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# Patterns in PIRLS Performance: The Importance of Liking to Read, SES, and the Effect of Test Prep

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**ABSTRACT**---- *Analysis of PIRLS data on liking reading and SES revealed five consistent patterns: (1) "baseline": locations with high PIRLS scores, high SES, and a high level of "liking reading" among both children and their parents. (2) "test-prep" locations, with high SES and PIRLS scores, but little interest in reading. Our conjecture is that these students achieved high scores through test-preparation (strategy instruction) and through diligently reading very hard texts. (3) "late-bloomers" with high SES and high PIRLS scores, with parents but not children liking reading, In most of these locations, reading instruction starts late. (4) middle SES countries and locations; (5) Lower SES countries and locations, with children liking to read but adults much less. The problem in cases in category (5) is lack of access to reading material.*

**Keywords**--- SES, reading attitudes, test preparation, access to books, testing

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## 1. INTRODUCTION

The PIRLS (Progress in International Reading Literary Study) is a reading test given to ten-year-old children in 49 countries (Mullis, Martin, Foy, and Drucker, 2012). Along with the test, children and their parents fill out a questionnaire about their reading habits and attitudes. We present here some fascinating patterns we discovered from the report, followed by conjectures on what the results may mean. Our primary focus is not on the actual PIRLS tests results, but on a measure we consider to be more important: how much parents of the children taking the PIRLS like to read, a proxy for how much adults in general like to read in each country.

It can be argued that adult attitudes toward reading should be our major concern, our primary dependent variable, in literacy research. Attitude toward reading tells us the long-term effects of our educational programs.

Attitude toward reading is also a better measure than scores on reading tests. Gardner (2014) warned that high test scores may be accompanied by negative attitudes, because of oppressive pedagogical methods: "Teachers can teach their subject well while teaching students to hate the subject in the process. The result is a pyrrhic victory that no nation should be proud of."

In the case of reading, the "normal" and natural path to competence in reading is through interesting reading that students really want to read (Krashen, 2004). But it is also possible to achieve high scores through massive amounts of assigned, or "forced" reading and intensive test preparation, which will result in less real competence and negative attitudes toward reading. In Purvis and Elley (1994), students were asked how to become a good reader; the most popular answer was "liking it" (selected from among 11 options). This was true for both 9 year-olds and 14 year-olds in countries around the world. Among the least popular strategies were "having lots of reading for homework" and "being told how to do it": in other words, assigned reading and strategy instruction.

Our analysis thus includes the PIRLS data on whether children say they like to read, and whether their parents say they (the parents) like to read. The children answered these questions, from Exhibit 8.1 (Mullis et. al., 2012):

1. I read only if I have to.\*
2. I like talking about what I read with other people.
3. I would be happy if someone gave me a book as a present.
4. I think reading is boring.\*
5. I would like to have more time for reading.
6. I enjoy reading.

How often do you read outside of school? (every day or almost every day, once or twice a week, once or twice a month, never or almost never)

1. I read for fun.
  2. I read things that I choose myself.
- reverse coded

Mullis et. al. inform us that "To be in the **Like Reading** category, students 'agreed a lot' with three of the six statements, 'agreed a little' with the other three, and did out-of-school reading of their own choosing or for fun on a daily basis, on average" (p. 204). Thus, students had to be dedicated out-of-school pleasure readers to be classified as liking to read.

The questionnaire for parents was similar (Mullis et al., 2012, Exhibit 4.4: pp. 120-121).

1. I read only if I have to.\*
2. I like talking about what I read with other people.
3. I like to spend my spare time reading.
4. I reading only if I need information.\*
5. Reading is an important activity in my home.
6. I would like to have more time for reading.
7. I enjoy reading.

When you are at home, how often how often do you read for your enjoyment? (every day or almost every day, once or twice a week, once or twice a month, never or almost never)

Parents who were categorized as "liking reading a lot" were those who "agreed a lot" with four of the statements and at least "a little" with the other three statements, on average, as well as reading daily for enjoyment (Mullis et. al., pp. 116-117). Thus, as was the case with children, parents had to be frequent voluntary readers to be categorized as liking to read.

We also included socio-economic class (SES). Children with higher SES have more access to reading material at home, in their community, and at school (Krashen, 2004). We used the HDI (Human Development Index) as a measure of socio-economic status, a combination of three factors: education, (adult literacy rates, school enrollment), life expectancy and family income (gross national income per capita). HDI levels for 2011 were obtained from the United Nations Development Programme (<http://hdr.undp.org/en/content/table-2-human-development-index-trends-1980-2013>) and from <http://eng.stat.gov.tw/ct.asp?xItem=25280&ctNode=6032&mp=5>.

For the 41 countries that supplied data on whether parents and children like to read, and for which HDI levels were available, our analysis is nearly exhaustive: all countries except one (France) fit into one of our categories, and there is very little overlap among the categories: In only a very few cases could one argue that a country might belong to a different category.

We found that higher SES countries fall into one of three patterns:

- (1) Countries in which both children and their parents like to read. This is the expected case, our base line. With high SES, reading material is plentiful. ("Baseline" in table 1.)
- (2) Countries and cities in which neither children nor parents like to read. ("Test prep" in table 1.)
- (3) Countries in which parents like to read, but children do not ("Late-bloomer" in table 1).

We found two patterns for the other countries:

- (1) Countries with middle-level SES: both children and parents like to read, but not as large a percentage as countries and cities in category (2), above. PIRLS scores for these countries were lower than for the high SES countries.
- (2) Countries with low SES: Children like to read, but adults do not. PIRLS scores for these countries were lower than for all previous categories.

**Table 1:** The five groups and overall means

Group	N	HDI	parent likes	child likes	PIRLS
Baseline	7	.91 (.01)	43.7 (5.2)	33 (2.5)	538.4 (9.7)
Test Prep	4	.88 (.01)	19 (4.4)	22.3 (.96)	558 (13.7)
Late Bloomer	5	.91 (.02)	46.8 (4)	21.6 (2.7)	543.4 (22.6)
Middle	10	.84 (.02)	29.3 (6.9)	26.9 (5.1)	505.4 (43)
Low SES	14	.75 (.06)	24.8 (8.6)	30.2 (8)	470 (69.4)
overall	40	.83 (.07)	31.2 (11.3)	28.1 (6.5)	509.7 (56)

## 2. THE BASELINE GROUP

The Baseline Group's results are in table 2.

**Table 2.** The Baseline Group

n = 7	HDI	parent likes	child likes
New Zealand	0.91	51	32
Australia	0.93	48	30
Canada	0.90	41	35
Germany	0.91	37	34
Israel	0.89	41	32
Ireland	0.91	48	37
Austria	0.89	40	31
MEAN	.91 (.01)	43.7 (5.2)	33 (2.5)

We refer to this group as the baseline because the results are to be expected. These children and their parents live in a high SES environment where access to reading material is generally plentiful. When children have access to interesting reading material, they read, and enjoy doing it (evidence in Krashen, 2004).

## 3. THE TEST-PREP GROUP

Because of Gardner's comment (see above), we looked for cases of high reading test scores and low enthusiasm for reading, both among children and adults. We found several clear cases (table 3). Adults in this group have the least interest in reading of all groups studied and children in this group are among the least interested in reading (see table 1, above), despite being in high SES countries, which generally means more access to books.

**Table 3:** The Test-Prep Group

n = 4	HDI	parent likes	child likes
Hong Kong	0.90	14	21
Taiwan	0.88	17	23
Italy	0.87	24	23
Singapore	0.87	21	22
MEANS	.88 (.01)	19 (4.4)	22.3 (.96)

Our conjecture, following Gardner, is that pedagogy is to blame: The high PIRLS test scores achieved by students in these countries are due to heavy doses of assigned reading plus extensive test preparation.

Test preparation means teaching students strategies that will increase scores without increasing competence, e.g. teaching children which questions to skip, when to guess and when not; why it is best to choose "true" on true/false tests if you are not sure, read the questions before reading the passage, make sure you don't turn two pages at once, etc.

Raising test scores through such test preparation is like claiming you have raised the temperature of the room when all you have done is light a match under the thermometer. It not only fails to produce true competence, but also fails to result in enthusiasm for reading. As noted by the Vermont Department of Education (2014), "when schools feel extraordinary pressure to raise scores, even rising scores may not be a signal that students are actually learning more."

If this analysis is correct, children in the "test-prep" locations pay a heavy price for their high PIRLS scores. The lack of interest in reading of their parents suggests that test-prep plus required reading of uninteresting material can result in a permanent lack of interest in reading.

In contrast, we hypothesize that the high scores of the countries in table 2 are due to the normal process – a great deal of self-selected reading.

If our conjecture is correct, the pedagogical practices that caused the lack of enthusiasm for reading were present when today's parents were in school. This hypothesis needs to be confirmed by an examination of pedagogical approaches in these countries and cities.

There is evidence that this pattern existed in Hong Kong and may still exist. Tse and Loh (2007, 2012) report that parents who filled out questionnaires with PIRLS testing in 2001 and 2006 pointed out that "their children had too much homework, leaving them little time to read books for leisure" (p. 2007, 114, 2012, p. 113). Teachers "complained that the children's school timetable allowed insufficient time for them to teach reading for learning and for pleasure, and this was especially the case for students who need to take the TFA" (Territory-Wide System Assessment, given in grades 3, 6 and 9) (Tse and Loh, 2012, p. 113).

We label groups in table 3 as "Test-Prep."

#### 4. LATE-BLOOMERS

We refer to the third group of high SES countries as "late bloomers" (table 4).

**Table 4:** Late Bloomers

n= 5	HDI	parent likes	student likes
Netherlands	0.91	45	20
Norway	0.94	44	22
Sweden	0.90	52	21
Denmark	0.90	50	19
Finland	0.88	43	26
MEAN	.91 (.02)	46.8 (4)	21.6 (2.7)

The parents in these countries are enthusiastic readers, about the same as the parents in table 3, but the children are not. The children in these countries, in fact, are the least enthusiastic of all groups.

There is a plausible explanation: In four of the five countries in table 4 (The Netherlands is an exception), reading is not introduced in school until age seven, apparently not enough time to build up enthusiasm for reading by age ten. The high PIRLS scores attained by the late bloomers is somewhat of a mystery, but the finding that adults in these countries are enthusiastic readers suggests that there is no harm done in starting later.

## 5. LOWER SES GROUPS

Table 5 presents the results for countries with middle-level SES. Their results are nearly identical to the overall means presented in table 1.

**Table 5:** Middle SES Countries

n = 10	HDI	Parent	Child
Czech Republic	0.86	31	30
Hungary	0.82	32	26
Poland	0.83	34	24
Malta	0.82	43	34
United Arab Emirates	0.82	19	25
Qatar	0.84	21	17
Slovak Republic	0.83	31	24
Lithuania	0.83	25	27
Slovenia	0.87	26	28
Spain	0.87	31	34
MEAN	.84 (.02)	29.3 (6.9)	26.9 (5.1)

Of interest is the finding that middle-SES enthusiasm for reading among children and adults is higher than in the high-SES Test-Prep group, and enthusiasm for reading among children is higher than that seen in the high-SES Late Bloomer group.

**Table 6:** Low SES Countries: Decliners

n = 14	HDI	Parent	Child
Romania	0.78	21	35
Georgia	0.74	27	42
Azerbaijan	0.74	21	33
Colombia	0.71	22	31
Indonesia	0.68	21	32
Iran	0.73	23	34
Saudi Arabia	0.83	19	26
Oman	0.78	17	23
Portugal	0.82	19	46
Morocco	0.61	18	21
Russian Federation	0.78	26	23
Bulgaria	0.77	36	32
Croatia	0.81	36	17
Trinidad & Tobago	0.76	41	28
MEANS	.75 (.06)	24.8 (7.6)	30.2 (8)

The interesting aspect of the Low-SES group (table 6) is that the children show significantly more enthusiasm for reading than two of the high SES groups, the Test-Prep group ( $t = 3.65, p = .0026$ ) and the Late Bloomer group ( $t = 3.52, p = .002$ ). Sadly, this enthusiasm wanes, most likely because of the lack of reading material for older readers in low SES countries.

As noted earlier, there is very little overlap among the categories: A few countries classified as "middle" have SES levels that are similar to those categorized as high-SES (Slovenia and Spain have the same HDI rating as Singapore).

There is only one serious exception to the patterns described here. France has a high SES rating (HDI = .884), but does not fit into any of the three high SES groups. It is the only high-SES group in which parents say they like reading less than the children do: Parents like to read = 22%, Children like to read = 32%. This is a puzzling result: French culture is widely known to be highly literate and French authors have made important contributions to literature at all levels. Additional research into access to reading material and reading habits among adults in France is called for.

## 6. CONCLUSION

When we consider "parents like to read" as the variable of interest, unexpected patterns emerge from the PIRLS data. What at first appeared to be positive results are not so positive: The high scores of the Test-Prep groups may not, after all, be a cause for rejoicing.

The sad case of the low-SES group has a simple cure: Make sure children have access to books. Studies have shown that high-SES children have more access to books, and that more access to books (e.g. in the form of libraries) results in higher reading proficiency, independent of the effect of social class (Krashen, Lee and McQuillan, 2012). The obvious first step in increasing reading is to strengthen school and public libraries.

It is remarkable that the patterns are so clear and consistent. Replication with other sets of data is clearly called for, however. If our results are replicated, additional research into the causes of the patterns is required, to convert our conjectures into hypotheses.

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