Religiosity, Reading and Educational Achievement among Jewish Students in Israel

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Abstract

Data from the PISA 2000 study were analyzed to compare educational achievement of Jewish students from public religious and public secular secondary schools in Israel. Public religious school students achieved higher scores in a standardized test of reading than students at public secular schools. This result was largely explained by students’ reading habits and the home reading environment (operationalized as the number of books at home). Neither social capital (defined as school disciplinary climate and teacher helpfulness) nor participation in highbrow cultural activities explains the advantage of students at religious schools. The study suggests that Jewish observant families provide, on average, a richer reading environment than Jewish secular families, and thus are seen to promote students’ reading skills.

Keywords: Religious education, Cultural capital, Reading, Israel
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Introduction

Studies in the United States and Europe over the last three decades consistently show that students at religious schools outperform their counterparts in non-religious schools (e.g. Bryk, Lee & Holland, 1993; Coleman, Hoffer & Kilgore, 1982; Dronkers, 2004). Several explanations for this advantage have been suggested, most of them focused on the school and community levels (e.g., Bryk et al., 1993; Coleman & Hoffer, 1987). Students who attend religious schools, however, are not drawn randomly from the adolescent population. Enrollment in such schools is associated, for example, with parents’ decision to send their child to them, with parents’ ability to pay extra fees in countries where religious education is private, and with school admission policies. Numerous studies suggest that the apparent religious-school effect is in fact a result of selection bias (e.g. Alexander & Pallas, 1985; Cohen-Zada & Sander, 2008; Figlio & Stone, 1999; Goldberger & Cain, 1982).

The Israeli context is more unique in relation to religious education. In most Western societies religious education is a form of private or independent education, although in some European countries independent religious schools are financed by the government (Dronkers, 2004). In contrast, in Israel, state religious education is an integral part of the public education system. State religious schools are fully financed and controlled by the Ministry of Education. Consequently, state religious schools are not expected to cater to more affluent population than state secular schools. In fact, previous research showed that the socio-economic characteristics of religious school students are on average inferior to those of secular school students (Schwarzwald, 1990; Dagan, 2006). Furthermore, as part of the public sector of education, state religious schools are not allowed to exercise selection policies on the basis of parents’ socio-economic status or student’s previous achievement. Yet, important cultural differences may be found between students at secular and religious schools that may account for achievement differences between the school sectors.

The present study differs from previous research on religious education in two ways. First, previous research has tended to focus on school characteristics as a major explanation for higher achievement
of students who attend religious schools. This paper emphasizes the role of the family’s cultural environment as an additional important explanation. Second, while the concept of social capital dominated much previous sociological research on religious education, our study introduces and tests the notion that the superior scholastic achievement of religious school students in Israel is due to their advantageous cultural capital, defined here as reading habits and the reading environment at home.

The Israeli Context

The education system in Israel consists of five main types of schools: Jewish state secular schools (hereinafter "state schools"), Jewish state religious schools, Arab state schools, Arab Christian schools, and Jewish independent schools; most of the last-named cater to the Jewish ultra-orthodox communities. The present study compares Jewish state schools and Jewish state religious schools, where the latter encompass about 20% of the students in the population studied here. The independent Jewish schools could not be included in the analysis because all but a few disagreed to participate in the study. The Arab schools cannot be analyzed here because in contrast to the division into state schools and state religious schools in the Jewish sector, the Arab sector has no such differentiation. The Arab state schools cater to students from very religious families and from non-religious families. The Christian schools, although religious institutions in the past, operate now as private schools, which attract students from the more advantaged strata of the Arab population in Israel, Christians and Muslims, religious and non-religious, alike. Our database provides no information on religiosity at the student level, so we cannot distinguish religious from non-religious Arab students.

Jewish state schools and state religious schools have several similarities. Both types are funded primarily from the public purse. State schools and state religious schools coexist in most cities, towns and rural areas in Israel, and they serve students on diverse socio-economic levels. Formally, as public education, neither school type exercises selection policies on the basis of parents’ socio-economic status or student’s previous achievement. Still, religious schools are selective in one important aspect: the observance of religious codes in the student’s home. State religious schools expect parents to provide a religious environment at home that harmonizes with the school's. Moreover,
state religious schools can legally refuse to accept, or expel, students whose behavior does not conform to the school’s religious norms. This admission policy of the religious schools in Israel differs, for example, from that of American Catholic schools, where religious affiliation is not an important factor in admission considerations (Bryk et al., 1993). In Israel the selection mechanism results in about 75% of the students in the state religious schools being from religiously observant families; most of the remainder are from less observant families (also known as ‘traditional’ families) and rarely from secular ones (Leslau & Rich, 2001; Schwarzwald, 1990). In the state schools the majority of the students are from secular families and the rest are from the less observant religious families (Schwarzwald, 1990). As noted above, the strictest religiously observant families in Israel, who belong to the ultra-orthodox community, send their children to independent schools, which are not part of state religious education.

**Explanations of Religious Schools’ Advantage**

The superior scholastic performance of students in American Catholic schools has been variously explained. Gamoran (1992) found differences in the tracking structure of public and Catholic schools that account for the advantage of the latter. Bryk and associates’ (1993) findings support Gamoran’s, but they also emphasize the Catholic school climate as an important factor in its better achievement. They found that in Catholic schools teachers encourage all students, including those placed in lower ability groups, to learn and to take challenging courses. Bryk and his associates also argue that Catholic schools provide a better learning environment than public schools.

Among the best known theoretical explanations of why students in Catholic schools in the United States do better than their peers in non-religious schools is Coleman’s social capital theory (Coleman & Hoffer, 1987; Coleman, 1988). According to this theory, Catholic communities are more cohesive than secular ones, and cohesion improves the disciplinary climate in Catholic schools. Specifically, families whose children attend Catholic school often know one another from church activities, which enable them to obtain information about, and keep closer tabs on, their children’s behavior in school. In his Foundation of Social Theory, Coleman (1990) adds another dimension of social capital to the explanation. He argues that in Catholic schools staff members are more attentive to students because of the “precept derived from religious
doctrine that every individual is important in the eyes of God” (p. 321). This argument conforms to the findings of Bryk and his colleagues (1993), who found that in Catholic schools teachers “display a strong personal interest in students, both in and outside the classroom” (p. 95). From the theoretical perspective of social capital, then, students in Catholic schools benefit from a better disciplinary climate, and also from more supportive school staff.

Students who attend religious schools may differ from those who attend non-religious schools in their social background, scholastic aptitude, educational aspirations and other characteristics. The writings of Coleman and his colleagues in the early and mid-1980s about the positive effect of Catholic schools has been criticized by numerous scholars who maintain that the beneficial effects of Catholic schools were actually due to selection bias (Goldberger & Cain, 1982; Alexander & Pallas, 1983). In a nutshell, the critics point out that Catholic schools, as private schools, are more selective than public schools regarding students’ admission. The advantages seen for students in Catholic schools, they argue, are due to their privileged social origins rather than the schools they attend. More recently Lubienski and Lubienski (2006) found that after controlling for demographic differences between school types in the USA, the private (religious and non-religious) school advantage disappears, and even reverses in most cases. Other recent research on public and private schools’ achievement differences in Latin America also supports the social selection explanation and refutes the school effectiveness explanation (Somers, McEwan & Willms, 2004).

Several American studies have employed the methodology of Instrumental Variable (IV) in an attempt to disentangle the causal effect of Catholic schooling on achievement from the effect of pre-selection. In this case a proper IV is a variable that is correlated with the decision to enroll in a Catholic school but not with the outcome variable (e.g. test scores, high school completion). Evans and Schwab (1995), for example, used the religious affiliation of the family (Catholic or not) as their IV after showing that this variable is not correlated with high school graduation and enrolling in college – their two dependent variables. They found that in both cases attending a Catholic school was associated with better outcomes, especially for urban students. Neal (1997) used the availability of Catholic schools in the area as an IV in his comparison of public and Catholic schools. He found that minority urban students who attended Catholic schools enjoyed higher school completion rates, higher odds of college graduation and higher wages in the labor market in
comparison to their peers in public schools. More recently, Cohen-Zada and Elder (2009) used information on state-level historical measures of Catholic population share as an IV in their study of Catholic schooling effects. In contrast to Evans and Schwab (1995) and Neal (1997) they found much smaller effects for attending a Catholic school.

An Alternative Explanation Based on Cultural Capital

In Israel, state religious schools are not expected to cater to more affluent population than state secular schools. In fact, previous research showed that the socio-economic characteristics of religious school students are on average somewhat inferior to those of secular school students (Schwarzwald, 1990; Dagan, 2006). Nevertheless, important cultural differences may be found between students at secular and religious schools that may account for achievement differences between the school sectors.

Bourdieu (1977), who focused on class differences in academic achievement, argued that schools reflect the culture of the dominant social class. Students who belong to it absorb the “right” cultural codes at home and come to school better adapted to the staff’s cultural preferences. Following Bourdieu, various researchers have operationalized cultural capital as familiarity with “highbrow” cultural codes or activities and examined the association between this and educational success (for a review of this literature see Lareau & Weininger, 2003). De Graaf, De Graaf and Kraaykamp (2000) demonstrated, however, that the various measures of “highbrow” culture have not yielded a significant explanation for educational achievement. They found parental reading habits best to predict students’ school success.

A possible explanation for the relationship between the home reading environment and educational achievement can be found in a large body of educational research into the early acquisition of literacy skills (for review see Whitehurst & Lonigan 1998). This research suggests that home literacy environment is strongly related to the early acquisition of reading and writing skills. For example, Christian, Morrison and Bryant (1998) who studied academic skills in kindergarten found that family literacy environment had positive causal relations with most measures of academic skills. Moreover, the findings suggest that a richer home literacy environment can compensate for lower levels of parental education. Another interesting example can be found in Petrill, Deater-Deckard, Schatschneider and Davis (2005). These researchers used data on adopted children to avoid confounding genetic and environmental
influences on academic skills. Using multilevel analyses they found that aspects of the family environment were associated with the child’s reading skills. An important dimension of the home literacy environment is the availability of reading materials in the household (Saracho, 2002; Park, 2008). Due to relationships with other dimensions of the home literacy environment (see e.g. Storch & Whitehurst, 2001) the number of books at home should be seen as a resource, but also as an indicator of other dimensions of the literacy environment, such as reading to children and expecting them to learn.

The present study examines reading habits and the home reading environment as possible explanations for the performance differential between students in Israel’s state religious schools and state schools. Judaism traditionally places high value on books and reading, an attitude that may be better preserved in observant than in non-observant Jewish families. Moreover, observant families do not watch television, use computers or drive cars on the Sabbath and religious festivals, so reading does not have to compete with these activities during leisure time. In a study of leisure activities and lifestyle in Israel, Katz-Gerro and Shavit (1998) found that among Jews a religious lifestyle was negatively associated with involvement in highbrow and popular culture, and positively associated with reading religious literature. Our hypotheses are: (a) that students in state religious schools are exposed to a richer home reading environment than those in state schools, and they are more engaged in reading activities; and (b) that this difference will account for any edge that may be found in the academic performance of students at religious schools.

Method

Data

Our data source was the international PISA 2000 study initiated by the OECD. The Israeli data were collected in 2002. The PISA study consisted of standardized tests in reading comprehension, math and science. Because our main explanatory variable, namely the home reading environment, is more related to literacy skills we used only the reading score as a dependent variable. In addition, while all the students took the reading test, only half of them took the tests in the other two subjects. Therefore, analyses based on the math and science scores are less reliable than the analysis based on the reading score. Students who participated in the PISA 2000 study filled out a questionnaire surveying features of
their family and school, and their own attitudes and activities. From this we obtained our information about the students’ socio-economic backgrounds and cultural capital, and about the schools’ social capital.

The target population of the PISA study was 15-year-old students. In Israel most students at this age (about 90%) are enrolled in tenth grade. Our analysis is restricted to the test scores of the Jewish tenth graders. As noted, we excluded students at Arab schools and independent ultra-orthodox schools. New immigrants were also excluded from the analysis to avoid confounding the effects of immigration with those of other factors. This study uses the number of books at home as a major indicator for cultural capital. However, among immigrant families this indicator is less reliable because moving from one country to another may reduce the number of books the family has but not necessarily the amount of cultural capital. Furthermore, it is unclear to what extent cultural capital is transferable from one society to another. In a recent study on students whose families immigrated to Israel from the Former Soviet Union, Leopold and Shavit (2013) emphasize the difficulties students with high level of "Russian" cultural capital face in Israeli schools.

PISA used a two-stage stratified sample. In the first stage schools were sampled from a comprehensive national list and classified by sector (State, State Religious, etc.). Within schools, students were selected with equal probability. In the analysis we used the student population weight, which is the product of the two base weights, the school weight and the within-school weight, and five adjustment factors that served to compensate for non-response rates and mismatching between the sample design and the sampling outcomes.

Variables

Dependent variable

The dependent variable of the study is the standardized reading score. The score was standardized with an international mean of 500 and a standard deviation of 100. In the present study the mean reading score was 488 and the standard deviation was 101.

Independent variables

Student level variables

Female – A dummy variable coded 1 for girls and 0 for boys.

Number of Siblings – The number of siblings reported by the student.
Father’s Education – Students were asked to classify their father’s highest level of education on the basis of national qualifications, which were then coded according to the International Standard Classification of Education (ISCED). The categories were: (1) Did not go to school. (2) Completed primary education. (3) Completed lower secondary education. (4) Completed upper secondary education. (5) Completed upper secondary education aimed at gaining entry into tertiary education. (6) Completed tertiary education. Due to the proximate linear relation of this variable with the dependent variable, and for the purpose of the analysis, we assumed that the variable was measured on an interval scale, so we introduced it into the statistical models as a continuous variable. Missing values of this variable were replaced by the mean of father’s education in the applicable sector.

Father’s Education Missing – This variable was coded 1 if father’s education was missing and 0 otherwise. In about 9% of the cases the father’s education variable was missing.

Economic Circumstances – The PISA asked students for an inventory of durable goods in their home. We computed factor scores based on Principal Component analysis of such items as the number of TV sets (In our sample about 90% of the students in the state religious sector reported that they had at least one television set at home), bathrooms, computers, and so on (see Appendix 2).

Number of Books at Home – Students were asked, “How many books are there in your home?” The response categories were (1) none, (2) 1-10, (3) 11-50, (4) 51-100, (5) 101-250, (6) 251-500, (7) more than 500. Category 7 was recoded to 6 in order to preserve a linear relation with the dependent variable (see Appendix 1). For the purpose of the analyses, we assumed that this too was an interval scale variable.

Reading for Enjoyment – A dummy variable, coded 1 if the student reads for enjoyment and 0 if not. This variable was constructed using the question, “Every day, about how much time do you usually spend reading for enjoyment?” The original categories included the options “I do not read for enjoyment”, “30 minutes or less every day”, “more than 30 to less than 60 minutes every day”, “one to two hours every day”, and “more than two hours every day”. A dichotomous variable was chosen because a major difference in the reading score was only found between those who did not read and those who did, regardless of the amount of time spent on reading (see Appendix 1).

Highbrow Activities – This variable was a factor score of students’ replies to questions about whether they visited museums or art galleries
and attended classical music concerts and the theatre (see Appendix 2). Positive values indicated a stronger tendency to participate in these activities, and negative values indicated a weaker tendency.

Previous Achievement – Students were asked what score they obtained in their last school report in Hebrew. This variable controlled for the effects of unmeasured variables that affected performance in school. As such, it provided some control for school selectivity on prior scholastic performance.

School level variables:

Religious School – Coded 1 for state religious schools and 0 for state schools.

School Disciplinary Climate – Students were asked about behavioral norms in class (see Appendix 2). A factor of these questions was constructed at the student level, in which positive values indicated a more positive perception of the disciplinary climate and negative values indicated a less positive perception. Because this measure was meaningful only at the school level, a mean was computed for each school. This mean served as a measure of social capital associated with the school disciplinary climate.

Teachers’ Helpfulness – This is a measure of social capital defined as the tendency of teachers to help their students. Students were asked about how much they felt that their teachers helped them to study (see Appendix 2). A factor of these questions was constructed for each student, in which positive values indicated more positive perceptions of teachers’ tendency to help, and negative values indicated less positive perceptions. This variable too was introduced into the model at the school level.

We also computed school means of the variables Father’s Education, Family’s Economic Circumstances, Previous Achievement, Number of Books at Home and Highbrow Activities, and the percent of students who reported reading for enjoyment in each school. These aggregations allowed us to control, at the school level, for contextual effects (i.e. effects over and above the individual effects) of the school’s socio-economic situation, school’s average previous achievement and school’s cultural capital.

In the HLM models, the student-level variables Number of Siblings, Father’s Education, Economic Circumstances, Previous Achievement, Number of Books at Home and Highbrow Activities were centered around their grand mean. In the school-level equations, School
Disciplinary Climate, Teachers’ Helpfulness and the various aggregations were centered around their grand mean. The variables Female, Father’s Education Missing, Reading for Enjoyment and Religious School were entered into the models in their original form (i.e. uncentered).

Results

Descriptive Analysis

Table 1: The distribution of schools and students by sector

<table>
<thead>
<tr>
<th>School Sector</th>
<th>Number of Schools</th>
<th>Percent of Schools</th>
<th>Number of Students</th>
<th>Percent of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religious Sector</td>
<td>19</td>
<td>23.8</td>
<td>390</td>
<td>22.6</td>
</tr>
<tr>
<td>Secular Sector</td>
<td>74</td>
<td>76.2</td>
<td>1339</td>
<td>77.4</td>
</tr>
</tbody>
</table>

As seen in Table 1, 23.8% of the schools and 22.6% of the students in the sample belong to the religious sector. The data presented in Table 2 show that students from the religious sector achieved on average significantly higher scores than students from the secular sector. With regard to the socio-economic variables, the students in the religious sector had a higher mean number of siblings and lower mean economic circumstances than those in the secular sector. On the other hand, fathers’ mean education was higher in the religious sector. The mean previous achievement of the religious sector’s students was also slightly higher than that of their peers in the non-religious sector but the difference was not statistically significant.

Regarding the school disciplinary climate, state religious students reported more negative behavioral norms in class than did students in the state schools. Nor do our findings support the view that teachers’ helpfulness, the second indicator of social capital examined, contributed to the superior academic achievements of students in religious schools. In fact, the Israeli PISA data show almost no sector difference in teacher helpfulness.

A substantial difference, however, was found in our main independent variables: Number of Books at Home and Reading for Enjoyment. In the state religious sector the mean value of the variable Number of Books at Home was 5.2, as against 4.3 in the state schools.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Religious Schools</th>
<th>Secular Schools</th>
<th>Significance of differences between sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Score</td>
<td>507.3 (94.1)</td>
<td>482.8 (103.0)</td>
<td>0.01</td>
</tr>
<tr>
<td>Female</td>
<td>0.54</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>Number of Siblings</td>
<td>3.6 (1.5)</td>
<td>2.5 (1.2)</td>
<td>0.01</td>
</tr>
<tr>
<td>Father’s Education</td>
<td>5.1 (1.3)</td>
<td>4.8 (1.3)</td>
<td>0.01</td>
</tr>
<tr>
<td>Father’s Education Missing</td>
<td>0.08</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Economic Circumstances</td>
<td>-0.3 (0.9)</td>
<td>0.1 (1.0)</td>
<td>0.01</td>
</tr>
<tr>
<td>Number of Books at Home</td>
<td>5.2 (1.1)</td>
<td>4.3 (1.4)</td>
<td>0.01</td>
</tr>
<tr>
<td>Reading for Enjoyment</td>
<td>0.69</td>
<td>0.43</td>
<td>0.01</td>
</tr>
<tr>
<td>Highbrow Activities</td>
<td>-0.2 (0.9)</td>
<td>0.1 (1.0)</td>
<td>0.01</td>
</tr>
<tr>
<td>School Disciplinary Climate</td>
<td>-0.2 (1.0)</td>
<td>0.0 (1.0)</td>
<td>0.01</td>
</tr>
<tr>
<td>Teachers’ Helpfulness</td>
<td>0.0 (1.0)</td>
<td>0.0 (1.0)</td>
<td>0.20</td>
</tr>
<tr>
<td>Previous Achievement</td>
<td>79.3 (14.2)</td>
<td>77.8 (15.0)</td>
<td>0.10</td>
</tr>
</tbody>
</table>

This wide gap (about 0.75 of a standard deviation) supports our hypothesis that students from religious families enjoy a richer home reading environment. This superiority is not the product of their fathers’ somewhat higher education: at each level of father’s education, the mean number of books at home was higher in the state religious sector than in the state sector.
Students in the state religious sector also read more than their peers in the state sector. In the religious schools 69% of the students reported that they read for enjoyment, compared with only 43% of the students in the secular schools. Furthermore, additional questions in the PISA study (not shown here) suggest that state religious students read more fiction as well as non-fiction than state students. About 60% of the religious students reported that they read fiction at least once a month, compared with less than 40% of the non-religious students. A similar rate was found for reading non-fiction. Hence the advantage of the religious school students in reading seems not necessarily to lie in their reading of religious texts but to their more diverse reading habits.

On the other hand, students in the state religious schools participated less frequently in “highbrow” cultural activities, the second type of cultural capital examined, than students in the state schools. This was not unexpected, since “highbrow” culture, that is, the appreciation of
fine arts, evolved in Western societies with the process of enlightenment and the decline of religion. This type of cultural capital is in essence secular.

**HLM Models**

We estimated five HLM models. In Model 1, the baseline model, we estimated the effects of religious schooling while controlling for gender, previous achievement, and the socio-economic variables at the student level. At the school level we controlled for the contextual effects of father's education, economic circumstances and previous achievement. The Model 1 equation is thus:

\[(\text{Achievement}_{ij}) = \beta_0 + \beta_1(\text{Female}_{ij}) + \beta_2(\text{Number of Siblings}_{ij}) + \beta_3(\text{Father's Education}_{ij}) + \beta_4(\text{Father's Education Missing}_{ij}) + \beta_5(\text{Economic Circumstances}_{ij}) + \beta_6(\text{Previous Achievement}_{ij}) + r_{ij}\]

where \(i\) indexes students and \(j\) indexes schools.

The intercept \(\beta_0\) is the dependent variable in the school-level equation. The school-level equation of Model 1 is thus:

\[\beta_0 = \gamma_{00} + \gamma_{01}(\text{Religious School}_{j}) + \gamma_{02}(\text{Mean Previous Achievement}_{j}) + \gamma_{03}(\text{Mean Father's Education}_{j}) + \gamma_{04}(\text{Mean Economic Circumstances}_{j}) + u_{0j}\]

The findings presented in Table 3 indicate that students from the religious sector have a statistically significant advantage over students from the secular sector, when controlling for gender, socio-economic background and previous achievement. In Model 1, the average gap is about 24 points. As can be expected, Father's Education and Previous Achievement are positively correlated with the reading score, and Number of Siblings is negatively correlated with this score. The Father's Education Missing variable had a statistically significant negative effect on the student’s score in this model and in the other models.
Table 3: Coefficients from the HLM analysis of the PISA reading achievement

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School-Level Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>488.13**</td>
<td>487.67**</td>
<td>487.57**</td>
<td>481.50**</td>
<td>479.60**</td>
</tr>
<tr>
<td>Religious School</td>
<td>23.63*</td>
<td>24.23*</td>
<td>32.35**</td>
<td>-6.33</td>
<td>4.19</td>
</tr>
<tr>
<td>Mean Father's Education</td>
<td>21.28*</td>
<td>15.05</td>
<td>18.03</td>
<td>-5.86</td>
<td>-9.58</td>
</tr>
<tr>
<td>Mean Economic Circumstances</td>
<td>18.98</td>
<td>14.47</td>
<td>10.51</td>
<td>12.37</td>
<td>2.14</td>
</tr>
<tr>
<td>Mean Previous Achievement</td>
<td>2.27*</td>
<td>2.51*</td>
<td>2.04*</td>
<td>2.15*</td>
<td>2.11*</td>
</tr>
<tr>
<td>School Disciplinary Climate</td>
<td>---</td>
<td>12.19</td>
<td>---</td>
<td>---</td>
<td>13.21</td>
</tr>
<tr>
<td>Teachers’ Helpfulness</td>
<td>---</td>
<td>-29.51*</td>
<td>---</td>
<td>---</td>
<td>-24.38</td>
</tr>
<tr>
<td>Mean Highbrow Activities</td>
<td>---</td>
<td>---</td>
<td>24.61</td>
<td>---</td>
<td>19.53</td>
</tr>
<tr>
<td>Percent Read for Enjoyment</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.25</td>
<td>0.04</td>
</tr>
<tr>
<td>Mean Number of Books At Home</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>26.62*</td>
<td>25.83**</td>
</tr>
<tr>
<td><strong>Student-Level Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Siblings</td>
<td>-6.78**</td>
<td>-6.65**</td>
<td>-6.68**</td>
<td>-7.84**</td>
<td>-7.66**</td>
</tr>
<tr>
<td>Father’s Education</td>
<td>7.17**</td>
<td>7.15**</td>
<td>6.74**</td>
<td>5.22**</td>
<td>5.15**</td>
</tr>
<tr>
<td>Father’s Education Missing</td>
<td>-38.23**</td>
<td>-37.91**</td>
<td>-37.46**</td>
<td>-35.06**</td>
<td>-34.54**</td>
</tr>
<tr>
<td>Economic Circumstances</td>
<td>-0.91</td>
<td>-0.91</td>
<td>-1.57</td>
<td>-2.11</td>
<td>-2.17</td>
</tr>
<tr>
<td>Female</td>
<td>-3.86</td>
<td>-3.40</td>
<td>-5.75</td>
<td>-7.59</td>
<td>-7.51</td>
</tr>
<tr>
<td>Previous Achievement</td>
<td>1.39**</td>
<td>1.39**</td>
<td>1.37**</td>
<td>1.31**</td>
<td>1.30**</td>
</tr>
</tbody>
</table>
Religiosity, Reading and Educational Achievement among Jewish Students in Israel

Highbrow Activities --- --- 4.67* --- 0.63
Reading for Enjoyment --- --- --- 26.6** 26.34**
Number of Books At Home --- --- --- 5.62** 5.56**
Between-School Variance 1,961.5 1906.1 1909.1 1,779.1 1,741.9
Percent decrease in between-school variance compared with Model 1 --- 2.8% 2.7% 9.3% 11.2%
Outcome Variance 5,624.3 5,621.9 5,608.4 5,395.3 5,395.6

Notes: * p < 0.05  ** p < 0.01
Number of students: 1,729
Number of Schools: 93

In Model 2 we tested the two dimensions of Coleman’s social capital explanation, by adding Disciplinary Climate and Teachers’ Helpfulness to the school-level equation. A decline in Religious School effect would support the social capital explanation. However, the results of Model 2 furnish no such support. First, there is no change in the baseline effect of attending a religious school on the reading scores. Second, the effect of School Disciplinary Climate does not reach statistical significance. Third, the effect of Teachers’ Helpfulness coefficient is negatively correlated with achievement. That is, higher Teachers’ Helpfulness is associated with lower test scores. This finding may reflect the assigning of more supportive teachers to classes and schools known to have weaker students, or that teachers in weaker classes are more helpful because their students need their help. Whatever the explanation, Model 2 suggests that Teachers’ Helpfulness does not account for the religious school sector’s academic advantage.

In Models 3 and 4 we tested the cultural capital explanations. In Model 3 we added to the baseline model Highbrow Activities, and in Model 4 we added Number of Books at Home and Reading for Enjoyment. These cultural capital variables were entered into the models as student-level effects and as contextual school-level effects in the intercept equation. The findings show that Highbrow Activities has a positive effect at both student- and school level but the coefficient is
significant (at the 0.05 level) only at the individual level. Home reading environment, as measured by Number of Books at Home, has a positive and significant effect at both student level and the school level. The reading variable has a positive significant effect at the student level but not at the school level.

More importantly, the net advantage associated with Religious School disappears when controlling for Number of Books at Home and Reading for Enjoyment. The Religious School coefficient drops from 24 points in Model 1 to (-6) points in Model 4. In contrast, in Model 3 the Religious School coefficient not only does not decrease, it indeed increases from 24 to 32 points, indicating that Highbrow Activities cannot account for the religious sector’s advantage. Furthermore, in Model 3 the between-school variance decreases only by 2.7% from the variance in the baseline model, but in Model 4 it decreases by 9.3%, that is, Model 4 explains more between-school variance than Model 3.

As noted earlier, religious school students have on average more books at home and they read more than secular school students, and both variables are related to the reading score. In Model 4 we find that both variables exercise a positive and significant effect on the reading score at the student level, but only the aggregation of Number of Books at Home is also significant at the school level. In additional analyses (not shown here) we added separately each of the variables to the baseline model. The results showed that Number of Books at Home accounts for most of the reduction in the Religious School effect. When adding only Number of Books at Home to the baseline model the Religious School coefficient drops from 24 points to (-1) points, and the between-school variance component decreases by almost 11%. When adding only Reading for Enjoyment to the baseline model the Religious School coefficient drops from 24 points to 13 points and the between-school variance decreases by only 1%.

Model 5, the full model, is very similar to Model 4 regarding the religious school coefficient and the decrease in the between-school variance. This means that even when controlling for all of the explanatory variables the pattern found in Model 4 remains stable.

Summary and Discussion

This study compared reading achievement of tenth grade students in Jewish state schools and state religious schools in Israel. Here, as in other countries, students who attend religious schools were found to
Religiosity, Reading and Educational Achievement among Jewish Students in Israel

achieve on average higher scores than students who attend secular schools, when controlling for student gender, socio-economic background and previous achievement. The analysis clearly shows that neither the socio-economic composition of the school’s student body nor the school’s social capital can be attributed to the superior performance of students at state religious schools in Israel. It is explained instead by the home reading environment and the student’s reading habits.

Our findings that there were more books in the homes of religious students than in those of secular students, and that more religious students read for enjoyment than secular students, regardless socioeconomic status, expands our understanding of the concept of cultural capital. The concept of cultural capital was introduced by Bourdieu and Passeron (1977) who argued that social reproduction is realized through cultural reproduction in the education system. Critics of this notion of cultural capital have emphasized that parental reading behavior is not necessarily related to class. Furthermore, they have argued that children’s cognitive skills, rather than social skills, are affected from exposure to written text in the home and this may explain better educational outcomes (De Graaf et al., 2000). The present study supports the argument that cultural capital is not necessarily related to class structure. Instead, we show that cultural capital can be linked to other social and cultural characteristics such as Jewish religiosity. Further research is required to determine whether the effects of home reading environment and reading habits mediate the advantages associated with religious education in other religions.

Another contribution of this study is to the literature and the debate on selectivity and school effect. The writing of Coleman and his colleagues in the early and mid-1980s about the positive effect of Catholic schools has been criticized by numerous scholars who maintained that the beneficial effects of Catholic schools confounded the spurious effects of their socio-economic selection of students (e.g. Goldberger & Cain, 1982; Alexander & Pallas, 1983; 1985). In a nutshell, the critics point out that Catholic schools, as private schools, are more selective than public schools regarding students’ admission. Thus, the advantages seen for students in Catholic schools are due to their privileged social origins rather than the schools they attend. The Israeli context is different from the American. As mentioned above, in Israel the state religious sector is public and the selection mechanism that places students in religious and secular schools is based on religious observance. Furthermore, students who attend state religious schools are generally from less privileged families (Schwarzwald, 1990). Still, our findings support the selection
argument. The cognitive advantages enjoyed by students attending state religious schools are due to family rather than school characteristics, albeit to reading behavior rather than socio-economic origins. By and large, observant families provide a richer reading environment than secular families, and thus are seen to promote students’ reading skills as measured by standardized tests of reading comprehension.

Our study has two main limitations. First, our measure of home reading environment was limited to the single variable Number of Books at Home. In effect, reading environment is a multi-dimensional construct that encompasses the availability of reading material at home, parents’ own reading habits, parents’ habits in reading to their young children and talking with them about books, and parents’ expectations that their children will read (Saracho, 2002; Senechal & LeFevre, 2002; Kraaykamp, 2003). These dimensions were not adequately covered by the PISA questionnaire. It is reasonable to assume that better measurement of the home reading environment variable would improve its explanatory power and further reduce the effect of attending a religious school. Second, the PISA is a cross-sectional study and thus reliable information on previous achievement is very limited. In addition, PISA data does not allow exploration of individual student growth in achievement over time. Thus, this study cannot adequately quantify the causal effects of school type or social and cultural background on academic outcomes.
References


Appendices

Appendix 1

Figure 2: Mean Reading Score by Number of Books at Home

![Mean Reading Score by Number of Books at Home](image)

Figure 3: Mean Reading Score by Reading for Enjoyment

![Mean Reading Score by Reading for Enjoyment](image)
Appendix 2 – The construction and reliability of indices in the PISA database

Economic circumstances

The index was derived from students’ answers on the following questions: How many of these do you have at your home?

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>One</th>
<th>Two</th>
<th>Three or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television sets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Computers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Cars</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Bathrooms</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

In your home, do you have a dishwasher? 1. Yes 2. No
(The answer was recoded: Yes=1, No=0)

Scale was obtained by saving scores of Principle Component analysis with one factor. Positive values indicate better economic circumstances.
Reliability:
Cronbach’s Alpha=0.638

“Highbrow” cultural capital

The index was derived from students’ answers to the following questions: During the past year, how often have you participated in these activities?

<table>
<thead>
<tr>
<th></th>
<th>Never or hardly ever</th>
<th>About Once or twice a year</th>
<th>3 or 4 times a year</th>
<th>More than 4 time a year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visited a museum or art gallery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Attended an opera, ballet or classical symphony concert.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Attended the theatre.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
The scale was obtained by saving scores of Principle Component analysis with one factor. Positive values indicate stronger tendency to participate in these activities, and negative values indicate weaker tendency to do so.

Reliability:
Cronbach’s Alpha = 0.559

School disciplinary climate

The index was derived from students’ answers to the following questions: How often do these things happen in your lessons?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Some lessons</th>
<th>Most lessons</th>
<th>Every lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>The teacher has to wait a long time for students to quieten down</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Students don't listen to what the teacher says</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Students don’t start working for a long time after the lesson begins</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>There is noise and disorder</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>At the start of class, more than five minutes are spent doing nothing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Scale was obtained by saving scores of Principle Component analysis with one factor. The factor scores were reversed, so positive values indicate more positive perception of the disciplinary climate and negative values indicate less positive perception of the disciplinary climate. Because this measure is meaningful only at the school level, a mean was computed for each school.

Reliability:
Cronbach’s Alpha = 0.859
Teacher’s helpfulness

The index was derived from students’ answers on the following questions: How often do these things happen in your lessons?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Some lessons</th>
<th>Most lessons</th>
<th>Every lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>The teacher shows an interest in every student’s learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The teacher helps students with their work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The teacher does a lot to help students</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The teacher helps students with their learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Scale was obtained by saving scores of Principle Component analysis with one factor. Positive values indicate more positive perceptions of teachers’ tendency to help, and negative values indicate less positive perceptions. Because this measure is meaningful only at the school level, a mean was computed for each school.

Reliability:
Cronbach’s Alpha = 0.858