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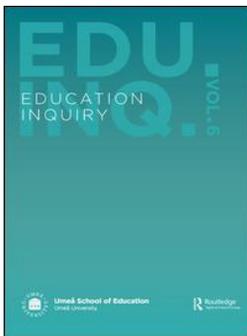
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Educational achievement and poor mental health in Sweden: the role of family socioeconomic resources

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ABSTRACT

This article elaborates on previous research showing that educational achievement is negatively related to poor mental health during adolescence and positively related to the family's socioeconomic resources. We examine (i) the potential moderating effects of family resources on the negative relationship between educational achievement and poor mental health and (ii) the impact of resources linked to the mother and father, respectively, on educational achievements. We use register data that cover all children born in Sweden in 1990 who still lived there in 2010 ($n = 115,882$). We use two dependent variables – upper secondary school graduation and grade point average (GPA) – and analyse the performance of girls and boys separately. Our results indicate that the impact of mothers' socioeconomic resources on children's school performance is stronger overall than that of fathers' resources. The compensatory effects of family socioeconomic resources on the risk of failure to graduate are more pronounced amongst girls than boys. With regard to GPA, compensatory effects are largely absent.

KEYWORDS

Education attainment; mental health; socioeconomic resources; register data; Sweden

Introduction

In contemporary western societies, a major educational policy goal is to offer equal educational opportunities to all children. This goal extends beyond the formal right to access education, to equalising opportunities, compensating for obstacles and supporting disadvantaged individuals to benefit from education. Ideally, an individual's opportunities should not depend on characteristics such as gender, socioeconomic background, ethnicity or health. In Sweden, efforts to equalise educational opportunities have been a long-standing priority in education policy (Arnesen & Lundahl, 2006; Erikson & Jonsson, 1996), and continue to be, despite the radical market-oriented reforms implemented in the 1990s (Björklund, Clark, Edin, Fredriksson, & Krueger, 2005).

In this article, we elaborate on two robust findings of previous studies which, despite the egalitarian goals of education policy, have established that educational achievement is positively affected by the socioeconomic resources of students' families (Breen & Jonsson, 2005; Breen, Luijkx, Müller, & Pollak, 2010; Erikson, Goldthorpe, Jackson, Yaish, & Cox, 2005;

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Sirniö, Martikainen, & Kauppinen, 2016) and negatively affected by poor mental health during childhood and adolescence (Becchetti, Conzo, & Pisani, 2018; Brännlund, Strandh, & Nilsson, 2017; Cutler & Lleras-Muney, 2008). The latter is a growing concern because during the last decade there has been a steady increase in the share of young people suffering from poor mental health, measured in terms of either prescription of drugs or self-ratings by respondents (Almroth, László, Kosidou, & Galanti, 2018; Baroudi et al., 2019; Stenmark, Bergström, Hägglöf, Öhman, & Petersen, 2016). Further, the prevalence of poor mental health is higher among girls than boys.

This article aims to make three contributions:

First, in contemporary stratification research, household socioeconomic status (SES) is generally measured using one or more indicators of either the highest SES of the two parents or the combined SES of both parents. However, the impact of mothers' and fathers' SES on children's educational attainment is likely to differ (Beller, 2009). In recent decades, the gender gap in paid employment has steadily decreased in Sweden, suggesting that inequality in the division of resources between men and women has declined (Statistics Sweden, 2016). However, there has been less gender equalisation in the domestic sphere. Unpaid household work and care of children are still predominately female responsibilities (Evertsson, 2014). Thus, although differences in resources between men and women have decreased over time, traditional gender ideological values persist – men and masculinity are associated with employment and careers, while women and femininity are linked to nursing, children and relationships. This suggests that mothers may have a greater interest in their children's education and allocate more of their financial and cultural resources than fathers to benefit their children. If so, mothers' resources may be more closely linked than fathers' resources to their children's well-being. Thus, we examine impacts of SES in more detail than most previous studies, by seeking to distinguish effects of resources linked to both mothers and fathers (Korupp, Ganzeboom, & Van Der Lippe, 2002).

Second, we examine the potential moderating effects of family resources on the negative relationship between poor mental health and educational performance. In this respect, we examine how much a favourable socioeconomic background may compensate for poor mental health during childhood and adolescence with regard to educational achievement. In other words, is the reduction in educational achievement linked to mental health problems smaller for children in well-resourced families than for peers in less well-resourced families?

Third, a common problem in research dealing with relatively infrequent phenomena such as poor mental health is the lack of sufficient data for detailed and in-depth analysis.¹ However, sufficiently detailed register data (as defined by Mellander, 2017) were already available for our study, covering all children who were born in Sweden in 1990 and still lived there in 2010 ($n = 115,882$), including information about their parents. We use two dependent variables describing educational achievement – upper secondary school graduation and grade point average (GPA) from upper secondary school. For reasons described in a later section, we analyse relationships between the independent and dependent variables for boys and girls separately.

The following research questions are addressed:

- (1) Do the effects of family socioeconomic resources on educational achievement depend on the mother's and father's proportional contributions to the resources?

- (2) To what extent may family socioeconomic resources moderate the well-documented negative relationship between poor mental health and educational achievement? More technically, do poor mental health and family socioeconomic resources have interactive effects on educational achievement?
- (3) Do any relationships mentioned in (1) and (2) differ between girls and boys?

Previous research and analytical framework

Education is generally viewed as a social right and central determinant of a range of outcomes over an individual's life course. Although the economic returns from education have been challenged in recent years (Åberg, 2003; Brown, Lauder, & Ashton, 2010; Collins, 2002; Tåhlin, 2007), it is generally believed that education is beneficial for both society and individuals, a view that is expressed in educational policy and stimulates research on the subject.

If we subscribe to the normative statement that education is highly significant for individuals' future life chances, a central question is what are the main barriers for children who are at risk of educational failure? In other words, it is important to consider not only entitlements, such as the formal right to education, but also obstacles that may prevent some children from taking advantage of that right and resources at their disposal to overcome the obstacles (Sen, 2007, 2009).

It has long been recognised that family and individual resources are not equally distributed between people (Brown & Tannock, 2009; Korpi, 1978; Korpi & Palme, 1998; Stenmark et al., 2016), and such differences are reflected in educational performance. Regarding the family, it is well established that parental resources strongly affect children's future life chances, as privileged families have much greater opportunities than less privileged families to invest money, knowledge, skills and access to social networks to benefit their children (Breen et al., 2010; Brooks & Svallfors, 2010; Erikson et al., 2005; Iannelli & Smyth, 2008; Pong & Ju., 2000; Sirin, 2005). In terms of individual resources' effects on educational performance, in this study, we are primarily interested in mental health status and the extent to which family-related resources may ameliorate the greater risk of educational failure associated with poor mental health.

Educational achievement and mental health

Previous researchers have detected negative relationships between childhood health conditions in general and both educational achievement and aspirations (Almroth et al., 2018; Cutler & Lleras-Muney, 2008; Ross & Wu., 1995). As data on the health status of school-aged children are scarce, most of these researchers have used health status at birth to predict educational outcomes, using crude measures such as low birth weight (Aizer & Currie, 2014; Bergvall, Iliadou, Tuvemo, & Cnattingius, 2006; Black, Devereux, & Salvanes, 2007; Conley, Strully, & Bennett, 2003; Currie & Hyson, 1999) and/or Apgar scores² (Almond, Chay, & Lee, 2005; Halmøy, Klungsøyr, Skjærven, & Haavik, 2012; Oreopoulos, Stabile, Walld, & Roos, 2008).

Researchers who have applied post-birth health data have also detected adverse effects on the educational achievement of both poor somatic health and poor mental health during

childhood and adolescence. Self-reported survey data have been used in most of these studies. Case, Fertig, and Paxson (2005) examined children's health conditions at ages 7 and 16 years and found that those with chronic mental health problems had significantly more adverse outcomes, including lower educational attainment, than those who had no health problems during childhood and adolescence. Similar evidence of negative relationships between educational achievement and poor mental health during childhood and adolescence has been recorded across a number of countries (Currie, Stabile, Manivong, & Roos, 2010; Cutler & Lleras-Muney, 2008; Gustafsson et al., 2010).

Studies that focus on different types of mental health problems commonly distinguish between externalising disorders, such as antisocial behaviour and anger control problems, and internalising disorders, such as emotional distress, low self-esteem, depression and anxiety (Achenbach & McConaughy, 1992; Buehler, Krishnakumar, Anthony, Tittsworth, & Stone, 1994; Reynolds, 1990). Previous studies have demonstrated a consistent negative association between externalising disorders and educational achievement (Breslau, Miller, Joanie Chung, & Schweitzer, 2011; Miech, Caspi, Moffitt, Wright, & Silva, 1999). However, findings regarding associations between internalising disorders and educational achievement are more mixed. Some studies have found no association between the prevalence of internalising disorders and educational achievement (Duchesne, Vitaro, Larose, & Tremblay, 2008; Jonsson et al., 2010; Miech et al., 1999), while others have found them to have adverse effects on both dropout and graduation rates (Fletcher, 2008, 2010; McLeod & Fettes, 2007).

The above findings suggest that it may be fruitful to analyse outcomes for girls and boys separately, for several reasons. First, and most importantly, there are systematic differences between boys and girls in terms of both frequencies and types of mental health problems (Kessler, 2003; Rosenfield, Lennon, & White, 2005). Girls generally experience more internalising disorders, such as poor self-esteem, depression and anxiety and loss of interest in day-to-day activities including educational activities. Amongst boys, externalising problems such as emotional dysregulation and impulsivity are more common. Second, boys and girls differ in terms of the effects of poor mental health on educational achievement (Fletcher, 2008; Kessler, Foster, Saunders, & Stang, 1995). Third, there are well-known links between gender and both educational choices and educational performance, with boys generally performing less well than girls (for details of these patterns in Sweden, see Emanuelsson & Fischbein, 1986; Hinnerich, Höglin, & Johannesson, 2011; Wernersson, 2010). Fourth, research has identified an interaction between socioeconomic background and gender, suggesting that the magnitude of the gap in school performance between girls and boys may be negatively related to families' resources (Heikkilä, 2015).

Educational achievement and family socioeconomic resources

It is well established that educational performance is strongly associated with socioeconomic background (Breen & Goldthorpe, 1997; Breen, Luijkx, Müller, & Pollak, 2009; Erikson et al., 2005; Huurre, Aro, Rahkonen, & Komulainen, 2006). Children from less privileged backgrounds, with limited academic, cultural and economic resources, are less likely to enter higher education than more privileged peers (Breen et al., 2010; Brooks & Svallfors, 2010; Erikson et al., 2005; Iannelli & Smyth, 2008; Sirniö

et al., 2016; Stirrup, Evans, & Davies, 2016). The “conventional view” analysts focused on the status of children’s fathers when considering family resources (Goldthorpe, 1983). As already mentioned, in recent decades, it has become increasingly common to broaden the measurement of household SES (typically based on labour force attachment; education, occupation or income; or a combination of these factors) by using indicators for the parent with the highest SES or the combined SES of both parents.³ However, it may be fruitful to move beyond a single-family SES measure as empirical evidence suggests that the impact of parental SES on children’s educational achievements differs between the parents (Beller, 2009). The division of labour between parents suggests that family and household duties, such as children’s well-being and schooling, are primarily seen as the mother’s responsibility, while the father’s key responsibility is to be the main economic provider (Reay, 2005; Weiss et al., 2003). Korupp et al. (2002) demonstrate that the mother’s SES is more closely associated with children’s educational achievements than the SES of the father. Further, in relation to income, children do better when their mothers control a larger fraction of family economic resources (Lundberg, Pollak, & Wales, 1997). Thus, in this article, we aim to distinguish the effects of SES of mothers and fathers, using detailed separate indicators based on their education, income and unemployment.

The relative strength of the mother’s SES effects on children’s school performance may potentially be influenced by the shift towards a dual-earner society, in which men’s and women’s life cycle behaviours with regard to education and employment have become increasingly similar over time (Statistics Sweden, 2016). However, public images and beliefs about ideal male and female behaviours are still far from identical (Edlund & Öun, 2016; Gilligan, 1982; Goldscheider, Bernhardt, & Lappegård, 2014; Grusec & Hasting, 2014). Simplistically, men and masculinity are closely connected to employment and careers, while women and femininity are associated with nursing, children and relationships. Thus, mothers may still have greater interest than fathers in their children’s education, and use more of their financial and cultural resources to help their children, as claimed more than 20 years ago by Lundberg et al. (1997). However, the validity of this hypothesis and strength of the effect (if present) clearly warrant attention.

As well as the resources discussed above, previous research has identified single parenthood as a strong risk factor for educational failure. Based on four American surveys,⁴ McLanahan and Sandefur (2009) found that children whose parents lived apart were twice as likely to drop out of high school as peers whose parents lived together. Moreover, the benefits associated with having educated parents decreased when parents separated. Using the British Household Panel Study, Ermisch and Francesconi (2001) found similar patterns and concluded that experiences of single parenthood are associated with lower educational performance. The negative effects of single parenthood on educational achievements may be weaker in Sweden than in many other industrialised countries. This is largely because single mothers in Sweden are relatively well off due to the high female employment rate and generous social policies directed towards families in Sweden (Bradbury & Jäntti, 2001). Nevertheless, income inequalities between single-parent households and dual-earner households are still substantial. Moreover, single parenthood is not only associated with relatively low economic resources but also other adverse factors, such as relatively little available

time to help children with schoolwork. Thus, we hypothesise that being raised by a single parent may be associated with lower than average educational achievement in Sweden.

Finally, several studies, both national and international, have reported that native-born students with immigrant parents perform worse in school than students with a native parental background (Aslund, Edin, & Fredriksson, 2011; Bygren & Szulkin, 2010; Collins, Collins, & Butt, 2015; Grönqvist & Niknami, 2017; Skolverket, 2016).

Data, variables and method

Generally, previous explorations of links between health and educational performance have relied on either survey data or register data containing health at birth measures. This study is based on data from various national official registers that have been integrated into the SIMSAM Lab, Umeå University (Lindgren, Nilsson, de Luna, & Ivarsson, 2016). Register data have an important advantage over survey data (Kreyenfeld, Zeman, Burkimsher, & Jaschinski, 2012) as they provide a complete sample of all registered individuals. In contrast, survey data may be biased due to low response rates, cover time periods that are too short to reveal long-term trends, lack responses to some questions and, perhaps most importantly, provide information on limited numbers of respondents with socio-demographic characteristics of interest, e.g. poor mental health. One drawback of register data is the relative lack of detailed information (Jensen, Bøggild, Garne, Overgaard, & Fonager, 2014). In this study, a possible limitation applies to the indicator of mental health status, which is based on prescriptions of specified classes of drugs, falling within Anatomical Therapeutic Chemical (ATC) codes N05 and N06 (World Health Organization, 2004). This measure only captures those suffering from quite severe mental health problems. Thus, it is a very strict criterion, but we think that the ability to study a specific group that is not easy to distinguish using the information other than register data is a clear strength of the study.

The SIMSAM database covers the entire Swedish population over the period 1960–2010. It integrates longitudinal administrative data provided by Statistics Sweden (SCB) contained in the Swedish National Agency for Education's Pupil Register, the Swedish Prescribed Drug Register, the Multi-Generational Register and the Longitudinal Integration Database for Health Insurance and Labour Market Studies. The Swedish National Agency for Education's Pupil Register provides information on every registered individual's year of compulsory school completion, GPAs from both compulsory school and upper secondary school and, where relevant, the year s/he enrolled in and graduated from upper secondary education. The Swedish Prescribed Drug Register is available for the years 2005–2009, during which the students considered here would have been between 15 and 19 years old. It contains data on all drugs prescribed and dispensed to these individuals, following the ATC classification system. The Medical Birth Register provides data on weight and Apgar scores at birth. These are high-quality registers (see, e.g. Nordin, Dackehag, & Gerdtham, 2013; Wettermark et al., 2007). The education and health data are supplemented with information from the Multi-Generational Register, which links children and their biological and/or adopted parents, and the Longitudinal Integration Database for Health Insurance and

Labour Market Studies, which provides complementary data related to the labour market, education and social insurance systems.

This study addresses children born in Sweden in 1990 who continued to live in the country up to 2010 (115,882 in total). We followed this cohort of students up to 2009 when most of them would have graduated from upper secondary school. We present two analyses. The first explores factors affecting “graduation from upper secondary school”, using data pertaining to all students (109,233 in total: 55,991 boys and 53,242 girls) who completed their compulsory schooling in spring 2006 and continued to upper secondary school the following autumn. The other explores factors affecting the students’ “grade point average” (GPA) using data pertaining to students who graduated from upper secondary education in 2009 (85,180 in total: 42,712 boys and 42,468 girls).

Dependent variables

Graduation from upper secondary school, the first dependent variable, is a dichotomous variable coded 100 if upper secondary education was completed in 2009 and 0 otherwise. In the sample, 76.3% of the boys and 79.8% of the girls graduated. *GPA*, the second dependent variable, is based on the students’ final grades (2009) and ranges from 0 to 20 (mean and standard deviation for boys and girls: 12.3 ± 4.9 and 13.7 ± 4.9 , respectively).

Individual health variables

As already mentioned, measurement of mental health problems is based on the prescription of two types of drugs, ATC codes N05 (psycholeptics) and N06 (psychoanaleptics), during the time period 2005–2009 (World Health Organization, 2004). Psycholeptics are drugs with antipsychotic actions (i.e. neuroleptics), drugs used in the treatment of neuroses and psychosomatic disorders associated with anxiety and tension (e.g. benzodiazepines) and drugs with primarily calming effects. Psychoanaleptics include drugs used in the treatment of endogenous and exogenous depression and ADHD (Attention Deficit Hyperactivity Disorder). Frequencies of prescriptions of both classes of drugs for the boys and girls in the sample are nearly identical.

The variable *drug prescription* varies between 0 (no prescription of these drugs) and 5 (prescriptions of these drugs every year between 2004 and 2009, with increments of 1 for each year in which the drugs were prescribed).⁵ The *Apgar score* measures health status at birth 5 min after birth. The measure is a standardised scale (0–10) evaluating a new-born’s health condition in relation to five criteria: appearance, pulse, grimace, activity and respiration (Apgar, 1953). Birth weight is a binary variable equal to 1 (designated low) if a child’s birth weight is more than 2 standard deviations lower than the mean of the baby’s gestational age based on the Swedish reference curve for the estimated weight (Maršál et al., 1996) and 0 otherwise. Because the variables relating to health status at birth are commonly applied in research, we use them as controls.

Family socioeconomic resource variables

Parental education is measured by three variables: the educational attainment levels of the father and mother and the parent with the highest level of educational attainment. Four levels are distinguished: compulsory school; secondary school, vocational track (2 years); secondary school, academic track (3 years); and university degree (≥ 3 years). *Parental income* is also measured by three variables, based on registry information regarding annual disposable income between 2004 and 2009.⁶ We use the average value over the period for both the father and the mother, as well as the mean value of both parents' income. The unit in the income scale is 100 Swedish KiloKronor (KSEK).

Parental unemployment is an indicator of labour market attachment and is also measured by three variables based on the period 1990–2009: unemployment of the father and mother individually, on scales varying between 0 (no unemployment) and 20 (at least one period of unemployment each year),⁷ and the mean of the father's and mother's unemployment values. *Parental country of birth* distinguishes students of three categories: both parents born in Sweden; one parent born in Sweden; and no parent born in Sweden. Due to the distribution and classification of the information regarding the country of birth in the database, it proved difficult to construct a more detailed variable. Thus, although previous research has demonstrated that country of birth is a significant predictor of educational achievement, the variable included in this study – because of its crude measurement – is mainly used as a control.

Civil status refers to the mother's civil status in the period 1990–2009, coded in three categories: (1) married or cohabiting during the complete period; (2) civil status changed one or several times during the period; and (3) single during the complete period.

A limitation of the study is that information regarding the fathers' civil status is not available in the dataset. Although virtually all the children in the sample had two parents, and child allowances are counted as income, it still provides insufficient information to determine the “true” financial conditions of single-parent households. However, to check the extent to which the inclusion of single parents may modulate the effects of the other independent variables, we performed the following sensitivity analyses. First, we tested the effects of excluding the variable civil status by repeating analyses with the full model (results of which are presented in [Tables 1–4](#)) without it. Second, we excluded single parents (category 3) from the sample and performed an identical analysis. Third, we performed the same analysis using data pertaining solely to stable two-parent couples (category 1). Fourth, we compared the coefficients for each of the independent variables across the samples described above. We found that the effects of the independent variables only marginally differed across the samples.

Method

Effects of the considered factors on the dependent variables were evaluated by Ordinary Least Squares linear regression analysis. For the binary dependent variable graduation from upper secondary education, another option would have been logistic regression. However, as argued by Hellevik (2009) and Mood (2010), substantive results obtained within a linear regression framework very rarely differ from those acquired with

Table 1. Effects of indicated variables on the probability of students graduating from upper secondary school.

		Boys		Girls	
		B	SE	B	SE
<i>Father's education</i>	Intercept	93.71	2.64	86.92	2.76
	Compulsory	-6.66	0.69	-4.22	0.67
	Secondary 2 years	-3.07	0.64	-1.00	0.62
	Secondary 3 years	0.48	0.64	1.41	0.62
<i>Mother's education</i>	University	0.00		0.00	
	Compulsory	-13.33	0.78	-10.67	0.75
	Secondary 2 years	-3.97	0.68	-2.56	0.66
	Secondary 3 years	0.79	0.67	0.77	0.65
<i>Income</i>	University	0.00		0.00	
	Father	0.13	0.05	0.16	0.06
<i>Unemployment</i>	Mother	0.34	0.15	0.86	0.16
	Father	-0.50	0.05	-0.48	0.05
<i>Parents' country of birth</i>	Mother	-0.27	0.04	-0.20	0.04
	Both Sweden	0.26	0.73	-0.12	0.70
	One Sweden	-3.00	0.88	-2.73	0.84
	Non-Sweden	0.00		0.00	
<i>Mother's civil status</i>	No partner – stable	-14.61	1.19	-13.88	1.12
	Mixed over time	-10.19	0.36	-8.96	0.35
	Married/cohabiting – stable	0.00		0.00	
<i>Individual health variables</i>	Drug prescription	-12.86	0.30	-13.07	0.24
	Apgar score	-0.33	0.25	0.39	0.26
	Low birth weight	-1.05	1.14	0.18	1.08

Linear Probability Regression Model (OLS) ($n = 109,223$). Significant coefficients ($p < 0.05$) are indicated in bold. Cell entries are unstandardised regression coefficients and standard errors.

Table 2. Effects of indicated variables on upper secondary GPA scores.

		Boys		Girls	
		B	SE	B	SE
<i>Father's education</i>	Intercept	15.39	0.34	16.06	0.38
	Compulsory	-1.98	0.09	-1.48	0.09
	Secondary 2 years	-1.70	0.08	-1.16	0.08
	Secondary 3 years	-0.83	0.08	-0.33	0.08
<i>Mother's education</i>	University	0.00		0.00	
	Compulsory	-2.54	0.10	-2.67	0.10
	Secondary 2 years	-1.71	0.09	-1.79	0.09
	Secondary 3 years	-0.74	0.08	-0.80	0.09
<i>Income</i>	University	0.00		0.00	
	Father	0.04	0.01	0.03	0.01
<i>Unemployment</i>	Mother	0.07	0.02	0.08	0.02
	Father	-0.05	0.01	-0.05	0.01
<i>Parents' country of birth</i>	Mother	-0.05	0.01	-0.05	0.01
	Both Sweden	0.39	0.10	0.52	0.10
	One Sweden	0.09	0.12	0.26	0.12
	Non-Sweden	0.00		0.00	
<i>Mother's civil status</i>	No partner – stable	-1.05	0.17	-1.33	0.17
	Mixed over time	-1.07	0.05	-1.11	0.05
	Married/cohabiting – stable	0.00		0.00	
<i>Individual health variables</i>	Drug prescription	-0.98	0.05	-1.04	0.04
	Apgar score	-0.03	0.03	0.01	0.04
	Low birth weight	-0.01	0.15	-0.32	0.15

Linear Regression Model (OLS) ($n = 85,180$). Significant coefficients ($p < 0.05$) are indicated in bold. Cell entries are unstandardised regression coefficients and standard errors.

a logistic framework. Moreover, interpretations of coefficients are more straightforward with a linear framework. For the binary dependent variable, we apply a linear probability model; the reported coefficients can be understood as changes in percentage points of the probability of graduating from upper secondary school. For the second dependent variable, GPA, the coefficients indicate changes in GPA score.

Results

Part I: the relative impact of family socioeconomic resources on educational achievement

Table 1 shows the effects of the considered independent variables on members of our cohort's probability of graduating from upper secondary school. Five results are worth emphasising. First, as expected, the prescription of psycholeptic or psychoanaleptic drugs was strongly negatively related to school performance. Each year of prescription was associated with a reduction in the probability of graduation of about 13 percentage points, for both boys and girls. Second, the overall patterns observed between the dependent and independent variables did not differ much between boys and girls: parental education, income, unemployment, country of birth and civil status were all significantly associated with school performance for both boys and girls. Third, resources associated with the mother (in terms of both parental education and income) influenced the children's likelihood of graduating more than those linked to the father. For example, among boys, having a mother or father with the lowest education level reduced chances of graduation by 13.3 and 6.7 percentage units, respectively, relative to having a mother or father with university education. Regarding experiences of unemployment, the results indicate the opposite pattern: that unemployment of fathers had more impact. For example, among girls, unemployment of the father or mother during the whole period reduced the likelihood of graduation by 9.6 and 4.0 percentage points, respectively, relative to having a father or mother in stable employment. Fourth, differences between those with native parents and those whose parents were both born outside Sweden were negligible. However, those with one parent born outside Sweden were slightly less likely to graduate than those in the other two categories. Fifth, civil status had significant effects: children living in stable, two-adult households were more likely to graduate from upper secondary school than children growing up in other household configurations. For both boys and girls, the likelihood of graduation was about 14 percentage points higher for those living in stable, two-adult households than for those living with a single parent.

Effects of the considered independent variables on GPA scores, which were substantively similar to their effects on the likelihood of graduation, are shown in Table 2. First, the prescription of the drugs was strongly negatively related to GPA scores. Second, the overall effects of the variables on GPA scores did not differ much between girls and boys. Third, mothers' resources (education and income) had stronger effects than fathers' resources (but effects of unemployment did not differ between parents). Fourth, regarding civil status, an adverse impact on school performance of not living in a stable, two-adult household was again detected. Fifth, adolescents whose parents were both born in Sweden performed slightly better than those whose parents were

born outside Sweden. The most significant extension of understanding provided by these results, in our view, is the empirical evidence that mothers' socioeconomic resources can affect children's performance in school more than fathers' resources.

Part II: compensatory effects of family socioeconomic resources on educational achievement

In this section, we focus on the potential moderating effects of family socioeconomic resources on the observed relationship between poor mental health (as measured by drug prescription) and educational performance. Family socioeconomic resources are strongly related to educational performance (as shown by the main effects presented in Tables 3 and 4), but we do not comment on them in this section.⁸ For parental education, income and unemployment, the composite measures are used.

Modulating effects of family resources on graduation from upper secondary school are shown in Table 3. Only one of the interactions between the socioeconomic and mental health variables had significant effects for boys (high parental income significantly mitigated risks of failing to graduate for boys suffering from mental health problems). Amongst boys who received drug prescriptions for 5 years, having low-income parents (decile 1 in the sample: ≤ 139 KSEK)⁹ decreased the likelihood of graduating from upper secondary school by 65 percentage points relative to boys with no prescriptions. For boys from a high-income family (decile 9: ≥ 326 KSEK), the corresponding figure was 58 percentage points.

Table 3. Main and interactive effects of indicated variables on the probability of graduating from upper secondary school

		Boys		Girls	
		B	SE	B	SE
<i>Highest parent's education</i>	Intercept	91.87	2.59	85.86	2.71
	Compulsory (Edu 1)	-18.65	0.80	-14.83	0.79
	Secondary 2 years (Edu 2)	-8.67	0.53	-5.35	0.53
	Secondary 3 years (Edu 3)	-1.00	0.53	0.66	0.52
	University (Edu 4)	0.00		0.00	
<i>Income</i>	Parental mean value	0.38	0.10	0.53	0.11
<i>Unemployment</i>	Parental mean value	-0.80	0.06	-0.66	0.06
<i>Parents' country of birth</i>	Both Sweden	1.64	0.73	1.07	0.70
	One Sweden	-2.23	0.88	-1.96	0.84
	Non-Sweden	0.00		0.00	
<i>Mother's civil status</i>	No partner – stable	-16.13	1.24	-13.90	1.18
	Mixed over time	-10.50	0.37	-8.75	0.36
	Married/cohabiting – stable	0.00		0.00	
<i>Individual health variables</i>	Drug prescription (Drugs)	-13.99	1.17	-10.60	0.88
	Apgar score	-0.35	0.25	0.40	0.26
	Low birth weight	-1.29	1.14	0.19	1.08
<i>Interaction effects</i>	Edu 1 × Drugs	1.10	1.29	-2.43	1.06
	Edu 2 × Drugs	-0.38	0.93	-2.55	0.73
	Edu 3 × Drugs	-0.86	0.93	-2.53	0.74
	Edu 4 × Drugs	0.00		0.00	
	Income × Drugs	0.73	0.27	0.48	0.19
	Unemployment × Drugs	0.01	0.10	-0.09	0.08
	Civil no partner × Drugs	1.89	1.61	-2.23	1.31
	Civil mixed × Drugs	-0.64	0.64	-2.04	0.51
	Civil married × Drugs	0.00		0.00	

Linear Probability Regression Model (OLS) ($n = 109,233$). Significant coefficients ($p < 0.05$) are indicated in bold. Cell entries are unstandardised regression coefficients and standard errors.

Thus, poor mental health had a less severe impact on the likelihood of graduating for boys with high-income parents than for those with low-income parents.

For girls with mental health problems, there are several indications that high socioeconomic resources may have mitigated risks of failing to graduate from upper secondary school. Regarding the parental level of education, the interaction terms show that the ameliorating effect was largely related to university education: the interaction terms between parental education and drug prescription for the other three educational levels are quite similar in magnitude. For girls having at least one parent with a university degree, 5 years of drug prescription were associated with a 53 percentage point reduction in the probability of successful graduation relative to no prescription. The corresponding reduction for girls having parents with compulsory education was 65 percentage points. Regarding parental income and civil status, the interaction terms indicate that the effects of poor mental health on risks of graduation failure were lower for girls from high-income families and those living in a stable, two-adult household. While these results show that family socioeconomic resources may decrease the risk of graduation failure among children suffering from poor mental health, particularly amongst girls, it is important to recognise that poor mental health still strongly increased risks of graduation failure.

Table 4 shows the results of a similar analysis of mitigating effects, using GPA score as the dependent variable. This analysis confirmed that socioeconomic resources did not have a significant moderating impact on the negative relationship between poor mental health

Table 4. Main and interactive effects of indicated variables on upper secondary GPA scores.

		Boys		Girls	
		B	SE	B	SE
<i>Highest parent's education</i>	Intercept	14.47	0.34	15.21	0.37
	Compulsory (Edu 1)	-3.58	0.11	-3.21	0.11
	Secondary 2 years (Edu 2)	-2.79	0.07	-2.43	0.07
	Secondary 3 years (Edu 3)	-1.49	0.07	-1.06	0.07
	University (Edu 4)	0.00		0.00	
<i>Income</i>	Parental mean value	0.11	0.01	0.10	0.01
<i>Unemployment</i>	Parental mean value	-0.11	0.01	-0.11	0.01
<i>Parents' country of birth</i>	Both Sweden	0.54	0.10	0.70	0.10
	One Sweden	0.18	0.12	0.38	0.12
	Non-Sweden	0.00		0.00	
<i>Mother's civil status</i>	No partner – stable	-1.25	0.18	-1.33	0.17
	Mixed over time	-1.12	0.05	-1.14	0.05
	Married/cohabiting – stable	0.00		0.00	
<i>Individual health variables</i>	Drug prescription (Drugs)	-1.03	0.19	-0.80	0.13
	Apgar score	-0.03	0.03	0.01	0.04
	Low birth weight	-0.02	0.15	-0.32	0.15
<i>Interaction effects</i>	Edu 1 × Drugs	-0.10	0.26	-0.29	0.21
	Edu 2 × Drugs	-0.23	0.16	-0.21	0.12
	Edu 3 × Drugs	-0.33	0.15	-0.22	0.12
	Edu 4 × Drugs	0.00		0.00	
	Income × Drugs	0.07	0.04	0.00	0.03
	Unemployment × Drugs	-0.01	0.02	-0.01	0.02
	Civil no partner × Drugs	0.30	0.31	-0.65	0.30
	Civil mixed × Drugs	0.15	0.12	-0.05	0.09
	Civil married × Drugs	0.00		0.00	

Linear Regression Model (OLS) ($n = 85\ 180$). Significant coefficients ($p < 0.05$) are indicated in bold. Cell entries are unstandardised regression coefficients and standard errors.

and GPA scores for boys. The same conclusion is also largely valid for girls, with one notable exception as civil status had a clear impact, because poor mental health had a stronger effect on GPA scores of girls growing up with a single mother than for girls growing up in the other two considered family configurations.

The key results from this section are as follows. The mitigating effects of high family socioeconomic resources on graduation failure amongst children with poor mental health seem to be more pronounced for girls than for boys. We have not evaluated the statistical significance of the differences between boys and girls in this respect, but we believe these findings warrant further attention. In terms of GPA scores, none of the indicators of socioeconomic resources affected the negative relationship between GPA scores and poor mental health, except mothers' civil status for girls.

Concluding discussion

In this article, we have focused on important factors for upper secondary school performance. First, acknowledging previous findings that families' socioeconomic resources are important (Breen & Jonsson, 2005; Breen et al., 2010; Sirniö et al., 2016), we analysed impacts of both mothers' and fathers' resources (Edlund, 2003; Erikson & Goldthorpe, 1992; Sorensen, 1994; Zipp & Plutzer, 1996). The results are not entirely conclusive. Both income and educational levels of mothers seemed to be more important than those of the fathers. However, in terms of unemployment – a measure of labour market attachment – the fathers' resources seemed to have a stronger impact on risks of failure to graduate, but this gender effect was not apparent in GPA scores.

On balance, the results indicate that mothers' socioeconomic resources are generally more important than the father's resources for their children's educational achievements. We believe that these findings should encourage scholars of social stratification and social mobility to use more detailed measures of SES, which move beyond the common strategy of using a single-household SES measure.

In line with previous research (Becchetti et al., 2018; Brännlund et al., 2017; Cutler & Lleras-Muney, 2006), we also detected a strong effect of poor mental health on school performance, for both girls and boys. Further analysis of potentially mitigating effects of high family socioeconomic resources showed the following. For girls, we found that resources that modulate the negative relationship between poor mental health and upper secondary graduation include parental education, income and civil status. For boys, only parental income showed a modulating effect. The analysis also revealed that only one of the examined resources significantly affected the negative relationship between GPA scores and poor mental health: the mother's civil status (and only for girls).

The results raise intriguing questions about why high family socioeconomic resources may have substantial mitigating effects for girls but much weaker effects for boys and why they affect secondary school graduation success but not GPA scores. The reasons may be partly due to differences in common kinds of mental health problems for boys and girls. While girls tend to suffer from internalised mental health problems, such as anxiety, mood disorders and depression, boys' mental health problems are more often external – involving antisocial behaviour and substance abuse. However, these

differences were not reflected in differences in frequencies of psycholeptic and psychoanaleptic drug prescriptions between boys and girls.

Another explanation relates to traditional gender roles, as children's sex shapes parents' expectations of them and support strategies offered. Children's perceptions of the behaviour expected of them might also depend on whether they are girls or boys. Finally, the conclusion that high family socioeconomic resources do not strongly and unambiguously compensate for the relationship between poor mental health and GPA scores is perhaps not very surprising. To help a child who is suffering from mental illness to graduate from upper secondary school is a challenging task, and the parents' resources may make some difference. However, enabling the child to graduate with good grades might be beyond the reach of even highly resourceful parents.

Notes

1. In this study, we use prescription of mental drugs as a proxy for poor mental health. Among the upper secondary education students in our sample, 6.6% of the boys and 10.9% of the girls used prescribed mental drugs for a year or more.
2. The Apgar score is a standardised scale to evaluate a new-born's health condition in relation to five criteria: appearance, pulse, grimace, activity and respiration (Apgar, 1953). Scores between 7 and 10 are generally seen as normal, 4 to 6 as fairly low and 3 or less as critically low.
3. The major arguments in the debate regarding conceptualisation and measurement of household resources are discussed by Goldthorpe (1983), Erikson and Goldthorpe (1992), Sorensen (1994), Zipp and Plutzer (1996), Edlund (2003), Beller (2009) and works cited therein.
4. The Panel Study of Income Dynamics (PSID), the National Longitudinal Survey of Young Men and Women (NLSY), the High School and Beyond Study (HSB) and the National Survey of Families and Households (NSF).
5. The end-date for the last year, 2009, was set to June – the anticipated month of graduation.
6. Disposable income includes all sources of income, i.e. gross salary, holiday pay, commissions, pension, sickness benefit, child allowance, housing allowance, social assistance and student grants and loans. It should be noted that negative transfers, such as taxes, repayment of student loans, and payment of child allowance, are also included, sometimes creating negative values for income. Using income data for the complete period is not possible due to an official change of measurement in 2004.
7. For unemployment, the data do not allow the end-date to be set to June 2009, so parental employment status in 2009 may have changed after anticipated graduation. However, analyses excluding unemployment in 2009 show negligible differences from those shown in Tables 1–4.
8. It is worth noting that the observed main effects of the independent variables shown in Tables 3 and 4 negligibly differ from effects yielded by models excluding interaction effects. Tables are available upon request.
9. The income distribution in the samples of boys and girls, respectively, is very similar.

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No potential conflict of interest was reported by the authors.

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