



# The association between parental separation at the school level and student outcomes in four European Countries

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## ABSTRACT

This paper re-examines the role of the school share of separated families with new data, new countries, and a broader set of outcomes. Past studies in the US have shown that the share of students from separated families has a negative effect on students' test scores. Using data on 16,468 students and their parents in 471 secondary schools in England, Germany, the Netherlands and Sweden, multilevel models were estimated to assess the effects of the demographic composition of schools on student outcomes while simultaneously exploring the role of school disadvantages and school-level social capital. Findings showed that students had lower reading test scores, displayed poorer behavior in school, and had more problem behaviors outside of school, when a larger share of the students in school came from separated families. The associations were to some extent explained by associated school disadvantages but social capital at the school level did not explain the associations. The adverse effects of the school context on behavior inside and outside of school were stronger for girls than for boys but the effects on reading were similar. There were also country differences, the most noteworthy being that context effects as well as gender differences therein were absent in Sweden.

## 1. Introduction

Many studies have documented adverse effects of parental separation on children's school outcomes, such as achievement test scores, problem behavior in school, high school dropout, and educational attainment (Albertini & Dronkers, 2009; Amato & Anthony, 2014; Fomby & Cherlin, 2007; Jonsson & Gähler, 1997; McLanahan & Sandefur, 1994; Sigle-Rushton & Hobcraft, 2005). Effects of parental separation on children are not necessarily causal but advanced longitudinal studies controlling for selection bias also revealed significant effects of parental separation (Kim, 2011; McLanahan & Tach, 2013). In general, there is consensus that parental separation has an adverse effect on children's success in school, although it is acknowledged that effects are not always strong and that they vary across children, families, and contexts (Amato & Anthony, 2014).

Children from separated families are not randomly distributed across schools. In some schools, there are many children from separated families, in other schools, parental separation is uncommon. There is evidence that the share of separated and single-parent families in a school has an impact on children as well. Three studies have shown that when there were more children in a school whose parents were separated or

living without the biological father, the children in these schools on average had poorer cognitive achievements than children in schools with fewer children from separated and single-parent families, even after controlling for the effects of student and family characteristics at the student level (Cavanagh & Fomby, 2012; De Lange & Dronkers, 2014; Pong, 1998). This finding fits into a larger body of studies showing that the composition of schools with respect to family background has emergent effects on student outcomes, on top of the effects of family background at the individual level (Chiu, 2010; Crosnoe, 2009; Rumberger & Palardy, 2005; Ryabov & Van Hook, 2007; Southworth & Mickelson, 2007).

Using nationally representative data on 16,468 students in 471 secondary schools in England, Germany, the Netherlands and Sweden (Kalter et al., 2013), this paper re-examines the effects of parental separation at the school level on student outcomes in secondary school. We contribute to past research in three ways. First, we broaden the evidence from cognitive to behavioral outcomes. School-level effects of the share of separated families have so far been tested exclusively on cognitive outcomes, in particular test scores in reading and mathematics (e.g., Cavanagh & Fomby, 2012; Pong, 1998). While cognitive outcomes are relevant for educational attainment and hence, for social inequality at

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large, they are somewhat remote from the social mechanisms that have been suggested to explain the effects. Next to examining student achievement (i.e., reading test scores), this paper examines student behavior in school (e.g., doing homework, skipping classes), and rule-breaking behavior outside of school (e.g., underage drinking). In doing so, we provide a more direct and comprehensive test of the hypothesis than has been offered before.

Second, we broaden the evidence to the European context. Previous studies have almost exclusively used American data (Cavanagh & Fomby, 2012; Pong, 1998). Cross-national comparative studies have shown that separation is less strongly connected to economic disadvantage in Western Europe than in the US (De Vaus & Gray, 2017). Moreover, separation is less strongly linked to racial inequality in Europe than in the US (Kalmijn, 2018). In Western Europe, there are immigrant groups where single parenthood is more common than it is in the majority (e.g., families with African or Caribbean origins) but there are also immigrant groups where separation and single parenthood are uncommon, such as families with Turkish or Indian origins (Kalmijn, 2018). Given these differences, it is yet uncertain if the school-level effects of parental separation can be generalized to the context of Western Europe.

Third, we explore differences by gender. None of the previous studies so far have analyzed gender differences. The lack of attention to gender at first seems reasonable since there are few gender differences in the effects of parental separation on children's school achievement and well-being (Amato & Cheadle, 2005; Fomby & Cherlin, 2007). However, there are important gender differences in school outcomes that could motivate a gendered analysis (Buchmann & DiPrete, 2008). Girls on average show less problem behavior in class, appear more motivated for school work (Downey, 2005), and have fewer problem behaviors outside of school (Thijs & van Dijk, 2015). Moreover, network studies have shown that girls are more strongly affected by the behaviors and beliefs of their friends and classmates than boys (Kretschmer & Leszczensky, 2018; Mercken & Snijders, 2010), a difference that could suggest that girls are more strongly affected by the share of separated parents in their school than boys. Although we cannot test the underlying network mechanisms, we do provide, for the first time, an analysis of the possible moderating role of gender in the association between separation at the school level and individual student outcomes.

Data were collected in England, Germany, the Netherlands and Sweden (CILS4EU; Kalter et al., 2013). These are high-income countries that have experienced the Second Demographic Transition (Lesthaeghe, 2014) along with substantial value change in a modern, secular direction (Halman & van Ingen, 2015). Although the set of countries is homogeneous in light of country differences on a global scale, there are also interesting differences. The four countries have different levels of inequality, different gender roles, and different divorce rates. We cannot devise one general hypothesis about the four countries and we cannot test underlying macro-level mechanisms with so few degrees of freedom. Nonetheless, we do present some suggestions about how countries could differ in terms of the effect of parental separation at the school level on student outcomes. Following prior work on CILS4EU on other topics, we present all analyses separately for the four countries and discuss similarities and differences in the findings (De Hoon & van Tubergen, 2014; Mood & Jonsson, 2016; Smith & Maas, 2015).

## 2. Background and hypotheses

Two explanations have been given for the school-level effects of single parenthood and parental separation on student outcomes. One line of thought argues that there are competing compositional effects involved. At the individual level, separation is associated with poverty, lower levels of schooling, and ethnic minority status (Härkönen, 2014; McLanahan, 2004). As a result, schools where there are many students from separated families tend to be more disadvantaged than other schools. Educational researchers have shown that socioeconomic

disadvantages at the school level have adverse effects on student outcomes, on top of the effects of disadvantage at the individual level (Rumberger & Palardy, 2005; Ryabov & Van Hook, 2007). School quality and resources play a role in these effects, but compositional effects are also important.

In line with this reasoning, two studies on the effects of parental separation and single parenthood at the school level have shown that more than half of the effects of single parenthood at the school level could be attributed to other school disadvantages, in particular to the socioeconomic background of the students in a school (De Lange & Dronkers, 2014; Pong, 1998). Even after controlling for socioeconomic effects, however, a substantial effect of the share of students from single-parent and separated families in school on children's achievement remained, suggesting that other mechanisms play a role as well.

A second explanation lies in the notion of family-based social capital (Coleman, 1988). Family-based social capital is reflected in parental involvement in children's life, support for children's school work, monitoring of children's behavior, and parent-school interactions which are conducive to children's development and achievement (Park, 2008; Teachman & Paasch, 1997). At the micro level, parents in separated families are believed to have less family-based social capital than parents in married families (Astone & McLanahan, 1991; Carlson, 2006; Coleman, 1988; Myers & Myers, 2015). Family-based social capital at the school level, in turn, is believed to benefit all students, in part because it leads to the emergence of school norms that are favorable for learning, and in part because monitoring by parents not only affects their own children but also their children's friends (Browning & Leventhal, 2005).

Empirical evidence for family-based social capital explanations has thus far been limited. One study showed that school-level measures of parental participation in school affairs and the number of parents who knew each other explained not more than 10% of the effect of the share of single-parent families in school on mathematics and reading achievement (Pong, 1998, p. 37).

The current paper also explores gender differences. A well-known claim in the literature on gender in adolescence is that girls are more sensitive to what their peers think, do, or believe (Riegle-Crumb & Farkas, 2006; Rose & Rudolph, 2006). Several mechanisms may be responsible for this difference. Girls are often more strongly oriented toward emotional closeness in relationships, more concerned and worried about the stability of their friendships, and more often thinking about what peers think of them (Rose & Rudolph, 2006). The stronger focus on emotional ties is combined with gender differences in network features, such as a higher frequency of dyadic interaction among girls, smaller network sizes, and denser and more homogenous networks (McMillan & Felmlee, 2018; Haynie & Doogan, 2014). Because the degree of influence is stronger in close relationships and dense networks, girls may be more likely to adapt to the behaviors and beliefs of their peers and classmates (Kretschmer & Leszczensky, 2018; McMillan & Felmlee, 2018). Girls also have a greater tendency to disclose and discuss their emotional problems when interacting with each other, a phenomenon labeled co-rumination (Rose, 2002). Co-rumination may suggest a greater sensitivity among girls toward the problems that children of separated parents have in school.

A set of hypotheses guides the analysis. The first hypothesis is that students fare worse in schools where more students have separated parents, after controlling for the individual effect of parental separation (*hypothesis 1*). The next two hypotheses concern potential explanations of these effects. It is hypothesized that the association between the school share of separated parents and student outcomes is explained by school disadvantages on the one hand (*hypothesis 2a*) and by school differences in social capital on the other (*hypothesis 2b*). The third hypothesis concerns gender differences: the adverse effects of the school share of separated parents on student outcomes are expected to be stronger for girls than for boys (*hypothesis 3*).

Although the main goal of the paper is not to test hypotheses at the

macro level, we present evidence for four countries and we can speculate about how these countries could differ. Countries first differ in the prevalence of divorce. According to the institutionalization hypothesis, the consequences of divorce depend on its prevalence. When divorce becomes more common, divorce will be more accepted and financial and social support arrangements for separated families will improve (Härkönen, 2014; Kalmijn, 2010). It is generally expected that as a result, the consequences of divorce for children at the individual level will be weaker in countries with higher divorce rates. Evidence on this idea from country comparisons is not supportive (Härkönen et al., 2017), but little is known about how effects of divorce at the school level vary with the overall prevalence of divorce in a country. Based on the institutionalization hypothesis, one could expect that the consequences of separation for student outcomes at the school level will be less adverse in countries where divorce rates are high (Sweden and England) than in countries where divorce rates are lower (Germany and the Netherlands).

The four countries also differ in inequality. With respect to income inequality, Sweden is the most egalitarian country whereas the UK is the most unequal country (OECD, 2011). How divorce and inequality are linked is difficult to assess from the literature. Existing comparisons are complicated by differences in model specification, interactions by parent status, and changes over time in the gradient (Matysiak & Styrac, 2014). It is true, nonetheless, that the UK has a clear negative gradient (Boertien & Härkönen, 2018), whereas evidence on the gradient in the other countries is more mixed and depends on the time period (Härkönen & Dronkers, 2006; Matysiak & Styrac, 2014). Moreover, one study found stronger negative effects of divorce on women's income in Germany and the UK than in Sweden (Andreß & Borgloh, 2006), a finding which can be attributed to the stronger welfare state in Sweden. Based on considerations about inequality, one could thus expect more adverse effects of the school share of separation on student outcomes in England, and possibly Germany, and less adverse effects in Sweden and possibly the Netherlands.

Gender differences also vary across countries. When looking at the gender division of labor, Sweden has more egalitarian gender roles than the other three countries (OECD, 2017; Voicu & Voicu, 2009). Similarly, gender role ideologies are more egalitarian in Sweden, and more traditional in Germany and the UK, with the Netherlands in between (Lomazzi et al., 2019). Whether such differences have implications for interaction patterns in school is not clear but one could speculate that gender differences in the effects of the share of parental separation will be smaller in Sweden than elsewhere.

### 3. Data and method

This paper used the CILS4EU data which were collected in four countries in 2010 and 2011 (Kalter et al., 2013; Kalter & Jonsson, 2018). The CILS4EU stands for *Children of Immigrants Longitudinal Survey in 4 European countries* and was funded in the NORFACE program (New Opportunities for Research Funding Agency Cooperation in Europe), a partnership between fifteen national research councils to increase cooperation in research and research policy in Europe. In each country, nationally representative samples were drawn using a three-stage design. First, schools were chosen based on a probability sample in each country. Schools with larger shares of children with a migration background were oversampled (for details, see CILS4EU, 2014).<sup>2</sup> The second step was to sample two full classes of the same grade in each school, also randomly. The focus was on those grades in which children were 14 years old (3rd grade in the Netherlands, 8th grade in Sweden, 9th grade in Germany, and 10th grade in England). The third step

<sup>2</sup> Following earlier analyses of the CILS4EU data, no weights were used in the regression models (Dollmann, 2017) but the proportion of students with a migration background – the sampling criterion – was included as a school-level variable.

consisted of filling out paper-and-pencil questionnaires by all the students in both classes in a school, covering two lessons (hours). The teachers of the classes were also asked to fill out a questionnaire, as were the parents of the students. More details about the fieldwork can be found in the technical report of the study (CILS4EU, 2014).

To address the problem that schools may not be willing to participate, a replacement strategy was used where each school was matched to a replacement school that was to be approached when the initial school did not respond. After replacement, response at the school level was 65.6% in England, 98.6% in Germany, 91.7% in the Netherlands, and 76.8% in Sweden (where no replacement procedure was used) (CILS4EU, 2014). Non-response at the school level is a common problem in school research – often resulting from research fatigue among schools – but not exceptionally high in the CILS4EU. More importantly, analyses of data from PISA found no evidence that lower response rates at the school level yielded more bias (Micklewright & Schnepf, 2012). The number of schools was 107 in England, 135 in Germany, 100 in the Netherlands, and 129 in Sweden (471 in total).

All individual-level measures were obtained from the student data. To construct school-level measures, data were used from students and teachers (cf. Pong, 1998). To obtain school-level data from students, both classes were used. The average number of participating students in a school was 40 in England, 35 in Germany, 44 in the Netherlands, and 39 in Sweden. Data from teachers were used to create selected measures of social capital and school quality. Data from parents had high non-response in England and Sweden and were therefore not used in this paper as this would complicate the comparability of the findings.

The total number of students was 18,716 (England 4315, Germany 5013, the Netherlands 4363, Sweden 5025). To construct the analytical sample, we excluded children who did not report about their household situation ( $n = 908$ ), children who lived without any biological parent ( $n = 1048$ ), children whose parent(s) was/were living abroad ( $n = 142$ ), children who did not specify the reason why their parents were not together ( $n = 136$ ), and children with missing values on sex ( $n = 13$ ). This yielded 16,468 students for the analyses. The variables and scales are discussed below in general terms. Measurement details are presented in Table 1. Table 2 presents means and standard deviations by country.

#### 3.1. Outcome measures

*Achievement* was assessed with an in-class reading test consisting of 30 questions where students had to choose the correct synonym from a precoded list of words. The score was the number of correct responses.

*School problems* were measured with a scale consisting of four items measuring behavior in school: (a) *coming late to school*, (b) *getting punishment from teachers*, (c) *arguing/fighting with teachers*, (d) *skipping lessons*, (e) *the time spent doing homework* (reversed), and (f) *the amount of effort put into school* (reversed). Cronbach's  $\alpha$  was .72.

*Problem behavior* was measured with a scale of five items measuring problem behavior (mostly) occurring outside of school: (a) *drinking alcohol*, (b) *smoking cigarettes*, (c) *using drugs*, (d) *having damaged property*, (e) *having been drunk*. Cronbach's  $\alpha$  was .73.

#### 3.2. Individual variables

Students were asked if they lived with both their biological parents, and if not, with whom they lived and why the parents did not live together. The main independent variable was whether the biological parents were divorced or separated. We use the term 'separated' to refer to both groups. An additional variable was constructed indicating whether a parent was deceased. The reference category consists of children whose biological parents were living together. No question was asked about whether the parents were married or cohabiting. Not all separated parents were single parents but additional models showed that there were very small differences in student outcomes between students from separated single-parent families and students from

**Table 1**  
Measurement information about the variables used in the analysis.

Dependent Variables	Items / measurement
Reading test <sup>1</sup>	The number of correct synonyms in a multiple-choice test of 30 words administered in class.
School behavior <sup>1</sup>	Items: (a) coming late to school, (b) getting punishment from teachers, (c) arguing/fighting with teachers, and (d) skipping lessons. These items were coded on 5-point frequency scales, ranging from 1 = never to 5 = every day. Two other items were used as well: (e) the time spent doing homework coded in five categories: more than 2 h a day, about 2 h a day, about 1 h a day, less than 1 h a day, no time at all (coded 5–1), (f) the amount of effort put into school work (5-point Likert items). $\alpha = .72$ . No item could be deleted without reducing the internal reliability.
Problem behavior <sup>1</sup>	Items: (a) drinking alcohol, (b) smoking cigarettes, (c) using drugs, (d) having damaged property, (e) having been drunk. The first three items were presented with 5-point frequency scales and the last two items were dichotomous (0 = never, 1 = ever). The items were standardized and averaged. $\alpha = .73$ .
INDIVIDUAL INDEPENDENT VARIABLES	
Immigrant background	Respondent and/or parent born abroad.
Parental SES	The averaged of the father's and the mother's occupational status (scaled in terms of the International Socio-Economic Index (ISEI) which is a measure of occupational status used in comparative research.
Books in home	The number of books in the home (measured with 5 categories, scaled from 1 to 5). Rescaled to percentile scores within countries.
Religious affiliation	Whether the respondent belonged to a church or denomination (1 = yes, 0 = no).
Father no work	Whether the father was employed (1 = yes, 0 = no).
Mother working	Whether the mother was employed (1 = yes, 0 = no).
# siblings	Range from 0 to 10.
Parent-child involvement	Items: (a) my parents show an interest in my grades and achievements at school, (b) my parents tell me they are proud when I do well in school, and (c) my parents encourage me to work hard for school. The items were standardized and averaged. $\alpha = .75$ .
Parents separated	Child not living with both biological parents whose parents divorced or separated.
Stepparent	Whether a stepparent was living in the household.
Parents widowed	Child not living with both biological parents who had a deceased parent.
SCHOOL-LEVEL VARIABLES	
School: proportion separated	Student measure aggregated.
School: proportion immigrants	Student measure aggregated.
School: SES	Student measure aggregated.
School: teacher morale	Items: (a) the morale of teachers in this school is high, (b) teachers work with enthusiasm, (c) teachers take pride in this school, (d) teachers job satisfaction is high, (e) there is high fluctuation of teachers in this school (Sweden only). $\alpha = .78$ . Recoded to percentile scores within countries.
School: parent-child involvement	Student measure aggregated.
School: parent-school participation	Items: (a) parents volunteering, (b) parents attending teacher-parent conferences, (c) parents attending social/cultural activities organized by the school, (d) parents doing support work for school, (e) parents' attendance in scheduled meetings, (f) parents invited at school events, (g) fund raising activities organized by the school. The items were standardized and averaged. $\alpha = .71$ .
School: type	England: religious (23.7), selective (6.9), academy (5.5), community (38.5), foundation (22.8), private/independent (2.6) Germany: special needs school (2.3), secondary general school (30.3), secondary school (33.2), comprehensive school (16.0), academic secondary school (18.1). Netherlands: lower vocational (25.0), lower general (34.4), middle and higher general (21.3), higher general only (19.3). Sweden: public (93.2), private (6.8)

<sup>1</sup>In the regression models, the dependent variables were standardized within countries ( $M = 0$ ,  $SD = 1$ ).

Source: CILS4EU 2010/2011.

stepfamilies. A dummy for living with a stepparent was included.

At the individual level, several controls were used for the parents' resources. To measure economic resources, the following variables were included: whether or not the mother worked, whether or not the father worked, the father's and mother's occupational status, and the number of siblings. Past research on CILS4EU showed that student reports about parents' occupations are quite reliable and more so than reports about parents' educational levels (Engzell & Jonsson, 2015). Two measures of cultural resources were available: the number of books in the home and whether the respondent belonged to a church or denomination.<sup>3</sup> To measure social resources, we used individual versions of the scale of parent-child involvement (see below). We also included a variable contrasting first- and second-generation (non-European) immigrants versus others (following Kalter & Jonsson, 2018). Distinguishing more specific groups was considered but made no difference for the main effects of interest.

### 3.3. School-level measures

Calculations of school-level measures were based on the full sample and not on the analytical sample.

*Parental separation:* the percentage of separated families in a school was obtained by aggregating student data to the school level. In an American analysis, it was shown that the effect of the share of separated (single-parent) families was similar across measurement sources, i.e., students versus school administrators (Pong, 1998, p. 31). Fig. 1 shows the distributions in each country. Note that the individual measure was missing if children did not specify why they were living with one parent and when parents were living abroad.

*School disadvantage:* School disadvantage was measured with three measures: (a) a measure of socioeconomic status based on the average occupational status of fathers and mothers in school, (b) the percentage of immigrant students (first and second generation combined), and (c) an index of the morale of teachers according to teachers themselves (see Table 1 for details).

*Social capital measures:* Following prior work, a distinction was made in two dimensions of social capital: parent-child connectivity and parent-school connectivity (Parcel & Dufur, 2010; Teachman & Paasch, 1997). Parent-child connectivity was based on three items measuring parental involvement in the student's school work, aggregated to the school level. Parent-school connectivity was based on reports of teachers about how much parents participated in school activities.

*School type:* The countries have different types of secondary schools that vary in academic level (due to early tracking), in funding (private versus public), or in other quality aspects (restrictive entry or not) (Van de Werfhorst & Mijs, 2010). Because entry into a specific type of school could be selective with respect to student outcomes and family background, school type is important. However, since many separations of the students in the sample will have occurred before entering secondary school, school type is not necessarily a confounding variable. Table 1 lists the types of schools distinguished in each country.

### 3.4. Method

The current paper used three design features that are important for estimating school-level effects: (a) data on a large number of schools, (b) a multilevel model that separates effects at the individual and the school level, and (c) adjustments for potential confounders at the school level.

<sup>3</sup> For the ages we look at (13–16), respondents' church membership is a reasonable proxy for parents' membership.



**Table 2**  
Descriptives of independent variables.

England	Mean	SD	N
Girl	.489	.5	3873
School problem behavior	.142	.719	3872
Immigrant background	.237	.425	3873
Parent SES	.112	.885	3556
Books in home	.5	.28	3404
Religious affiliation	.59	.492	3660
Father no work	.115	.319	3451
Mother working	.725	.447	3720
# siblings	1.583	1.295	3659
Parent-child involvement	.109	.827	3865
Parents widowed	.031	.173	3873
Stepparent	.11	.313	3873
Parents separated	.296	.456	3873
School: proportion separated	.304	.134	3873
School: proportion immigrants	.242	.225	3873
School: SES	.074	.355	3873
School: teacher morale	.5	.285	3339
School: parent-child involvement	.1	.178	3873
School: parent-school participation	.376	.667	3376
Germany	Mean	SD	N
Girl	.496	.5	4206
School problem behavior	-.052	.572	4206
Immigrant background	.309	.462	4206
Parent SES	-.236	.814	4002
Books in home	.5	.279	3807
Religious affiliation	.881	.323	4092
Father no work	.119	.324	3873
Mother working	.71	.454	4121
# siblings	1.467	1.328	4161
Parent-child involvement	-.174	.867	4198
Parents widowed	.023	.15	4206
Stepparent	.123	.329	4206
Parents separated	.291	.455	4206
School: proportion separated	.283	.096	4206
School: proportion immigrants	.311	.211	4206
School: SES	-.268	.348	4206
School: teacher morale	.5	.289	4183
School: parent-child involvement	-.172	.174	4206
School: parent-school participation	.023	.575	4183
Netherlands	Mean	SD	N
Girl	.516	.5	3833
School problem behavior	.072	.648	3832
Immigrant background	.195	.396	3833
Parent SES	.002	.837	3603
Books in home	.5	.275	3742
Religious affiliation	.464	.499	3786
Father no work	.097	.296	3583
Mother working	.788	.409	3748
# siblings	1.376	1.078	3383
Parent-child involvement	-.107	.716	3830
Parents widowed	.025	.155	3833
Stepparent	.098	.297	3833
Parents separated	.231	.421	3833
School: proportion separated	.225	.093	3833
School: proportion immigrants	.203	.256	3833
School: SES	-.114	.274	3833
School: teacher morale	.5	.287	3730
School: parent-child involvement	-.099	.206	3833
School: parent-school participation	-.075	.399	3730
Sweden	Mean	SD	N
Girl	.514	.5	4556
School problem behavior	-.132	.64	4556
Immigrant background	.299	.458	4556
Parent SES	.041	.859	4293
Books in home	.5	.28	3882
Religious affiliation	.687	.464	4213
Father no work	.11	.313	4246
Mother working	.835	.371	4401
# siblings	1.598	1.365	4556
Parent-child involvement	.159	.792	4542

**Table 2 (continued)**

Sweden	Mean	SD	N
Parents widowed	.028	.166	4556
Stepparent	.121	.326	4556
Parents separated	.286	.452	4556
School: proportion separated	.285	.09	4556
School: proportion immigrants	.309	.279	4556
School: SES	.157	.328	4556
School: teacher morale	.5	.289	4354
School: parent-child involvement	.153	.185	4556
School: parent-school participation	-.006	.589	4368

Source: CILS4EU 2010/2011.

Causal effects of schools on student outcomes cannot be established with the current data. This would require data for a large number of schools over longer periods of time with sufficient change at the school level. While the CILS4EU has a panel structure, there was insufficient change in the composition of schools. Important to emphasize is that the effects of each school-level measure were estimated while controlling for the individual version of that measure. In this way, interpretation problems arising from the ecological fallacy were circumvented.

Multilevel regression models were estimated with students nested in schools (Raudenbush & Bryk, 2002). Estimation was done in Stata with random-effects regression models. The numbers of schools per country (120 on average) and the numbers of students per school (39 on average) were sufficient to conduct a multilevel analysis. The number of students per school varies so some schools were represented by few students. Because aggregate measures may be less reliable when based on a small number of students in a school, we also estimated models while leaving out schools that were represented by fewer than 20 students and fewer than 30 students. These results, presented in Appendix 1, revealed virtually no differences from the main results.

All analyses were done for each of the four countries separately. Three models were estimated for each outcome and each country: a model with individual-level variables and the school share of separated parents (Model 1), a model including other school-level variables to examine if the effect of the school share of separated parents was due to school disadvantages and social capital effects (Model 2), and a model including adjustments for differences between types of secondary schools (Model 3). The causal role of school type is somewhat uncertain since school choice may be a consequence of parental separation in primary school. The effects of school type were included in Model 3 but not printed in the regression tables for the sake of space.

Interactions of gender and separation (at the individual level and the school level) were included in each model. Girls were coded 0 and boys were coded 1. By implication, the main effects of the separation variables apply to girls and the interactions tell us if the separation effects were larger/smaller for boys. The sum of the main and interaction effect is the implied effect for boys. The regression results are presented for each country separately in Tables 3–6. For the sake of space, the tables only contain the key variables and not the control variables. The full regression tables are included in Appendix 2. All dependent variables were standardized within countries.

Because of the large number of models and tables, the findings were summarized in graphs. We estimated margins and confidence intervals for girls and boys for different proportions of separated parents in a school (ranging from 0 to .5). Margins were calculated separately for Model 1 (top panel) and Model 2 (bottom panel). Covariates were set at the mean values. The figures were created for each outcome variable and for each country (Figs. 2–5). The three hypotheses can be evaluated by examining the figures. The slopes in the figures illustrate the ‘effect’ of the school share of separated parents (hypothesis 1). Comparing slopes between top and bottom panels tell us to what extent the ‘effects’ were explained by other school-level variables (hypothesis 2). The differences in slopes between girls and boys tell us if the ‘effects’ were gender-specific (hypothesis 3). Note that the vertical scales were similar in all

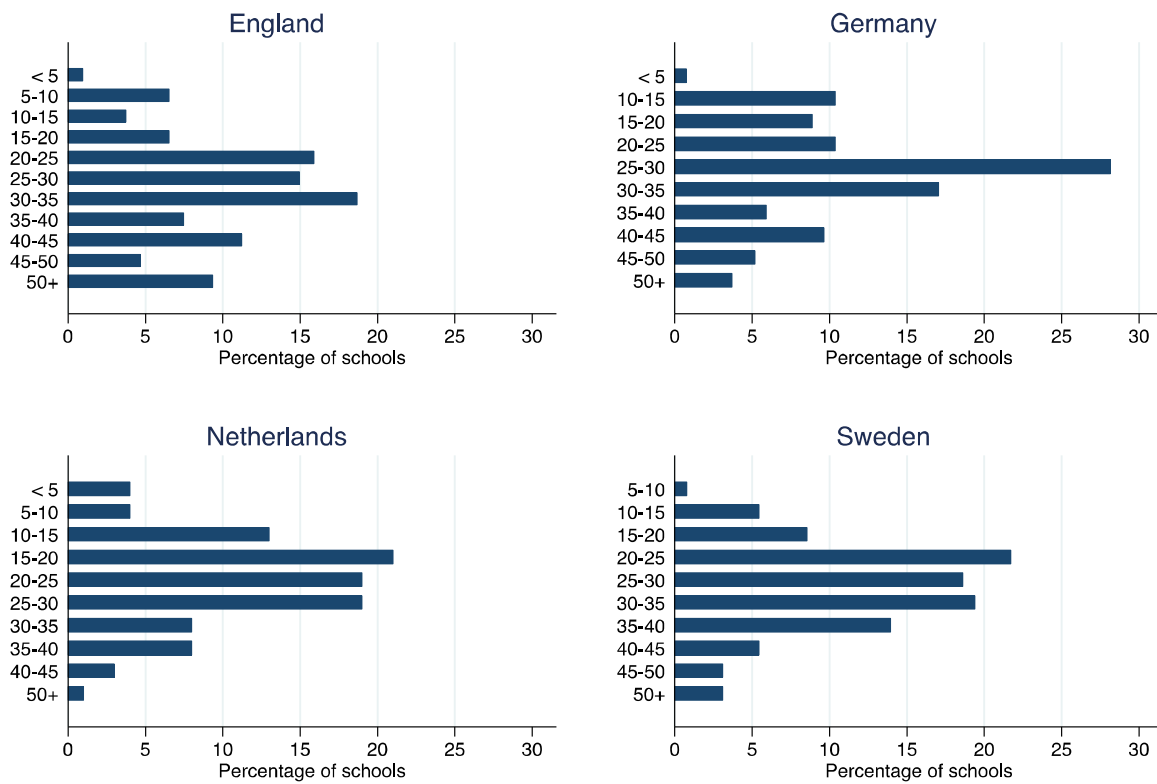


Fig. 1. Percentage of students with separated families in schools.

Table 3

Multilevel regression models of student outcomes in England: Regression coefficients and p-values in parentheses.

England	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M3	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	-.003 (.975)	.031 (.707)	.015 (.857)	.558* (.000)	.541* (.000)	.536* (.000)	.297* (.001)	.306* (.001)	.298* (.001)
Parents separated	.041 (.433)	.048 (.352)	.048 (.351)	.280* (.000)	.279* (.000)	.275* (.000)	.254* (.000)	.260* (.000)	.258* (.000)
Boy x separation	-.045 (.503)	-.056 (.403)	-.057 (.396)	-.094 (.155)	-.090 (.176)	-.088 (.186)	-.010 (.898)	-.015 (.837)	-.014 (.846)
School: proportion separated	-.872* (.000)	-.302 (.309)	-.268 (.363)	.882* (.000)	.557* (.038)	.593* (.027)	.680* (.004)	.738* (.009)	.761* (.008)
Boy x school separation	.122 (.621)	.056 (.820)	.078 (.751)	-.674* (.006)	-.639* (.009)	-.637* (.009)	-.568* (.035)	-.587* (.030)	-.576* (.033)
School: SES		.196* (.000)	.169* (.001)		-.081* (.034)	-.101* (.020)		.044 (.257)	.036 (.428)
School: proportion immigrants		-.048 (.200)	-.047 (.197)		-.017 (.603)	-.017 (.605)		-.050 (.143)	-.049 (.163)
School: teacher morale		.026 (.401)	.027 (.378)		-.011 (.687)	-.011 (.694)		-.013 (.644)	-.012 (.671)
School: parent-child involvement		-.005 (.897)	.011 (.774)		-.009 (.782)	-.002 (.955)		.013 (.716)	.018 (.628)
School: parent-school participation		-.006 (.844)	-.015 (.635)		.006 (.842)	.006 (.851)		-.003 (.912)	-.004 (.886)
Constant	.206* (.023)	-.035 (.751)	-.074 (.556)	-.360* (.000)	-.237* (.018)	-.147 (.194)	-.250* (.005)	-.301* (.005)	-.280* (.021)
Pupils	3731	3731	3731	3872	3872	3872	3415	3415	3415
Schools	107	107	107	107	107	107	107	107	107

~  $p < 0.10$ , \*  $p < 0.05$

Source: CILS4EU 2010/2011.

Note: Dependent variables standardized (M = 0, SD = 1). Individual control variables included in all models (see Appendix 2).

**Table 4**  
Multilevel regression models of student outcomes in Germany: Regression coefficients and p-values in parentheses.

Germany	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M3	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	.188* (.014)	.225* (.003)	.233* (.002)	.708* (.000)	.692* (.000)	.690* (.000)	.481* (.000)	.474* (.000)	.482* (.000)
Parents separated	.011 (.797)	.022 (.595)	.027 (.519)	.274* (.000)	.264* (.000)	.263* (.000)	.167* (.006)	.171* (.005)	.171* (.005)
Boy x separation	.128* (.019)	.127* (.017)	.121* (.023)	.049 (.445)	.053 (.411)	.053 (.413)	.034 (.665)	.031 (.687)	.031 (.687)
School: proportion separated (girls)	-1.466* (.000)	-.876* (.001)	-.338 (.142)	.769* (.002)	.708* (.004)	.663* (.011)	1.374* (.000)	1.194* (.000)	1.034* (.002)
Boy x school separation	.095 (.719)	.014 (.958)	-.021 (.934)	-1.018* (.001)	-.983* (.001)	-.982* (.001)	-1.058* (.005)	-1.056* (.005)	-1.093* (.003)
School: SES		.361* (.000)	.178* (.000)		.017 (.555)	.030 (.447)		-.061 (.124)	-.030 (.518)
School: proportion immigrants		-.034 (.370)	-.059* (.045)		.039 (.209)	.032 (.316)		-.073~ (.085)	-.096* (.016)
School: teacher morale		-.013 (.602)	.010 (.592)		.001 (.970)	-.000 (.982)		-.032 (.230)	-.028 (.259)
School: parent-child involvement		.020 (.525)	.047~ (.061)		-.026 (.322)	-.028 (.309)		-.083* (.023)	-.073* (.039)
School: parent-school participation		.049 (.186)	.012 (.657)		-.098* (.001)	-.089* (.002)		-.080* (.047)	-.042 (.256)
Constant	.403* (.000)	.486* (.000)	-.548* (.000)	-.483* (.000)	-.470* (.000)	-.409* (.012)	-.489* (.000)	-.527* (.000)	-.317 (.197)
Pupils	4197	4197	4197	4206	4206	4206	3023	3023	3023
Schools	135	135	135	135	135	135	105	105	105

~  $p < 0.10$

\*  $p < 0.05$

Source: CILS4EU 2010/2011.

Note: Dependent variables standardized (M = 0, SD = 1). Individual control variables included in all models (see Appendix 2).

**Table 5**  
Multilevel regression models of student outcomes in the Netherlands: Regression coefficients and p-values in parentheses.

Netherlands	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M3	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	.161* (.019)	.179* (.008)	.204* (.002)	.389* (.000)	.379* (.000)	.369* (.000)	.218* (.009)	.205* (.014)	.191* (.022)
Parents separated	.021 (.660)	.030 (.514)	.029 (.532)	.133* (.016)	.132* (.018)	.132* (.017)	.149* (.008)	.157* (.005)	.157* (.005)
Boy x separation	-.007 (.909)	-.014 (.819)	-.009 (.889)	.135~ (.067)	.137~ (.063)	.138~ (.061)	.036 (.628)	.025 (.735)	.027 (.723)
School: proportion separated	-2.164* (.000)	-1.387* (.000)	-.093 (.755)	1.378* (.000)	1.047* (.006)	.571 (.156)	1.070* (.001)	1.047* (.003)	.428 (.244)
Boy x school separation	-.033 (.910)	-.082 (.775)	-.137 (.626)	-.498 (.145)	-.464 (.175)	-.437 (.201)	-.270 (.442)	-.201 (.567)	-.163 (.642)
School: SES		.401* (.000)	.008 (.862)		-.142* (.001)	.012 (.844)		-.135* (.000)	.059 (.280)
School: proportion immigrants		.029 (.534)	-.078* (.028)		-.055 (.245)	-.010 (.837)		-.144* (.001)	-.087* (.047)
School: teacher morale		-.088* (.003)	-.048* (.027)		.016 (.585)	-.001 (.984)		.013 (.625)	-.013 (.648)
School: parent-child involvement		-.137* (.009)	-.014 (.720)		.049 (.360)	-.000 (.993)		.058 (.226)	-.004 (.933)
School: parent-school participation		-.019 (.680)	-.027 (.419)		-.039 (.425)	-.037 (.443)		.020 (.669)	.018 (.690)
Constant	.486* (.000)	.354* (.000)	-.589* (.000)	-.556* (.000)	-.520* (.000)	-.179 (.205)	-.354* (.000)	-.399* (.000)	.027 (.834)
Pupils	3696	3696	3696	3832	3832	3832	3750	3750	3750
Schools	100	100	100	100	100	100	100	100	100

~  $p < 0.10$

\*  $p < 0.05$

Source: CILS4EU 2010/2011.

Note: Dependent variables standardized (M = 0, SD = 1). Individual control variables included in all models (see Appendix 2).

**Table 6**  
Multilevel regression models of student outcomes in Sweden: Regression coefficients and p-values in parentheses.

Sweden	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M3	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	-.086 (.325)	-.095 (.274)	-.097 (.269)	.034 (.709)	.037 (.687)	.037 (.683)	.049 (.639)	.048 (.646)	.045 (.671)
Parents separated	-.006 (.891)	.001 (.987)	.001 (.986)	.296* (.000)	.292* (.000)	.292* (.000)	.193* (.000)	.192* (.000)	.192* (.000)
Boy x separation	-.112 <sup>~</sup> (.059)	-.113 <sup>~</sup> (.058)	-.113 <sup>~</sup> (.058)	-.045 (.463)	-.048 (.439)	-.048 (.440)	.017 (.813)	.015 (.828)	.016 (.822)
School: proportion separated	.078 (.778)	-.055 (.846)	-.035 (.903)	.104 (.722)	.182 (.539)	.178 (.555)	.017 (.957)	.059 (.857)	.100 (.760)
Boy x school separation	-.115 (.703)	-.083 (.782)	-.079 (.793)	.695* (.027)	.694* (.027)	.692* (.027)	-.017 (.962)	-.010 (.978)	.005 (.989)
School: SES		.066* (.023)	.068* (.020)		.010 (.745)	.009 (.764)		.066* (.046)	.071* (.034)
School: proportion immigrants		-.062* (.020)	-.061* (.022)		.048 <sup>~</sup> (.082)	.048 <sup>~</sup> (.085)		.006 (.849)	.007 (.809)
School: teacher morale		.019 (.391)	.020 (.375)		-.052* (.028)	-.052* (.028)		-.040 (.145)	-.039 (.164)
School: parent-child involvement		.010 (.763)	.009 (.781)		-.020 (.560)	-.019 (.568)		.018 (.628)	.016 (.662)
School: parent-school participation		-.008 (.739)	-.006 (.818)		.046 <sup>~</sup> (.063)	.045 <sup>~</sup> (.075)		.026 (.368)	.031 (.289)
Constant	.089 (.347)	.086 (.395)	.083 (.415)	-.058 (.560)	-.070 (.511)	-.069 (.516)	.047 (.673)	-.007 (.955)	-.012 (.917)
Pupils	4355	4355	4355	4556	4556	4556	3912	3912	3912
Schools	129	129	129	129	129	129	129	129	129

<sup>~</sup>  $p < 0.10$

\*  $p < 0.05$

Source: CILS4EU 2010/2011.

Note: Dependent variables standardized (M = 0, SD = 1). Individual control variables included in all models (see Appendix 2).

figures, allowing us to also evaluate and compare effect sizes across outcomes and countries.

We explored whether associations with the school share of separation were linear. To evaluate this in a parsimonious way, we added quadratic terms to Model 1. Out of the 12 tests, we found only two significant quadratic terms (for school problems in Sweden and for reading achievement in England), confirming that a linear approximation works well in general. For the figures, we always included quadratic terms so readers can evaluate to what extent the effects were indeed linear. An interaction of gender and the quadratic term for the school share of separated parents was also included if it was statistically significant. Additional models were estimated where the share of separated parents was broken down in five categories which were entered as indicator variables (Appendix 3). The fit of these categorical models was worse than the fit of the linear models using the Bayesian Information Coefficient, except for school problems in Sweden (see Fig. 5).

Missing values on control variables were addressed with multiple imputation in Stata for the regression tables (using 20 imputations, chained regression models, and Rubin’s rules to combine the imputations). Dependent and key independent variables were not imputed. For the margins plots, country-specific mean imputation of control variables was used as the estimation of margins is overly complex when multilevel models are combined with multiple imputation. We compared coefficients across imputation methods (mean versus multiple imputation) and there were only trivial differences.

#### 4. Findings

In Fig. 1, frequency distributions are presented showing how much variance there was at the school level in the share of separated families in each country. The variance in each country was considerable. There were schools with fewer than 5% separated families and schools with more than 50% separated families. The distributions were approximately normal and the variance appeared not to differ much across countries. England clearly had the largest number of schools with a high

concentration of separated families. Germany, in contrast, had the largest number of schools with few separated families. The maximum percentage of separated families in a school was 69% (in England).

##### 4.1. Parental separation and student outcomes

We begin our discussion with the findings for England, focusing on school-level effects (Table 3, Fig. 2). For both girls and boys, there were negative associations between reading scores and the share of separated parents in school. The main effect, which applies to girls, was significant and the gender interaction was not significant (Table 3). The magnitude of the effect was substantial. The school-level measure is a proportion, so the effect for girls implies that a 10% increase in the share of separated parents in a school was associated with a decline in reading scores by 8.7% of a standard deviation.

In England, there were also positive associations between the school share of separated parents and the two behavioral outcomes. These associations were clearly present for girls and mostly absent for boys. Girls displayed poorer behavior in school and had more problems outside of school when the share of separated parents was higher. The gender interactions were significant (Table 3), showing that the associations of the school share of separated parents with these outcomes were significantly smaller for boys than for girls. Fig. 2 also shows convergence between girls and boys with the share of separated parents. The advantage of girls over boys (in terms of having fewer school problems and less problem behavior) declined when the share of separated families in a school was higher. In schools with high shares of separated families, girls no longer had their typical behavioral advantage over boys.

In Germany, a similar pattern of findings was observed as in England (Table 4, Fig. 3). For girls and boys in Germany, there was a significant negative association between the share of separated parents and student reading scores, in line with expectations. The gender interaction was not significant showing that this association applied to both genders (Table 4). The effect for girls implies that a 10% increase in the share of



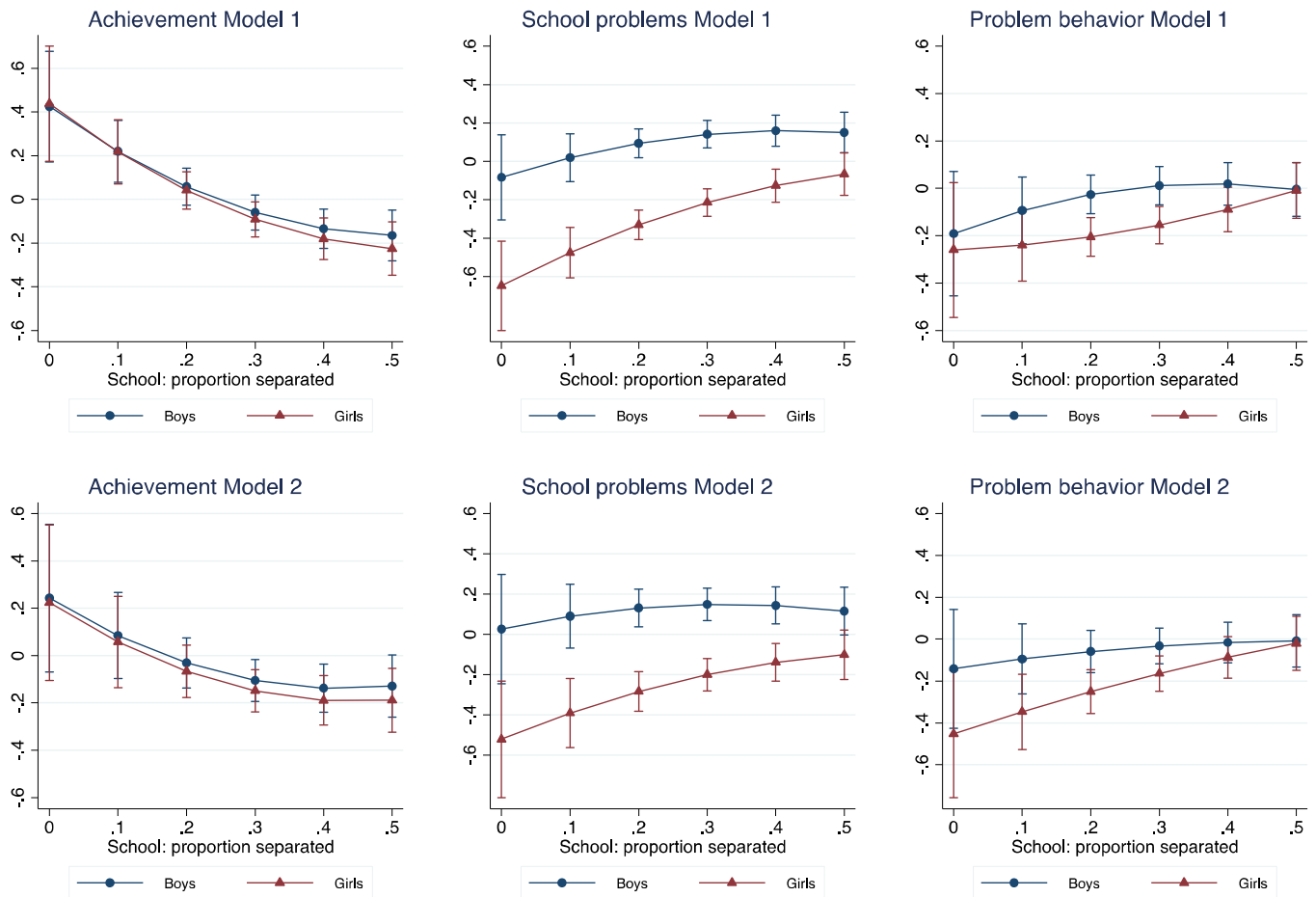


Fig. 2. Associations between the school-share of separated parents and student outcomes in England.

separated parents in a school was associated with a decline in reading scores by 14.7% of a standard deviation. For school problems and problem behavior outside school, there were significant positive associations with the share of separated parents among girls. Girls had more problems inside and outside of school when the share of separated parents in a school was larger. These associations were significantly weaker for boys for both outcomes (Table 5). Fig. 3 shows that the curves for girls' behavior were upward whereas the curves for boys were more or less flat. Again, a convergence pattern was observed in the figure: girls had 'better behavior' than boys but less so in schools with high proportions of separated parents.

The Dutch results were in some ways similar and in some ways different (Table 5, Fig. 4). For reading scores, the results were the same, with poorer reading scores when the share of separated parents was larger and no gender difference in this association (no significant interaction; Table 5). The two slopes were parallel in Fig. 4. For school problems and problem behavior, there were significant positive associations with the share of separated parents, in line with the hypothesis. Students had more school problems and more problem behavior when the share of separated parents increased. The slopes were somewhat stronger for girls than for boys and there also was convergence. The difference in slopes was smaller than it was in England and Germany. Moreover, although the gender interactions were in the expected direction, they did not reach statistical significance (Table 5).

The Swedish results were not supportive for the hypotheses. Fig. 5 and Table 6 show that there was no significant association between the school share of separated parents and reading test scores; the slopes were flat for both genders. There was also no association between the

school share of separated parents and problem behavior outside of school; the slopes for girls and boys were again flat. Table 6 confirms that the main effects of the school share of separated parents and the gender interactions for these outcomes were not significant. A different result was found for school problems. Here, we found a positive association with the share of separated parents, in line with hypothesis 1, but only for boys and not for girls. Moreover, this occurred only after a relatively high share of separated parents, suggesting a threshold effect. Below a share of 10%, the association for boys was in the opposite direction but there were very few schools in that range in Sweden. The gender interaction was in contrast to our hypothesis (hypothesis 3).

In sum, when looking at reading scores, the evidence for hypothesis 1 was supportive. In England, Germany, and the Netherlands, both girls and boys had poorer reading scores when there were more students from separated families in school. No difference was observed between girls and boys, refuting hypothesis 3 for reading. When looking at school problems and problem behavior outside of school, there also was evidence of adverse effects in England, Germany, and the Netherlands. However, this evidence was found primarily for girls and less or not at all for boys. For behavioral outcomes, it thus appeared that there was support for a gender-specific effect of the school share of separated parents, as predicted in hypothesis 3. The figures illustrate these gender differences well and also point to a convergence between girls and boys in several cases, with girls 'doing better' than boys in schools with few separated parents but losing this 'advantage' in schools with more separated parents.

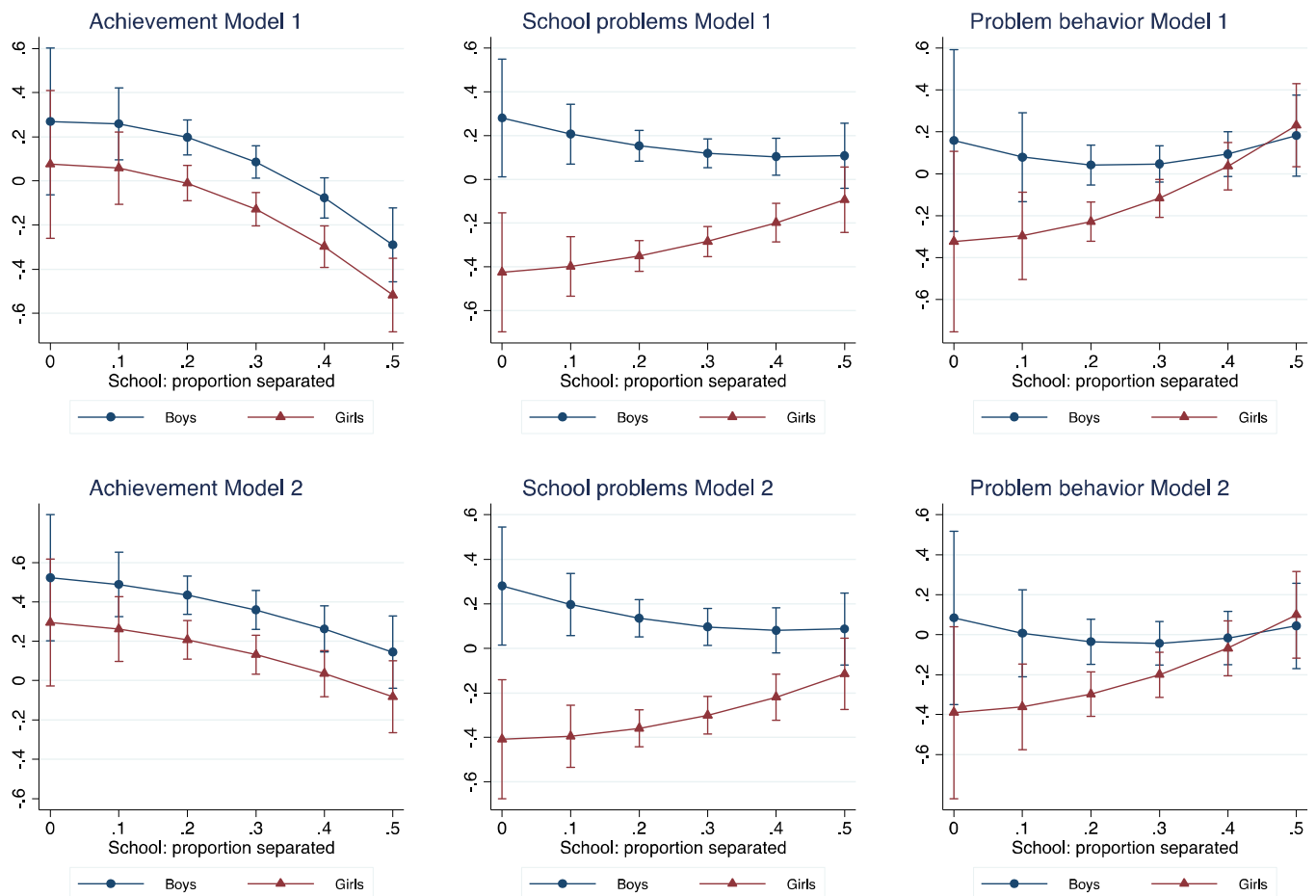


Fig. 3. Associations between the school-share of separated parents and student outcomes in Germany.

#### 4.2. Explaining school-level effects

In Model 2, other school-level effects were added to examine if and to what extent the initial associations with the share of separated parents could be attributed to school disadvantages and social capital. Regression results are presented in Tables 3–6. Predictions of Model 2 are presented in the bottom panels of Figs. 2–5. All covariates were again held constant at the means.

In England, the socioeconomic composition of a school had significant and positive effects on reading test scores. The expected negative school-level socioeconomic effects were found on school problems but not on problem behavior outside of school. The other indicators of disadvantage had no effects. The two social capital measures at the school level had no significant effects either. To what extent were the associations with the share of separated parents reduced once school disadvantages and social capital measures were controlled for? Comparing the top (Model 1) and bottom panel (Model 2) in Fig. 2, it can be seen that the association between the share of separated parents and reading scores declined substantially. For girls' reading test scores, the decline was 65% (from  $-.872$  to  $-.302$ ) and the remaining association was no longer significant (Table 4). For school problems and problem behavior, the slopes were also somewhat flatter in the bottom panel than in the top panel, but the change was smaller than it was for reading scores. Moreover, gender differences did not change. Adding adjustments for the type of school did not reduce the school-level associations further (Table 3, Model 3).

In Germany, we also found evidence for effects of school disadvantages but again primarily for reading (Table 4). In schools where students came from higher socioeconomic backgrounds, students had

better reading scores. Germany was the only country where school-level social capital effects were observed. In schools where parents were more involved in school affairs, students had fewer school problems and less problem behavior outside of school. When comparing the top and bottom parts of Fig. 3 (Model 1 versus Model 2), we observed a decline in the association between the school share of separated parents and reading scores for both genders. For girls, the decline was 40% between Model 2 and Model 1 (from  $-1.466$  to  $-.876$ ). Changes in the association between the school share of separated parents and the two behavioral outcomes were small, showing that social capital effects, although significant, did not explain the association. Gender differences in the slopes also remained present in Model 2. Adjustments for school type in Model 3 slightly reduced the association of the school share of separated parents with reading scores but did not change the associations with the other two outcomes (Table 4).

The Dutch case primarily reveals socioeconomic school-level effects. In schools with higher levels of socioeconomic status, reading scores were better, students had fewer school problems and less problem behavior outside of school. Effects of social capital indicators at the school level were small, insignificant, and occasionally in the opposite direction from what was expected. The primary association of interest – with the school share of separation – was reduced for reading scores between the top and the bottom panel. The effect for girls declined by 36% (from  $-2.164$  to  $-1.387$ , Table 5). For the other two outcomes, changes were again modest when comparing the top and the bottom panel. Adjusting for school type further reduced the associations (Model 3, Table 5), a finding we discuss in the conclusion.

The Swedish results for Model 2 will only be discussed briefly since there were no initial associations with parental separation at the school

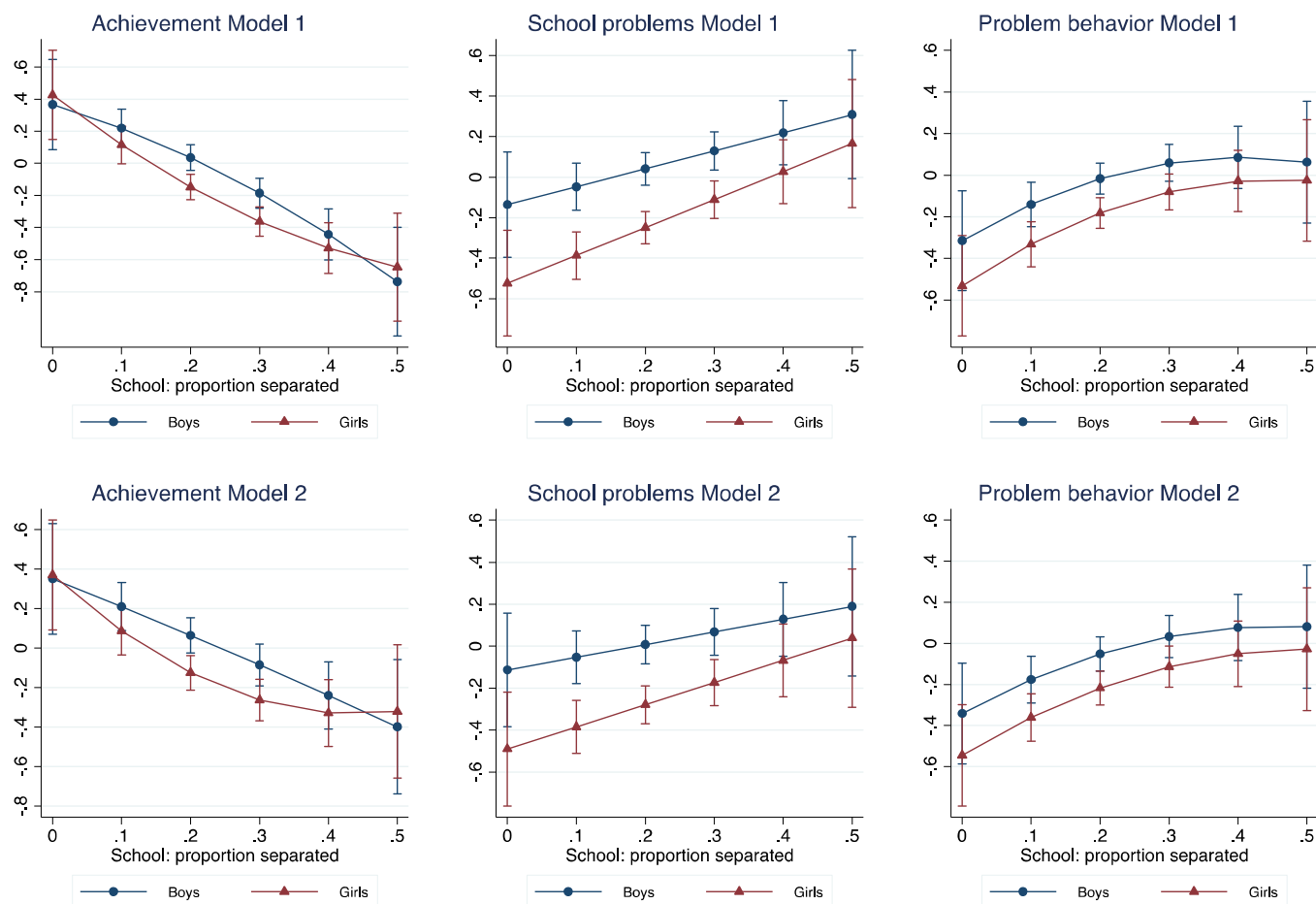


Fig. 4. Associations between the school-share of separated parents and student outcomes in the Netherlands.

level to begin with. The added school-level indicators reveals weak and insignificant effects. The patterns in Fig. 5 were the same for Model 1 and Model 2.

In sum, there was evidence for hypothesis 2a (school disadvantages), but primarily for reading test scores and less for school problems and problem behavior outside of school. There was no evidence for hypothesis 2b since very few effects were found of social capital measures at the school level. Even though there were social capital effects in Germany on the two behavioral outcomes, the association with the school share of separated parents was hardly reduced when controlling for social capital effects.

## 5. Conclusion and discussion

Using data on students from more than 400 schools in four Western European countries, multilevel analyses showed that students fared more poorly when the share of students coming from separated families was larger, independently of the effects of individual family structure. To some extent, these associations were due to other school disadvantages, such as their socioeconomic composition, but even after controlling for other school-level effects, associations of the share of separated parents with student outcomes remained significant. This finding is in line with the few US studies on this topic and shows that the idea can be generalized to the Western European context. The present study yielded a number of novel findings.

First, previous studies analyzed cognitive achievement only, in particular mathematics and reading test scores. Our analyses used a broader set of student outcomes and revealed significant associations with school problems (e.g., skipping class) and problem behavior

outside of school (e.g., underage drinking). Because problem behaviors inside and outside of school are to a large extent governed by social influence processes, these findings speak more directly to theories explaining the school-level effects of parental separation in social terms than previous findings that were based on achievement tests.

A second new finding is that social capital at the school level played almost no role in explaining the school-level effects of separation. Although social capital is commonly invoked for understanding a variety of school and community effects on children, our analyses showed that parent-child involvement and parent involvement in school had no emergent effects on student outcomes. Because there were no school-level effects of family-based social capital on student outcomes, there was also no mediation of the effect of the share of separated families in school. Given how elaborate the measures were, it is difficult to attribute the negative evidence for social capital explanations to measurement issues. We experimented with interaction effects involving measures of school-level social capital and separation at the individual level (cf. Pong, 1998) but did not find significant effects. The limited role of social capital at the school level in the present application suggests that other types of social processes may be involved in the effects of the school share of separated parents on individual student outcomes.

Third, school-level associations of separation with behavioral outcomes were significantly stronger for girls than for boys. In fact, the school-level associations for boys were often insignificant. Differences in the school-level associations of parental separation by gender can be interpreted in terms of various social processes. Previous research has shown that girls' behaviors are more strongly influenced by their friends and classmates than boys' behaviors (Frank & Muller, 2008; Riegle-Crumb & Farkas, 2006). If a parental separation affects one child

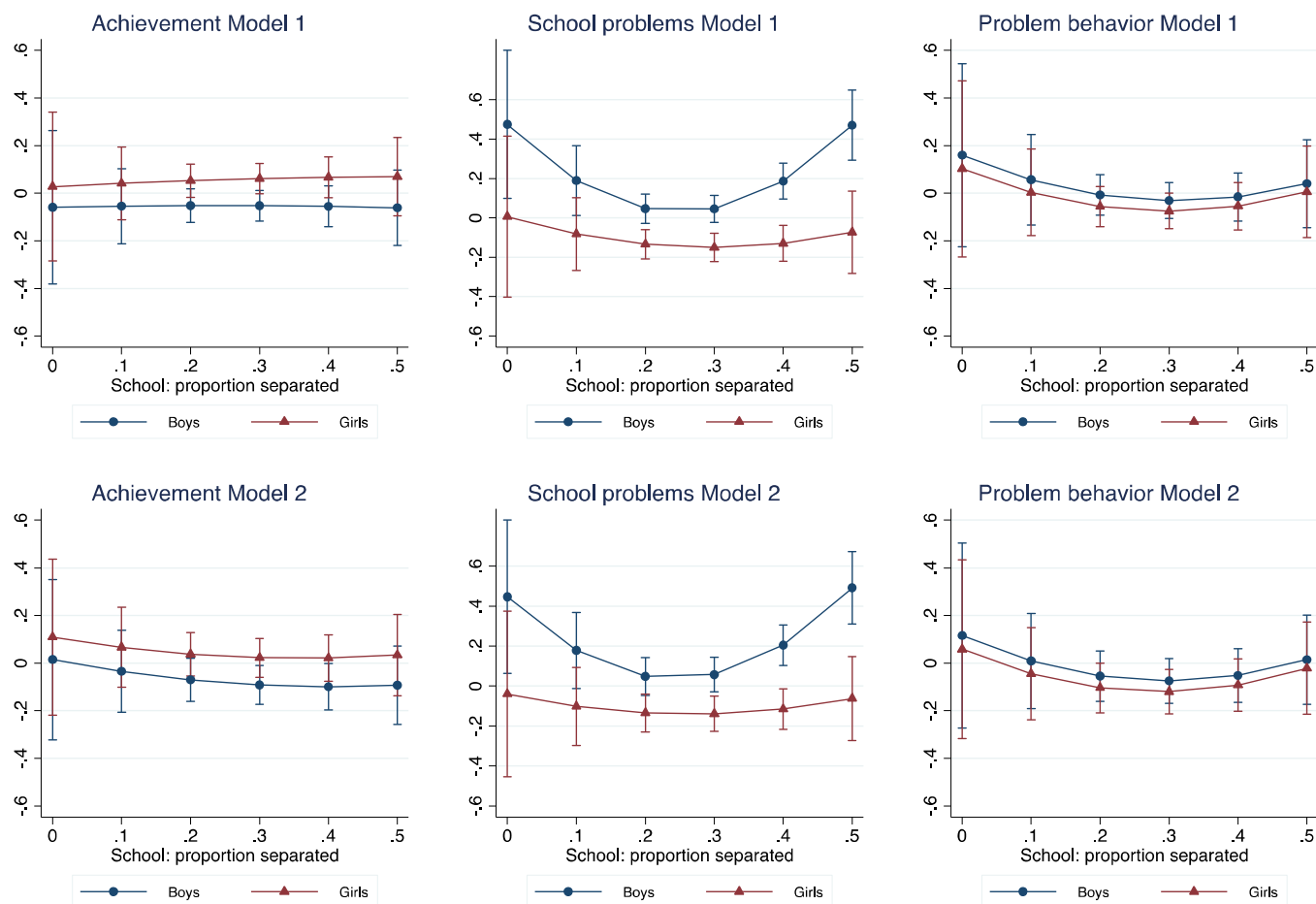


Fig. 5. Associations between the school-share of separated parents and student outcomes in Sweden.

in a negative way – for instance, by encouraging truancy, drinking, or emotional problems – this effect may trickle down to others in interaction. Such effects will probably not be limited to the best friends children have in school but extend to other fellow students with whom children interact. Friendships in school are often within gender (Rose & Rudolph, 2006). Interesting in this light is that the gender interactions were only found for behavioral outcomes and not for achievement tests. This would support the idea that effects are social in nature, assuming that the former outcomes are more sensitive to adaptation behavior than achievement. To test such an interpretation directly, evidence is needed on selection and adaptation behavior in peer groups.

Like earlier studies, we showed that school disadvantages played a role, in particular the socioeconomic status of schools in which students were enrolled. Adding these school traits to the model led to a reduction in the effects of separation at the school level but primarily for reading scores. For the two behavioral outcomes, the mediation was smaller, to a large extent because of weaker effects of the socioeconomic status of schools on school problems and problem behavior. School type differences further reduced the effects of the school share of separated parents, especially in the Netherlands. A caveat here is that controlling for such effects may have adjusted too much. The type of school in the Netherlands coincides with the track level chosen at the end of primary school. This choice is largely based on test scores at the end of primary school and these are known to be negatively affected by parental separation (De Leeuw, 2021). Given the age of the students, many separations will have occurred in primary school.

Although we can generalize school-level effects of parental separation to the context of Western Europe, there were also differences between the four countries studied. School-level associations of parental

separation and student outcomes were clear (and similar) in England and Germany, somewhat weaker in the Netherlands, and absent in Sweden. A speculative interpretation is that school context effects of family structure are stronger in societies where there is more inequality. The country differences are not consistent with the idea that the prevalence and acceptance of separation play a role. England and Sweden are both high-divorce societies but effects of the school share of separation were very different. The absence of gender-specific effects in Sweden is consistent with more general differences in gender roles across countries, but the smaller effects of the school context in Sweden to begin with are a simpler and probably more plausible reason. Obviously, hypotheses about inequality, gender roles, and the prevalence of divorce need to be tested simultaneously but this can only be done with larger numbers of countries.

The gender interactions that we found have implications for gender inequality in schools more generally. As is well known, there are considerable gender differences in high school, with boys on average displaying more problem behavior, less motivation, and less effort than girls, a difference sometimes framed as ‘the boy problem’ (Scheeren, 2020; Thijs & van Dijk, 2015). Our analyses confirmed these previous findings but also made clear that differences were more pronounced when there were fewer divorced families in a school. Because girls were more strongly affected by the social context than boys, the advantage of girls over boys declined when the context was less favorable. In schools with the most unfavorable demographic composition, gender inequality was almost absent. These demographic composition effects are in contrast to what past studies have shown for other school-level effects. There is evidence that the socioeconomic composition and quality of schools have stronger (beneficial) effects on boys than on girls (Autor &

Figlio, 2016; Legewie & DiPrete, 2012; Reardon & Fahle, 2019). This finding has been interpreted in terms of school differences in academic orientations and the greater sensitivity of boys with respect to such school norms. In contrast to this, our analyses show that the demographic composition of a school has a stronger impact on girls, presumably because of the greater contagiousness of adverse individual divorce effects among girls. Although SES and divorce are correlated compositional variables, they apparently have quite different implications for gender inequality.

The current paper has a number of limitations that need to be taken into account. First, it remains to be seen if there are other school-level effects that possibly confound the effects of divorce at the school level. Panel data could be helpful here but school composition does not change quickly, hence, long-term panels of (a large number of) schools would be needed to establish causality. It remains possible that unmeasured context variables explain some of the main effects of the share of divorced parents, but it is more difficult to imagine that they also would explain the observed gender interactions. Second, some authors have

examined interactions between parental divorce at the micro level and divorce at the school level. Although little evidence in this direction has thus far been accumulated, it would be important to address this interaction separately for girls and boys. Third, direct evidence for peer group and network effects will be an important next step in this line of research. Given the problem of disentangling selection and adaptation, this needs to be done with a longitudinal network design (Raabe & Boda, 2019). Such analyses are beyond the scope of this paper but important to do for a further understanding of the gender differences that we found.

**Declaration of Competing Interest**

The author has no competing interests.

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**Appendix 1. Sensitivity analyses for schools represented by few students**

	Achievement			School problems			Problem behavior		
	All	>= 20 <sup>a</sup>	>= 30 <sup>b</sup>	All	>= 20	>= 30	All	>= 20	>= 30
<b>England</b>									
Boys vs girls	-.003 (.975)	-.005 (.951)	.021 (.810)	.558*** (.000)	.553*** (.000)	.557*** (.000)	.297*** (.001)	.298*** (.001)	.321*** (.001)
School: proportion separated	-.872*** (.000)	-.872*** (.000)	-.755** (.006)	.882*** (.000)	.878*** (.000)	.740** (.004)	.680** (.004)	.684** (.004)	.808** (.002)
Boy x school separation	.122 (.621)	.138 (.578)	.035 (.900)	-.674** (.006)	-.676** (.006)	-.560* (.039)	-.568* (.035)	-.573* (.034)	-.607* (.045)
Pupils	3731	3691	3334	3872	3830	3466	3415	3377	3055
Schools	107	104	88	107	104	88	107	104	88
<b>Germany</b>									
Boys vs girls	.188* (.014)	.155 (.060)	.155 (.075)	.708*** (.000)	.717*** (.000)	.665*** (.000)	.481*** (.000)	.482*** (.000)	.444*** (.000)
School: proportion separated	-1.466*** (.000)	-1.365*** (.000)	-1.467*** (.000)	.769** (.002)	.858** (.002)	.931** (.002)	1.374*** (.000)	1.429*** (.000)	1.376*** (.000)
Boy x school separation	.095 (.719)	.201 (.481)	.201 (.507)	-1.018*** (.001)	-1.013** (.002)	-.868* (.013)	-1.058** (.005)	-1.036** (.008)	-.955* (.017)
Pupils	4197	3981	3420	4206	3990	3427	3023	2917	2575
Schools	135	114	89	135	114	89	105	91	74
<b>Netherlands</b>									
Boys vs girls	.161* (.019)	.164* (.017)	.165* (.031)	.389*** (.000)	.393*** (.000)	.336*** (.000)	.218** (.009)	.219** (.009)	.152 (.101)
School: proportion separated	-2.164*** (.000)	-2.086*** (.000)	-1.857*** (.000)	1.378*** (.000)	1.338*** (.000)	1.291*** (.001)	1.070** (.001)	1.027** (.002)	.800* (.039)
Boy x school separation	-.033 (.910)	-.055 (.850)	-.080 (.802)	-.498 (.145)	-.529 (.123)	-.268 (.475)	-.270 (.442)	-.293 (.408)	.001 (.999)
Pupils	3696	3643	3285	3832	3775	3413	3750	3696	3347
Schools	100	96	79	100	96	79	100	96	79
<b>Sweden</b>									
Boys vs girls	-.086 (.325)	-.069 (.436)	-.096 (.303)	.034 (.709)	.059 (.525)	.112 (.250)	.049 (.639)	.045 (.676)	.037 (.741)
School: proportion separated	.078 (.778)	.151 (.601)	.056 (.860)	.104 (.722)	-.086 (.772)	.013 (.968)	.017 (.957)	-.074 (.830)	-.073 (.835)
Boy x school separation	-.115 (.703)	-.198 (.520)	-.120 (.711)	.695* (.027)	.582 (.069)	.387 (.248)	-.017 (.962)	.010 (.979)	.031 (.935)
Pupils	4355	4289	4093	4556	4486	4286	3912	3852	3692
Schools	129	123	114	129	123	114	129	123	114

Note: p-values in parentheses.

a Only schools represented by 20 students or more.

b Only schools represented by 30 students or more.

\* p < 0.05

\*\* p < 0.01

\*\* p < 0.001



Appendix 2. Multilevel regression models of student outcomes in England: Regression coefficients and p-values in parentheses

England	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M2	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	-.003 (.975)	.031 (.707)	.015 (.857)	.558* (.000)	.541* (.000)	.536* (.000)	.297* (.001)	.306* (.001)	.298* (.001)
Immigrant background	-.295* (.000)	-.267* (.000)	-.268* (.000)	-.113* (.004)	-.113* (.006)	-.111* (.007)	-.206* (.000)	-.180* (.000)	-.180* (.000)
Parent SES	.095* (.000)	.078* (.000)	.078* (.000)	-.005 (.774)	.003 (.852)	.003 (.835)	-.004 (.830)	-.011 (.559)	-.011 (.563)
Books in home	.182* (.000)	.168* (.000)	.168* (.000)	-.121* (.000)	-.115* (.000)	-.115* (.000)	-.027 (.139)	-.032~ (.084)	-.032~ (.083)
Religious affiliation	-.002 (.945)	.002 (.950)	.005 (.899)	-.125* (.000)	-.124* (.000)	-.133* (.000)	-.146* (.000)	-.140* (.000)	-.143* (.000)
Father no work	-.009 (.862)	.001 (.992)	.001 (.979)	-.034 (.510)	-.036 (.483)	-.035 (.493)	.021 (.726)	.026 (.657)	.027 (.650)
Mother working	.118* (.001)	.109* (.003)	.108* (.003)	-.041 (.250)	-.038 (.279)	-.042 (.235)	.065 (.109)	.061 (.132)	.059 (.146)
# siblings	-.040* (.015)	-.034* (.039)	-.034* (.036)	.041* (.010)	.038* (.016)	.038* (.016)	-.008 (.679)	-.005 (.804)	-.005 (.795)
Parent-child involvement	.024 (.106)	.026~ (.077)	.026~ (.077)	-.231* (.000)	-.232* (.000)	-.231* (.000)	-.155* (.000)	-.155* (.000)	-.154* (.000)
Parents widowed	.115 (.213)	.117 (.202)	.119 (.197)	.039 (.664)	.040 (.652)	.031 (.727)	.014 (.891)	.020 (.846)	.016 (.871)
Stepparent	-.007 (.898)	-.012 (.831)	-.013 (.818)	-.022 (.682)	-.022 (.680)	-.020 (.715)	-.008 (.896)	-.012 (.840)	-.012 (.847)
Parents separated	.041 (.433)	.048 (.352)	.048 (.351)	.280* (.000)	.279* (.000)	.275* (.000)	.254* (.000)	.260* (.000)	.258* (.000)
Boy x separation	-.045 (.503)	-.056 (.403)	-.057 (.396)	-.094 (.155)	-.090 (.176)	-.088 (.186)	-.010 (.898)	-.015 (.837)	-.014 (.846)
School: proportion separated	-.872* (.000)	-.302 (.309)	-.268 (.363)	.882* (.000)	.557* (.038)	.593* (.027)	.680* (.004)	.738* (.009)	.761* (.008)
Boy x school separation	.122 (.621)	.056 (.820)	.078 (.751)	-.674* (.006)	-.639* (.009)	-.637* (.009)	-.568* (.035)	-.587* (.030)	-.576* (.033)
School: SES		.196* (.000)	.169* (.001)		-.081* (.034)	-.101* (.020)		.044 (.257)	.036 (.428)
School: proportion immigrants		-.048 (.200)	-.047 (.197)		-.017 (.603)	-.017 (.605)		-.050 (.143)	-.049 (.163)
School: teacher morale		.026 (.401)	.027 (.378)		-.011 (.687)	-.011 (.694)		-.013 (.644)	-.012 (.671)
School: parent-child involvement		-.005 (.897)	.011 (.774)		-.009 (.782)	-.002 (.955)		.013 (.716)	.018 (.628)
School: parent-school participation		-.006 (.844)	-.015 (.635)		.006 (.842)	.006 (.851)		-.003 (.912)	-.004 (.886)
Constant	.206* (.023)	-.035 (.751)	-.074 (.556)	-.360* (.000)	-.237* (.018)	-.147 (.194)	-.250* (.005)	-.301* (.005)	-.280* (.021)
Pupils	3731	3731	3731	3872	3872	3872	3415	3415	3415
Schools	107	107	107	107	107	107	107	107	107

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Germany	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M2	Problem behavior M1	Problem behavior M2	Problem behavior M3
Religious affiliation	(.000) -.111*	(.000) -.095*	(.000) -.085*	(.043) -.112*	(.258) -.118*	(.270) -.124*	(.460) -.114*	(.823) -.112*	(.807) -.135*
Father no work	(.008) .016	(.021) .041	(.033) .044	(.018) .014	(.012) .005	(.009) .008	(.038) .016	(.041) .018	(.013) .028
Mother working	(.707) .095*	(.321) .083*	(.287) .085*	(.790) .053	(.928) .061~	(.880) .058~	(.773) .122*	(.655) .122*	(.655) .117*
# siblings	(.001) -.060*	(.003) -.053*	(.003) -.051*	(.120) .042*	(.075) .040*	(.087) .039*	(.004) -.010	(.004) -.012	(.005) -.014
Parent-child involvement	(.000) -.051*	(.000) -.044*	(.000) -.043*	(.000) -.220*	(.000) -.221*	(.000) -.221*	(.000) -.107*	(.000) -.104*	(.000) -.103*
Parents widowed	(.000) .088	(.000) .081	(.000) .086	(.000) .168	(.000) .171~	(.000) .168	(.000) -.125	(.000) -.121	(.000) -.125
Stepparent	(.319) -.060	(.344) -.061	(.312) -.063	(.107) -.095~	(.099) -.094~	(.107) -.093~	(.343) .058	(.359) .055	(.341) .052
Parents separated	(.167) .011	(.151) .022	(.134) .027	(.064) .274*	(.068) .264*	(.070) .263*	(.340) .167*	(.367) .171*	(.394) .171*
Boy x separation	(.797) .128*	(.595) .127*	(.519) .121*	(.000) .049	(.000) .053	(.000) .053	(.006) .034	(.005) .031	(.005) .031
School: proportion separated	(.019) -1.466*	(.017) -.876*	(.023) -.338	(.445) .769*	(.411) .708*	(.413) .663*	(.665) 1.374*	(.687) 1.194*	(.687) 1.034*
Boy x school separation	(.000) .095	(.001) .014	(.142) -.021	(.002) -1.018*	(.004) -.983*	(.011) -.982*	(.000) -1.058*	(.000) -1.056*	(.002) -1.093*
School: SES	(.719) .361*	(.958) .178*	(.934) .178*	(.001) .017	(.001) .030	(.001) .030	(.005) -.061	(.005) -.061	(.003) -.030
School: proportion immigrants	(.000) -.034	(.000) -.059*	(.000) -.059*	(.555) .039	(.447) .032	(.447) .032	(.124) -.073~	(.124) -.073~	(.518) -.096*
School: teacher morale	(.370) -.013	(.045) .010	(.045) .010	(.209) .001	(.316) -.000	(.316) -.000	(.085) -.032	(.085) -.032	(.016) -.028
School: parent-child involvement	(.602) .020	(.592) .047~	(.592) .047~	(.970) -.026	(.982) -.028	(.982) -.028	(.230) -.083*	(.230) -.083*	(.259) -.073*
School: parent-school participation	(.525) .049	(.061) .012	(.061) .012	(.322) -.098*	(.309) -.089*	(.309) -.089*	(.023) -.080*	(.023) -.080*	(.039) -.042
Constant	(.186) .403*	(.657) .486*	(.657) -.548*	(.001) -.483*	(.002) -.470*	(.002) -.409*	(.047) -.489*	(.047) -.527*	(.256) -.317
Pupils	(.000) 4197	(.000) 4197	(.000) 4197	(.000) 4206	(.000) 4206	(.012) 4206	(.000) 3023	(.000) 3023	(.197) 3023
Schools	135	135	135	135	135	135	105	105	105

Netherlands	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M2	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	.161*	.179*	.204*	.389*	.379*	.369*	.218*	.205*	.191*
Immigrant background	(.019) -.545*	(.008) -.505*	(.002) -.512*	(.000) .043	(.000) .045	(.000) .047	(.009) -.260*	(.014) -.192*	(.022) -.189*
Parent SES	(.000) .041*	(.000) .019	(.000) .017	(.424) .039*	(.429) .050*	(.404) .051*	(.000) -.006	(.001) .005	(.001) .006
Books in home	(.009) .114*	(.235) .104*	(.278) .100*	(.032) -.019	(.006) -.013	(.005) -.010	(.744) -.036*	(.781) -.032~	(.748) -.026
Religious affiliation	(.000) -.048	(.000) -.031	(.000) -.019	(.275) -.110*	(.451) -.115*	(.572) -.118*	(.037) -.081*	(.070) -.083*	(.132) -.086*
Father no work	(.125) -.057	(.311) -.047	(.534) -.040	(.003) .031	(.002) .029	(.001) .026	(.031) .054	(.028) .063	(.023) .057
Mother working	(.230) -.001	(.320) -.013	(.390) -.014	(.597) .116*	(.614) .119*	(.656) .119*	(.371) .072~	(.291) .067	(.341) .067
# siblings	(.968) -.047*	(.707) -.041*	(.681) -.041*	(.005) .053*	(.004) .050*	(.004) .053*	(.088) .000	(.113) -.002	(.112) .001
Parent-child involvement	(.011) -.033*	(.026) -.027~	(.022) -.028~	(.009) -.202*	(.013) -.204*	(.009) -.204*	(.998) -.082*	(.914) -.081*	(.952) -.081*
	(.029)	(.077)	(.066)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)

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Netherlands	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M2	Problem behavior M1	Problem behavior M2	Problem behavior M3
Parents widowed	.004 (.964)	.013 (.883)	.014 (.867)	.231* (.027)	.227* (.030)	.228* (.029)	.278* (.009)	.273* (.011)	.276* (.010)
Stepparent	-.014 (.786)	-.017 (.739)	-.020 (.704)	.019 (.756)	.018 (.772)	.016 (.794)	.213* (.001)	.209* (.001)	.206* (.001)
Parents separated	.021 (.660)	.030 (.514)	.029 (.532)	.133* (.016)	.132* (.018)	.132* (.017)	.149* (.008)	.157* (.005)	.157* (.005)
Boy x separation	-.007 (.909)	-.014 (.819)	-.009 (.889)	.135~ (.067)	.137~ (.063)	.138~ (.061)	.036 (.628)	.025 (.735)	.027 (.723)
School: proportion separated	-2.164* (.000)	-1.387* (.000)	-.093 (.755)	1.378* (.000)	1.047* (.006)	.571 (.156)	1.070* (.001)	1.047* (.003)	.428 (.244)
Boy x school separation	-.033 (.910)	-.082 (.775)	-.137 (.626)	-.498 (.145)	-.464 (.175)	-.437 (.201)	-.270 (.442)	-.201 (.567)	-.163 (.642)
School: SES		.401* (.000)	.008 (.862)		-.142* (.001)	.012 (.844)		-.135* (.000)	.059 (.280)
School: proportion immigrants		.029 (.534)	-.078* (.028)		-.055 (.245)	-.010 (.837)		-.144* (.001)	-.087* (.047)
School: teacher morale		-.088* (.003)	-.048* (.027)		.016 (.585)	-.001 (.984)		.013 (.625)	-.013 (.648)
School: parent-child involvement		-.137* (.009)	-.014 (.720)		.049 (.360)	-.000 (.993)		.058 (.226)	-.004 (.933)
School: parent-school participation		-.019 (.680)	-.027 (.419)		-.039 (.425)	-.037 (.443)		.020 (.669)	.018 (.690)
Constant	.486* (.000)	.354* (.000)	-.589* (.000)	-.556* (.000)	-.520* (.000)	-.179 (.205)	-.354* (.000)	-.399* (.000)	.027 (.834)
Pupils	3696	3696	3696	3832	3832	3832	3750	3750	3750
Schools	100	100	100	100	100	100	100	100	100
Sweden	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M2	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boys vs girls	-.086 (.325)	-.095 (.274)	-.097 (.269)	.034 (.709)	.037 (.687)	.037 (.683)	.049 (.639)	.048 (.646)	.045 (.671)
Immigrant background	-.603* (.000)	-.557* (.000)	-.557* (.000)	-.126* (.001)	-.148* (.000)	-.148* (.000)	-.107* (.016)	-.107* (.024)	-.106* (.025)
Parent SES	.110* (.000)	.100* (.000)	.100* (.000)	-.022 (.164)	-.024 (.145)	-.024 (.145)	-.010 (.613)	-.019 (.345)	-.019 (.340)
Books in home	.131* (.000)	.125* (.000)	.125* (.000)	-.058* (.001)	-.058* (.001)	-.058* (.001)	-.029 (.116)	-.033~ (.077)	-.032~ (.079)
Religious affiliation	-.064~ (.057)	-.055 (.100)	-.055 (.100)	-.070* (.034)	-.072* (.029)	-.072* (.029)	-.043 (.237)	-.039 (.283)	-.040 (.280)
Father no work	-.087~ (.068)	-.078 (.104)	-.078 (.104)	.061 (.221)	.057 (.249)	.057 (.249)	.128* (.032)	.131* (.028)	.131* (.028)
Mother working	.218* (.000)	.206* (.000)	.206* (.000)	-.045 (.271)	-.042 (.313)	-.042 (.313)	-.090~ (.073)	-.093~ (.065)	-.092~ (.066)
# siblings	-.041* (.001)	-.040* (.002)	-.040* (.002)	.042* (.002)	.041* (.002)	.041* (.002)	.023 (.143)	.024 (.136)	.023 (.139)
Parent-child involvement	.050* (.000)	.053* (.000)	.053* (.000)	-.275* (.000)	-.275* (.000)	-.275* (.000)	-.108* (.000)	-.108* (.000)	-.108* (.000)
Parents widowed	.115 (.190)	.119 (.173)	.119 (.171)	.270* (.003)	.274* (.003)	.274* (.003)	.140 (.187)	.145 (.171)	.146 (.169)
Stepparent	-.037 (.448)	-.043 (.375)	-.043 (.375)	.028 (.579)	.034 (.504)	.034 (.503)	.050 (.394)	.052 (.368)	.052 (.369)
Parents separated	-.006 (.891)	.001 (.987)	.001 (.986)	.296* (.000)	.292* (.000)	.292* (.000)	.193* (.000)	.192* (.000)	.192* (.000)
Boy x separation	-.112~ (.059)	-.113~ (.058)	-.113~ (.058)	-.045 (.463)	-.048 (.439)	-.048 (.440)	.017 (.813)	.015 (.828)	.016 (.822)
School: proportion separated	.078 (.778)	-.055 (.846)	-.035 (.903)	.104 (.722)	.182 (.539)	.178 (.555)	.017 (.957)	.059 (.857)	.100 (.760)

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Sweden	Reading M1	Reading M2	Reading M3	School problems M1	School problems M2	School problems M2	Problem behavior M1	Problem behavior M2	Problem behavior M3
Boy x school separation	-.115 (.703)	-.083 (.782)	-.079 (.793)	.695* (.027)	.694* (.027)	.692* (.027)	-.017 (.962)	-.010 (.978)	.005 (.989)
School: SES		.066* (.023)	.068* (.020)		.010 (.745)	.009 (.764)		.066* (.046)	.071* (.034)
School: proportion immigrants		-.062* (.020)	-.061* (.022)		.048~ (.082)	.048~ (.085)		.006 (.849)	.007 (.809)
School: teacher morale		.019 (.391)	.020 (.375)		-.052* (.028)	-.052* (.028)		-.040 (.145)	-.039 (.164)
School: parent-child involvement		.010 (.763)	.009 (.781)		-.020 (.560)	-.019 (.568)		.018 (.628)	.016 (.662)
School: parent-school participation		-.008 (.739)	-.006 (.818)		.046~ (.063)	.045~ (.075)		.026 (.368)	.031 (.289)
Constant	.089 (.347)	.086 (.395)	.083 (.415)	-.058 (.560)	-.070 (.511)	-.069 (.516)	.047 (.673)	-.007 (.955)	-.012 (.917)
Pupils	4355	4355	4355	4556	4556	4556	3912	3912	3912
Schools	129	129	129	129	129	129	129	129	129

~  $p < 0.10$

\*  $p < 0.05$

Source: CILS4EU 2010/2011.

Note: Dependent variables standardized (M = 0, SD = 1).

### Appendix 3. Comparing linear and nonlinear models for the school share of single parents

Reading scores	England	Germany	Netherlands	Sweden
Linear	9890	9967	8764	11233
Categorical	9912	9996	8787	11255
School problems	England	Germany	Netherlands	Sweden
Linear	10299	11433	10548	12348
Categorical	10325	11455	10570	12363
Problem behavior	England	Germany	Netherlands	Sweden
Linear	9441	8412	10364	11041
Categorical	9465	8427	10385	11060

Note: Based on categorical version of the share of single parents with 5 categories (0-10%, 10-20%, 20-30%, 30-40%, 40%+). Model fit based on BIC. Lower values indicate better fit.

Girls and boys were pooled and no interaction was included for the sake of parsimony.

Source: CILS4EU 2010/2011.

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