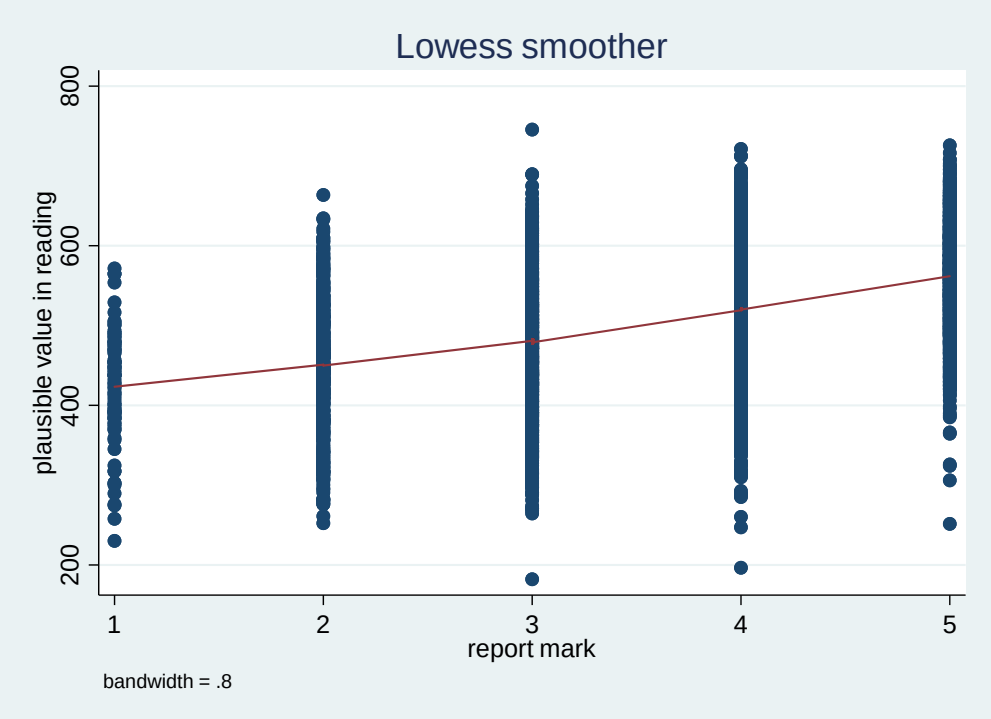
Pearson correlation is 0.49.

Portugal



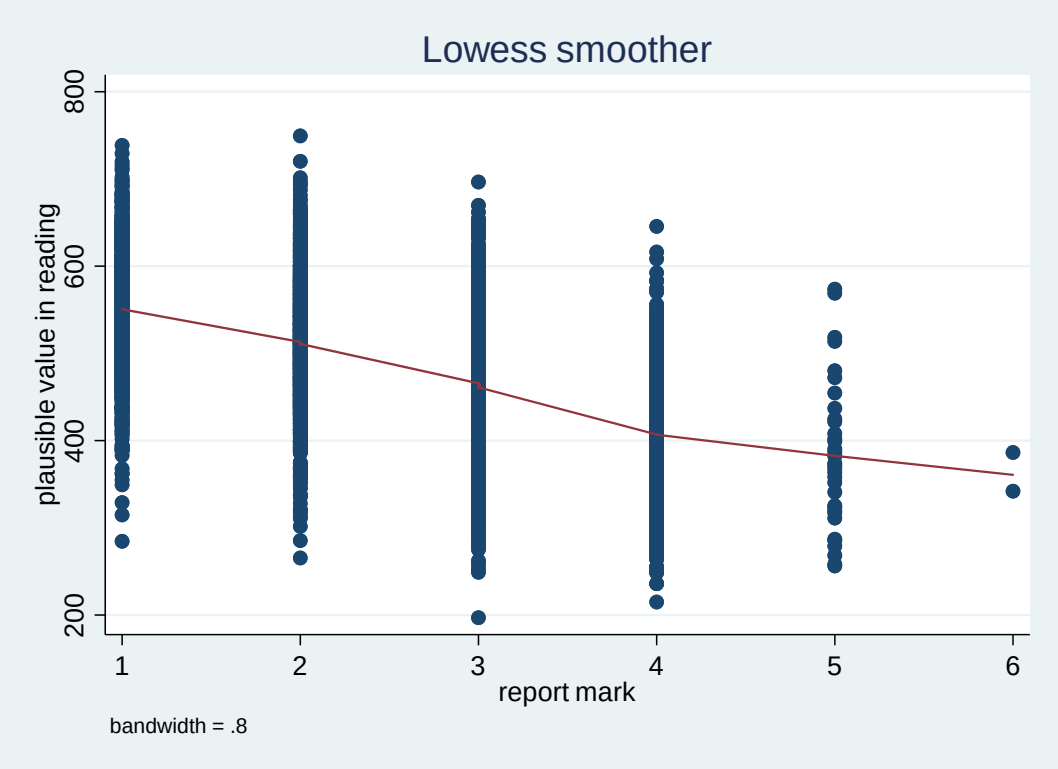
Pearson correlation is 0.44.

Hungary



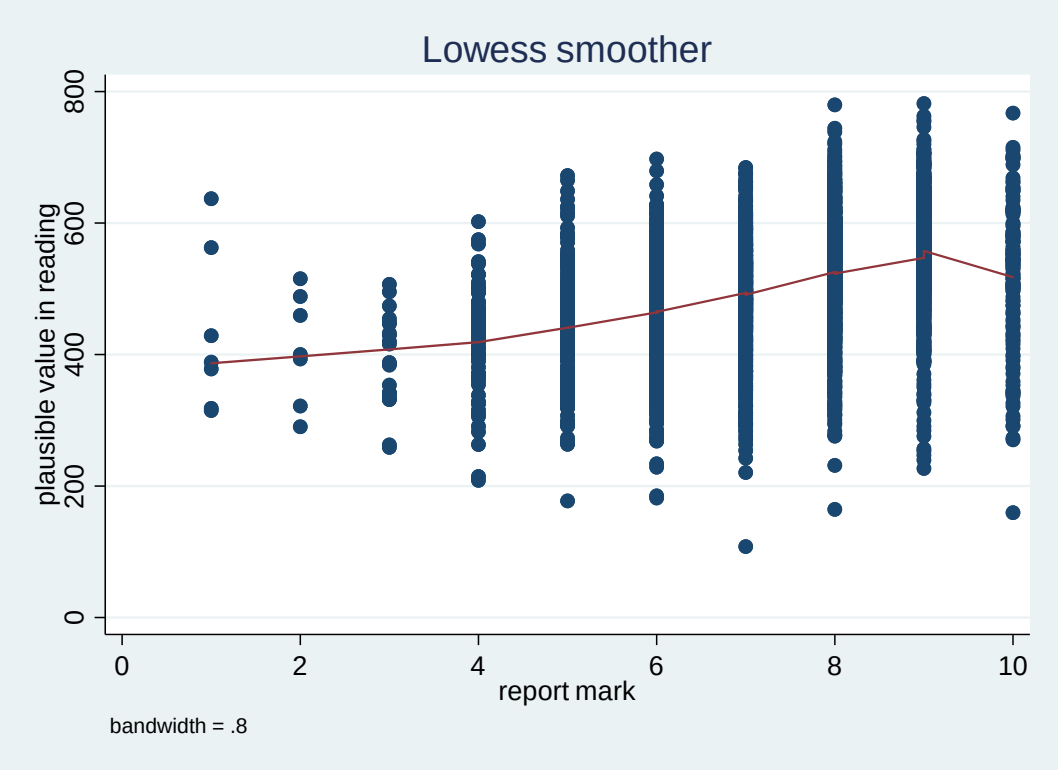
Pearson correlation is 0.48.

Slovak Republic



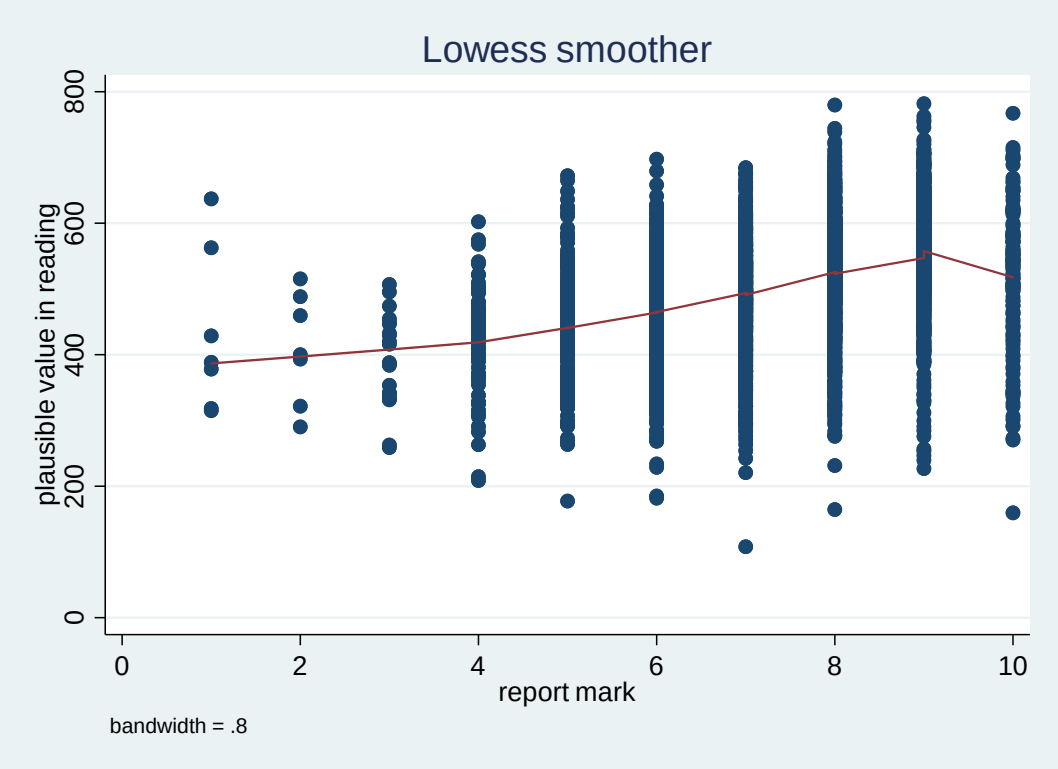
Pearson correlation is 0.54.

Iceland



Pearson correlation = 0.39

Italy



Pearson correlation = 0.37

Appendix Table A1. Alternative estimates of the fiction effect with and without controlling for prior reading achievement

	Correlation between baseline measure and PISA reading	Without prior reading achievement		With prior reading achievement	
		Beta	SE	Beta	SE
Iceland	0.39	7.90*	0.95	7.57*	0.96
Italy	0.37	6.28*	0.55	5.95*	0.55
Portugal	0.44	4.94*	1.07	4.65*	1.07
Hungary	0.48	4.45*	0.61	4.15*	0.63
Poland	0.56	4.40*	0.73	3.70*	0.75
Slovak Republic	0.54	4.13*	0.78	3.66*	0.77
Latvia	0.49	3.17*	0.88	2.95*	0.86

Notes: School fixed-effects excluded. * with grey shading indicates statistical significance at the five percent level.

Appendix Table A2. Non-response to the PISA parental questionnaire

Country	Total sample size	Parent questionnaire complete	% parent complete
South Korea	4,989	4,935	99%
Hungary	4,605	4,520	98%
Chile	5,663	5,183	92%
Italy	30,876	27,641	90%
Portugal	6,263	4,853	77%
New Zealand	4,606	3,451	75%
Germany	4,979	3,178	64%
Denmark	5,924	3,536	60%

Appendix Table A3. Alternative parameter estimates controlling for parental reading attitudes, behaviours and support

(a) All pupils included

	Without parent scales		With parent scales	
	Beta	**SE**	**Beta**	**SE**
New Zealand	8.00*	0.72	7.40*	0.73
Italy	6.37*	0.51	6.13*	0.52
Germany	5.85*	0.68	5.43*	0.66
Denmark	5.40*	0.89	4.99*	0.91
Hungary	4.24*	0.61	3.95*	0.62
South Korea	4.16*	0.71	4.13*	0.72
Portugal	3.83*	0.82	3.71*	0.80
Chile	1.60	0.82	1.57	0.82

(b) Complete case

	Without parent scales		With parent scales	
	Beta	**SE**	**Beta**	**SE**
New Zealand	8.19*	0.87	7.52*	0.86
Italy	6.35*	0.50	6.10*	0.51
Germany	6.19*	0.85	5.65*	0.84
Denmark	5.07*	1.10	4.56*	1.14
Portugal	4.72*	0.85	4.59*	0.83
Hungary	4.39*	0.60	4.11*	0.61
South Korea	4.06*	0.66	4.02*	0.66
Chile	1.99*	0.94	1.96*	0.93

Notes: In panel (a), students with missing data for any of the parental scales has had the mean value of the scale imputed. In panel (b) these students have been dropped from the analysis. Figures differ compared to main body of the paper as the school fixed-effects have been excluded from these models. This is for speed and ease of estimation.

Appendix Table A4. Alternative estimates of the fiction effect in Portugal controlling for both prior reading achievement and parental reading attitudes, behaviours and support

	Baseline		+ prior achievement		+ parental questionnaire	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**
Magazines	-0.69	1.12	-0.50	1.10	-0.41	1.09
Comics	-0.38	0.94	0.15	0.93	-0.07	0.93
Fiction	4.94*	1.03	4.17*	1.02	4.15*	0.98
Non-fiction	2.03	1.10	1.67	1.11	1.40	1.08
Newspapers	-0.31	1.08	-0.51	1.06	-0.47	1.05
Controls						
Gender	Y		Y		Y	
Socio-economic status	Y		Y		Y	
Immigrant	Y		Y		Y	
Language	Y		Y		Y	
Grade repeated	Y		Y		Y	
Attended pre-school	Y		Y		Y	
Family structure	Y		Y		Y	
School grade	Y		Y		Y	
Achievement in mathematics	Y		Y		Y	
Language enrichment classes	Y		Y		Y	
Remedial language classes	Y		Y		Y	
Tutored in language	Y		Y		Y	
Teachers stimulation of reading	Y		Y		Y	
Teacher use of scaffolding	Y		Y		Y	
Teacher-student relations	Y		Y		Y	
Disciplinary climate at school	Y		Y		Y	
Attitude towards school	Y		Y		Y	
Prior English achievement	-		Y		Y	
Parent support for child literacy	-		-		Y	
Parents own reading engagement	-		-		Y	
Parent involved in child's school	-		-		Y	
Parent view school quality	-		-		Y	
Early life reading activities	-		-		Y	

Notes: Scales derived from the parental questionnaire have had the national mean imputed for observations where the data was missing.

Appendix Table A5. Alternative estimates of the fiction effect in Hungary controlling for both prior reading achievement and parental reading attitudes, behaviours and support

	Baseline		+ prior achievement		+ parental questionnaire	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**
Magazines	1.43*	0.55	1.25*	0.56	1.21*	0.55
Comics	-0.66	0.45	-0.40	0.46	-0.37	0.46
Fiction	4.13*	0.68	3.90*	0.69	3.68*	0.69
Non-fiction	0.66	0.79	0.41	0.79	0.29	0.79
Newspapers	-0.29	0.68	-0.33	0.67	-0.27	0.67
Controls						
Gender	Y		Y		Y	
Socio-economic status	Y		Y		Y	
Immigrant	Y		Y		Y	
Language	Y		Y		Y	
Grade repeated	Y		Y		Y	
Attended pre-school	Y		Y		Y	
Family structure	Y		Y		Y	
School grade	Y		Y		Y	
Achievement in mathematics	Y		Y		Y	
Language enrichment classes	Y		Y		Y	
Remedial language classes	Y		Y		Y	
Tutored in language	Y		Y		Y	
Teachers stimulation of reading	Y		Y		Y	
Teacher use of scaffolding	Y		Y		Y	
Teacher-student relations	Y		Y		Y	
Disciplinary climate at school	Y		Y		Y	
Attitude towards school	Y		Y		Y	
Prior English achievement	-		Y		Y	
Parent support for child literacy	-		-		Y	
Parents own reading engagement	-		-		Y	
Parent involved in child's school	-		-		Y	
Parent view school quality	-		-		Y	
Early life reading activities	-		-		Y	

Notes: Scales derived from the parental questionnaire have had the national mean imputed for observations where the data was missing.

Appendix Table A6. Alternative estimates of the fiction effect in Italy controlling for both prior reading achievement and parental reading attitudes, behaviours and support

	Baseline		+ prior achievement		+ parental questionnaire	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**
Magazines	-0.20	0.37	-0.20	0.37	-0.14	0.37
Comics	2.04*	0.38	2.09*	0.38	1.89*	0.38
Fiction	6.28*	0.55	5.95*	0.55	5.73*	0.55
Non-fiction	-1.03	0.71	-1.44*	0.72	-1.48*	0.72
Newspapers	1.08*	0.34	1.01*	0.35	1.01*	0.34
Controls						
Gender	Y		Y		Y	
Socio-economic status	Y		Y		Y	
Immigrant	Y		Y		Y	
Language	Y		Y		Y	
Grade repeated	Y		Y		Y	
Attended pre-school	Y		Y		Y	
Family structure	Y		Y		Y	
School grade	Y		Y		Y	
Achievement in mathematics	Y		Y		Y	
Language enrichment classes	Y		Y		Y	
Remedial language classes	Y		Y		Y	
Tutored in language	Y		Y		Y	
Teachers stimulation of reading	Y		Y		Y	
Teacher use of scaffolding	Y		Y		Y	
Teacher-student relations	Y		Y		Y	
Disciplinary climate at school	Y		Y		Y	
Attitude towards school	Y		Y		Y	
Prior English achievement	-		Y		Y	
Parent support for child literacy	-		-		Y	
Parents own reading engagement	-		-		Y	
Parent involved in child's school	-		-		Y	
Parent view school quality	-		-		Y	
Early life reading activities	-		-		Y	

Notes: Scales derived from the parental questionnaire have had the national mean imputed for observations where the data was missing.

Appendix B. Country-by-country estimates

Appendix Table B1. The frequency with which girls read different text types

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
Turkey	3.6	2.3	3.9	2.6	4.4
New Zealand	3.6	1.6	3.5	2.8	3.4
Canada	3.5	1.8	3.5	2.5	3.1
South Korea	2.7	2.7	3.5	2.9	3.1
Japan	3.8	3.6	3.3	1.9	3.3
Australia	3.5	1.5	3.3	2.5	3.3
USA	3.4	1.6	3.2	2.5	2.7
Italy	3.5	1.8	3.2	1.6	3.2
Sweden	3.8	2.2	3.2	1.9	4.0
Latvia	4.1	1.7	3.2	2.9	3.8
Germany	3.5	1.5	3.2	2.1	3.4
Mexico	3.3	2.4	3.1	2.3	3.0
Chile	3.6	2.4	3.1	2.5	3.5
Finland	4.0	3.4	3.1	2.2	4.1
Denmark	4.0	2.1	3.1	2.7	3.2
Switzerland	4.0	2.1	3.1	2.0	4.1
Portugal	3.9	2.0	3.1	2.3	2.8
Luxemburg	4.0	1.9	3.1	2.1	3.8
Hungary	3.8	2.5	3.0	2.9	4.1
UK	3.9	1.4	3.0	2.4	3.4
Spain	3.5	1.6	3.0	2.5	2.6
Israel	3.2	2.2	3.0	2.6	4.2
Estonia	4.1	1.9	3.0	2.9	4.2
Norway	3.9	2.8	3.0	2.6	4.0
Ireland	3.9	1.4	2.9	2.3	3.6
France	3.9	2.4	2.9	1.9	3.0
Iceland	3.8	2.5	2.9	2.4	4.3
Austria	3.9	1.7	2.9	2.0	4.2
Poland	4.0	1.6	2.8	2.6	4.2
Netherlands	3.8	2.0	2.8	2.2	3.0
Greece	3.7	2.2	2.8	1.7	2.5
Belgium	4.0	2.4	2.7	2.1	3.0
Czech Republic	4.0	1.9	2.6	2.1	3.7
Slovenia	4.2	1.9	2.5	2.5	3.8
Slovak Republic	4.3	2.0	2.5	2.3	4.0
OECD average	**3.8**	**2.1**	**3.1**	**2.3**	**3.5**

Appendix Table B2. The frequency with which boys read different text types

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
Turkey	3.3	2.4	3.2	2.8	4.5
South Korea	2.2	3.3	3.1	2.6	3.2
New Zealand	3.3	2.1	2.9	2.6	3.4
Japan	3.5	4.2	2.9	1.9	3.6
Canada	3.0	2.2	2.7	2.3	3.3
Mexico	3.1	2.7	2.7	2.3	3.3
Australia	3.3	1.9	2.6	2.4	3.5
USA	3.1	1.9	2.6	2.3	2.9
Chile	3.0	2.5	2.5	2.2	3.5
Latvia	3.6	1.9	2.5	2.5	3.7
Hungary	3.4	2.5	2.5	2.9	3.8
Denmark	3.4	2.6	2.5	2.6	3.5
Italy	3.1	2.3	2.5	1.5	3.5
Ireland	3.2	1.8	2.5	2.2	4.0
UK	3.3	1.8	2.4	2.3	3.8
Spain	3.2	2.1	2.4	2.1	3.4
Estonia	3.8	2.2	2.4	2.8	4.3
France	3.5	3.0	2.3	2.1	3.3
Iceland	3.2	2.8	2.3	2.1	4.2
Sweden	3.3	2.6	2.3	1.8	3.9
Germany	3.4	2.0	2.2	2.4	3.7
Norway	3.3	3.4	2.2	2.6	4.1
Israel	2.6	1.9	2.2	2.4	4.0
Portugal	3.5	2.4	2.2	2.0	3.7
Switzerland	3.6	2.6	2.2	2.3	4.2
Luxemburg	3.7	2.4	2.1	2.4	4.0
Belgium	3.5	2.9	2.1	2.0	3.5
Finland	3.4	3.9	2.1	2.5	4.1
Poland	3.5	1.9	2.0	2.2	4.1
Greece	3.4	2.6	2.0	1.6	3.5
Austria	3.6	2.1	2.0	2.4	4.3
Slovenia	3.7	2.3	2.0	2.1	4.0
Netherlands	3.1	2.6	1.9	1.8	3.4
Slovak Republic	4.0	1.8	1.7	2.2	3.9
Czech Republic	3.7	2.2	1.6	1.9	3.8
OECD average	**3.3**	**2.5**	**2.4**	**2.3**	**3.7**

Appendix Table B3. Gender differences in the frequency of reading different text types

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
South Korea	-0.47	0.63	-0.39	-0.27	0.12
Japan	-0.27	0.59	-0.42	-0.08	0.29
Mexico	-0.23	0.31	-0.43	-0.02	0.25
Ireland	-0.64	0.38	-0.48	-0.14	0.35
Hungary	-0.30	0.06	-0.53	0.00	-0.34
Chile	-0.61	0.09	-0.56	-0.31	-0.02
Slovenia	-0.45	0.35	-0.58	-0.35	0.20
Iceland	-0.55	0.27	-0.58	-0.34	-0.11
UK	-0.65	0.37	-0.59	-0.15	0.36
France	-0.34	0.64	-0.59	0.17	0.26
Estonia	-0.29	0.34	-0.59	-0.10	0.04
Belgium	-0.49	0.57	-0.60	-0.04	0.47
Spain	-0.34	0.53	-0.61	-0.39	0.85
Turkey	-0.30	0.17	-0.61	0.19	0.10
New Zealand	-0.35	0.43	-0.61	-0.14	0.02
Denmark	-0.60	0.53	-0.61	-0.06	0.28
USA	-0.22	0.30	-0.61	-0.18	0.25
Australia	-0.24	0.38	-0.66	-0.16	0.22
Latvia	-0.51	0.19	-0.66	-0.45	-0.09
Italy	-0.42	0.50	-0.74	-0.12	0.23
Greece	-0.33	0.41	-0.75	-0.10	0.97
Norway	-0.67	0.52	-0.76	0.03	0.11
Slovak Republic	-0.39	-0.27	-0.76	-0.08	-0.01
Poland	-0.55	0.31	-0.77	-0.32	-0.17
Canada	-0.54	0.36	-0.79	-0.14	0.22
Israel	-0.61	-0.21	-0.81	-0.19	-0.19
Portugal	-0.40	0.40	-0.89	-0.36	0.93
Netherlands	-0.71	0.64	-0.90	-0.40	0.40
Sweden	-0.50	0.45	-0.90	-0.15	-0.04
Austria	-0.24	0.43	-0.91	0.35	0.09
Luxemburg	-0.29	0.50	-0.91	0.35	0.16
Switzerland	-0.37	0.52	-0.93	0.27	0.11
Germany	-0.15	0.50	-0.97	0.30	0.30
Finland	-0.59	0.55	-0.99	0.23	0.01
Czech Republic	-0.31	0.24	-1.02	-0.17	0.11
OECD average	**-0.43**	**0.37**	**-0.70**	**-0.09**	**0.19**

Appendix Table B4. The frequency low socio-economic status teenagers read different text types

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
Turkey	3.1	2.3	3.6	2.8	4.3
Mexico	2.8	2.5	3.0	2.1	3.0
South Korea	2.2	3.0	2.9	2.4	2.5
New Zealand	3.4	1.8	2.9	2.5	3.3
Canada	3.1	2.0	2.9	2.2	3.1
Japan	3.6	3.9	2.9	1.7	3.2
Latvia	3.8	1.8	2.8	2.4	3.7
Chile	3.1	2.5	2.8	2.3	3.3
USA	3.1	1.8	2.7	2.4	2.7
Hungary	3.3	2.6	2.7	2.8	3.9
Australia	3.4	1.7	2.6	2.2	3.3
Israel	2.8	2.2	2.6	2.4	3.9
Italy	3.3	1.9	2.5	1.4	3.1
Denmark	3.7	2.2	2.5	2.4	3.2
Estonia	3.9	2.1	2.4	2.6	4.1
Portugal	3.7	2.1	2.4	2.0	3.1
Iceland	3.4	2.6	2.4	2.2	4.0
Sweden	3.3	2.3	2.4	1.6	3.7
UK	3.6	1.7	2.4	2.2	3.7
Spain	3.2	1.8	2.4	1.9	2.8
Norway	3.5	2.9	2.3	2.4	3.8
Ireland	3.6	1.6	2.3	1.9	3.9
Switzerland	3.6	2.1	2.3	2.0	4.1
France	3.5	2.4	2.3	1.9	3.0
Finland	3.5	3.7	2.3	2.2	4.0
Germany	3.4	1.7	2.2	2.0	3.4
Poland	3.6	1.8	2.2	2.2	4.1
Luxemburg	3.7	2.1	2.2	2.0	4.0
Netherlands	3.2	2.1	2.1	1.9	3.0
Austria	3.6	1.9	2.1	1.9	4.1
Belgium	3.6	2.4	2.1	1.9	3.1
Greece	3.4	2.3	2.1	1.5	2.8
Slovenia	3.9	2.1	2.0	2.0	3.9
Slovak Republic	4.0	1.9	1.9	2.0	3.8
Czech Republic	3.8	2.0	1.8	1.8	3.8
OECD average	**3.4**	**2.2**	**2.5**	**2.1**	**3.5**

Appendix Table B5. The frequency high socio-economic status teenagers read different text types

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
New Zealand	3.4	1.9	3.6	2.9	3.6
Turkey	3.7	2.5	3.6	2.6	4.6
South Korea	2.7	2.9	3.5	3.1	3.7
Canada	3.5	2.1	3.4	2.6	3.5
Australia	3.4	1.8	3.4	2.7	3.6
Japan	3.7	4.0	3.4	2.2	3.7
USA	3.4	1.7	3.3	2.5	3.0
UK	3.6	1.5	3.2	2.6	3.6
Denmark	3.8	2.4	3.2	2.9	3.6
Italy	3.4	2.3	3.2	1.7	3.6
Germany	3.5	1.9	3.1	2.4	3.8
Sweden	3.7	2.5	3.1	2.2	4.2
Ireland	3.5	1.6	3.1	2.5	3.7
France	3.8	2.9	3.1	2.2	3.3
Hungary	3.7	2.4	3.1	3.1	3.8
Switzerland	3.9	2.6	3.1	2.3	4.3
Luxemburg	3.9	2.3	3.0	2.5	3.9
Latvia	4.0	1.7	3.0	2.9	3.8
Spain	3.4	1.9	3.0	2.6	3.3
Chile	3.5	2.3	3.0	2.5	3.7
Finland	3.8	3.7	2.9	2.6	4.2
Norway	3.7	3.3	2.9	2.9	4.2
Austria	3.9	1.9	2.9	2.5	4.3
Portugal	3.6	2.3	2.9	2.4	3.2
Iceland	3.6	2.7	2.9	2.4	4.6
Mexico	3.4	2.5	2.9	2.4	3.3
Estonia	4.1	2.0	2.9	3.1	4.4
Belgium	3.9	2.9	2.9	2.3	3.4
Poland	3.8	1.8	2.7	2.7	4.1
Israel	3.0	1.9	2.7	2.6	4.2
Greece	3.7	2.5	2.7	1.8	3.3
Netherlands	3.7	2.5	2.7	2.2	3.5
Slovenia	4.0	2.1	2.6	2.6	3.9
Czech Republic	3.9	2.2	2.4	2.2	3.8
Slovak Republic	4.2	2.0	2.4	2.5	3.9
OECD average	**3.7**	**2.3**	**3.0**	**2.5**	**3.8**

Appendix Table B6. The socio-economic gap in the frequency that teenagers read different text types across countries

	Magazines	Comics	Fiction	Non-Fiction	Newspapers
Germany	0.10	0.11	0.91	0.46	0.44
Luxemburg	0.25	0.12	0.84	0.54	-0.04
Austria	0.26	0.05	0.83	0.52	0.21
France	0.31	0.46	0.83	0.28	0.24
Ireland	-0.13	0.00	0.81	0.58	-0.23
Australia	0.01	0.08	0.79	0.49	0.31
Switzerland	0.23	0.43	0.78	0.33	0.25
UK	-0.05	-0.19	0.77	0.45	-0.07
Belgium	0.30	0.50	0.76	0.34	0.36
Sweden	0.37	0.24	0.73	0.54	0.45
Finland	0.30	0.01	0.69	0.45	0.18
Denmark	0.18	0.16	0.68	0.54	0.41
New Zealand	-0.02	0.07	0.65	0.36	0.24
Spain	0.23	0.11	0.65	0.70	0.51
Italy	0.10	0.49	0.63	0.34	0.48
Norway	0.20	0.34	0.62	0.47	0.39
South Korea	0.57	-0.13	0.59	0.70	1.17
Canada	0.38	0.09	0.58	0.37	0.42
Greece	0.27	0.25	0.58	0.37	0.43
Slovenia	0.10	0.06	0.57	0.60	-0.01
Czech Republic	0.09	0.19	0.56	0.41	0.02
USA	0.29	-0.09	0.55	0.09	0.28
Japan	0.14	0.16	0.53	0.49	0.52
Poland	0.22	-0.01	0.52	0.48	-0.04
Netherlands	0.49	0.36	0.52	0.36	0.45
Portugal	-0.07	0.14	0.50	0.40	0.10
Iceland	0.16	0.11	0.50	0.26	0.54
Slovak Republic	0.20	0.14	0.49	0.45	0.10
Hungary	0.44	-0.22	0.45	0.31	-0.08
Estonia	0.18	-0.05	0.44	0.49	0.22
Latvia	0.23	-0.08	0.26	0.51	0.09
Chile	0.33	-0.14	0.21	0.28	0.45
Israel	0.21	-0.29	0.14	0.27	0.34
Turkey	0.53	0.15	-0.03	-0.15	0.35
Mexico	0.59	-0.03	-0.08	0.29	0.29
OECD average	**0.23**	**0.10**	**0.57**	**0.41**	**0.28**

Appendix Table B7. Regression model M1 estimates across countries.

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
France	25.5	1.6	7.6	1.8	6.7	1.5	4.5	1.4	8.0	1.3
Australia	25.3	0.7	13.9	0.9	4.4	0.7	-7.8	0.8	1.6	0.9
Finland	25.2	1.0	15.5	1.2	8.1	1.2	12.0	1.4	8.3	1.1
Austria	24.2	1.3	8.9	1.5	5.4	1.3	1.8	1.5	-2.7	1.2
Sweden	24.1	1.1	16.6	1.3	13.7	1.1	10.5	1.1	6.7	1.1
Iceland	24.0	1.1	13.5	1.3	17.7	1.6	6.7	1.4	9.9	1.0
UK	23.3	1.0	13.2	1.1	1.8	1.1	-3.8	1.0	-3.2	1.2
Czech Republic	22.6	1.1	12.3	1.2	3.2	1.1	1.5	1.2	2.7	1.2
New Zealand	22.3	1.2	8.4	1.2	2.2	1.1	-9.8	1.3	-0.9	1.4
Netherlands	22.2	1.5	17.0	1.5	9.9	1.2	12.9	1.5	6.0	1.0
Norway	22.1	1.0	3.3	0.9	9.0	1.2	2.7	1.3	11.2	1.0
Luxemburg	22.0	1.1	8.7	1.1	4.3	1.1	3.0	1.4	0.3	1.0
Belgium	21.9	1.0	8.7	1.2	5.2	0.8	8.3	1.2	7.8	0.9
Switzerland	21.8	1.0	7.6	1.0	9.2	1.0	5.4	1.0	6.0	0.9
Germany	20.6	0.9	6.6	1.4	4.4	1.2	0.8	1.2	1.7	1.2
Ireland	20.6	1.1	14.5	1.5	-0.9	1.2	-2.9	1.6	-2.1	1.6
Slovenia	19.7	1.2	17.6	1.2	6.8	1.1	3.7	1.3	-2.4	1.1
Canada	19.4	0.6	6.9	0.7	4.2	0.7	-2.6	0.8	2.0	0.8
Spain	19.1	0.7	18.8	0.8	3.7	0.7	-0.1	0.7	4.6	0.8
Japan	17.0	1.1	9.1	1.2	7.7	1.0	-3.6	1.2	5.8	1.2
Italy	16.5	0.7	5.8	1.0	6.5	0.6	2.4	0.6	7.4	0.7
Greece	15.9	1.4	5.0	1.7	4.8	1.1	3.8	1.5	2.3	1.1
USA	15.8	1.0	1.2	1.3	1.9	1.0	-3.1	1.1	-2.6	1.3
Estonia	15.7	1.1	14.0	1.3	7.5	1.3	3.3	1.5	-7.3	1.2
Denmark	15.4	1.1	9.4	1.0	7.1	1.0	5.8	1.1	7.2	1.0
Poland	15.1	1.3	12.0	1.2	4.4	1.2	9.2	1.2	-3.8	1.1
Slovak Republic	14.3	1.4	11.6	1.2	1.2	1.1	7.4	1.6	1.8	1.3
Portugal	12.1	1.0	10.8	1.0	1.5	1.0	-4.2	1.0	-1.0	0.9
South Korea	11.1	1.0	12.2	1.2	7.7	0.9	-3.5	1.0	-0.5	1.2
Hungary	9.5	1.4	6.4	1.2	3.5	1.3	11.9	1.3	-4.7	1.1
Latvia	8.1	1.3	8.0	1.1	5.1	1.1	4.6	1.3	-9.6	1.5
Chile	7.7	1.1	11.8	1.0	7.0	1.1	7.6	1.2	0.0	0.9
Israel	7.0	1.3	4.3	1.2	11.1	1.4	5.4	1.1	-8.1	1.4
Turkey	0.1	1.1	-2.4	0.9	5.2	1.7	-4.2	1.3	-5.0	1.1
Mexico	-0.9	0.5	7.5	0.7	0.6	0.5	2.3	0.6	-3.8	0.6
OECD average	**17.3**	**1.1**	**9.9**	**1.2**	**5.8**	**1.1**	**2.6**	**1.2**	**1.2**	**1.1**

Appendix Table B8. Regression model M2 estimates across countries.

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Australia	24.9	0.7	13.9	0.9	3.9	0.7	-7.8	0.8	2.2	0.9
Finland	24.5	0.9	15.2	1.1	7.0	1.1	10.4	1.3	7.7	1.1
Austria	24.0	1.2	8.0	1.5	4.3	1.3	1.4	1.4	-1.3	1.3
Sweden	23.4	1.1	16.4	1.3	12.4	1.1	9.3	1.1	6.7	1.0
Iceland	23.2	1.1	13.3	1.3	17.2	1.5	6.8	1.4	10.0	1.0
UK	22.8	0.9	12.9	1.1	1.3	1.0	-4.5	1.0	-2.7	1.2
Czech Republic	22.7	1.0	12.4	1.1	1.8	1.0	0.8	1.1	3.7	1.1
New Zealand	21.8	1.2	9.2	1.2	1.8	1.1	-9.4	1.3	0.2	1.4
Norway	21.8	1.0	3.2	0.9	8.2	1.1	2.3	1.3	10.9	1.0
Switzerland	20.4	0.9	8.3	0.8	6.2	0.9	4.9	0.9	5.9	0.8
Netherlands	20.0	1.5	15.8	1.5	8.0	1.2	11.3	1.4	5.5	1.1
Ireland	20.0	1.0	14.2	1.4	-1.9	1.1	-3.4	1.5	-1.3	1.6
France	19.7	1.2	7.3	1.6	3.0	1.2	3.7	1.1	8.1	1.1
Belgium	19.4	0.9	7.9	1.0	3.1	0.7	6.0	1.0	7.0	0.8
Slovenia	19.3	1.2	16.9	1.2	6.2	1.1	3.5	1.2	-1.7	1.1
Canada	18.6	0.6	5.7	0.7	3.8	0.6	-3.5	0.8	3.4	0.7
Luxemburg	18.2	1.0	7.7	1.1	2.5	1.0	2.3	1.2	2.1	0.9
Germany	17.5	0.9	5.3	1.2	2.5	1.1	1.1	1.1	2.3	1.2
Japan	16.8	1.1	9.1	1.2	7.4	1.0	-3.6	1.1	5.7	1.1
Denmark	16.0	1.0	9.2	1.0	6.2	1.0	5.4	1.0	7.5	0.9
USA	15.4	1.0	2.7	1.3	1.4	0.9	-3.1	1.0	-1.1	1.2
Spain	14.7	0.6	14.3	0.6	1.8	0.7	0.4	0.7	5.1	0.7
Slovak Republic	14.6	1.3	10.7	1.1	-0.2	1.1	4.8	1.4	2.1	1.1
Greece	14.6	1.2	4.9	1.6	4.1	1.1	2.6	1.2	2.6	1.1
Italy	14.5	0.6	4.8	0.9	4.8	0.6	1.5	0.6	6.9	0.6
Poland	13.6	1.2	10.6	1.1	2.9	1.1	7.3	1.1	-2.7	1.0
Estonia	13.1	1.0	11.1	1.1	6.2	1.2	3.0	1.3	-5.7	1.1
South Korea	11.2	1.0	12.1	1.2	7.6	0.9	-3.8	1.0	-0.4	1.2
Hungary	10.6	1.1	6.3	1.1	1.8	1.1	8.3	1.1	-3.1	0.9
Israel	9.3	1.2	5.2	1.1	8.9	1.1	6.7	1.1	-4.8	1.3
Portugal	7.2	0.9	6.6	0.9	0.5	0.8	-1.3	0.9	0.1	0.8
Latvia	6.8	1.3	6.5	1.1	2.8	1.0	3.7	1.2	-7.4	1.4
Chile	6.4	1.0	9.4	1.0	5.2	0.9	5.9	1.0	0.1	0.7
Turkey	1.0	1.0	-0.8	0.9	3.3	1.4	-3.7	1.2	-3.9	1.0
Mexico	0.2	0.5	6.2	0.5	-0.2	0.4	1.7	0.5	-2.8	0.5
OECD average	**16.2**	**1.0**	**9.2**	**1.1**	**4.5**	**1.0**	**2.0**	**1.1**	**1.9**	**1.0**

Appendix Table B9. Regression model M3 estimates across countries.

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Switzerland	10.5	0.7	3.7	0.7	2.5	0.7	2.2	0.6	3.3	0.5
France	10.1	0.6	4.9	1.0	1.9	0.8	2.5	0.7	4.1	0.9
Finland	10.1	0.6	4.6	0.8	2.0	0.9	3.0	1.0	2.2	0.8
Belgium	10.0	0.6	4.3	0.6	0.7	0.5	3.3	0.7	3.6	0.6
Sweden	9.4	0.9	5.9	0.8	5.2	0.8	4.3	0.8	2.6	0.7
Austria	9.3	0.9	2.1	0.8	1.3	0.8	1.9	0.9	0.6	0.9
UK	9.2	0.5	6.1	0.6	1.4	0.5	0.1	0.7	1.5	0.8
Ireland	9.2	0.6	7.0	0.9	-0.9	0.6	-0.4	0.8	1.4	0.9
Australia	8.9	0.4	4.5	0.4	0.2	0.4	-1.6	0.4	0.9	0.6
Canada	8.7	0.4	5.1	0.4	1.1	0.4	0.1	0.4	1.1	0.5
Iceland	8.3	0.7	5.5	0.9	5.5	0.9	3.4	0.8	3.0	0.9
Luxemburg	8.2	0.7	2.8	0.9	1.1	0.6	1.1	0.7	0.2	0.7
Japan	8.1	0.6	5.0	0.8	2.1	0.6	0.0	0.6	3.1	0.6
Czech Republic	8.0	0.7	4.4	0.7	0.7	0.6	0.5	0.8	0.7	0.7
Norway	7.9	0.7	1.8	0.8	2.0	0.8	0.5	0.7	2.1	0.7
Netherlands	7.7	0.7	5.6	0.8	2.1	0.6	4.1	0.7	2.3	0.6
New Zealand	7.7	0.6	3.6	0.7	0.3	0.7	-2.7	0.7	1.1	0.8
USA	7.6	0.7	3.5	0.7	0.5	0.6	0.0	0.7	0.3	1.0
Spain	7.1	0.4	6.5	0.5	0.4	0.5	0.4	0.5	2.6	0.5
Italy	6.7	0.5	2.1	0.6	1.8	0.3	0.6	0.4	2.8	0.4
Denmark	6.4	0.8	4.0	0.6	3.3	0.7	3.7	0.8	2.8	0.7
Greece	6.3	0.8	0.9	1.0	1.9	0.8	1.7	0.9	0.7	0.7
Slovenia	6.0	0.7	5.0	0.7	2.4	0.7	2.6	0.6	-0.2	0.8
Germany	6.0	0.6	1.2	0.7	0.8	0.6	0.3	0.7	0.9	0.9
Poland	5.6	0.7	4.5	0.7	3.9	0.9	4.3	0.6	0.9	0.7
Estonia	5.3	0.9	4.5	0.8	1.9	0.8	0.5	0.8	-3.2	0.8
South Korea	5.2	0.6	4.5	0.6	2.6	0.5	0.9	0.9	0.8	0.7
Israel	4.9	0.7	3.5	0.8	2.9	0.7	3.2	0.6	-0.1	0.9
Hungary	4.7	0.6	2.9	0.7	1.8	0.6	3.1	0.5	0.2	0.5
Portugal	4.5	0.6	3.8	0.6	0.5	0.7	0.2	0.7	0.4	0.6
Slovak Republic	4.2	0.8	2.8	0.8	0.5	0.9	2.1	0.9	0.3	0.8
Latvia	4.0	0.9	3.9	0.8	1.7	0.7	1.9	0.8	-2.6	0.9
Chile	2.4	0.6	3.2	0.6	2.4	0.5	2.4	0.6	-0.3	0.5
Turkey	1.6	0.7	0.6	0.6	2.0	0.8	-0.5	0.7	-1.0	0.6
Mexico	0.2	0.3	1.8	0.4	0.2	0.3	1.1	0.3	-0.9	0.4
OECD average	**6.9**	**0.7**	**3.9**	**0.7**	**1.7**	**0.6**	**1.5**	**0.7**	**1.1**	**0.7**

Appendix Table B10. Regression model M4 estimates across countries.

	Fiction		Non-fiction		Newspapers		Magazines		Comic books	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Switzerland	10.1	0.7	3.3	0.7	2.0	0.7	1.8	0.6	3.3	0.5
France	10.0	0.6	5.0	1.0	2.0	0.8	2.3	0.7	4.0	0.9
Belgium	9.5	0.6	3.8	0.6	0.5	0.5	2.8	0.6	3.2	0.6
Finland	9.2	0.6	3.4	0.8	1.3	0.9	2.3	0.9	1.9	0.8
Ireland	9.2	0.6	6.9	0.9	-1.0	0.6	-0.4	0.8	1.4	0.9
Austria	9.1	0.9	2.2	0.8	1.3	0.8	1.8	0.9	0.6	0.9
Sweden	8.8	0.9	5.4	0.8	4.7	0.8	3.9	0.7	2.6	0.6
UK	8.8	0.6	5.6	0.6	1.0	0.5	-0.3	0.7	1.2	0.8
Australia	8.5	0.4	4.2	0.4	-0.1	0.4	-1.9	0.4	0.9	0.6
Luxemburg	8.4	0.7	3.1	0.8	1.0	0.6	1.0	0.7	0.5	0.6
Canada	8.2	0.4	4.6	0.4	0.8	0.4	-0.2	0.4	1.0	0.5
Iceland	8.1	0.7	5.5	0.9	5.2	0.9	3.2	0.8	2.9	0.9
Czech Republic	8.0	0.6	4.5	0.7	0.5	0.6	0.3	0.8	0.7	0.7
Netherlands	8.0	0.7	5.8	0.7	2.2	0.6	4.0	0.7	2.4	0.6
Japan	7.7	0.6	4.5	0.7	1.5	0.6	-0.1	0.6	3.1	0.6
New Zealand	7.5	0.7	3.3	0.7	0.2	0.7	-2.7	0.6	1.4	0.8
Norway	7.2	0.7	1.1	0.8	1.5	0.8	0.1	0.7	1.9	0.8
Spain	7.1	0.4	6.5	0.4	0.3	0.5	0.5	0.5	2.6	0.5
USA	7.1	0.6	2.9	0.7	0.2	0.6	-0.6	0.7	0.6	1.0
Italy	6.5	0.5	2.0	0.6	1.7	0.3	0.6	0.4	2.9	0.3
Denmark	6.0	0.8	3.5	0.6	3.1	0.7	3.4	0.7	2.7	0.7
Greece	6.0	0.9	0.6	1.0	1.7	0.8	1.8	0.9	0.8	0.7
Estonia	5.8	0.9	4.8	0.8	2.2	0.9	0.8	0.8	-2.7	0.7
Germany	5.8	0.6	1.0	0.7	0.7	0.6	0.3	0.7	1.0	0.9
Slovenia	5.5	0.7	4.5	0.7	2.0	0.6	1.9	0.6	-0.5	0.8
Israel	5.5	0.7	3.9	0.8	2.8	0.7	3.4	0.6	0.3	0.9
Poland	5.5	0.6	4.3	0.7	3.6	0.9	4.0	0.6	0.7	0.7
South Korea	5.2	0.7	4.2	0.6	2.3	0.5	0.6	0.8	1.0	0.7
Hungary	4.6	0.6	2.7	0.7	1.7	0.6	3.0	0.5	0.1	0.5
Portugal	4.4	0.6	3.6	0.6	0.2	0.7	-0.1	0.6	0.6	0.6
Slovak Republic	4.3	0.8	3.0	0.7	0.6	0.9	2.2	0.9	0.4	0.8
Latvia	4.0	0.8	3.8	0.7	1.4	0.7	1.4	0.8	-2.0	0.9
Chile	2.1	0.6	2.7	0.6	2.2	0.5	2.0	0.6	-0.5	0.5
Turkey	0.8	0.7	0.1	0.5	1.6	0.8	-0.8	0.7	-1.3	0.6
Mexico	0.1	0.3	1.6	0.4	0.0	0.3	1.0	0.3	-0.9	0.4
OECD average	**6.6**	**0.7**	**3.7**	**0.7**	**1.5**	**0.6**	**1.2**	**0.7**	**1.1**	**0.7**

Appendix Table B11. Estimates of non-linearities of the fiction effect across countries

	Few times a year		Once a month		Several times a month		Several times a week	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Switzerland	14.3	2.2	22.5	2.6	32.0	2.9	39.4	3.2
France	15.8	2.6	20.7	2.8	33.1	2.5	38.4	3.1
Belgium	15.8	2.0	24.0	2.4	33.3	2.4	38.3	3.0
Austria	16.8	3.3	21.6	4.0	31.8	4.3	38.2	4.4
Australia	9.6	2.0	19.3	2.4	27.4	2.2	37.6	2.3
Finland	13.4	2.4	25.3	3.0	33.0	3.0	35.8	3.0
Ireland	8.3	2.7	14.9	3.3	23.2	3.5	35.7	3.6
UK	11.3	2.3	16.8	2.7	26.3	2.8	35.3	2.6
USA	8.7	2.6	17.8	2.7	24.9	2.9	35.2	3.3
Luxemburg	11.7	2.3	17.1	3.2	26.5	3.5	34.6	3.1
Canada	8.4	1.8	13.9	2.1	22.2	2.3	33.0	2.2
Sweden	11.6	2.6	18.2	3.0	27.4	3.2	32.5	4.1
Iceland	8.6	3.0	16.0	3.8	24.1	3.9	31.4	4.3
New Zealand	4.8	4.0	10.1	4.2	16.8	3.7	31.1	4.0
Czech Republic	13.3	2.9	14.6	2.6	23.3	3.1	30.9	3.2
Japan	10.5	2.7	14.9	2.7	22.7	2.6	30.2	3.0
Norway	12.1	2.4	20.5	2.6	25.8	3.1	29.6	3.1
Greece	14.5	2.6	16.1	3.3	23.6	3.9	27.8	5.3
Netherlands	8.6	2.1	16.1	2.8	21.0	3.2	26.8	4.4
Italy	7.7	1.6	15.4	1.5	20.2	1.6	25.2	2.5
Denmark	7.8	3.0	11.3	3.4	15.4	3.5	24.8	4.0
Germany	8.4	2.6	10.5	2.8	18.2	2.6	24.4	2.9
Spain	5.9	1.9	9.9	2.3	15.5	1.8	22.0	2.2
Estonia	6.3	3.1	8.1	2.9	12.9	3.5	20.7	4.1
South Korea	13.0	3.6	15.7	3.8	20.8	3.7	20.7	4.1
Israel	6.0	2.3	10.3	3.4	12.6	3.1	20.4	3.9
Poland	4.0	2.0	7.0	3.0	11.7	2.6	19.7	3.2
Slovenia	5.7	2.1	8.0	2.7	14.6	3.4	17.7	4.2
Hungary	6.5	2.6	9.8	2.4	13.3	2.9	17.6	2.9
Portugal	6.5	2.4	8.3	2.6	11.6	3.0	17.2	3.3
Latvia	4.3	2.6	8.2	3.3	7.1	3.2	16.3	3.9
Slovak Republic	6.8	2.5	6.7	2.9	16.0	3.1	14.1	4.3
Turkey	9.9	3.7	10.7	3.6	11.8	3.7	10.1	3.7
Chile	-2.1	2.3	3.5	2.2	3.5	2.8	4.2	3.5
Mexico	1.4	1.2	1.4	1.5	0.9	1.5	-0.7	1.6
OECD average	**9.0**	**2.5**	**13.9**	**2.9**	**20.1**	**3.0**	**26.2**	**3.4**

Appendix Table B12. The association between fiction and the PISA reading sub-domains across countries

	Access & Retrieve		Integrate & interpret		Reflect & evaluate		Continuous texts		Non-continuous texts	
	Beta	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**	**Beta**	**SE**
Austria	11.4	1.0	10.1	0.9	10.1	0.8	11.0	1.0	8.4	1.0
France	10.7	0.9	11.3	1.0	9.1	1.0	10.9	1.0	7.4	0.9
Finland	9.9	1.1	10.1	0.8	8.8	0.8	9.9	0.8	9.2	0.9
USA	9.4	1.0	10.2	0.9	8.7	0.9	10.4	1.0	8.5	1.1
New Zealand	9.0	1.0	10.6	1.0	8.7	1.0	10.2	1.1	7.3	1.1
Switzerland	8.8	0.9	11.5	0.9	10.2	0.9	11.6	1.1	7.6	1.2
Iceland	8.8	1.4	9.7	1.2	7.1	1.1	9.3	1.1	6.7	1.1
Canada	8.4	0.8	10.2	0.6	7.2	0.6	10.2	0.7	6.3	0.6
Belgium	8.4	0.8	12.0	0.9	9.1	0.8	11.1	0.8	7.7	0.8
Australia	8.4	0.6	11.4	0.6	9.7	0.6	11.6	0.7	7.4	0.7
UK	8.2	0.8	10.4	0.9	9.6	0.8	11.3	0.9	7.6	0.9
Greece	8.0	1.2	7.4	1.0	6.4	1.1	8.2	1.0	5.3	0.9
Luxemburg	8.0	1.3	9.6	0.8	8.9	0.8	9.8	0.7	6.9	0.9
Sweden	7.8	1.1	9.5	1.0	8.1	0.9	9.5	1.0	7.1	1.0
Czech Republic	7.3	1.0	8.6	0.8	8.1	1.1	8.5	0.7	7.1	0.8
Japan	7.2	0.9	8.2	0.7	6.4	0.8	8.1	0.7	5.5	0.8
Italy	7.1	0.7	6.8	0.6	6.9	0.7	7.4	0.5	5.8	0.6
Ireland	6.4	0.9	9.9	0.8	10.6	0.9	10.1	1.0	8.0	1.0
Norway	6.4	1.0	9.7	0.8	7.5	0.9	8.7	1.0	5.4	0.9
Spain	6.2	0.8	7.1	0.7	4.7	0.8	6.7	0.6	4.4	0.7
Denmark	6.2	1.3	6.3	1.1	6.2	1.1	6.9	1.1	4.8	1.1
Germany	6.1	0.9	7.9	0.9	5.5	0.8	7.0	0.8	5.0	0.8
Estonia	5.8	0.9	5.8	0.8	3.5	1.0	5.1	0.9	3.8	0.9
Slovak Republic	5.3	1.3	4.4	1.1	3.6	1.0	4.8	0.9	2.0	1.0
South Korea	5.1	1.1	4.6	1.0	3.8	1.0	5.2	0.9	3.3	0.9
Poland	5.0	1.1	4.8	1.0	4.9	0.9	5.9	1.1	3.3	1.0
Slovenia	4.8	1.1	5.1	1.1	5.3	1.0	5.9	1.4	3.7	1.2
Netherlands	4.6	1.2	8.6	1.4	7.9	1.2	8.6	1.3	6.3	1.4
Hungary	4.4	0.9	5.0	0.8	5.0	0.9	5.1	0.8	3.9	0.7
Israel	4.0	0.9	5.0	0.9	4.8	0.9	5.4	0.8	4.1	1.0
Latvia	3.1	1.5	3.6	1.1	2.8	1.2	3.8	1.2	2.4	1.2
Portugal	2.9	1.1	4.5	1.1	5.5	1.1	4.2	1.0	3.4	0.8
Chile	2.0	1.0	1.5	1.0	1.6	1.0	1.5	1.2	1.9	1.2
Turkey	1.7	1.0	1.3	0.8	2.2	1.2	1.9	0.7	0.6	0.8
Mexico	0.0	0.5	-0.5	0.4	-0.5	0.5	-0.2	0.4	-0.2	0.4
OECD average	**6.5**	**1.0**	**7.5**	**0.9**	**6.5**	**0.9**	**7.6**	**0.9**	**5.4**	**0.9**