

Shoresh Research Paper

Not Just Parental Education

The relationship between parents' occupations and their children's achievements

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Abstract

Despite extensive structural reforms in the education system, the scholastic achievements of Israeli students remain strongly associated with their socioeconomic background – a relationship that suggests unequal opportunities and limited intergenerational mobility. This study finds a significant relationship between students' PISA scores and their parents' occupations, with the nature of the relationship differing between mothers and fathers. Specifically, students whose fathers work in scientific and technological occupations perform better in mathematics and science. By contrast, a significant association with the mother's occupation is found mainly in the case of her children's language and reading skills. In general, student achievement is higher when parents are employed in white-collar and technology occupations, and it is lower when mothers are employed in education occupations.

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Introduction

In recent decades, with the transition from an industrial economy to a global knowledge economy, human capital has become a critical resource, determining not only an individual's earning capacity and degree of success in the labor market, but also countries' economic resilience. This human capital begins to take shape in childhood, through an environment rich in linguistic discourse and cultural exposure, and with the assistance of mediating agents, primarily schools, which provide children with the tools to understand their surroundings and shape their world. Consequently, equality of opportunity in education, which touches on the foundations of equitable distribution in modern society, has become a central focus of public and academic discourse. Despite structural reforms in education systems around the world, the link between variables related to students' socioeconomic background and their academic achievement has remained stable and significant.

This study focuses on parental occupation as a factor underlying disparities in academic achievement. Using PISA data and an international occupational classification, the study examines how parents' occupational status translates into measurable academic achievement by their children, thus affecting intergenerational mobility.

While many studies focus on parental education, or other variables reflecting parents' socioeconomic background (for example, Savin, Kimhi and Ben-David, 2023), parental occupation appears to have received less research attention. The decision to focus on occupation in this paper, while statistically controlling for education and additional socioeconomic characteristics of the parental household, rests on several considerations.

First, according to Bourdieu's (1977) theory of cultural capital, the different forms of capital – economic, social and cultural – are interdependent and mutually reinforcing. A multidimensional measure of “family capital” is therefore required in order to understand its effect on student achievement. In this context, Jaeger (2007) argued that reliance on only partial measures of social background may distort the picture of inequality in education. This argument is supported

by Stopforth and Gayle (2022), who showed that the effect of parental occupation on student achievement remains, even when parental education is controlled for.

Second, parental occupation has a direct effect on the social capital to which a child is exposed. Social capital is determined, among other things, by the relationships between children and their parents, and between the family and its social circle. According to Coleman (1988), holding other resources constant, the amount of social capital available to a child has a significant effect on academic achievement. Bourdieu (1986) found that parents with substantial economic and cultural capital have acquaintances who themselves possess substantial capital. This network then provides their children with a form of social backing that may offer guidance, recommendations and access to opportunities, while also exposing them to conversations about careers, higher education and employment opportunities that are less likely to occur in families with less social capital. Thus, parental occupation directly affects the family's capital and network of connections. Such exposure may increase children's motivation to invest in their studies.

Another reason to focus on parental occupation is that parents' work environments shape values and dispositions that are transmitted to children through intergenerational socialization, particularly values of independence, initiative and the capacity for independent judgment. When parents' occupations are characterized by independent thought and personal responsibility, children tend to adopt a similar orientation, whereas occupations based more heavily on obedience and routine lead to a greater tendency toward conformity (Burger et al., 2025).

Finally, types of occupation affect family stability and resources that are not dependent on income alone. This stability is associated with occupational characteristics such as job security, predictable schedules and flexibility, characteristics that enable parents to create a consistent and supportive home routine. Conversely, family instability may increase children's psychological symptoms and impair their academic achievement. Fuller et al. (2025) found that children of parents experiencing employment instability and irregular working hours had lower grades than

children of parents with more stable and regular employment, even after statistically controlling for parental education and income.

Additional studies have found a relationship between parental occupation and student achievement. Abubakar and Musa (2019) showed that while parental income was not a significant predictor of students' academic achievement, parental occupation type did have an effect. Akinsanya et al. (2011) found that students whose parents belonged to a higher occupational class achieved higher mathematics scores than peers whose parents belonged to a lower occupational class. Parental education was the strongest predictor of student mathematics achievement, with occupation being the second most important variable. An OECD (2014) review found that students whose parents work in positions requiring high levels of professional, theoretical and practical knowledge achieve higher scores, while students whose parents have elementary occupations achieve lower scores, particularly in mathematics. However, the strength of this relationship varies greatly across countries, implying that educational opportunities may reduce or increase these disparities.

Data

This study uses data on student achievement in PISA assessments as well as data from the accompanying background questionnaires. The principal variable is based on students' responses to questions concerning their parents' occupations.¹ In each assessment cycle, students were asked about their parents' occupations through four open-ended questions, two concerning the mother's occupation and two concerning the father's occupation. In the PISA data, the responses were coded according to the ISCO scale (ILO, 2012),² in which each value represents a sub-occupation. The scale is intended to organize and classify occupations uniformly and consistently so as to enable

¹ The first question asked what the parent's main job was, while the second asked what the parent does in his or her main job.

² ISCO is the International Standard Classification of Occupations. It is administered by the International Labour Organization (ILO).

international comparison of employment statistics. The classification is based on a detailed description of the skills, knowledge and responsibilities required for each occupation.

The study is based on data for Israeli students who took the assessment in Hebrew³ in the four most recent PISA cycles: 2012, 2015, 2018 and 2022.⁴ In these years, the 2008 version of ISCO was used.⁵ After excluding students for whom at least one parent was not employed, the remaining sample included 10,336 students. Their parents' occupations were divided into approximately 500 sub-occupations. These were grouped in this study into 14 occupational categories for mothers and 12 occupational categories for fathers, differentiated by the nature of the parents' occupations. One of these categories is a "baseline category," against which the other categories are compared below.

The process of defining the baseline category consisted of three principal stages. First, the approximately 500 sub-occupations were divided into roughly 30 categories according to the nature of the parents' occupations, while taking occupational quality into account. Quality was determined using the ISEI, the International Socio-Economic Index of Occupational Status.⁶ A higher value on this index indicates a higher level of occupational status (Ganzeboom and Treiman, 2003). Second, a multivariate statistical analysis was conducted to examine the relationship between student achievement and parental occupations after controlling for other relevant characteristics. Finally, on the basis of this analysis, all categories for which differences in student scores were negligible were combined into one large category, the baseline category. These categories were, for the most part, located at the bottom of the professional-quality index.

The occupations of mothers included in the baseline category comprise education and teaching, grooming and personal services (beauticians and childcare workers), commerce and sales

³ Students who took the assessment in Arabic were not included in this analysis because a previous study found large discrepancies between their reports of parental education and administrative data reported by Israel's Central Bureau of Statistics (Savin, Kimhi and Ben-David, 2023).

⁴ Further details on the PISA assessments appear in Appendix 1. Data from the 2025 survey were not available at the time that this analysis was conducted.

⁵ PISA cycles prior to 2012 used an earlier index, the 1988 version.

⁶ ISEI is the International Socio-Economic Index of Occupational Status. It is based on levels of education and income.

(sales assistants, customer service and store management), clerical occupations such as medical secretaries, and cleaning and household services (assistance in offices, hotels and private households). Fathers' occupations in the baseline category include commerce and sales (commercial sales representatives and general sales and marketing personnel), driving, transportation and logistics (heavy-truck and bus drivers), security and law enforcement (police officers and security guards), and occupations in construction and manufacturing (building contractors and construction workers).

Distribution of parental occupational categories

Table 1 presents the distribution of the sample by the mother's and father's occupational categories. The data reveal pronounced gender differences in parental employment patterns. Fathers show a particularly strong tendency toward management and technology. This is reflected first and foremost in the share employed in fields classified under management and administration. While the mothers of 10% of the students are employed in this field, the corresponding share among fathers is twice as high, 20% of the observations, making it the second-largest category after the baseline category.

Fathers are also more highly represented than mothers in manufacturing and technical occupations (8% of fathers compared with only 1% of mothers), as well as in information technology and software (8% compared with 3%, respectively).

Table 1
Distribution of parental occupational categories
Students who took the PISA assessments in Hebrew, 2012–2022

Mothers	Fathers	Occupational category
2%	2%	University and higher-education teachers, science and research
3%	4%	Law and legal services
1%	6%	Advanced engineering services
10%	4%	Health and medical services
3%	8%	Technology, information and software
4%	2%	Personal and community services
4%	3%	Arts, media and entertainment
10%	20%	Management and administration
12%	7%	Finance, accounting and economics
6%	-	Early-childhood educators
1%	8%	Manufacturing and technical occupations
7%	1%	General work and elementary occupations
2%	-	Teaching assistants
35%	35%	Baseline category

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

By contrast, mothers show a greater tendency to work in care, finance and education occupations. Approximately 12% of mothers are employed in finance, accounting and economics, compared with only 7% of fathers, while mothers account for 10% in health and medical services compared with 4% among fathers. Moreover, early-childhood education and teaching-assistant occupations were virtually nonexistent among fathers.

Table 2 presents the distribution of the prominent sub-occupations comprising each occupational category. The data point to pronounced gender gaps within some categories. For example, in “management and administration,” the leading sub-occupation among fathers is chief executives (17%), whereas among mothers the most prominent sub-occupation is the intermediate position of sales and marketing managers (21%), and only 8% are chief executives. A similar result appears in law and legal services, where among fathers the second-largest sub-occupation is general managers, senior officials and legislators, while among mothers the second-largest sub-occupation is legal secretaries. In health and medical services there is a traditional gender division: most mothers are employed as nurses (29%), while fathers are concentrated at different levels of the medical profession. These internal disparities indicate that even when both parents belong to the same occupational category, the father is generally more likely to hold a position with organizational authority.

In two categories, no substantial gaps were found between the prominent sub-occupations of mothers and fathers. One is technology, information and software, and the other comprises university and higher-education teachers, science and research. This suggests that women who enter these fields are integrated into occupational positions with functional profiles, social prestige and human capital similar to those of men.

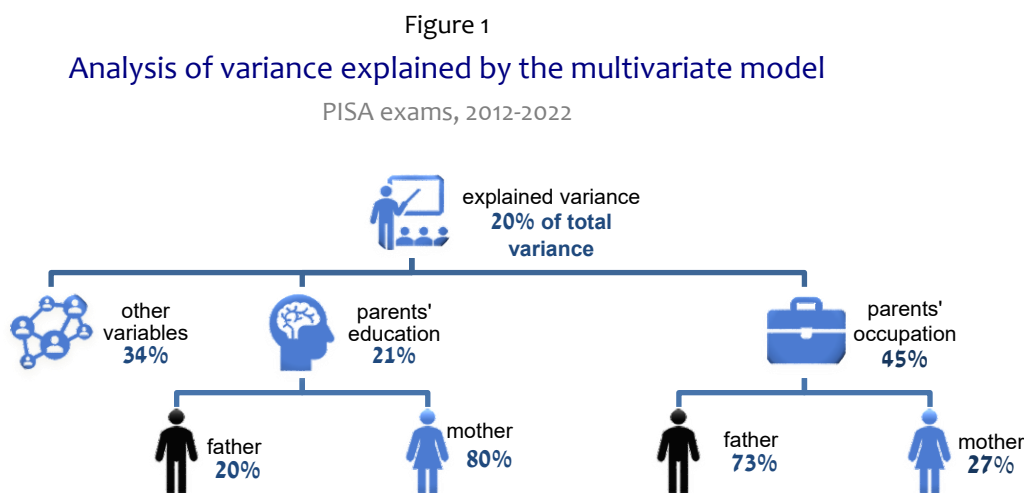
Table 2
Distribution of prominent sub-occupations within parental occupational categories
Students who took the PISA assessments in Hebrew, 2012-2022

Occupational category	Mothers		Fathers	
	Prominent sub-occupations	% of occupational category	Prominent sub-occupations	% of occupational category
University and higher-education teachers, science and research	University lecturers Biologists and botanists Zoologists and chemists	61% 20% 13%	University lecturers Chemists Physicists and astronomers	61% 13% 12%
Law and legal services	Lawyers Legal secretaries	80% 10%	Lawyers General managers, senior officials and legislators	80% 10%
Advanced engineering services	Industrial and management engineers Civil engineers	20% 20%	Mechanical engineers Civil engineers	21% 17%
Health and medical services	Nurses Psychologists Specialist physicians	29% 12% 9%	Specialist physicians General practitioners Dentists	24% 14% 10%
Technology, information and software	Application developers Software engineers	32% 20%	Application developers Software developers	25% 21%
Personal and community services	Social work and counselling professionals	81%	Clergy Social workers and counsellors	51% 14%
Arts, media and entertainment	Interior and set designers Graphic and multimedia designers	21% 18%	Sports instructors, coaches and referees Advertising and marketing professionals	12% 11%
Management and administration	Sales and marketing managers Education managers Chief executives	21% 9% 8%	Chief executives Sales and marketing managers Real estate agents and business managers	17% 14% 8%
Finance, accounting and economics	Accountants Senior bookkeepers	44% 15%	Accountants Commercial brokers	25% 12%
Early-childhood educators	Early-childhood educators	100%	-	
Manufacturing and technical occupations	Production managers Product quality inspectors Production workers	18% 12% 11%	Building electricians Production managers Production supervisors	15% 15% 6%
General work and elementary occupations	Secretaries Office managers	55% 19%	Mail carriers and sorting clerks Office managers	20% 15%
Teaching assistants	Teaching assistants	100%	-	
Baseline category	Secondary-school teachers Primary-school teachers Beauticians	16% 10% 6%	Car and taxi drivers Commercial sales representatives Secondary-school teachers	6% 5% 5%

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

The contribution of parental occupations in explaining variation in student achievement

To examine the strength of the contribution of the various variables in explaining variation in average PISA achievement, an analysis of variance was conducted on the results of the multivariate analysis.⁷ Figure 1 presents the distribution of the variance explained by the model. All variables used in the multivariate (i.e., regression) model explain approximately 20% of the total variation in student achievement. The parents' occupational categories together account for approximately 45% of the explained variation, while the parents' education levels together account for only 21%. The remaining explanatory variables account for roughly 34% of the explained variation. These include additional socioeconomic characteristics of the student and the parents.



Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

A comparison of mothers and fathers shows that the father's occupation accounts for approximately 33% of the explained variation while the mother's occupation accounts for just 12%. By contrast, the father's education accounts for about 4% of the explained variation, while

⁷ The average is across the three literacy domains. The analysis of variance identifies the relative contribution of each explanatory variable in the multivariate analysis in explaining disparities in student achievement. Table A1 in the Appendix presents descriptive statistics for the variables included in the analysis, in addition to the occupational variables reported in Table 1. The full results of the analysis of variance appear in Table A2 in the Appendix.

the mother's education accounts for approximately 17%, or four times the contribution of the father's education. This suggests that fathers' influence on student achievement operates primarily through economic and status capital derived from the labor market, while mothers' influence operates primarily through literacy skills originating in formal education.

An additional result of the variance analysis is that after controlling for variables related to the family's socioeconomic situation, parental education and parental occupation, the student's gender and the country of birth of the student or the parents make a relatively small contribution in explaining variation in average PISA achievement. This suggests that achievement gaps do not arise directly from innate gender components or from first- or second-generation immigrant status, but are a direct product of class, economic or cultural inequality embedded in household characteristics.

The relationship between student achievement and parental occupation

Figure 2 presents differences in average PISA scores between students according to each parent's occupational category, relative to the baseline category. The categories are ordered from low to high according to the quality index for women (the index for men is very similar).⁸ The bars show achievement gaps after statistically controlling for relevant explanatory variables in a multivariate statistical analysis.⁹ The figure presents all cases in which there is a statistically significant relationship at a level of at least 10% between student achievement and type of occupation.

Only two occupational categories were found to be associated with lower student scores than those in the baseline category. These are occupations held exclusively by mothers – teaching

⁸ Table A3 in the Appendix presents the average quality index for each occupational category. The ranking was conducted separately for mothers and fathers.

⁹ Explanatory variables include gender, parental education, whether the student and the student's parents were born in Israel, whether the student's home has educational/learning software, an Internet connection, a dictionary and works of art, as well as the number of televisions, computers, mobile phones and books in the home. The full regression results are presented in Table A4 in the Appendix.

assistants and early childhood educators – whose children’s scores are 2.2% and 4.6% lower, respectively, than those of children whose mothers are employed in the baseline category. In all other categories, children’s scores are higher than those of children whose parents’ occupations belong to the baseline group.

The results reveal a pattern in which the father’s occupation is more dominant than the mother’s occupation. Among the statistically significant categories for both parents, with the exception of one occupational category, the achievement gaps between each occupational category and the baseline category are larger for fathers than for mothers.¹⁰

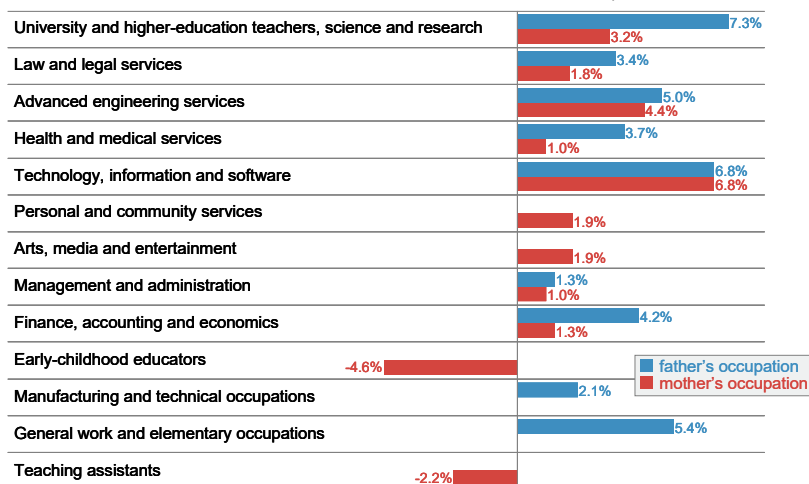
Also, the results show that the achievement of students whose fathers are employed in blue-collar categories and in the general-work and elementary-occupations category is

higher than that of the baseline category, while no significant differences are found in the case of mothers. This suggests that a father’s manual or industrial work generates a distinct advantage for the child beyond the family’s economic circumstances, whereas similar work by the mother has no effect on the child’s achievement. This conclusion reinforces the argument that the channels through which parents affect their children’s achievement are gender-differentiated: the father’s occupation operates primarily through economic status, perceived prestige and occupational skills,

Figure 2

Pupil’s achievement gaps by occupation of parents

in comparison with the baseline category,
students who took the PISA assessments in Hebrew, 2012-2022*



* Only statistically significant results at the 10% level and up are shown. The categories are arranged in ascending order according to the occupational quality index for women (the index for men is very similar). The gender-specific baseline category combines all categories for which the differences in student scores were negligible, categories generally located near the bottom of the occupational quality index.

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

¹⁰ In the information technology and software category, the gap observed among fathers is equal to the gap observed among mothers.

whereas the mother's occupation operates within a more complex system in which some advantages are mediated by other family characteristics.

Comparison of student achievement across the three literacy domains

To examine whether the relationship between student achievement and parental occupations varies across literacy domains, three separate regressions were estimated for the three principal literacy domains assessed by PISA.

For fathers, the largest gap between the achievement of students whose fathers are employed in advanced engineering services and students whose fathers are employed in the baseline category occupations is found in science (Table A5 in the Appendix). This gap is 5.7%, compared with 5.0% in reading and only 4.3% in mathematics, indicating a relative advantage transmitted to engineers' children in scientific subjects. Similarly, the largest gaps between students whose fathers belong to information technology and software and those whose fathers belong to the baseline category are also in science and mathematics, at 7.2% and 7.1%, respectively, compared with only 6.3% in reading. The largest gap between students whose fathers are university and higher-education teachers or work in science and research and students whose fathers belong to the baseline category is in reading, at 8.4%, compared with 7.2% in science and 6.3% in mathematics. Another category in which the gaps differ across domains is law and legal services. The largest gap for students whose fathers belong to this category relative to the baseline category is in science, at 4.0%, compared with 3.2% in reading and 3.0% in mathematics.

For mothers, in most cases the largest gaps between achievements of students whose mothers belong to a given occupational category and achievements of students whose mothers belong to the baseline category occupations are in reading literacy (Table A6 in the Appendix). This is reflected both in higher coefficients for those occupational categories in the regression in which the reading score is the dependent variable, and in higher significance levels for those coefficients. For example, in finance, accounting and economics, the achievement gap described

above is 2.1% in reading, 1.0% in mathematics (significant only at the 10% level), and still lower and statistically insignificant in science. Similarly, in advanced engineering services, the reading gap relative to the baseline category is 5.8%, compared with 4.1% in mathematics and only 3.4% in science. Here too, the significance level of the reading gap is higher than in the other two literacy domains. In law and legal services and in management and administration, a significant coefficient is obtained only in reading, while the coefficients in mathematics and science are small and insignificant. Among mothers in the category of university and higher-education teachers, science and research, the largest gap relative to the baseline category is in science, at 4.1%, compared with 3.0% in reading and 2.5% in mathematics. This differs from fathers, for whom the largest gap is in reading.

These findings suggest that the transmission of human and cultural capital from parents to children is not uniform across literacy domains. Nearly all fathers' occupational categories are significantly associated with student achievement in all three skill domains, particularly fathers' STEM occupations, which translate into higher achievement in their children in science and mathematics. Mothers' occupations, by contrast, more often translate into higher achievement specifically in reading.

Summary

This study examines the relationship between Israeli students' PISA achievement and the type of occupation held by their parents. Gender differences were found in parents' occupational patterns: management, technology and manufacturing occupations were prominent among fathers, whereas mothers tended toward education, care and finance occupations. Moreover, even when both parents belonged to the same occupational category, fathers were generally more likely to hold positions involving organizational authority. The exceptions were technology, information and software and the category of university and higher-education teachers, science and research,

where the prominent sub-occupations of fathers and mothers were aligned. This suggests that women who enter these fields are integrated into occupational positions similar to those of men.

The relationship between student achievement and parental occupation was examined using multivariate statistical analysis. The occupational categories of both parents together were found to account for 45% of the explained variation in student achievement, compared with only 21% accounted for by parental education levels. The contribution of the father's occupation was also found to be greater than that of the mother's occupation. Achievement gaps between occupational categories narrowed after controlling for additional variables, but in most cases remained statistically significant, particularly for fathers' occupational categories.

The achievements of students whose mothers were employed in the early-childhood educators and teaching assistants categories were significantly lower, and this finding remained after controlling for the other variables, indicating that the relative disadvantage in this group is not a product of the background variables in the model but is associated with the nature of the occupation itself. By contrast, there is a positive, strong and significant association between student achievement and parental employment in knowledge- and human-capital-intensive occupations, with both the strength and significance of the association generally greater for fathers. Another difference is found in blue-collar and manufacturing occupations. For mothers, the achievement gaps between students whose mothers work in these occupations and students whose mothers belong to the baseline category lose their statistical significance after controlling for the other variables. For fathers, however, a positive and significant gap remains between students whose fathers work in these occupations and students whose fathers belong to the baseline category, and controlling for background characteristics produces only a relatively small change.

Comparing the regression results across the three principal literacy domains assessed by PISA shows that in most fathers' occupational categories there is a significant relationship with student achievement in all three domains. In particular, fathers' STEM occupations translate into

higher science achievement among their children. By contrast, mothers' occupations are more often associated specifically with their children's reading achievement.

In conclusion, the findings point to a relationship between student achievement and the type of occupation held by their parents. This relationship is not merely a reflection of parents' economic circumstances and parental education but contains an independent component whose strength varies by type of occupation and differs between fathers and mothers. These findings point to the importance of parental occupation for children's educational futures and underscore that the future generation's prospects for success remain anchored in their parents' occupational starting point, sharpening the need for education systems that promote equality of opportunity.

References

Hebrew

Barzelavsky, Ron, Nurit Lipstadt, Georgette Hilo and Daniel Gatushkin (2019), "PISA 2018: Literacy among 15-Year-Old Students," Ministry of Education, RAMA.

English

Abubakar, Haddabi and Usman Musa (2019), "Relationship between parents' occupational status and academic performance of students in Adamawa State Polytechnic Yola, Adamawa State, Nigeria," *International Journal of Scientific Research in Educational Studies and Social Development*, 3(1), 127–136.

Akinsanya, Omolade O., Kassim O. Ajayi and Modupe O. Salomi (2011), "Relative effects of parents' occupation, qualification and academic motivation of wards on students' achievement in senior secondary school mathematics in Ogun State," *British Journal of Arts and Social Sciences* 3(2), 242–252.

Bourdieu, Pierre (1977), "The economics of linguistic exchanges," *Social Science Information* 16(6), 645–668.

Bourdieu, Pierre (1986), "The forms of capital." In J. G. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education*, 241–258. Greenwood Press.

Burger, Kaspar, Francesca Mele, Monica Kirkpatrick Johnson, Jeylan Mortimer and Xiaowen Han (2025), "The intergenerational reproduction of self-direction at work: Revisiting Class and Conformity," *Social Forces*, 104(1), 320–340.

Coleman, James S. (1988), "Social capital in the creation of human capital," *American Journal of Sociology*, 94, S95–S120.

Fuller, Anne E., et al. (2025), "Parental employment quality and the mental health and school performance of children and youth," *Journal of Epidemiol and Community Health*, 79(7), 552–558.

- Ganzeboom, Harry B.G. and Donald J. Treiman (2003), "Three Internationally Standardised Measures for Comparative Research on Occupational Status." In Hoffmeyer-Zlotnik, J.H.P., Wolf, C. (eds), *Advances in Cross-National Comparison*, pp. 159–193. Boston, MA: Springer.
- International Labour Office (2012), "International Standard Classification of Occupations (ISCO-08): Structure, group definitions and correspondence tables", *ILO*, <https://www.ilo.org/publications/international-standard-classification-occupations-2008-isco-08-structure>
- Jæger, Mads Meier (2007), "Educational mobility across three generations: The changing impact of parental social class, economic, cultural and social capital", *European Societies*, 9(4), 527-550.
- OECD (2014), "Do parents' occupations have an impact on student performance?" PISA in Focus, 36. OECD Publishing, Paris, <https://doi.org/10.1787/5jz8mr7kp026-en>.
- Savin, Ariela, Ayal Kimhi and Dan Ben-David (2023), "The Impact of Parental Education on Their Children's Achievement: Comparing Israel with the Leading Countries in the PISA Assessments, 2006–2018," Shoresh Institution for Socioeconomic Research.
- Stopforth, Sarah and Vernon Gayle (2022), "Parental social class and GCSE attainment: Re-reading the role of 'cultural capital'," *British Journal of Sociology of Education*, 43(5), 680–699.

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Findings and points of view expressed in Shoresh publications are the authors' alone.

Appendix 1: PISA Assessments

The international PISA assessments cover three main domains of literacy: reading, mathematics, and science. The assessed population is a representative sample of 15-year-old students.¹¹ The main objective of the PISA assessment, as noted by Barcelevsky, Lipstadt, Hilo and Gatushkin (2019), is to assess the extent to which students are able to use the knowledge and skills they have acquired in order to cope with challenges they will face later in life. The assessments are also intended to enable each country to examine the outcomes of its education system and to evaluate student achievement from an international comparative perspective.

Since 2000, eight assessment cycles have been conducted, one every three years.¹² The assessment results are calibrated in a manner that enables comparisons over time. As noted, the study is based on data from the four most recent PISA cycles, conducted in 2012, 2015, 2018 and 2022,¹³ and the background questionnaires for these assessments used the 2008 version of ISCO (ILO, 2007).¹⁴

Between 2012 and 2022, the wording of several questions used to construct explanatory variables in the regressions changed, including, for example, parental education and the number of electrical appliances, such as televisions and computers, in the student's home. For the purposes of this study, categories were combined in order to create a common scale for these questions.

¹¹ A detailed description of the assessment can be found at <http://www.oecd.org/pisa/aboutpisa>.

¹² Except for the assessment cycle that was scheduled to take place in 2021 but was postponed to 2022 due to the COVID-19 pandemic.

¹³ Results from the 2025 assessment had not yet been published when this study was undertaken.

¹⁴ ISCO is the International Standard Classification of Occupations maintained by the International Labour Organization (ILO).

Appendix Tables

Table A1
Descriptive Statistics
Research sample, 2012-2022

Mean PISA score		520
Gender	Boys (reference group)	50.70%
	Girls	49.30%
Mother's education	Did not complete high school (reference group)	2.30%
	Completed high school but no academic degree	37.40%
	Academic degree	60.30%
Father's education	Did not complete high school (reference group)	4.00%
	Completed high school but no academic degree	45.20%
	Academic degree	50.80%
Educational/learning software	Yes (reference group)	57.90%
	No	42.10%
Internet connection	Yes (reference group)	97.50%
	No	2.50%
Dictionary	Yes (reference group)	97.00%
	No	3.00%
Works of art	Yes (reference group)	72.90%
	No	27.10%
Television sets	None (reference group)	9.70%
	One-two	31.40%
	Three or more	58.90%
Number of mobile phones in the student's home	None (reference group)	0.40%
	One-two	5.00%
	Three or more	94.70%
Number of computers in the student's home	None (reference group)	1.30%
	One-two	36.30%
	Three or more	62.50%
Number of books in the student's home	0-10 (reference group)	9.40%
	11-25	13.50%
	26-100	29.20%
	101-200	19.60%
	201-500	16.20%
	More than 500	12.00%
Student born in Israel	Yes (reference group)	94.30%
	No	5.70%
Mother born in Israel	Yes (reference group)	73.70%
	No	26.30%
Father born in Israel	Yes (reference group)	73.40%
	No	26.60%

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

Table A2
Analysis of variance, 2012–2022

Contribution of parental occupation and the other control variables to the variance of the average scores' natural log

Percent of total variance	Variable
6.503%	Father's occupation
3.838%	Number of books at home
3.430%	Mother's education
2.406%	Mother's occupation
0.846%	Father's education
0.725%	Number of computers at home
0.682%	Works of art at home
0.454%	Year
0.343%	Number of televisions at home
0.321%	Dictionary
0.206%	Internet connection
0.142%	Student born in Israel
0.047%	Number of phones at home
0.037%	Gender
0.030%	Father born in Israel
0.004%	Mother born in Israel
0.001%	Educational/learning software at home
79.975%	Unexplained component
100%	Total

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

Table A3
Average occupational quality index
by parental occupational category, 2012–2022

Mothers	Fathers	Occupational category
83.94	84.46	University and higher-education teachers, science and research
82.45	84.04	Law and legal services
78.84	78.85	Advanced engineering services
74.49	79.48	Health and medical services
73.76	70.73	Information technology and software
66.96	60.98	Personal and community services
64.81	59.11	Arts, media and entertainment
63.26	62.84	Management and administration
60.81	67.77	Finance, accounting and economics
58.84		Early-childhood educators
52.75	38.45	Baseline category
50.49	48.11	Manufacturing and technical occupations
47.80	45.66	General work and elementary occupations
24.98		Teaching assistants

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution
Data: PISA

Table A4
Regression results (2012-2022)

Natural log of each student's mean score as a function of parental occupation and the other control variables¹

Gender	Boys	0.002	
Mother's education (reference group: no degree)	Completed high school but no academic degree	0.081	***
	Academic degree	0.104	***
Father's education	Completed high school but no academic degree	0.044	***
	Academic degree	0.059	***
Educational/learning software	No	0.002	
Internet connection	No	-0.045	***
Dictionary	No	-0.023	**
Works of art	No	-0.016	***
Television sets	One-two	0.01	
	Three or more	-0.008	
Mobile phones	One-two	-0.007	
	Three or more	0.0003	
Computers	One-two	0.071	***
	Three or more	0.096	***
Number of books in the student's home	11-25	0.047	***
	26-100	0.088	***
	101-200	0.121	***
	201-500	0.126	***
	More than 500	0.135	***
Student born in Israel	No	-0.028	***
Mother born in Israel	No	0.002	
Father born in Israel	No	-0.011	**
Year	2015	0.008	*
	2018	-0.008	*
	2022	-0.029	***
Intercept		5.907	***
R ²		0.2	
Number of observations		10,336	
Number of weighted observations		198,900	

¹ Regression coefficients for the occupational categories appear in Figure 2

* 10% significance level, ** 5% significance level, *** 1% significance level

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution

Data: PISA

Table A5
**Coefficients for father's occupation in natural log regressions
of scores in the three literacy domains, 2012–2022**
The regressions also included the remaining control variables

Science	Reading	Math	
0.072 ***	0.084 ***	0.063 ***	University and higher-education teachers, science and research
0.040 ***	0.032 ***	0.030 ***	Law and legal services
0.057 ***	0.050 ***	0.043 ***	Advanced engineering services
0.038 ***	0.037 ***	0.036 ***	Health and medical services
0.072 ***	0.063 ***	0.071 ***	Technology, information and software
0.006	0.005	-0.008	Personal and community services
0.009	0.013	0.012	Arts, media and entertainment
0.017 ***	0.013 **	0.012 **	Management and administration
0.042 ***	0.040 ***	0.044 ***	Finance, accounting and economics
0.024 ***	0.020 ***	0.021 ***	Manufacturing and technical occupations
0.048 **	0.058 ***	0.058 ***	General work and elementary occupations

* 10% significance level, ** 5% significance level, *** 1% significance level

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution

Data: PISA

Table A6
**Coefficients for mother's occupation in natural log regressions
of scores in the three literacy domains, 2012–2022**
The regressions also included the remaining control variables

Science	Reading	Math	
0.041 ***	0.030 **	0.025 *	University and higher-education teachers, science and research
0.014	0.027 **	0.012	Law and legal services
0.034 *	0.058 ***	0.041 **	Advanced engineering services
0.008	0.012 *	0.010	Health and medical services
0.064 ***	0.070 ***	0.071 ***	Technology, information and software
0.016	0.022 **	0.019 **	Personal and community services
0.018 **	0.021 **	0.017 **	Arts, media and entertainment
0.006	0.016 **	0.007	Management and administration
0.009	0.021 ***	0.010 *	Finance, accounting and economics
-0.048 ***	-0.047 ***	-0.046 ***	Early-childhood educators
-0.010	-0.024	-0.017	Manufacturing and technical occupations
0.005	0.013 *	-0.005	General work and elementary occupations
-0.022 *	-0.013	-0.030 ***	Teaching assistants

* 10% significance level, ** 5% significance level, *** 1% significance level

Source: Ariela Savin, Ayal Kimhi and Dan Ben-David, Shoresh Institution

Data: PISA