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POSH BUT POOR: THE ASSOCIATION BETWEEN RELATIVE SOCIO-ECONOMIC STATUS AND CHILDREN'S ACADEMIC PERFORMANCE

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It is well known that young people from more advantaged socio-economic backgrounds have, on average, higher levels of academic achievement than their disadvantaged peers. Yet rather less is known about how the relative socio-economic position of students might be related to their academic progression at school. This is the issue considered in this paper, using longitudinal administrative data covering the largest region within Spain. We find evidence that the relative socio-economic position of students within their school is associated with grade retention, performance in standardized tests and attitudes towards school, even after controlling for the absolute level of their socio-economic status. Our primary conclusion is that both absolute and relative social position matters for young people's academic development.

JEL Codes: I20, I21, I28

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1. Introduction

Socio-economic inequalities in young people's outcomes is one of the most studied issues across the social sciences (Perrons and Plomien, 2010). It is now well-established that large social disparities exist across a wide range of outcomes (e.g. health, Jones and Nicolás, 2004; access to labor market, Hu, 2013; education, Jerrim *et al.*, 2015) and that these emerge very early in life (Galobardes *et al.*, 2004; Currie, 2009). Reducing such inequalities is also a key public policy issue being tackled by many governments across the world (Brune and Garrett, 2005), with billions of dollars devoted to this cause each year (Mayer and Lopoo, 2008).

This literature—and public policy—has almost exclusively focused upon the relationship between young people's "absolute" socio-economic status (measured by either parental education, parental occupation or household income) and their later

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outcomes. In other words, researchers have typically considered whether children with more educated, higher-earning parents achieve superior lifetime outcomes (e.g. better school grades, obtain a higher social position, earn more money) than their peers from disadvantaged backgrounds—across a country or a region as a whole. Much less attention has been paid, however, to the role of children's relative social background in determining their future achievements. That is, if a child is relatively advantaged or disadvantaged in comparison to their school peers, does this matter for their future academic achievements (over and above their absolute socio-economic status)? The primary contribution of this paper is to examine such "relative" socio-economic status influence across a selection of academic outcomes (grade retention, standardized test scores, attitudes towards school and academic self-concept).

There are several reasons to believe that relative social status is likely to be important for children's educational outcomes. In the section that follows, we describe such potential mechanisms in detail. However, one particularly important factor could be that children's relative socio-economic status within their school is likely to be related to their relative academic rank (i.e. the most socially advantaged children within a school are also likely to be stronger academically than the most disadvantaged children within the school). This, in turn, could give rise to the much-studied phenomenon of "big-fish-little-pond" effects (Seaton *et al.*, 2009; Mora and Oreopoulos, 2011; Roy *et al.*, 2015, among others). This wide-ranging literature recognizes the importance of children's relative academic rank within their school, with young people developing higher levels of academic self-confidence (Jonkmann *et al.*, 2012; Roy *et al.*, 2015) and experiencing faster academic progress (Elsner and Isphording, 2017) if they are higher-performing than their school peers (conditional upon their absolute level of prior performance). Our paper also speaks to this literature by considering whether the link between relative socio-economic status and young people's educational outcomes is being driven by such big-fish-little-pond effects, or whether these two phenomena are independently associated with young people's educational outcomes.

The empirical setting for this research is the largest administrative region within Spain—Andalusia. This region has many characteristics that make it a particularly interesting context to conduct this work. First, it is the largest and most populated administrative region of Spain and one of the worst performers in international large-scale assessment tests. For instance, Andalusian students scored 19 points below the Spanish average and 19 below the OECD average in the PISA (Programme for International Student Assessment) 2015 test (MECD, 2016). Additionally, Andalusia has very high dropout rates in compulsory education, to the extent that around a quarter of students did not finish their compulsory studies in 2015 (IECA, 2020). Moreover, Andalusia had one of the highest grade retention rates for 15–16 year-old students among all Spanish regions (38 percent) in PISA 2015, above the average for Spain (31 percent) and the OECD (26 percent) as a whole (MECD, 2016).

In the present paper we employ logistic models (to analyze the likelihood of grade retention) and value-added models (to analyze progression in reading and mathematics) to approach this issue. The use of prior academic achievement in these value-added models helps to control for relevant unobservables (using it as a proxy of e.g. student ability) so that we can overcome, at least partially, variable omission problems. Additionally we control for a range of potential confounding

variables (e.g. such as absolute or relative socio-economic status and previous reading and mathematics results). Nevertheless, to the extent that we cannot be sure that our estimates are free from confounding variables, our results will refer to conditional associations only and do not necessarily capture cause and effect.

From these models, clear findings emerge with respect to the probability of experiencing grade retention; relative social position is clearly associated with the chances of children experiencing this outcome. However, relative socio-economic status seems to work in the opposite direction to the more often studied absolute socio-economic status influence. That is, although more advantaged children are less likely to repeat a grade in general (as has been found multiple times in the previous literature), the opposite holds true with respect to relative social status (i.e. children who are more advantaged than their school peers are more likely to repeat a grade). This result is not due to big-fish-little-pond effects and can be observed across different model specifications. We speculate that this may be due to there being less social stigma attached to grade retention when young people attend a school with pupils who are less advantaged than themselves. In contrast, we find that being more advantaged than one's school peers is positively related with achievement in reading and mathematics; being amongst the most advantaged 10 percent of pupils within a school is associated with around a 0.1 standard deviation increase in standardized reading and mathematics scores compared to being in the least advantaged socio-economic decile. This result holds true even after we control for children's relative (within-school) academic rank, suggesting it is not being driven by big-fish-little-pond effects.

Finally, our results with respect to young people's attitudes towards school are somewhat mixed. Those who are relatively advantaged compared to their school peers are more likely to say they enjoy studying and going to school even though they are also more likely to report their classmates to be disruptive. On the other hand, there is little obvious positive association between relative social status and children's academic self-concept.

The paper now proceeds as follows. Section 2 describes a series of potential mechanisms that may generate relative socio-economic status influence and provides an overview of our research questions. A description of the educational setting in which we explore relative socio-economic status influence (Andalusia) and the dataset we analyze follow in Section 3. An overview of our empirical methodology is then provided in Section 4, with results following in Section 5. The paper then concludes in Section 6.

2. Mechanisms and Research Questions

Why might relative socio-economic status matter for children's educational outcomes? In this section we discuss a series of potential mechanisms that may link these factors together.

2.1. *Peer Effects*

There is an extensive social science literature studying the effect of children's peers upon their educational outcomes (Glewwe, 1997; Sakellariou, 2008; Perry and McConney, 2010; Vardardottir, 2013; Vardardottir, 2015; among others),

notwithstanding the many methodological challenges the estimation of such effects entail (Manski, 1993). The main thrust of this literature has suggested that young people tend to benefit from having higher-achieving peers than themselves (Henry and Rickman, 2007; Sund, 2009; Kiss, 2013; Kiss, 2018). We argue that, with respect to this paper, this is likely to imply that there will be a negative influence of a child being more socio-economically advantaged than their school peers.

The logic behind this argument is as follows. On average, children from high socio-economic status backgrounds tend to be higher achieving (Martins and Veiga, 2010; Hanushek and Woessmann, 2011) and better behaved (Boroughs *et al.*, 2006) than children from low socio-economic backgrounds. Therefore, if a high socio-economic status (SES from now on) child attends a school with a large proportion of disadvantaged children, then their progress will be limited by the fact that they are surrounded by less able and more disruptive pupils than themselves (in comparison to the counterfactual of them attending a school comprised of mainly high SES pupils). Thus, peer effects imply that there is likely to be an academic penalty if a high SES child attends a low-SES school.

2.2. *Big-Fish-Little-Pond (Or "Rank") Effects*

One of the most widely replicated findings from educational psychology is the "Big-Fish-Little-Pond" (BFLP) effect. The basis for this theory is that children tend to judge themselves against their school peers. This then has an impact upon a range of psychological outcomes, such as academic self-concept (Roy *et al.*, 2015), attitudes (Ladd and Coleman, 1997), motivation at school (Wentzel *et al.*, 2010) and aspirations (Mora and Oreopoulos, 2011), which are thought to influence educational achievement (Rinn, 2007; Alivernini and Lucidi, 2011; Veas *et al.*, 2019). For instance, say there was a child at the 70th percentile of the mathematics distribution across the nation as a whole. If this child attends a high-achieving school (e.g. one where the average mathematics achievement is at the 90th percentile) then they will be significantly less secure in their academic abilities than if they attended a low-achieving school (e.g. a school where average mathematics achievement is around the 30th percentile).

With respect to this paper, our starting point is to note that children from advantaged socio-economic backgrounds are likely to be much higher achieving than children from disadvantaged backgrounds (Sirin, 2005). Hence, ceteris paribus, a high SES child who attends a low SES school is likely to be higher-achieving (on average) than most of their school peers. They will hence benefit from BFLP effects, and have higher levels of academic self-concept, school engagement, motivation and thus academic achievement as a result. In other words, this implies that there will be a positive influence of relative social status, with it being advantageous for a high SES child to attend a school with mainly low SES peers. Importantly, note that the BFLP mechanism works in the exact opposite direction to the potential influence of peer effects.

2.3. *Within-School Segregation*

In many school systems, including our empirical setting of Andalusia, children are separated into different groups (sets or streams) based upon their academic

ability (Steenbergen-Hu *et al.*, 2016). Which set a child is placed into is a decision made by staff within each school. Given that only a limited number of pupils can sit in any one class, such decisions are likely based upon teachers' perceptions of each child's ability relative to the rest of their school cohort. Hence the same pupil might be placed into the top-set if they were to attend one school, but in the bottom-set if they were to attend another. This may in turn influence their educational progress, not only through peer and BFLP effects discussed in the previous section, but also potentially through the content of their lessons and how schools decide to allocate their resources (discussed in more detail below).

2.4. *The Allocation of School Resources*

Schools have to decide how to allocate their resources to pupils. This includes both the human capital at their disposal (e.g. how to assign teachers to classes of pupils) and to whom they provide additional instruction and support (e.g. whether they focus resources upon ensuring disadvantaged and low-achieving children develop basic skills versus providing gifted and talented programs to stretch the highest-achievers). Yet children may receive different types of support depending upon their relative social and academic standing within their school.[1] For instance, school leaders may decide to allocate their "best" teachers to the brightest pupils within their school (e.g. to the top stream/set), with disadvantaged pupils taught by lower-quality members of staff (see Allen and Sims, 2018, for evidence on this issue in England). In this situation, it would be better for a child to have a high relative socio-economic status compared to others within their school. However, if principals tend to allocate better teachers to their least able pupils, then the opposite will hold true (i.e. it will be better for a child to attend a school where they are comparatively poor and/or lower-achieving than their peers). Consequently, such organization and allocation decisions made by schools are likely to have an important role in generating relative socio-economic influence, though these might operate in either direction (depending upon how resources are distributed).

2.5. *Social Stigma*

One outcome of particular interest in this paper is grade retention (the probability of a child having to retake the school year). This, as noted in the introduction, is a particular problem in Andalusia. Such an outcome has a negative social stigma for both children and their parents, which may be more or less acute depending upon their relative social status within their school. For instance, say a child from a high SES background is struggling at school and is potentially facing the prospect of repeating a grade. If this child is surrounded by mainly high SES (and thus typically high-achieving) pupils—most of whom are performing well at school—the social stigma attached to repeating a grade is likely to be large. On the

[1]This information on students' academic standing may be provided by the teachers of the same school or by the SENECA programme, which is an administrative tracking system implemented in compulsory education in Andalusia used by teachers to upload their students' scores. However, the dataset employed for our empirical analysis does not let us know whether head teachers are grouping students and allocating school resources according to students' characteristics, so we only use this allocation of school resources as a potential explanation of our results.

other hand, if the same high SES child were to attend a school with mainly low SES (and thus typically lower-achieving) pupils—many of whom are also likely to have to retake a grade—then the social stigma attached to grade retention may not be so great. A child's relative socio-economic status may then influence whether they actually repeat the grade or not via such social stigma. Specifically, this would imply that coming from a higher SES background relative to others in the same school would (ceteris paribus) make it more likely that they will retake the grade.

2.6. *Parental Behaviors*

Parents may change their behavior depending upon whether they are more or less advantaged than other parents at their child's school. For instance, in a school comprised of children from mainly high SES backgrounds, most parents may pay for private after-school tutoring for their offspring. If a child from a lower SES background were then to join this school, their parents might also feel obliged to pay for a private tutor as well (possibly diverting their discretionary spending from other areas to do so). On the other hand, were this low SES child to attend a school comprised of mainly low SES pupils (where most children are not privately tutored) then their parents may not decide to take such a step. This is, of course, just one example of a potential behavioral reaction of parents and their children, with many other examples possible as well. Yet it clearly illustrates how behavioral responses to the socio-economic context of the school may help to generate relative socio-economic influence.

2.7. *Information Asymmetry*

Information asymmetry may also play a relevant role for students' academic outcomes (as found by authors such as Bozgeyikli *et al.*, 2009; Huang and Hsieh, 2011; Metheny and Hawley, 2013; Hsieh and Huang, 2014). This is because higher SES students may have access to more, better and earlier information about their future career options than students with lower SES backgrounds, even when they attend the same school, to the extent that their parents had to take similar decisions before and may, hence, orient their children in a more precise way (Hitlin, 2006). This may provide students a higher self-efficacy on career selection and the opportunity of orienting their academic decisions and study efforts towards a long-term goal. Furthermore, this information asymmetry may also influence students through their peers' SES; this is because students may discuss with their peers the information about future career options that they have obtained from their parents, hence interchanging this parental orientation with other peers (Kracke, 2002; Black *et al.*, 2013).

2.8. *Summary and Research Questions*

This section has illustrated how there are several potential mechanisms that might give rise to relative socio-economic influence upon young people's academic achievement, over and above their absolute socio-economic position. Although some of these may be driven by a positive correlation between relative (within-school) socio-economic status and relative (within-school) academic position (e.g. BFLP effects), others are not. The magnitude and direction of this relative

SES influence differ across the mechanisms discussed, making the overall impact of relative social status upon children's academic outcomes an empirical question. Although it is beyond the scope of this paper (and, indeed, the data available) to isolate the impact of each of these individual mechanisms, we do attempt to estimate their aggregate influence—and the extent to which relative SES influence is driven by children's relative academic achievement. In particular, we attempt to answer the following research questions:

> RQ1. Are young people more likely to repeat a grade if they come from a more advantaged social background than their school peers? To what extent is this result driven by relative socio-economic differences in their within-school academic rank?
>
> RQ2. Do children make more academic progress if they attend a primary school where they are more socio-economically advantaged than their school peers? To what extent is this result driven by relative socio-economic differences in their within-school academic rank?
>
> RQ3. Is there an association between children's relative socio-economic position and their attitudes towards school and academic self-concept? Is this association being driven by socio-economic differences in within-school academic rank?

3. Data

The data required to investigate relative socio-economic status influence are demanding. An ideal data source would:

- Be drawn from across a large number of schools.
- Include data from every child within the school.
- Include a detailed, continuous measure of children's socio-economic background.
- Include measures of children's academic achievement.
- Include additional contextual information to allow investigation of potential mechanisms.
- Be longitudinal, with data gathered on children on at least two time points.

In this paper we use an administrative census database from the largest region within Spain (Andalusia) which meets many of the criteria above. Importantly, it is also an interesting educational context per se, being a European region with relatively low levels of academic achievement, high levels of educational inequality and where grade retention is a major problem (Rodríguez *et al.*, 2009).

3.1. *The Educational and Social Context of Andalusia*

Kindergarten is optional in Andalusia up until age six, when compulsory schooling begins (it cannot be delayed). This is followed by six grades of primary education and four grades of secondary education. Once young people

TABLE 1
Comparison of Andalusian and Spanish Education Figures in 2015

		Andalusia	Spain	OECD
PISA 2015 Mean Scores	Reading	479	496	487
	Mathematics	466	486	478
	Sciences	473	493	488
Children who have repeated a grade by 12th grade	38%	31%	13%	
Father's education	University studies	32%	43%	42%
	High school studies	15%	18%	33%
	Secondary education studies	29%	23%	15%
	Primary education studies	18%	12%	7%
	Less than primary education studies	7%	4%	3%
Mother's education	University studies	30%	43%	43%
	High school studies	17%	21%	33%
	Secondary education studies	30%	23%	14%
	Primary education studies	18%	11%	7%
	Less than primary education studies	5%	3%	3%
Annual household net income per capita, in PPPs	16,276$	20,367$	28,443$	

Source: Authors' own calculations from PISA 2015, INE (2020) and OECD (2017a).

turn 16, they are no longer required to attend school. As a substantial proportion of children repeat at least one grade at some point in their schooling, this leads to a large number not graduating from compulsory education (approximately a quarter of children failed to complete secondary education in Andalusia in 2015—IECA, 2020).

Around two-thirds of schools in Andalusia are publicly funded (MECD, 2020), with a quarter defined as semi-private schools and the remaining ten percent fully private. Those who attend public schools in primary education normally move to another school for their secondary education. In contrast, semi and fully private schools usually offer both primary and secondary education, meaning children can attend the same school until they finish.[2] Furthermore, hiring of teachers in public schools is via a state competitive exam, while semi-private and private teachers are hired directly by schools. Further details about the Andalusian education system, in comparison to the whole of Spain and the average OECD economy, can be found in Table 1.

3.2. *Survey Design*

The data we use are based upon a census of children that occurs within Andalusia, conducted by the Andalusian Agency of Education Assessment (*Agencia Andaluza de Evaluación Educativa*; AGAEVE from now on). Within this

[2]Because of that, the main estimations of our research have been controlled by school change between the grades under analysis (5th and 8th) and the funding of both schools.

region, each child completes a diagnostic assessment (*Evaluación de Diagnóstico*). This involves all children completing an assessment in Spanish language[3] and mathematics.[4] Our cohort of interest was in the fifth grade (the penultimate year of primary school) in 2008/9 and eighth grade (the second year of secondary school) in 2011/12. In addition, all children and their parents completed background questionnaires. This included detailed information about family background (e.g. parental education, occupation and household possessions) as well as attitudes towards school, aspirations and expectations for the future and parental engagement in their child's schooling. The response rates to these questionnaires were reasonably high; 78 percent amongst pupils and 82 percent amongst their parents.

3.3. *Measurement of Socio-Economic Background*

The key covariate in this paper is children's family background. This can be conceptualized and operationalized in several different ways. While economists have often favored family income (Acemoglu and Pischke, 2001; Dahl and Lochner, 2012) and sociologists social class derived from parental occupation (Kloosterman *et al.*, 2009), it is becoming increasingly recognized that socio-economic circumstances are multidimensional and cannot be captured by a single indicator alone (Marks *et al.*, 2000; Kolenikov and Angeles, 2004; OECD, 2016, pp. 204–6; OECD, 2017b, pp. 339–42). To reflect this within our analysis, our preference is to use a composite measure of socio-economic status, which together reflects several different aspects of children's family background. Moreover, as our interest is in the "ranking" of children (in terms of their socio-economic status) within schools, a fine-grained continuous measure is to be preferred (the problem with a single categorical measure—such as parental education—is that it would result in many "ties," with several children having the same socio-economic ranking within any given school).

Consequently, the measure of socio-economic status used in this paper is a socio-economic status index, which has been derived by the census organizers (AGAEVE). This draws upon the following information, which was gathered directly from a questionnaire to children's parents:

- The highest between mother's and father's education
- The highest between mother's and father's occupation
- Number of books at home
- Household possessions[5]

[3]This is defined as "the use of language as an instrument of oral and written communication, of presentation, interpretation and comprehension of reality; to construct and communicate the knowledge, to organize and to auto-regulate thinking, emotions and behavior" (AGAEVE, 2009, p. 7).

[4]This is defined as "the ability to use and relate numbers, their basic operations, symbols and expression forms and mathematic reasoning, to produce and interpret different types of information and to increase knowledge on quantitative and spatial aspects of reality and to solve problems related to daily life and to the labour world" (AGAEVE, 2009, p. 7).

[5]Household possessions have been commonly used in the literature as a proxy of household wealth (Traynor and Raykov, 2013; Bofah and Hannula, 2017) and also by PISA (OECD, 2016, pp. 204–206). However, we find it necessary to indicate that some authors have acknowledged their limitations to measure material deprivation. Their arguments are, for instance, that possessing the item does not imply owning it—it could be rented, leased, provided on loan or shared with other households—(McKnight, 2013) or the need of considering objective—capacity of satisfying particular needs—and subjective—people's appreciation of their conditions—dimensions of material deprivation (Boarini and d'Ercole, 2006).

The survey organizers have combined this information via a principal component analysis (PCA) to create a continuous socio-economic status scale. Particularly, AGAEVE replicated the PISA items and structure of this index (AGAEVE, 2011, p. 111; following the same procedure as the Spanish national assessments, which also replicated this index; MECD, 2011, p. 102). In order to do this, the variables used to create this index were coded by AGAEVE as follows:

- For the highest level of education of the parents it was ordered in ascending level of education: the variable was recoded 1 for "Incomplete primary education or did not attend school," 2 for "EGB or Compulsory Secondary Education," 3 for "High school, First Grade Professional Formation, Elemental Arts School and Artistic Professions, BUP, COU, Official Language School or Medium Grade Professional Formation Cycle," 4 for "Second Grade Professional Formation, Arts Speciality and Artistic Professions or High Grade Professional Formation Cycle" and 5 for "University degree, PhD."
- For the highest level of occupation of the parents it was ordered in ascending occupational status: the variable was recoded 1 for "Inactive," 2 for "Performing housework," 3 for "Non-qualified workers," 4 for "Agriculture and fishing qualified workers. Artisans and qualified manufacturing, construction and mining workers," 5 for "Hotel workers, personnel, protection and sellers. Army (sub-officials and low ranks)," 6 for "Technicians and support professionals. Administrative employees. Little business people," 7 for "Technicians, professionals, scientists and intellectuals. Army (officials and high ranks)" and 8 for "Business managers or public administration."
- For the number of books at home it was ordered in ascending number of books at home: the variable was coded 1 for "0–10," 2 for "11–25", 3 for "26–50", 4 for "51–100" and 5 for "More than 100."
- For household possessions the variable presents the total number of the following possessions that students have at home (ranging from 0 to 9): "a place to study at home," "study desk," "computer," "Internet," "digital TV, cable or satellite," "video, CD or DVD player", "casebooks and school support books (encyclopedias, dictionaries…)", "reading books (novels, tales, poems, comics…)," "specialized magazines" and "daily press."

This is in essence very similar to the Economic, Social and Cultural Status (ESCS) index that is the key measure of family background used within the OECD's Programme for International Student Assessment (PISA) dataset, which has mean zero and standard deviation 1. In our case, 4 principal components were obtained, and the component employed as the SES index explains 0.62 percent of the variance (which is the highest; the rest explain 0.16, 0.13 and 0.09). Furthermore, the value of the Cronbach's alpha is 0.77, which is higher than 0.7 (as remarked in the literature, an alpha greater than 0.7 is rather high and acceptable; Cortina, 1993) and is higher, for instance, than the average ESCS index presented in PISA 2015 (OECD, 2017b, pp. 340–1).[6] A histogram illustrating the distribution of this

[6]AGAEVE did not provide this information in its reports, so we have followed their PCA procedure to replicate their SES index. The correlation between AGAEVE's and our SES index is 0.93, which is quite high, so we have got quite close to their index.

variable is provided in Appendix A (Figure A1). The dataset hence contains a multidimensional, continuous and high-quality measure of children's socio-economic background which is ideal for our intended analysis.

The absolute value of this socio-economic scale is used to capture children's absolute socio-economic status (i.e. whether the child comes from an advantaged or disadvantaged background compared to other children in the Andalusian region). In contrast, to measure relative socio-economic status, we divide children into ten socio-economic deciles within each school (i.e. whether the child comes from an advantaged or disadvantaged background compared to other children within their school). This is relevant to the extent that these deciles may capture the within school variation in SES, which represents around the 75 percent of the total SES variation (being the rest between school variation). Note that it is hence possible for a child to come from a high socio-economic background compared to most other children within Andalusia, but be comparatively disadvantaged compared to other children within their school (and vice-versa).

3.4. *Academic Achievement*

At the end of the fifth and eighth grade, children within Andalusia completed standardized tests in Spanish language and mathematics. These tests took approximately 2 hours to complete (with a rest of 30 minutes after the first hour) and were marked by different teachers to those who usually teach the students. Children's responses to the test questions were converted into a distribution of scores with mean 500 and standard deviation 100. Further details about the psychometric properties of these tests can be found at http://www.juntadeandalucia.es/educacion/agaeve/publicaciones-cuadernillos-ped.html. Two histograms illustrating the distribution of standardized scores on these tests can be found in Appendix A (Figures A2 and A3). There is no evidence of floor or ceiling effects, with both language and mathematics scores broadly following a normal distribution. We have standardized these scores throughout our analysis, so that the mean is zero and standard deviation one (using each grade school mean and standard deviation). All of our results can therefore be interpreted in terms of an effect size.

3.5. *Grade Retention*

A further academic outcome we consider is whether children retake a school grade over this three-year period. The applicable education laws for the period under analysis state that students can only repeat once in primary education (BOE, 2002, art. 17.3; BOE, 2006, art. 20.2) and twice in secondary education (BOE, 2002, art. 29.3; BOE, 2006, art. 28.5). Within primary school, students may be asked to repeat a grade if it is deemed that they have not achieved the objectives for that academic year (BOE, 2002, art. 17.3; BOE, 2006, art. 20.2). In secondary education, grade retention occurs when students fail both reading and mathematics, or when they fail three or more subjects in total (BOE, 2002, art. 29; BOE, 2006, art. 28.2). The decision of whether a child should repeat a grade is usually made by school teachers using these as criteria, although children's parents may be consulted as well (this is more common in primary than in secondary education). In total, 14 percent of children in our data repeated at least one grade between 2008 and 2011.

3.6. *Children's Attitudes Towards School and Academic Self-Concept*

The background questionnaires completed by children and their parents also include a number of other measures; concretely, the following questions measuring children's attitudes towards their school and their classmates:

- Do you like going to school? (1. No; 2. A little; 3. To some extent; 4. A lot).
- I like studying (1. Strongly disagree; 2. Disagree; 3. Agree; 4. Strongly agree).
- Do you want to move to another school? (1. No; 2. I do not mind; 3. Yes).
- My classmates follow school rules (1. Never; 2. Sometimes; 3. To some extent; 4. A lot).
- My classmates get on well (1. Never; 2. Sometimes; 3. To some extent; 4. A lot).
- How are your relationships with your classmates (1. Not good at all; 2. Not so good; 3. Good; 4. Very good).

It also includes the following three questions capturing children's academic self-concept, with each answered on a four-point scale (1. Strongly disagree; 2. Disagree; 3. Agree; 4. Strongly agree):

- I can learn any exercise, even when it is very difficult.
- I learn easily.
- I am sure about passing my exams.

We use children's responses to these questions to address our third research question. Specifically, our analysis will consider whether children's relative socio-economic position in primary school is related to their attitudes towards school and their academic self-concept.

4. Methodology

4.1. *Sample Selection*

There were a total of 60,747 fifth grade Andalusian students in the 2008/9 academic year and we can follow 47,318 until the end of the 8th grade (2011–2012). Within our analysis, we make the following sample restrictions:

- Children who repeated a grade before the fifth grade are excluded (1,993 students dropped).
- Private school children are excluded as they were not included within the assessment program in 5th grade (165 students dropped).
- Children missing any of the key pieces of information are excluded (11,855 students dropped).[7]

[7]These variables are students' scores in reading, mathematics and the socio-economic status index for both 5th and 8th grades.

- Children within schools with less than 10 pupils are excluded (3,430 students dropped).[8]

This leaves a total analytic sample of 29,875 students included within our analysis. A comparison of the population[9] and sample descriptive statistics for the main variables of our analysis (and those which are used in the derivation of the socio-economic status index) is provided in Appendix B.

4.2. *Models*

The starting point for our analysis is the following baseline model specification for child *i* in school *j*:

$$O_{ij}^{8} = \alpha + \beta Rel\_SES_{ij}^{5} + \gamma Abs\_SES_{ij}^{5} + \delta Ach_{ij}^{5} + \theta D_{ij}^{5} + \varepsilon_{ij} \quad (1)$$

where:

O^8 = The outcome of interest. This is measured as a binary variable for our models of grade retention ("1" for students repeating between 5th and 8th grade—including both grades—and "0" for non-repeater students in this period) and as a continuous variable for models where language/mathematics standardized scores are the outcome (standardized to mean zero and standard deviation one, using 8th grade school mean and standard deviation). These are measured in grade 8.

Rel_SES^5 = A series of nine dummy variables indicating the relative socio-economic status of each child compared to their primary school peers in grade 5 (reference group = most disadvantaged decile).

Abs_SES^5 = The absolute value of the socio-economic status index in grade 5, measured with a single continuous variable.

Ach^5 = Children's standardized scores (standardized to mean zero and standard deviation one, using 5th grade school mean and standard deviation) on the Spanish language and mathematics assessments taken at the end of grade 5.

D^5 = A vector of child and school background characteristics, such as gender, school-type (public versus semi-private) in grade 5 and school change by funding between grades 5 and 8.

This model is estimated by either logistic regression (grade retention models) or Ordinary Least Squares (OLS)—language/mathematics test score models—with standard errors clustered at the primary school level. The parameter of interest is β. This captures the link between children's relative social status and their academic outcomes, conditional upon the other factors included in the model.

[8]Given our interest in relative socio-economic status influence, we believe that imposing such a minimal school sample size is important for the interpretation of our results. Our main estimations have been replicated keeping only those schools with 20 or more students and results are kept. These results will be provided by authors upon request.

[9]These population descriptive statistics do not include those students who are repeaters in the course 2008/09 to make them comparable with the sample descriptive statistics.

There are two particularly important features to note about this baseline specification. First, it is a value-added model, designed to measure the factors associated with the progress children make in language and mathematics between grade 5 and grade 8 (i.e. all estimates are conditional upon prior achievement). Second, the model includes a control for children's absolute socio-economic status (i.e. whether they are advantaged or disadvantaged compared to all other pupils within the Andalusian region). The β estimates hence capture the association of being relatively advantaged/disadvantaged relative to one's school peers, amongst young people whose parents have similar levels of education, occupation and household possessions.

Having estimated our baseline model, we move on to consider whether relative SES influence is being driven by academic rank (big-fish-little-pond effects). In other words, children who are socio-economically advantaged relative to their school peers are also likely to be higher-performing academically (on average) than their school peers; does this then explain our results? Hence in our second set of models we add an additional control for within-school academic rank:

$$O_{ij}^{8} = \alpha + \beta Rel\_SES_{ij}^{5} + \gamma Abs\_SES_{ij}^{5} + \delta Ach_{ij}^{5} + \theta D_{ij}^{5} + \tau Rank_{ij}^{5} + \varepsilon_{ij} \quad (2)$$

where:

$Rank^5$ = A series of nine dummy variables indicating children's relative (within-school) academic ranking in grade 5 (reference group = lowest rank decile).

The β estimates from these models will thus illustrate whether relative social status continues to be associated with grade retention and academic progress, over and above the potential influence of their relative academic rank. It will hence reveal whether this is one of the key channels which generate relative SES influence.

In our third set of models, we turn to the link between relative SES and children's attitudes towards school/academic self-concept. These follow the same broad specifications outlined above, with the exception that the dependent variable (O_{ij}^{8}) is replaced by the children's attitudes towards school/academic self-concept variable of interest, which is measured within fifth grade. In other words, our interest in these models is whether "current" (i.e. fifth grade) relative socio-economic status is related to "current" (fifth grade) attitudes towards school/academic self-concept—both before and after conditioning upon relative academic rank.

5. Results

5.1. *Grade Repetition*

Table 2 begins by providing our baseline estimates of the link between relative social position and the chances of repeating an academic year at any point between grade five and grade eight in column (1). Figures refer to odds ratios, with values greater than one illustrating an increased likelihood of repeating a grade.

As anticipated, lower levels of prior achievement and lower absolute values on the socio-economic status index are strongly associated with the probability of a child repeating an academic year. However, for our primary covariate of interest

TABLE 2
THE LINK BETWEEN RELATIVE SOCIAL STATUS AND THE PROBABILITY OF REPEATING A GRADE AND YOUNG PEOPLE'S ACADEMIC ACHIEVEMENT. ODDS RATIOS

	Odds Ratio (SE) (1)	Reading (2)	Mathematics (3)
Standardized scores in reading in 5th grade	0.55***	0.36***	0.21***
	(0.01)	(0.01)	(0.01)
Standardized scores in mathematics in 5th grade	0.54***	0.20***	0.44***
	(0.01)	(0.01)	(0.01)
SES decile in 5th grade (Ref.: 1st decile, bottom)			
10th decile (top)	1.79***	0.13***	0.10***
	(0.30)	(0.03)	(0.03)
9th decile	1.71***	0.10***	0.06**
	(0.23)	(0.03)	(0.03)
8th decile	1.45***	0.12***	0.04*
	(0.18)	(0.03)	(0.03)
7th decile	1.66***	0.07***	−0.00
	(0.18)	(0.03)	(0.02)
6th decile	1.44***	0.07***	0.02
	(0.14)	(0.02)	(0.02)
5th decile	1.59***	0.06***	−0.01
	(0.14)	(0.02)	(0.02)
4th decile	1.33***	0.04*	−0.01
	(0.11)	(0.02)	(0.02)
3rd decile	1.29***	0.06***	−0.02
	(0.09)	(0.02)	(0.02)
2nd decile	1.10	0.01	−0.01
	(0.08)	(0.02)	(0.02)
SES in 5th grade	0.48***	0.06***	0.07***
	(0.02)	(0.01)	(0.01)
Female (Ref.: Male)	0.61***	0.25***	−0.08***
	(0.02)	(0.01)	(0.01)
School Funding in 5th grade: Semi-private (Ref.: Public)	1.25*	−0.04**	−0.07***
	(0.15)	(0.02)	(0.02)
School change between 5th and 8th grade (Ref.: The student does not change school)			
Change from semi-private to public school	3.26***	0.05	−0.01
	(0.56)	(0.06)	(0.07)
Change from public school to semi-private school	2.95***	−0.28***	−0.21***
	(0.47)	(0.04)	(0.04)
Change to same-funding school	1.94***	−0.03**	−0.05***
	(0.22)	(0.01)	(0.01)
Constant	0.06***	−0.17***	0.07***
	(0.01)	(0.02)	(0.02)
Observations	33,186	29,875	29,875
R^2	-	0.30	0.38

Notes: Standard errors are in parentheses and clustered by 5th grade school. For column (1): Non-repeater students until 5th grade in 2008–2009. Private schools in 2011–2012 and schools with less than 10 students have not been included. For columns (2) and (3): Non-repeater students until 8th grade in 2011–2012. Private schools in 2011–2012 and schools with less than 10 students have not been included.

Dependent variable: For column (1): Students' grade retention in 8th in the course 2012/13, including students who repeated any course between 5th and 8th grade between the courses 2008/09 and 2011/12 and those who failed in 8th grade in 2011/12 and are repeating it in 2012/13. The variable takes the value "1" for repeaters and "0" for non-repeaters; approximately 14% of students repeated according to this classification. For columns (2) and (3): Students' standardized scores using the school mean and standard deviations in 8th grade.

Estimation method: For column (1): Logit, odd ratios. For columns (2) and (3): OLS.

Coefficient: ***Significant at 1%, ** significant at 5%, * significant at 10%.

Source: Authors' own calculations.

(relative socio-economic status), the situation is reversed. Specifically, being more advantaged than one's school peers is positively associated with the chances of repeating a grade, conditional upon prior academic performance and their absolute score on the socio-economic status index. In particular, the most advantaged 10 percent of children within a school are around 1.8 times more likely to repeat a grade than the least advantaged 10 percent of pupils within their school. Returning to the potential mechanisms described in Section 2, such a finding is consistent with potential social stigma influence, with grade repetition carrying less stigma for children and families when they attend schools with lower SES peers. An alternative interpretation is that this result could also be driven by negative peer effects.

In column (1), Table 3 investigates whether this association between relative social status and later achievement is maintained once relative (within primary school) academic rank is controlled.

From these results, there are two key points to note. First, there is weak evidence of big-fish-little-pond effects within this context; the odds ratios for the relative academic achievement deciles are mostly close to one and not statistically significant at conventional thresholds. The only notable exception is for the two highest relative achievement deciles, with higher achievers (relative to their school peers) somewhat less likely to repeat a grade. Nevertheless, in contrast to the results for absolute level of academic achievement, the association of children's relative academic position within their school does not seem to be strongly associated with grade repetition.

Second, we continue to find grade repetition to be strongly associated with children's relative socio-economic position within their school. For instance, those in the top socio-economic decile within their school are still around 1.8 times more likely to repeat a grade than those children in the bottom decile (conditional upon the other factors within the model—including their absolute level of academic performance and the absolute value of the socio-economic status index). Importantly, our inclusion of relative academic performance has done little to change our previous results. Consequently, it does not seem to be the case that the association between children's relative socio-economic status and grade repetition is being driven by big-fish-little-pond effects.

In the appendices, we have tested the robustness of these findings. Appendix C includes an additional set of controls designed to capture parental engagement in their children' schooling (e.g. parental assistance with homework, parental expectations for their child's future). The association of relative socio-economic status does not change; the odds ratio for the difference between the top and bottom socio-economic decile continues to be around 1.8. Together, we believe that this further strengthens the evidence that relative socio-economic status within primary school matters, with young people who are more socio-economically advantaged than their school peers being more likely to repeat a grade (conditional upon their prior academic achievement, relative academic performance and the absolute value of the socio-economic status index).[10]

[10]Results in Table 2 (column 1) and 3 (column 1) have been reported using linear probability models (ordinary least squares with binary dependent variable) in Tables S1 and S2 (online supplemental material) in order to show marginal effects.

TABLE 3
The Link Between Relative Social Status and the Probability of Repeating a Grade and Young People's Academic Achievement, Conditional Upon Primary School Academic Rank. Odds Ratios

	Odds ratio (SE) (1)	Reading (2)	Mathematics (3)
Scores decile in reading in 5th grade (Ref.: 1st decile, bottom)			
10th decile (top)	0.73	0.03	0.08
	(0.20)	(0.07)	(0.07)
9th decile	0.62**	0.03	−0.01
	(0.14)	(0.06)	(0.06)
8th decile	0.98	0.04	−0.04
	(0.18)	(0.05)	(0.05)
7th decile	0.94	0.03	−0.05
	(0.16)	(0.05)	(0.05)
6th decile	0.96	0.02	−0.08*
	(0.14)	(0.04)	(0.04)
5th decile	0.98	0.04	−0.06*
	(0.12)	(0.04)	(0.04)
4th decile	1.04	0.01	−0.06*
	(0.11)	(0.03)	(0.03)
3rd decile	1.08	0.01	−0.07***
	(0.10)	(0.03)	(0.03)
2nd decile	0.96	0.01	−0.05**
	(0.07)	(0.03)	(0.02)
Scores decile in mathematics in 5th grade (Ref.: 1st decile, bottom)			
10th decile (top)	0.53**	−0.02	0.20***
	(0.14)	(0.07)	(0.06)
9th decile	0.79	−0.04	0.11**
	(0.17)	(0.06)	(0.06)
8th decile	0.99	−0.02	0.07
	(0.18)	(0.06)	(0.05)
7th decile	1.03	−0.07	−0.03
	(0.17)	(0.05)	(0.05)
6th decile	0.98	−0.05	−0.01
	(0.14)	(0.05)	(0.04)
5th decile	1.18	−0.05	−0.08**
	(0.15)	(0.04)	(0.04)
4th decile	1.02	−0.04	−0.10***
	(0.11)	(0.04)	(0.03)
3rd decile	1.07	−0.03	−0.08***
	(0.10)	(0.03)	(0.03)
2nd decile	1.03	−0.03	−0.06***
	(0.07)	(0.03)	(0.02)
Standardized scores in reading in 5th grade	0.57***	0.35***	0.20***
	(0.04)	(0.02)	(0.02)
Standardized scores in mathematics in 5th grade	0.55***	0.21***	0.39***
	(0.03)	(0.02)	(0.02)
SES decile in 5th grade (Ref.: 1st decile, bottom)			
10th decile (top)	1.82***	0.13***	0.08***
	(0.30)	(0.03)	(0.03)
9th decile	1.72***	0.10***	0.05*
	(0.23)	(0.03)	(0.03)
8th decile	1.46***	0.13***	0.04*
	(0.18)	(0.03)	(0.03)
7th decile	1.65***	0.07***	0.00
	(0.18)	(0.03)	(0.02)
6th decile	1.43***	0.07***	0.02
	(0.13)	(0.02)	(0.02)
5th decile	1.58***	0.06***	−0.01

TABLE 3
(CONTINUED)

	Odds ratio (SE) (1)	Reading (2)	Mathematics (3)
	(0.14)	(0.02)	(0.02)
4th decile	1.33***	0.05*	0.00
	(0.11)	(0.02)	(0.02)
3rd decile	1.28***	0.06***	−0.01
	(0.09)	(0.02)	(0.02)
2nd decile	1.10	0.01	−0.01
	(0.07)	(0.02)	(0.02)
SES in 5th grade	0.48***	0.06***	0.06***
	(0.02)	(0.01)	(0.01)
Female (Ref.: Male)	0.61***	0.25***	−0.08***
	(0.02)	(0.01)	(0.01)
School Funding in 5th grade: Semi-private (Ref.: Public)	1.25*	−0.04**	−0.07***
	(0.15)	(0.02)	(0.02)
School change between 5th and 8th grade (Ref.: The student does not change school)			
Change from semi-private to public school	3.24***	0.05	−0.01
	(0.55)	(0.06)	(0.07)
Change from public school to semi-private school	2.94***	−0.28***	−0.22***
	(0.47)	(0.04)	(0.04)
Change to same-funding school	1.93***	−0.03**	−0.05***
	(0.22)	(0.01)	(0.01)
Constant	0.06***	−0.16***	0.11**
	(0.01)	(0.06)	(0.05)
Observations	33,186	29,875	29,875
R^2	–	0.30	0.38

Notes: Standard errors are in parentheses and clustered by 5th grade school. For column (1): Non-repeater students until 5th grade in 2008–2009. Private schools in 2011–20112 and schools with less than 10 students have not been included. For columns (2) and (3): Non-repeater students until 8th grade in 2011–2012. Private schools in 2011–2012 and schools with less than 10 students have not been included.

Dependent variable: For column (1): Students' grade retention in 8th in the course 2012/13, including students who repeated any course between 5th and 8th grade between the courses 2008/09 and 2011/12 and those who failed in 8th grade in 2011/12 and are repeating it in 2012/13. The variable takes the value "1" for repeaters and "0" for non-repeaters; approximately 14% of students repeated according to this classification. For columns (2) and (3): Students' standardized scores using the school mean and standard deviations in 8th grade.

Estimation method: For column (1): Logit, odd ratios. For columns (2) and (3): OLS.

Coefficient: ***Significant at 1%, ** significant at 5%, * significant at 10%.

Source: Authors' own calculations.

5.2. *Achievement in Reading and Mathematics*

Results from the equivalent baseline model examining the association between relative socio-economic status and children's achievement in reading and mathematics can be found in columns (2) and (3) in Table 2. Note that these results are based only upon the sub-sample of children who have not repeated a grade.

In contrast to the results for grade repetition presented in the previous sub-section, relative social status is positively associated with children's achievement, though with the evidence stronger for reading than mathematics. In other words, these results suggest that (conditional upon prior achievement and absolute

family background) there is a positive association of students' reading and mathematics scores with coming from a more advantaged social background than their school peers. For instance, children from the most advantaged 10 percent of backgrounds within their school score 0.13 standard deviations higher on the grade eight reading test than the least advantaged pupils within their school. The analogous result is 0.10 standard deviations higher with respect to the mathematics test. These are reasonable associations in terms of effect sizes, particularly given both prior achievement and the absolute socio-economic status of the child have been controlled. Returning to our discussion in Section 2, these results are consistent with there being big-fish-little-pond effects and/or maybe school principals allocating more resources (e.g. their best teachers) to higher achieving children and/or those from more advantaged socio-economic backgrounds (although we cannot be completely sure about the precise explanation).

Columns (2) and (3) in Table 3 investigate whether these results continue to hold after we condition upon relative (within-primary-school) academic rank.

From these results, there are two findings of particular note. First, we do indeed find some evidence of big-fish-little-pond effects; having a higher academic ranking within primary school is associated with higher achievement scores in grade eight. This is particularly the case in mathematics, with children in the top achievement decile within their school achieving 0.20 standard deviations higher on the grade eight mathematics test than those who are the lowest achievers within their school. Second, regardless of this finding, there is little change to our relative social status parameter estimates; children in the top relative SES decile seem to score 0.13 higher on the reading test and 0.08 higher on the mathematics test than children in the bottom decile. In other words, within primary school social status continues to be just as strongly associated with academic achievement in grade eight, independent of children's primary school academic rank. This hence strengthens the evidence that relative social position may matter for young people's academic achievement per se and is not simply proxying the influence of within-school academic achievement (i.e. big-fish-little-pond effects).[11,12]

The inclusion of controls for parental engagement in their children's schooling in Appendix C does not lead to any substantive change to our findings.

[11]In order to check for attrition influence in our main results, we have obtained firstly Table S3 (online supplemental material) which presents a comparison between the characteristics of the sample that we could follow from 5th to 8th grade and those who were dropped due to having missing key information (i.e. students' scores in reading, mathematics and the socio-economic status index for both 5th and 8th grades). As this table shows, we can see that differences between both samples are small in terms of magnitude. Furthermore, the tables including our main results have been re-estimated (Tables 2 and 3) in Tables S4–S7 (online supplemental material), respectively, including those students who presented the rest of characteristics which were omitted from our analysis (children who repeated a grade before the 5th grade, private school children and children within schools with less than 10 pupils). In general, our main results do not change.

[12]We have also analysed our main results in Tables 2 and 3 using SES and the ranking performance variable using quartiles instead of deciles; these results are presented in Tables S8–S11 (online supplemental material), respectively, and our main results do not change.

5.3. *Children's Attitudes Towards School and their Academic Self-Concept*

Table 4 considers the relationship between relative social status and children's attitudes towards school and their school peers. All estimates refer to odds ratios based upon ordinal regression models, with controls included for the absolute value of the socio-economic status index, prior achievement in reading and mathematics, gender and school-type.

There is evidence that relative socio-economic status is associated with these wider attitudinal outcomes. Children who are more socio-economically advantaged than their peers seem to be much more likely to indicate that they enjoy school and that they like studying; the odds ratio comparing the top and bottom relative SES decile are around 1.4 and 2, respectively. There is also some evidence that they may be less likely to want to move school (odds ratio = 0.69). This is despite these children also reporting that their school has more disruptive behavior; children in the top relative SES decile were less likely to say that their classmates follow school rules (odds ratio = 0.54), that their classmates get on well with one another (odds ratio = 0.74) and that they get on well with their classmates (odds ratio = 0.84) than children in the bottom SES decile. Together, this indicates that relative social position does not seem to only matter for children's academic outcomes (grade retention and test scores) but also more generally for their attitudes towards school.

Columns (1) to (6) in Table 5 analyze what happens to our results when we condition upon relative (within primary school) academic rank.

We find that there is not any evidence of big-fish-little-pond effects, as having a higher academic ranking within primary school is not associated with the odds ratios of these attitudinal outcomes. In addition, there is little change in the relative social status parameter estimates.

The results for the three academic self-concept items can be found in Table 6.

There is little clear evidence of a link between relative SES and young people's academic self-concept. Most of the odds ratios sit close to one, and with no suggestion of a monotonic increase or decrease in their value for children higher up the relative SES scale. This holds true for all three statements, even though some coefficients (most notably for the first item presented) are statistically significant. Overall, Table 6 hence indicates that academic self-concept and relative SES are not linked.

Alternative estimates which additionally control for academic achievement rank can be found in columns (7) to (9) in Table 5, but they do not appreciably differ from those presented.

6. Discussion and Conclusions

An extensive academic literature, spanning across several social science disciplines, has investigated the link between children's socio-economic background and their educational achievement. The main thrust of this literature has found large social disparities in young people's outcomes (Sirin, 2005; Marks, 2008; Rosen *et al.*, 2018), with those from disadvantaged backgrounds falling further behind their more advantaged peers during their time at school. Yet rather less attention has been paid to the link between young people's relative socio-economic status

TABLE 4
THE LINK BETWEEN RELATIVE SOCIAL STATUS AND CHILDREN'S ATTITUDES TOWARDS SCHOOL. ODDS RATIOS

	Do You Like Going To School	I Like Studying	Do You Want to Move to Another School	My Classmates Follow School Rules	My Classmates Get on Well	Relationships With Classmates
SES decile in 5th grade (Ref.: 1st decile, bottom)						
10th decile (top)	1.39***	1.97***	0.69**	0.54***	0.74***	0.84*
	(0.14)	(0.19)	(0.10)	(0.06)	(0.07)	(0.08)
9th decile	1.30***	1.64***	0.83	0.57***	0.83**	0.88
	(0.11)	(0.14)	(0.11)	(0.06)	(0.07)	(0.08)
8th decile	1.25***	1.65***	0.73***	0.61***	0.80***	0.93
	(0.10)	(0.13)	(0.09)	(0.05)	(0.06)	(0.07)
7th decile	1.21***	1.42***	0.91	0.67***	0.87**	0.93
	(0.09)	(0.10)	(0.10)	(0.05)	(0.06)	(0.07)
6th decile	1.23***	1.46***	0.92	0.69***	0.89*	0.99
	(0.08)	(0.09)	(0.09)	(0.05)	(0.06)	(0.06)
5th decile	1.25***	1.38***	0.98	0.75***	0.89*	0.99
	(0.08)	(0.09)	(0.10)	(0.05)	(0.05)	(0.06)
4th decile	1.15**	1.25***	0.94	0.72***	0.94	1.05
	(0.07)	(0.07)	(0.09)	(0.04)	(0.06)	(0.06)
3rd decile	1.09	1.30***	0.99	0.81***	0.98	1.06
	(0.06)	(0.07)	(0.09)	(0.04)	(0.05)	(0.06)
2nd decile	1.04	1.18***	0.88	0.91**	0.98	1.00
	(0.05)	(0.06)	(0.07)	(0.05)	(0.05)	(0.06)
Observations	29,621	29,248	29,671	29,067	29,088	29,385

Notes: Figures refer to odds ratios. *,** and *** indicate statistical significance at the ten, five and one percent levels. Controls included for absolute values of the socio-economic status index, standardized academic achievement in reading and mathematics, gender and school funding. Complete estimations will be provided from authors upon request.

TABLE 5

THE LINK BETWEEN RELATIVE SOCIAL STATUS AND CHILDREN'S ATTITUDES TOWARDS SCHOOL AND CHILDREN'S ACADEMIC SELF-CONCEPT, CONDITIONAL UPON ACADEMIC RANK. ODDS RATIOS

	Do you like going to school (1)	I like studying (2)	Do you want to move to another school (3)	My classmates follow school rules (4)	My class-mates get on well (5)	Relationships with class-mates (6)	I can learn any exer-cise, even when it is very difficult (7)	I learn easily (8)	I am sure about passing my exams (9)
Scores decile in reading in 5th grade (Ref.: 1st decile, bottom)									
10th decile (top)	1.19	1.15	0.85	0.95	1.17	0.93	0.99	1.30	1.05
	(0.18)	(0.19)	(0.23)	(0.15)	(0.19)	(0.16)	(0.16)	(0.22)	(0.17)
9th decile	1.08	1.11	0.99	0.94	1.19	1.03	0.90	1.21	0.97
	(0.14)	(0.15)	(0.23)	(0.13)	(0.17)	(0.16)	(0.13)	(0.18)	(0.14)
8th decile	1.07	1.06	0.84	0.91	1.14	1.00	0.92	1.08	1.01
	(0.13)	(0.13)	(0.18)	(0.11)	(0.14)	(0.14)	(0.11)	(0.14)	(0.13)
7th decile	1.07	1.10	1.01	0.95	1.18	1.01	0.95	1.11	1.00
	(0.12)	(0.13)	(0.19)	(0.10)	(0.13)	(0.12)	(0.11)	(0.13)	(0.12)
6th decile	1.07	1.11	0.93	0.89	1.08	1.10	0.94	1.05	1.01
	(0.10)	(0.11)	(0.15)	(0.09)	(0.11)	(0.12)	(0.09)	(0.11)	(0.11)
5th decile	1.02	1.03	0.94	0.97	1.12	1.11	0.97	1.03	0.99
	(0.09)	(0.09)	(0.14)	(0.09)	(0.10)	(0.11)	(0.09)	(0.10)	(0.09)
4th decile	0.96	1.05	0.90	0.95	1.13	1.04	0.98	1.01	1.01
	(0.07)	(0.08)	(0.12)	(0.08)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)
3th decile	0.99	1.07	0.97	0.94	1.13*	0.98	1.03	1.00	1.02
	(0.07)	(0.07)	(0.11)	(0.06)	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)
2nd decile	1.01	1.04	0.90	0.95	1.08	1.05	0.96	1.02	1.02
	(0.06)	(0.06)	(0.08)	(0.05)	(0.06)	(0.07)	(0.06)	(0.06)	(0.06)
Scores decile in mathematics in 5th grade (Ref.: 1st decile, bottom)									
10th decile (top)	1.30*	1.03	1.28	1.08	0.78	0.81	0.93	1.28	0.83
	(0.20)	(0.16)	(0.34)	(0.16)	(0.12)	(0.14)	(0.14)	(0.21)	(0.14)
9th decile	1.29*	1.08	1.11	1.08	0.90	0.85	0.98	1.18	0.87
	(0.17)	(0.15)	(0.26)	(0.14)	(0.12)	(0.13)	(0.13)	(0.17)	(0.13)
8th decile	1.11	0.96	0.97	1.04	0.90	0.81	0.95	1.14	0.85
	(0.14)	(0.12)	(0.20)	(0.13)	(0.11)	(0.11)	(0.12)	(0.15)	(0.11)
7th decile	1.19	0.97	1.00	1.02	0.89	0.87	0.98	1.13	0.92
	(0.13)	(0.11)	(0.19)	(0.11)	(0.10)	(0.11)	(0.11)	(0.14)	(0.11)
6th decile	1.05	0.95	0.94	1.10	0.93	0.91	0.93	1.01	0.88
	(0.11)	(0.10)	(0.16)	(0.11)	(0.09)	(0.11)	(0.09)	(0.11)	(0.09)

TABLE 5
(CONTINUED)

	Do you like going to school (1)	I like studying (2)	Do you want to move to another school (3)	My classmates follow school rules (4)	My classmates get on well (5)	Relationships with classmates (6)	I can learn any exercise, even when it is very difficult (7)	I learn easily (8)	I am sure about passing my exams (9)
5th decile	1.10	0.98	0.92	1.02	0.92	0.84*	1.04	1.04	0.90
	(0.10)	(0.09)	(0.14)	(0.09)	(0.09)	(0.09)	(0.10)	(0.11)	(0.09)
4th decile	0.98	0.90	0.88	1.01	0.87*	0.81**	0.92	0.93	0.84**
	(0.08)	(0.07)	(0.12)	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)	(0.07)
3th decile	1.07	1.00	0.96	1.04	0.93	0.89	0.93	0.94	0.87*
	(0.07)	(0.07)	(0.11)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.06)
2nd decile	1.00	1.05	0.97	0.97	0.94	0.89*	0.99	0.96	0.92
	(0.06)	(0.06)	(0.09)	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
SES decile in 5th grade (Ref.: 1st decile, bottom)									
10th decile (top)	1.37***	1.97***	0.68***	0.54***	0.75***	0.84*	1.24**	1.13	1.07
	(0.14)	(0.19)	(0.10)	(0.06)	(0.07)	(0.08)	(0.11)	(0.10)	(0.10)
9th decile	1.29***	1.64***	0.82	0.57***	0.83**	0.88	1.17**	1.08	1.07
	(0.11)	(0.14)	(0.11)	(0.05)	(0.07)	(0.08)	(0.09)	(0.08)	(0.08)
8th decile	1.24***	1.66***	0.73***	0.61***	0.80***	0.93	1.15**	1.03	1.07
	(0.10)	(0.13)	(0.09)	(0.05)	(0.06)	(0.07)	(0.08)	(0.07)	(0.08)
7th decile	1.21***	1.42***	0.91	0.67***	0.87**	0.93	1.12*	1.03	1.04
	(0.09)	(0.10)	(0.10)	(0.05)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
6th decile	1.23***	1.46***	0.92	0.69***	0.89*	0.99	1.13**	1.07	1.14**
	(0.08)	(0.09)	(0.10)	(0.05)	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)
5th decile	1.25***	1.38***	0.98	0.75***	0.89*	0.99	1.13**	1.08	1.09
	(0.08)	(0.09)	(0.10)	(0.05)	(0.05)	(0.06)	(0.06)	(0.07)	(0.06)
4th decile	1.15**	1.26***	0.94	0.72***	0.94	1.05	1.03	1.04	1.09
	(0.07)	(0.07)	(0.09)	(0.04)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
3th decile	1.09	1.30***	0.99	0.81***	0.98	1.06	1.14**	1.10*	1.13**
	(0.06)	(0.07)	(0.09)	(0.04)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
2nd decile	1.05	1.18***	0.89	0.91**	0.98	1.00	1.06	1.04	1.05
	(0.05)	(0.06)	(0.07)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)
Observations	29,621	29,248	29,671	29,067	29,088	29,385	29,205	29,069	29,271

Notes: Figures refer to odds ratios. *,** and *** indicate statistical significance at the ten, five and one percent levels. Controls included for absolute values of the socio-economic status index, standardized academic achievement in reading and mathematics, gender and school funding. Complete estimations will be provided from authors upon request.

TABLE 6
The Link Between Relative Social Status and Children's Academic Self-Concept. Odds Ratios

	I Can Learn Any Exercise, Even When it is Very Difficult	I Learn Easily	I Am Sure About Passing My Exams
SES decile in 5th grade (Ref.: 1st decile, bottom)			
10th decile (top)	1.24**	1.14	1.08
	(0.11)	(0.10)	(0.10)
9th decile	1.17**	1.08	1.08
	(0.09)	(0.08)	(0.08)
8th decile	1.15**	1.03	1.07
	(0.08)	(0.07)	(0.08)
7th decile	1.12*	1.02	1.04
	(0.07)	(0.07)	(0.07)
6th decile	1.13**	1.06	1.14**
	(0.07)	(0.06)	(0.07)
5th decile	1.13**	1.08	1.09
	(0.06)	(0.06)	(0.06)
4th decile	1.03	1.03	1.08
	(0.06)	(0.06)	(0.06)
3rd decile	1.14**	1.10*	1.12**
	(0.06)	(0.06)	(0.06)
2nd decile	1.05	1.03	1.04
	(0.05)	(0.05)	(0.05)
Observations	29,205	29,069	29,271

Notes: Figures refer to odds ratios. *,** and *** indicate statistical significance at the ten, five and one percent levels. Controls included for absolute values of the socio-economic status index, standardized academic achievement in reading and mathematics, gender and school funding. Complete estimations will be provided from authors upon request.

(i.e. how socio-economically advantaged children are in comparison to their school peers) and their educational achievement. This is despite there being several reasons to believe that such relationship will exist, including the setting/streaming of children into different groups in their class/school, the decisions schools make with respect to how they allocate resources, social stigma, parental behaviors, information asymmetry and the well-known phenomenon of "big-fish-little-pond" effects.

The key contribution of this paper has been to investigate the presence of such relative socio-economic status influence, using rich longitudinal census data covering the largest region within Spain. This is a particularly interesting context in which to consider relative socio-economic status influence, given it has a large number of disadvantaged pupils, high levels of educational inequality, a substantial proportion of young people who repeat a grade and generally low levels of educational achievement overall. Our empirical analysis not only considers how children's relative socio-economic position within their primary school is associated with the progress they make in reading and mathematics, but also the likelihood that they repeat a grade, their academic self-concept and attitudes towards school. Importantly, we consider whether relative socio-economic status relationship with such outcomes can be observed over and above children's relative academic rank (big-fish-little-pond effects).

There is strong and consistent evidence that young people's relative socio-economic position within their school is associated with the probability that they repeat a grade. Specifically, children who are more socio-economically advantaged than their school peers are more likely to repeat a grade than the equivalent child

who is from a low socio-economic background relative to their school peers. This holds after controlling for children's academic rank, suggesting it is not being driven by big-fish-little-pond effects and parental engagement in their schooling. It also runs counter to the more commonly studied "absolute" socio-economic status influence, where more advantaged pupils are less likely to repeat a grade. One possible explanation for this result may be that there is less social stigma for a child to repeat a grade when they are surrounded by low socio-economic status peers or, alternatively, it could be driven by negative peer effects.

Interestingly, relative social status influence works in the opposite direction with respect to progress in reading and mathematics scores. Specifically, being socio-economically advantaged compared to one's primary school peers was found to be positively linked to progress in reading and mathematics. This result did not seem to be driven by big-fish-little-pond effects (i.e. it was not due to children with a high relative SES position in primary school also having a high primary school academic rank).

Finally, evidence also emerges that relative socio-economic status seems to matter for young people's academic attitudes towards school. In particular, children who are socially advantaged relative to others in their school may be more likely to report being happy at school and that they like studying, despite also suggesting that there are greater levels of disruption amongst their classmates. In contrast, we find little clear evidence that relative SES is linked to children's academic self-concept.

Our results have some relevant implications for the design of education policies aimed at reducing the influence of relative socio-economic status that we have found. First, social stigma may be relevant for students' likelihood of grade retention; hence, early attention programs for students at risk of grade retention should be fostered and, for those who have already repeated, teachers should help their integration in the classroom, so that this stigma is reduced as much as possible. Furthermore, the identification of those students who are less socio-economically advantaged than their peers and, thus, may be at risk of presenting lower academic performance than their higher socio-economic peers, should be done, so that teachers can closely monitor their progress. However, all these integration policies should be performed in such a way that students do not realize them, so that they do not worsen problems surrounding social stigma.

These results should, of course, be interpreted in light of the limitations of this research. Five particularly important issues stand out as key areas for future work. First, although we have controlled for a range of potential confounding variables, our estimates still refer to conditional associations only and do not necessarily capture cause and effect. Further work incorporating a richer set of controls (particularly in terms of parental school choice) would undoubtedly be welcome as a future addition to the literature. Second, at the start of the paper we discussed a number of potential mechanisms that may give rise of relative socio-economic status influence. Yet our ability to explore such mechanisms in this paper has been limited due to a lack of available data (e.g. we do not know how children are set/streamed within schools or how schools allocated resources amongst pupils). Again, future work using data with such additional information may help to resolve this matter. Third, it would perhaps be preferable for relative differences in socio-economic

status to be done at class-level (rather than at the school-level). This was—unfortunately—not possible in this analysis, due to the data available not containing class identifiers. Fourth, unfortunately the data we have available do not include any information about household income (or students' postal code to derive an area-based proxy). Consequently, family income has not been directly included in our socio-economic status measure (only household possessions as a proxy) with it also not possible to disentangle differences across the socio-economic components (e.g. separating out parental income from parental educational influences). Finally, we do not have information on the allocation of school resources, so we use it only as a potential explanation of our results.

Despite these limitations, we believe that this paper has highlighted the importance of further investigations of relative socio-economic influence. Our results have illustrated how they are linked to a range of future outcomes and that these associations are independent of young people's relative academic rank. Further work is now needed to establish whether such influence can be observed in other education systems across the world and the mechanisms by which relative socio-economic influence is generated.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's web site:

Table S.1: The link between relative social status and the probability of repeating a grade. Linear Probability Model (this table corresponds to column 1 in Table 2)

Table S.2: The link between relative social status and the probability of repeating a grade, conditional upon primary school academic rank. Linear Probability Model (this table corresponds to column 1 in Table 3)

Table S.3: Descriptive statistics in 5th grade, comparing students who could be followed until the end of the 8th grade (2011–2012) and students who were dropped out from our sample because they had missing in any of the key pieces of information (students' scores in reading, mathematics and the socio-economic status index for both 5th and 8th grades)

Table S.4: The link between relative social status and the probability of repeating a grade. Odds ratios. These estimations include children who repeated a grade before the 5th grade, private school children and children within schools with less than 10 pupils (this table corresponds to column 1 in Table 2)

Table S.5: The link between relative social status and the probability of repeating a grade, conditional upon primary school academic rank. Odds ratios. These estimations include children who repeated a grade before the 5th grade, private school children and children within schools with less than 10 pupils (this table corresponds to column 1 in Table 3)

Table S.6: The link between relative social status and young people's academic achievement. Effect sizes. These estimations include children who repeated a grade before the 5th grade, private school children and children within schools with less than 10 pupils (this table corresponds to columns 2 and 3 in Table 2)

Table S.7: The link between relative social status and young people's academic achievement, conditional upon academic rank. Effect sizes. These estimations include children who repeated a grade before the 5th grade, private school children and children within schools with less than 10 pupils (this table corresponds to columns 2 and 3 in Table 3)

Table S.8: The link between relative social status and the probability of repeating a grade. Odds ratios. Quartile estimations (this table corresponds to column 1 in Table 2)

Table S.9: The link between relative social status and the probability of repeating a grade, conditional upon primary school academic rank. Odds ratios. Quartile estimations (this table corresponds to column 1 in Table 3)

Table S.10: The link between relative social status and young people's academic achievement. Effect sizes. Quartile estimations (this table corresponds to columns 2 and 3 in Table 2)

Table S.11: The link between relative social status and young people's academic achievement, conditional upon academic rank. Effect sizes. Quartile estimations (this table corresponds to columns 2 and 3 in Table 3)