

Family Background Characteristics and Student Achievement: Does School Ethos Play a Compensatory Role?

Jocim Ramberg

Department of Special Education, Stockholm University, Sweden

Contact corresponding author: joacim.ramberg@specped.su.se

Sara Brodin Låftman, Emma Fransson and Bitte Modin

Department of Public Health Sciences, Centre for Health Equity Studies (CHESS), Stockholm University/
Karolinska Institutet, Sweden

ABSTRACT

It is a well-known fact that family background characteristics affect school achievement, and according to Swedish law, school should play a compensatory role to outweigh such differences. Previous research has demonstrated that a strong school ethos is associated with higher student achievement, but whether school ethos can play a compensatory role for family background has not been investigated to the same extent. This study examines whether the predictive capacity of students' family background on school achievement is moderated by school ethos. Data were derived from 9,349 ninth grade students (15–16 years) and 2,176 teachers in 159 school units in Stockholm. Multilevel linear regression analyses showed that family background characteristics, as well as school ethos, were associated with student achievement. School ethos did not, however, moderate the association between family background and school achievement. The results suggest that school ethos does not play a compensatory role, but rather, promotes school achievement for all students alike.

Keywords: *school ethos, school achievement, social justice, compensatory effect, multilevel*

Introduction

For a long time, one of the central tenets of the Swedish educational system has been that school should compensate for students' different and varied backgrounds, an idea

Manuscript received: 24.08.2020. Manuscript accepted: 04.03.2021.

©2021 J. Ramberg, S. B. Låftman, E. Fransson & B. Modin. This is an Open Access article distributed under the terms of the Creative Commons CC-BY 4.0 License. ISSN 1891-5949, <https://noredstudies.org>

Citation: Ramberg, J., Låftman, S. B., Fransson, E. & Modin, B. (2021). Family background characteristics and student achievement: Does school ethos play a compensatory role? *Nordic Studies in Education*, 41(3), 239–260. <https://doi.org/10.23865/nse.v41.2999>

which is usually referred to as the school's compensatory role (Arnesen & Lundahl, 2006; Holmlund, 2015). In other words, a student's chance of succeeding in school should not depend on his or her social background. This idea is expressed in the Swedish Education Act (SFS 2010:800) in the following way: "An endeavour shall be made to compensate for differences in the capacity of children and students to benefit from the education" (Chapter 1, paragraph 4, *our translation*). This societal equity goal is based on the fundamental idea that factors that the students cannot influence should play as little a role as possible for their opportunities to succeed in school, and thus also for their future life chances. Contrary to this statutory intention, research points to clear associations between family background characteristics and school achievement, where students from less favourable backgrounds in general perform worse than their more advantaged peers. Thus, the school's compensatory assignment must be considered far from accomplished, as also highlighted by the national Swedish School Commission (SOU 2017:35).

Research within the field of school effectiveness theory has demonstrated positive associations between a school's ethos and student achievement even when taking students' family background characteristics into account (Banerjee, Weare, & Farr, 2014; Granvik Saminathen, Brodin Låftman, Almquist, & Modin, 2018; Rutter, Maughan, Mortimore, Ouston, 1979; Sellström & Bremberg, 2006). But to the best of our knowledge, no studies have yet examined whether a school's ethos can also function in a compensatory manner for students from less advantaged backgrounds. A basic starting point for the assumption that students – depending on their background – benefit to differing degrees from a strong school ethos is the notion that students from more advantageous backgrounds are generally better equipped for school. For instance, they tend to have higher expectations from home (and of themselves), higher access to resources for support, and better linguistic preconditions in their home environment. It could, however, be assumed that at least some of the disadvantages associated with having a less favourable background could be compensated for by school-contextual features, such as a strong school ethos.

Based on the assumption above, the current study takes as its starting point school effectiveness theory and investigates whether the associations between students' family background and school achievement are moderated by school ethos. More specifically, we seek to assess if a school's ethos can compensate for the relative disadvantage of not having university-educated parents, of not living with two parents in the same household, and of having a migration background, in relation to school achievement. To this end, we used data from four separate surveys that were combined, including information from 9,349 ninth grade students (aged 15–16 years) and 2,176 teachers in 159 senior-level school units in Stockholm municipality.

The Swedish context

Swedish schools are free of charge and compulsory up to school year 9, which means that students are not formally differentiated with regard to academic performance or social background (SFS 2010:800). However, there are several inherent market-related

mechanisms in the education system leading to differentiation between students and school segregation. These mechanisms can be traced to the market adaptation that has taken place in the education system, not only in Sweden, but most western education systems over the last 30 years or so (Apple, 2011; Ball, 2007). However, in Sweden, market adjustment has been more far-reaching than in most other countries (Björklund, Clark, Edin, Fredricksson, & Krueger, 2006; Lundahl, Arreman, Holm, & Lundström, 2014), and the basis for this change in Sweden has its origins in educational reforms implemented in the 1990s, namely the decentralization reform, the free school choice reform and the independent school reform (Ramberg, 2015).

An extensive field of research has examined the effect of these reforms. In summary it can be stated that free school choice has contributed to an increase in between-school variation concerning students' school performance (Sahlgren, 2013; Trumberg, 2011; Östh, Andersson, & Malmberg, 2013), thus adding to the already existing differences in student population derived from residential segregation (Lindbom, 2010; Östh, Andersson, and Malmberg, 2013; Yang Hansen & Gustafsson, 2016).

Overall, it can be concluded that since these reforms were introduced, the Swedish compulsory school has become more divided, where students from more favourable backgrounds, to a greater extent, attend same schools, while students from less favourable backgrounds attend other schools. This is particularly noticeable in the urban areas (Böhlmark & Holmlund, 2011) such as Stockholm, where this study was conducted. This conclusion is also in line with results showing that inequalities in the distribution of learning outcomes has increased in Sweden over the last ten years (Organisation for Economic Co-operation and Development (OECD), 2016), which further underpins the need to examine possible compensatory factors within the education system.

School effectiveness theory

This study's central theoretical concept – school ethos – with which we investigate possible compensatory effects at the school level, is taken from the extensive international theory and research area school effectiveness theory. Michael Rutter and his colleagues (Rutter et al., 1979) were pioneers in school effectiveness research with their empirical studies in London in the 1970s, while in the Swedish context, Grosin (2004) has contributed significantly.

The basic idea of school effectiveness theory is the assumption that schools have the ability to overcome disadvantages associated with the student composition by improving their contextual features. These school-contextual features are primarily not about the availability of resources at the school, the physical environment, or the student body composition, but rather about the school's formal and informal rules and values as well as the school's internal organisation (Rutter et al., 1979). Rutter et al. (1979) showed empirically that some educational environments were more successful than others in counteracting the negative effects of, for example, adverse social background and low cognitive ability. School effectiveness theory thus builds on the idea

that there are differences between schools that can be attributed to the quality of the school itself, regardless of the schools' student composition. Rather than focusing on factors beyond individual characteristics such as social and/or family background, the focus is on the school organisational level to improve students' academic and social outcomes (Brault, Janosz, & Archambault, 2014; Rutter et al., 1979; Rutter & Maughan, 2002; Scheerens, 2016).

Central to studies and debates on school effectiveness theory is the question of which school contextual factors are particularly decisive for a school's success, and to what extent they are so. The results of empirical studies, both nationally and internationally (Grosin, 2004; West, Sweeting, & Leyland, 2004), have been fairly consistent regarding what features of the school context play a particularly prominent role. Furthermore, there has been strong consensus within school effectiveness research regarding what kind of school-level conditions are of specific importance (Scheerens, 2016). The most vital features are school leadership, teacher cooperation, and school ethos, which shall in turn be understood as hierarchically ordered. The idea is that higher levels in the school structure (school leadership) provide the necessary conditions for processes at lower levels (teacher- and student-level) to take place. Thus, the extent to which school leaders have succeeded in implementing school effectiveness characteristics in the schools is expected to be reflected in teachers' degree of cooperation and consensus regarding important pedagogical and organisational aspects (Ertesvåg & Roland, 2015), as well as in how teachers and students relate to and behave towards each other, as reflected in the school's ethos.

School ethos

School ethos is a central concept in school effectiveness theory, and closely related to the concept of school climate. However, school climate is most often operationalized at the student level (Låftman, Östberg & Modin, 2017; Mayberry, Espelage & Koenig, 2009), and therefore, in essence reflects students' own experiences. School ethos is more closely related to school leadership and teacher cooperation, in line with school effectiveness theory, thus focusing on conditions at higher levels of the school structure, and assessed by teachers at the school.

School ethos, as defined by Rutter, refers to the norms, values, and beliefs, which permeate the school and manifest themselves in the way that students and teachers relate, behave, and interact with each other (Rutter et al., 1979). In line with this definition, it has also been defined as the prevailing common atmosphere at school, which derives from the social activities and behaviours that its actors are involved in, rather than the physical and organisational environment (Allder, 1993). Based on these definitions, several important components have been identified as important features in the description of school ethos, including a strong academic emphasis, positive and high expectations on students, student-teacher cohesion, an emphasis on positive rewards, and consistent and shared values and standards (Glover & Coleman, 2005). School ethos has also been referred to as the teachers' attitudes

towards and expectations of students, the nature of student involvement in the school, and the schools' underlying philosophy and aims (Halstead & Taylor, 2000). Taken together, these features of a school's ethos are important to take into account when conducting empirical research related to school ethos.

Previous research on school ethos as an important feature of school improvement and student outcomes is extensive. Research has shown clear associations between schools with a strong ethos and students' achievement, even when taking individual sociodemographic characteristics into account (Banerjee et al., 2014; Granvik Saminathan et al., 2018; Grosin, 2004; Rutter & Maughan, 2002; Rutter et al., 1979). A school's ethos has previously also been showed to be inversely associated with a number of different school related student outcomes such as truancy (Ramberg, Brodin Låftman, Fransson & Modin, 2019), cheating (Ramberg & Modin, 2019), and recurring sickness absence (Brodin Låftman, Ramberg & Modin, 2020).

Despite the existing empirical evidence on the importance of school ethos for student achievement and other vital student outcomes, less is known about whether this effect varies across socioeconomically and demographically defined groups of students. There is thus a lack of knowledge about whether the effects of school ethos differ between different groups of students. By comparing the relative "gain" in school performance from a stronger school ethos between students with favourable versus less favourable family background characteristics, this study investigates whether school ethos functions as a compensatory factor for students from more disadvantaged backgrounds.

Family background characteristics and student achievement

Research into students' different prerequisites to succeed in school because of their family background is extensive. From an equity perspective, the mission of evening out students' school results in relation to family background is important, since the results in compulsory school to a large extent determine their opportunities for further studies, and thus in the long run also their chances to succeed in the labour market (Holmlund, 2015). In other words, unequal learning outcomes due to students' social background is likely to reproduce over the life course into unequal living conditions and life opportunities.

Parental education

One of the most salient predictors of student achievement in Sweden is parental educational level, which has been the subject of an extensive body of research (e.g., Björklund, Lindahl & Sund, 2003; Böhlmark & Holmlund, 2011, 2012; Gustafsson & Yang-Hansen, 2009, 2018; Holmlund, 2015; Holmlund et al., 2014; Holmlund, Lindahl & Plug, 2011; SNAE, 2010, 2018). A consistent finding of this research is that parents' educational level is crucial for students' school achievement. The reasons why students of more highly educated parents perform better in school are complex, but studies show, for example, that students with more highly educated parents have higher

expectations and higher demands on school achievement than students of less educated parents. The opportunities for support in schoolwork are also better for students with more highly educated parents. Research shows that parental behaviour and educational support directly affect children's learning habits and academic performance (Li & Qiu, 2018), and also that a higher parental educational level generally leads to higher parental educational participation in, for example, discussing school issues with their children, helping out with homework, and participating in different school activities (Pong, Hao & Gardner, 2005).

Family structure

Another family-related factor that matters for students' school achievement is the composition of the household that they grow up in. Research has shown that children whose parents have separated fare less well compared with children in nuclear families with regards to educational achievement and a range of other outcomes, although the overall effect sizes are rather small (Amato, 2001; Amato & Keith, 1991; Bernardi & Boertien, 2016; Chapple, 2009; Härkönen, Bernardi & Boertien, 2017; Gähler & Palmtag, 2015; Pong et al., 2003). Studies that focused on children living in shared physical custody, i.e. with continued access to both their parents, have reported that these children use parents as a source of emotional support to a higher extent than those in single-parent households, (Bergström et al., 2013; Bjarnason, & Arnarsson, 2011; Carlsund, Eriksson & Sellström, 2013; Låftman et al., 2014). The school achievement gap between students from single- and two-parent families is reported for many western societies, including Sweden, even when taking into account differences between countries' family policies aiming at equalizing economic resources between single-parent and other family households (Pong et al., 2003).

Taken together, previous research indicates that growing up with two parents has advantages for various outcomes, including educational achievement, compared to growing up with only one parent. It is reasonable to assume that children who live with two parents have a more secure financial situation, greater possibilities to spend time with their parents, and better opportunities to receive support in school-related issues, compared with children who grow up with only one parent or in other family compositions.

Immigrant background

Another sociodemographic factor of importance to students' school achievement is immigrant background. This refers to a heterogeneous group of students with highly diverse backgrounds, ranging from unaccompanied refugee children to immigrant children from resourceful families. Studies have also shown that there is substantial variation in school performance within this group of students (Grönqvist & Niknami, 2017a, 2017b). Research has nevertheless repeatedly shown that immigrant background in general is negatively associated with school performance (Ammermueller, 2007; Grönqvist & Niknami, 2017b; Jakobsen & Smith, 2006; Riphahn, 2003;

Schneeweis, 2011; Schnepf, 2007). Previous studies that have examined immigrants' educational disadvantage in relation to natives', point to major differences between countries (Mullis, Martin, Gozalez & Chrostowski, 2004; OECD, 2004; Schnepf, 2007), and that the immigrant–native achievement gap in Sweden (and in other non-English speaking countries) is substantial. In addition to language barriers, it is also evident that immigrants' generally lower socio-economic background contributes to these findings, as does the level of school segregation at the societal level (Grönqvist & Niknami, 2017b; Schnepf, 2007). Similar results were revealed in a national study of refugees' versus other students' school performance in Sweden, even though the differences in performance were heavily reduced when controlling for parental socio-economic conditions and neighbourhood effects (Grönqvist & Niknami, 2017a). Despite the fact that students with an immigrant background refers to a heterogeneous group of the Swedish student population, this crude categorisation still appears to capture the substantial negative effects of foreign origin on school performance (Grönqvist & Niknami, 2017b; Heath & Brinbaum, 2007; Schnepf, 2007). Analyses based on data from all Swedish students in grade nine in 1988–2014 showed that about 90 percent of all native-born students qualified for a national upper secondary program, while the corresponding figure for foreign-born students was about 65 percent (Grönqvist & Niknami, 2017b).

Taken together, previous research shows clear and strong associations between students' school achievement and a number of social background characteristics of which parental level of education appears to be the most important. However, few studies have investigated possible compensatory effects at the school level for these background characteristics.

Aim

The aim of this study is to investigate whether the predictive capacity of students' family background characteristics in terms of parental education, family structure and migration background on school achievement is moderated by the school's ethos. More specifically, we seek to assess if school ethos can compensate for the relative disadvantage of not having university-educated parents, of not having two parents in the same household, and of having migrated to Sweden during the school years, in relation to school achievement. In order to do so, the study also seeks to examine the associations between family background characteristics and student achievement.

Method

Data

The data used for this study includes combined cross-sectional information from four separate surveys comprising 159 senior-level school units in Stockholm, as well as school-level information from official administrative registers retrieved from the Swedish National Agency of Education (SNAE, 2016). Student-level data derives from the Stockholm School Survey (SSS) performed by the Stockholm municipality

in 2014 and 2016, targeting ninth graders (aged 15–16 years) in all public and most independent schools in the Stockholm municipality. The SSS was completed by students in the classroom and administrated by their teachers. The survey covers a wide range of questions, including information on family background characteristics and grades. The SSS response rate was 83% ($n = 11,393$). The Stockholm Teacher Survey (STS) was performed through a web-based questionnaire by our research group, targeting all senior-level teachers in the participating schools, with the purpose of collecting school-contextual information from teachers about their working conditions and about features of school effectiveness, including the school ethos dimension. The information from the STS was then aggregated to the school-level by calculating mean values for each participating school unit, which were subsequently linked to the student-level data. The STS response rate was 54% ($n = 2,533$). Since the study is based on combined student- and teacher-data, only schools that participated in both the SSS and the STS were included. Our combined data covers information from 10,757 students and 2,304 teachers in 169 school units. Ten schools without information from the official administrative registers were excluded ($n = 446$) as were students with missing data on any of the variables used in the analyses ($n = 962$), resulting in a final study sample of 9,349 students distributed across 159 school units (covering school-level information collected among 2,176 teachers).

Ethics

The Stockholm Teacher Survey, and its linkage to the Stockholm School Survey, has been approved by the Regional Ethical Review Board of Stockholm (2015/1827-31/5). According to a decision by the Regional Ethical Review Board of Stockholm (2010/241-31/5), the Stockholm School Survey was not considered as an issue of ethical concern, since student data were collected anonymously.

Individual-level measures

Dependent variable

Our dependent variable was *student grades*, which was operationalized as the summation of students' self-reported grades in the core subjects: Swedish, mathematics, and English from the previous term. Grades in letter were given numerical values (A = 5, B = 4, C = 3, D = 2, E = 1, and fail (F) or no grade received = 0), resulting in an approximately normally distributed sum index ranging from 0 to 15.

Independent variables

Three measures of family background characteristics were used as independent variables, namely parental education, family structure, and immigrant background. *Parental education* was measured by the question 'Which is the highest level of education of your parents?' followed by four response options, provided separately for mothers and fathers: 'Compulsory school (max 9 years schooling)', 'Upper secondary school', 'University and/or university college', and 'Don't know'. The variable was coded into those

with: 'Both parents with post-secondary education', 'One parent with post-secondary education', and 'No parent with post-secondary education or information missing'. *Family structure* was measured by the question 'Which people do you live with?' followed by the following response options (one or more to be ticked): 'mother', 'father', 'step-father/stepmother', 'siblings', 'shared residence', 'other relatives', 'foster parents', 'I live alone', or 'other'. A dummy variable was created, where those having ticked both 'mother' and 'father' were classified as living with two parents in the same household and contrasted to all others. *Migration background* was measured by the question: 'How long have you lived in Sweden?' with the response options: 'all my life', '10 years or more', '5–9 years', and 'less than 5 years'. The variable was recoded into two categories capturing students who have lived in Sweden less than 10 years and those who have lived in Sweden 10 years or more, i.e. approximately distinguishing between students who had migrated to Sweden after the start of comprehensive school from those who had spent the full period of comprehensive school in Sweden.

Control variable

Gender was used as a control variable and measured by the question: 'Are you a boy or a girl?'

School-level measures

School ethos was intended to capture the dimensions of the concept based on school effectiveness theory, measured through a teacher-rated sum index based on the following nine items: a) 'At this school the teachers make an effort to provide positive feedback about students' performance', b) 'Teachers have high expectations of student performance', c) 'Teachers at this school take their time with students even if they want to discuss something other than schoolwork', d) 'At this school we actively work on issues such as violence, bullying and harassment among students', e) 'This school provides a stimulating learning environment', f) 'The teachers work with great enthusiasm', g) 'At this school the students are treated with respect', h) 'The teachers at this school feel confident as classroom leaders', and i) 'There are many substitute teachers at this school'. All items were responded to on a 5-point Likert-type scale with the response alternatives: 'strongly agree', 'agree', 'neither agree nor disagree', 'disagree', and 'strongly disagree'.

The index was developed to capture the school's overall ethos as rated by the teachers at the school, and to ensure that items were related as theoretically expected, initial exploratory factor analysis (EFA) was performed, followed by confirmatory factor analysis (CFA) to assess model fit statistics. The sum index had a good model fit (RMSEA = .05; TLI = .98; CFI = .98) and a high internal consistency (Cronbach's α = .86).

Control variables

To reduce possible confounding effects of other school contextual variables, three control variables at the school-level were taken into account. These were derived from

official statistics from the SNAE (2016). *Proportion of parents with post-secondary education* indicates the average parental education level at the school. *Number of students per full time teacher* indicates the staff density at the school, and *school type* refers to public or independent school.

Statistical method and analytical strategy

Due to the hierarchical nature of the data, multilevel modelling was used. This allows the variance in the outcome to be separated between different levels, in this case into school-level variation and student-level variation. Two-level linear regression models were applied using the *xtmixed* command in Stata 15.

The analyses were performed in different steps. Firstly, an empty model containing no independent variables (intercept-only model) was estimated for the purpose of showing how much of the total variance in the dependent variable was accounted for by the school-level rather than the student-level. Next, before analysing possible moderating effects of school ethos, the associations between family background characteristics and student achievement needed to be examined, as well as the association between school ethos and student achievement. Accordingly, in Model 1–3, three independent variables – parental education, family structure, and migration background – were introduced, one at a time, whilst also controlling for gender. In Model 4, these three independent variables were included simultaneously, in order to investigate their net effects. In Model 5, the potential moderating variable school ethos was introduced, and in Model 6, the three school-level control variables were added. Finally, in Models 7–9, cross-level interactions between the three family background characteristic variables and school ethos were tested one at a time. These three moderation models tested whether the association between the studied family background characteristics and student performance differed across levels of school ethos. In other words, they examine whether the school's level of ethos can compensate for the relative disadvantage of poor family background characteristics, in relation to school achievement. If the cross-level interactions are statistically significant, this can be understood as a moderating effect on the investigated relationship (Baron & Kenny, 1986).

For all models, the Intra Class Correlation (ICC) is presented, providing information on how much of the total variance that can be ascribed to the school-level.

Finally, in order to further illustrate the associations between family background characteristics and student grades across schools with different degrees of school ethos, stratified analyses of three levels of school ethos were also performed.

Results

Descriptive statistics of the study sample is presented in Table 1. The mean value of the students' self-reported grades was 8.6 with an approximately normal distribution ranging from 0 to 15. About 42 percent of the students either had missing information about parental education or reported that none of them had a post-secondary

Family Background Characteristics and Student Achievement

education, about 22 percent answered that they had one parent with a post-secondary education, and about 36 percent reported that both their parents had such an education. Two-thirds of the students reported that they lived with two parents in the same household, and about 91 percent had lived in Sweden for 10 years or more. The study sample contained roughly as many boys as girls. At the school-level, there was substantial variation concerning teachers' ratings of school ethos, as indicated by the range from 23.3 to 43.3, with an average of 34.7. As with school ethos, there was substantial variation between schools in the proportion of parents with post-secondary education and in the number of students per teacher. Further, 84 percent of the students in the final study sample attended a public school and 16 percent an independent school.

Table 1: Sample descriptive. n = 9,349 students distributed across 159 senior-level school units.

| Individual-level | | |
|---|------------------|--------------|
| Dependent variable | Mean (SD) | Range |
| Grades | 8.6 (3.68) | 0–15 |
| <i>Independent variables</i> | | |
| Parental education | | |
| No parent with post-secondary education or missing | 3900 | 41.7 |
| One parent with post-secondary education | 2073 | 22.2 |
| Both parents with post-secondary education | 3376 | 36.1 |
| Family structure | | |
| Two parents in the same household | 6167 | 66.0 |
| Other | 3182 | 34.0 |
| Migration background | | |
| Lived in Sweden 10 years or more | 8485 | 90.8 |
| Lived in Sweden less than 10 years | 864 | 9.2 |
| <i>Control variable</i> | | |
| Gender | | |
| Boys | 4662 | 49.9 |
| Girls | 4687 | 50.1 |
| School-level | | |
| Independent variable | Mean (SD) | Range |
| School ethos | 34.7 (3.1) | 23.3–43.3 |
| <i>Control variables</i> | | |
| Proportion of parents with post-secondary education | 65.4 (17.8) | 16–92 |
| Number of students per full time teacher | 14.1 (2.7) | 6.2–23.7 |
| School type | | |
| Public | 7849 | 84.0 |
| Independent | 1500 | 16.0 |

Results from two-linear regression analyses of student achievement are presented in Table 2. Model 1 shows a clear and statistically significant association between parental education and student grades. The estimate for having one parent with post-secondary education was 0.31 ($p < 0.001$), while the corresponding estimate for having two parents with post-secondary education was 0.66 ($p < 0.001$) compared to students where none of the parents had a post-secondary education. Model 2 shows that students living with only one “original” parent in the household had lower grades ($b = -0.29$, $p < 0.001$) compared to the reference category, while Model 3 shows that students who had lived in Sweden less than 10 years had lower grades ($b = -0.57$, $p < 0.001$), compared to those who had lived in Sweden 10 years or more. In Model 4, these three family background characteristics were included simultaneously. While the estimates for parental education and migration background practically remained the same, the estimate for family structure was somewhat attenuated, but still highly significant. Overall, Models 1–4 show significant associations between the three family background characteristics and students’ grades.

In Model 5, teachers’ average ratings of their school’s ethos was introduced, and was positively associated with student grades ($b = 0.05$, $p < 0.001$), while the estimates for family background variables remained unaltered. These associations were not affected to any noteworthy degree in Model 6, which also adjusted for school-level control variables.

The ICC of the empty model shows that a substantial part (about 20 percent) of the variation in student grades occurred at the school level. When taking the full set of family background characteristics into account in Model 4, the ICC decreased to about 12 percent, indicating that about 40 percent of the between school variation in student grades was accounted for by the included family background variables ($1 - [11.9/19.9] = 0.40$) (with especially parental education playing a substantial role). When school ethos was introduced in Model 5, the ICC further decreased, indicating that a school’s ethos also plays an important role in the variation of student grades between schools.

Finally, in Models 7–9, the potential moderating effect of school ethos on the associations between family background characteristics and students’ grades was examined. The cross-level interactions between the three family background variables and student grades were introduced one at a time whilst also taking all other study variables into account. However, none of the interaction terms were statistically significant, indicating that the associations between the three independent family background variables and student grades did not differ significantly across levels of school ethos.

In an attempt to further scrutinize this lack of moderating effects, we performed a set of analyses of family background characteristics and students’ grades, stratified by schools’ level of ethos. The sample was divided into three categories of about equal size, distinguishing students attending schools with a relatively weak, intermediate, and strong school ethos. Results from these stratified multilevel regression analyses are presented in Table 3. Overall, the results showed that the associations between

Table 2: Two-level linear regressions of students' grades regressed on parental education, family structure, migration background, and school ethos (n = 9,349 students in 159 schools).

| | Empty model | | | | | | | | |
|---|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 |
| <i>Individual-level</i> | <i>b</i> | <i>b</i> | <i>b</i> | <i>b</i> | <i>b</i> | <i>b</i> | <i>b</i> | <i>b</i> | <i>b</i> |
| Parental education | | | | | | | | | |
| No parent with post-secondary education or missing (ref.) | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| One parent with post-secondary education | 0.31*** | | | 0.30*** | 0.30*** | 0.29*** | 0.24 | 0.29*** | 0.29*** |
| Both parents with post-secondary education | 0.66*** | | | 0.63*** | 0.63*** | 0.61*** | 0.51* | 0.61*** | 0.61*** |
| Family structure | | | | | | | | | |
| Two parents in the same household (ref.) | | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other | | -0.29*** | | -0.19*** | -0.19*** | -0.19*** | -0.19*** | -0.05 | -0.19*** |
| Migration background | | | | | | | | | |
| Lived in Sweden 10 years or more (ref.) | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lived in Sweden less than 10 years | | | -0.57*** | -0.52*** | -0.52*** | -0.49*** | -0.49*** | -0.49*** | -0.81* |
| Gender | | | | | | | | | |
| Boys (ref.) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Girls | 0.20*** | 0.23*** | 0.21*** | 0.20*** | 0.20*** | 0.20*** | 0.20*** | 0.20*** | 0.20*** |

(Continued)

Table 2: (Continued)

| | Empty model | | | | | | | | |
|---|-------------|-------|-------|-------|---------|---------|---------------------|----------------------|---------------------|
| | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 |
| School-level | b | b | b | b | b | b | b | b | b |
| School ethos | | | | | 0.05*** | 0.03*** | 0.02* | 0.03*** | 0.02*** |
| Proportion of parents with post-secondary education | | | | | | 0.01*** | 0.01*** | 0.01*** | 0.01*** |
| Number of students per full time teacher | | | | | | -0.01 | -0.01 | -0.01 | -0.01 |
| School type | | | | | | 0.13** | 0.13** | 0.13** | 0.13** |
| ICC _{school} | 0.199 | 0.145 | 0.193 | 0.119 | 0.088 | 0.044 | 0.044 | 0.044 | 0.044 |
| <i>Cross-level interactions</i> | | | | | | | | | |
| Parental education*school ethos | | | | | | | 0.00 (p = 0.661) | | |
| Family structure*school ethos | | | | | | | | -0.00 (p = 0.494) | |
| Migration background*school ethos | | | | | | | | | 0.01 (p = 0.330) |

***p < .001; **p < .01; *p < .05.
 Empty model contains no independent variables. Model 1 contains parental education and gender. Model 2 contains family structure and gender. Model 3 contains migration background and gender. Model 4 contains parental education, family structure, migration background and gender. Model 5 adds school ethos. Model 6 adds school-level control variables. Model 7 adds cross-level interactions between parental education and school ethos to Model 6. Model 8 adds cross-level interactions between family structure and school ethos to Model 6. Model 9 adds cross-level interactions between migration background and school ethos to Model 6.

Table 3: Two-level linear regressions of students' grades regressed on parental education, family structure, migration background, stratified by the school's level of ethos.

| | Students' grades | | |
|--|----------------------------------|--|------------------------------------|
| | Weak school ethos (n = 3,139) | Intermediate school ethos (n = 3,156) | Strong school ethos (n = 3,054) |
| | <i>b</i> | <i>b</i> | <i>b</i> |
| Parental education | | | |
| No one with post-secondary education or missing (ref.) | 0.00 | 0.00 | 0.00 |
| One parent with post-secondary education | 0.35*** | 0.23*** | 0.30*** |
| Both parents with post-secondary education | 0.58*** | 0.63*** | 0.62*** |
| Family structure | | | |
| Live with both parents (ref.) | 0.00 | 0.00 | 0.00 |
| Do not live with both parents | -0.18*** | -0.19*** | -0.22*** |
| Migration background | | | |
| Lived in Sweden 10 years or more (ref.) | 0.00 | 0.00 | 0.00 |
| Lived in Sweden less than 10 years | -0.54*** | -0.47*** | -0.42*** |

****p* < .001; ***p* < .01; **p* < .05.

family background characteristics and students' grades were very similar across the three groups of schools, regardless of their level of ethos. It can be concluded that the level of school ethos does not compensate for the relative disadvantage of not having university-educated parents, of not having two parents in the same household, and of having migrated to Sweden during the school years, in relation to school achievement.

Discussion

A fundamental equity goal for the Swedish school has for many decades been that factors that cannot be influenced by the students themselves should play as little a role as possible for their opportunities to succeed in school, and thus also for their future educational opportunities and life chances. This is an important societal goal in the pursuit of a more equal society because educational success and school achievement at this stage of life are well-known predictors of long-term labour market outcomes (Holmlund, 2015), as well as important determinants for many other outcomes throughout the life course. It has been argued that reducing the effects of such background factors at this stage of life not only strengthen everyone's right to equal opportunities, but is also beneficial for more instrumental objectives such as social cohesion and economic efficiency (Evans & Baxter, 2012). Accordingly, it is important to identify factors that can contribute to a more compensating school system. Such factors can reduce the risk that the education system, in contrast to its intentions, contributes to reproducing and even strengthening social injustice.

As expected, and as demonstrated in previous research, we found significant associations between the three family background characteristics and student achievement. Our results showed a strong positive association between parental education and student achievement, in accordance with previous studies (Björklund et al., 2003; Böhlmark & Holmlund, 2011, 2012; Gustafsson & Yang-Hansen, 2009, 2018; Holmlund, 2015; Holmlund et al., 2014; Holmlund et al., 2011; SNAE 2010, 2018). Our results were also in line with prior research into the association between family structure and school achievement (Bernardi & Boertien, 2016; Härkönen et al., 2017; Pong et al., 2003), showing that students not living with two parents in the same household performed worse than students living with two parents. The same applied to the association between migration background and school achievement, where our results showed, in line with previous studies (Ammermueller, 2007; Grönqvist & Niknami, 2017b; Jakobsen & Smith, 2006; Riphahn, 2003; Schneeweis, 2011; Schnepf, 2007), that students who had lived in Sweden less than 10 years performed worse, on average, than those who had lived in Sweden for a longer time. The associations between all three family background characteristics and school achievement remained substantially and statistically significant while mutually adjusted for, indicating that they all had independent effects. Our results also showed, similar to previous research (Banerjee et al., 2014; Granvik Saminathen et al., 2018; Grosin, 2004; Rutter & Maughan, 2002; Rutter et al., 1979), and in line with school effectiveness theory, a positive association between school ethos and student achievement. Overall, our results thus confirm the importance of family background characteristics and school ethos on student achievement.

Potential explanations for the lower performance of students from less favourable family backgrounds include less academic encouragement, less access to support from the home, poorer economic conditions, and poorer language conditions. It is possible to assume that these students in particular would benefit from attending a school with a strong ethos, as expressed through encouragement and feedback from teachers, high expectations of student performance, a continuity of adults around them, and a stimulating learning environment.

However, our moderation analysis found no compensating effects on the relation between family background characteristics and students' school achievement. None of the cross-level interactions between family background characteristics and school ethos showed statistically significant estimates and the positive association between school ethos and student achievement was more or less the same irrespective of family background characteristics. Thus, it could not be shown that students from relatively poorer family backgrounds benefit more from the positive effect that a strong school ethos entails, compared with students from a more favourable background. Or, in other words, schools with a strong school ethos did not seem to compensate for students from a poorer family background but instead, it seems as if all students, regardless of their family background, benefit equally from a strong school ethos.

Accordingly, we conclude that a strong school ethos does not compensate for the disadvantage of not having university-educated parents, of living with only one “original” parent, or of having an immigrant background. On the other hand, school ethos seems to play an important role for all groups of students. To the best of our knowledge, no prior studies have investigated the compensatory effects of the school’s ethos and hence this finding is a contribution to school effectiveness theory.

As our results indicate that school ethos does not have a compensatory role in the association between family background and school achievement, the important question remains about what can serve as a compensating factor for students from a disadvantaged background. This is an important and topical issue not least since several recent studies have reported a deteriorating equivalence of the Swedish school, and that differences between advantaged and disadvantaged students in Sweden are increasing (Gustafsson & Yang Hanssen, 2018; OECD, 2016; SNAE, 2018). Furthermore, despite Sweden’s historical tradition of being the most successful country in relation to compensating for social inequality, Sweden now ranks as the least successful among the Nordic nations and is close to the OECD average (Nordic co-operation, 2017). One possibility for future studies could be to investigate the effects of the educational resources that are specifically redistributed to groups of students and schools with particularly disadvantaged backgrounds. Would more redistributed educational resources contribute to a more compensatory school? In order to determine the prerequisites for a more equivalent and compensating school, future research should continue to search for existing compensating factors in the school setting that can be improved at both the individual-, school-, and societal level.

Strengths and limitations

This study used unique and new data covering a substantial part of senior-level school-units in Stockholm municipality with survey information from both teachers and students.

A strength of the study is the separate data collected among students and teachers, which contribute to reducing the risk of bias related to common methods variance. Another strength is the possibility to adjust for school-level control variables retrieved from the SNAE and linked to the data.

Among the students, although the response rate of the SSS was relatively high (83%), it is reasonable to assume that there was systematic bias among the non-responders. For instance, students from more disadvantaged family backgrounds and students with lower grades were possibly more likely to be absent the day the survey was conducted. Among the teachers, the attrition was more substantial (response rate: 54%), and it could be assumed that the teachers who did not participate in the survey would have reported a generally lower rating of their respective school’s ethos, which means that the school-level averages of school ethos may also have been somewhat over-estimated. However, we do not have any reason to believe that the associations examined were affected by these possible biases.

Since this study relied on cross-sectional data, we cannot make any claims about causality with support in the data. Furthermore, we cannot rule out the possibility of selection in the associations examined. More specifically, it is possible that students with lower grades and/or from more disadvantaged backgrounds to a larger extent ended up in schools with a weak ethos, and vice versa. Unfortunately, however, we do not have the possibility to further explore this assumption in our data.

Finally, as this study was conducted among students and teachers in senior-level school units in Stockholm, generalizations to other educational contexts, geographical areas, and age groups should be made with caution. Future research should include students in other educational systems and geographical settings, as well as investigate other possible school-contextual compensatory factors.

Conclusions

This study showed that parental education was associated with higher school achievement, whereas living with only one “original” parent in the same household and having lived in Sweden for less than 10 years were associated with lower achievement. While teacher-rated school ethos was positively associated with student achievement, we did not find any empirical support for a compensatory effect of ethos. We therefore conclude that a strong school ethos promotes achievement for all students alike.

REFERENCES

- Allder, M. (1993). The meaning of ‘school ethos’. *Westminster Studies in Education*, 16(1), 59–69. <https://doi.org/10.1080/0140672930160109>
- Ammermueller, A. (2007). Poor background or low returns? Why immigrant students in Germany perform so poorly in the programme for international student assessment. *Education Economics*, 15(2), 215–230. <https://doi.org/10.1080/09645290701263161>
- Amato, P. R. (2001). Children of divorce in the 1990s: An update of the Amato and Keith (1991) meta-analysis. *Journal of family psychology*, 15(3), 355–370. <https://doi.org/10.1037//0893-3200.15.3.355>
- Amato, P. R. & Keith, B. (1991). Parental divorce and the well-being of children: A meta-analysis. *Psychological bulletin*, 110(1), 26–46. <https://doi.org/0033-2909/91/J3.00>
- Apple, M. W. (2011). Democratic education in neoliberal and neoconservative times. *International Studies in Sociology of Education*, 21, 21–31. <https://doi.org/10.1080/09620214.2011.543850>
- Arnesen, A. L. & Lundahl, L. (2006). Still social and democratic? Inclusive education policies in the Nordic welfare states. *Scandinavian Journal of Educational Research*, 50(3), 285–300. <https://doi.org/10.1080/00313830600743316>
- Ball, S. J. (2007). *Education plc: Understanding private sector participation in public sector education*. Routledge.
- Banerjee, R., Weare, K. & Farr, W. (2014). Working with ‘social and emotional aspects of learning’ (SEAL): Associations with school ethos, pupil social experiences, attendance, and attainment. *British Educational Research Journal*, 40(4), 718–742. <https://doi.org/10.1002/berj.3114>

Family Background Characteristics and Student Achievement

- Baron, R. M. & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173–1182. <https://doi.org/0022-3514/86/S00.75>
- Bergström, M., Modin, B., Fransson, E., Rajmil, L., Berlin, M., Gustafsson, P. A. & Hjern, A. (2013). Living in two homes – a Swedish national survey of wellbeing in 12 and 15 year olds with joint physical custody. *BMC public health*, 13(1), 868–874. <https://doi.org/10.1186/1471-2458-13-868>
- Bernardi, F. & Boertien, D. (2016). Understanding heterogeneity in the effects of parental separation on educational attainment in Britain: do children from lower educational backgrounds have less to lose? *European Sociological Review*, 32(6), 807–819. <https://doi.org/10.1093/esr/jcw036>
- Bjarnason, T., & Arnarsson, A. M. (2011). Joint physical custody and communication with parents: A cross-national study of children in 36 western countries. *Journal of comparative family studies*, 871–890. <https://doi.org/10.3138/jcfs.42.6.871>
- Bjorklund, A., Clark, M. A., Edin, P. A., Fredricksson, P. & Krueger, A. B. (2006). *The market comes to education in Sweden: An evaluation of Sweden's surprising school reforms*. Russell Sage Foundation.
- Bjorklund, A., Lindahl, M. & Sund, K. (2003). Family background and school performance during a turbulent era of school reforms. *Swedish Economic Policy Review*, 10(2), 111–136.
- Brault, M. C., Janosz, M. & Archambault, I. (2014). Effects of school composition and school climate on teacher expectations of students: A multilevel analysis. *Teaching and Teacher Education*, 44, 148–159. <https://doi-org.ezp.sub.su.se/10.1016/j.tate.2014.08.008>
- Brolin Låftman, S., Ramberg, J. & Modin, B. (2020). School ethos and recurring sickness absence: A multilevel study of ninth-grade students in Stockholm. *International Journal of Environmental Research and Public Health*, 17(3), 745. <https://doi.org/10.3390/ijerph17030745>
- Böhlmark, A. & Holmlund, H. (2011). *20 år med förändringar i skolan. Vad har hänt med likvärdigheten?* [20 years of change in school. What has happened to equity?]. SNS Förlag.
- Böhlmark, A. & Holmlund, H. (2012). *Lika möjligheter? Familjebakgrund och skolprestationer 1988–2010* [Equal opportunities? Family background and school achievement 1988–2010]. IFAU Report 2012:14.
- Carlsund, Å., Eriksson, U. & Sellström, E. (2013). Shared physical custody after family split-up: implications for health and well-being in Swedish schoolchildren. *Acta Paediatrica*, 102(3), 318–323. <https://doi.org/10.1111/apa.12110>
- Chapple, S. (2009). Child well-being and sole-parent family structure in the OECD: An analysis. *OECD social, employment and migration working papers, no. 82*. OECD Publishing.
- Evans, A. & Baxter, J. (2012). *Negotiating the life course: Stability and change in life pathways*. Springer Science & Business Media.
- Glover, D. & Coleman, M. (2005). School culture, climate and ethos: interchangeable or distinctive concepts? *Journal of in-service education*, 31(2), 251–272. <https://doi.org/10.1080/13674580500200278>
- Granvik Saminathen, M., Brolin Låftman, S., Almquist, Y. B. & Modin, B. (2018). Effective schools, school segregation, and the link with school achievement. *School Effectiveness and School Improvement*, 29(3), 464–484. <https://doi.org/10.1080/09243453.2018.1470988>
- Grosin, L. (2004). *Skolklimat, prestation och anpassning i 21 mellan- och 20 högstadieskolor* [School climate, performance and adjustment in 21 intermediate and 20 senior level schools] (Research Report No. 71). Sweden, Stockholm: Pedagogiska Institutionen.
- Grönqvist, H. & Niknami, S. (2017a). The school achievements of refugee children: Lessons from Sweden. *Nordic Economic Policy Review*, (520), 159–183.

- Grönqvist, H. & Niknami, S. (2017b). *Ankomst och härkomst – en ESO-rapport om skolresultat och bakgrund. Rapport 2017:3* [Arrival and descent – an ESO-report on school results and background. Report 2017:3]. Regeringskansliet.
- Gustafsson, J. E. & Yang-Hansen, K. (2009). *Resultatförändringar i svensk grundskola, Vad påverkar resultaten i svensk grundskola? Kunskapsöversikt om betydelsen av olika faktorer* [Changes in results in Swedish compulsory school. The development of results in Swedish comprehensive school. What affects the results in the Swedish compulsory school? A research review of the importance of different factors]. Skolverket.
- Gustafsson, J. E., & Yang-Hansen, K. (2018). Changes in the impact of family education on student educational achievement in Sweden 1988–2014. *Scandinavian Journal of Educational Research*, 62(5), 719–736. <https://doi.org/10.1080/00313831.2017.1306799>
- Gähler, M. & Palmtag, E. L. (2015). Parental divorce, psychological well-being and educational attainment: Changed experience, unchanged effect among Swedes born 1892–1991. *Social Indicators Research*, 123(2), 601–623. <https://doi.org/10.1007/s11205-014-0768-6>
- Halstead, J. M. & Taylor, M. J. (2000). Learning and teaching about values: A review of recent research. *Cambridge Journal of Education*, 30(2), 169–202. <https://doi.org/10.1080/713657146>
- Heath, A. & Brinbaum, Y. (2007). Guest editorial: Explaining ethnic inequalities in educational attainment. *Ethnicities*, 7, 291–305. <https://doi.org/10.1177/1468796807080230>
- Holmlund, H. (2015). Education and equality of opportunity: What have we learned from educational reforms? *Nordic Policy Review*, 2, 133–170.
- Holmlund, H., Häggblom, J., Lindahl, E., Martinson, S., Sjögren, A., Vikman, U. & Öckert, B. (2014). *Decentralisering, skolval och fristående skolor: Resultat och likvärdighet i svensk skola*. [Decentralisation, School Choice and Independent Schools: Results and Equity in Swedish Schools]. IFAU Report 2014:25.
- Holmlund, H., Lindahl, M. & Plug, E. (2011). The causal effect of parents' schooling on children's schooling: A comparison of estimation methods. *Journal of Economic Literature*, 49(3), 615–51. <https://doi.org/10.1257/jel.49.3.615>
- Härkönen, J., Bernardi, F. & Boertien, D. (2017). Family dynamics and child outcomes: An overview of research and open questions. *European Journal of Population*, 33(2), 163–184. <https://doi.org/10.1007/s10680-017-9424-6>
- Jakobsen, V. & Smith, N. (2006). The educational attainment of the children of the Danish 'guest worker' immigrants. *Nationaløkonomisk Tidsskrift 2006*, 144, 18–41.
- Li, Z. & Qiu, Z. (2018). How does family background affect children's educational achievement? Evidence from contemporary China. *The Journal of Chinese Sociology*, 5(1), 1–21. <https://doi.org/10.1186/s40711-018-0083-8>
- Lindbom, A. (2010). School choice in Sweden: Effects on student performance, school costs, and segregation. *Scandinavian journal of educational research*, 54(6), 615–630. <https://doi.org/10.1080/00313831.2010.522849>
- Lundahl, L., Arreman, I. E., Holm, A. S. & Lundstrom, U. (2014). *Gymnasiet som marknad* [Upper secondary school as a market]. Borea.
- Låftman, S. B., Bergström, M., Modin, B. & Östberg, V. (2014). Joint physical custody, turning to parents for emotional support, and subjective health: A study of adolescents in Stockholm, Sweden. *Scandinavian Journal of Public Health*, 42(5), 456–462.
- Låftman, S. B., Östberg, V. & Modin, B. (2017). School climate and exposure to bullying: A multilevel study. *School Effectiveness and School Improvement*, 28(1), 153–164. <https://doi.org/10.1080/09243453.2016.1253591>
- Mayberry, M. L., Espelage, D. L. & Koenig, B. (2009). Multilevel modeling of direct effects and interactions of peers, parents, school, and community influences on adolescent substance

Family Background Characteristics and Student Achievement

- use. *Journal of youth and adolescence*, 38(8), 1038–1049. <https://doi.org/10.1007/s10964-009-9425-9>
- Mullis, I. V., Martin, M. O., Gonzalez, E. J. & Chrostowski, S. J. (2004). *TIMSS 2003 international mathematics report: Findings from IEA's trends in international mathematics and science study at the fourth and eighth grades*. TIMSS & PIRLS International Study Center.
- Nordic co-operation. (2017). *Nordic PISA performance: Positive trend with warning signs*. Newsletter 20170216. <https://www.norden.org/en/news/nordic-pisa-performance-positive-trend-warning-signs>
- OECD. (2004). *Learning for tomorrow's world. First results from PISA 2003*. OECD Publishing.
- OECD. (2016). *Country note Sweden – results from PISA 2015*. OECD Publishing.
- Pong, S. L., Dronkers, J. & Hampden-Thompson, G. (2003). Family policies and children's school achievement in single-versus two-parent families. *Journal of marriage and family*, 65(3), 681–699. <https://doi.org/10.1111/j.1741-3737.2003.00681.x>
- Pong, S. L., Hao, L. & Gardner, E. (2005). The roles of parenting styles and social capital in the school performance of immigrant Asian and Hispanic adolescents. *Social Science Quarterly*, 86(4), 928–950. <https://doi.org/10.1111/j.0038-4941.2005.00364.x>
- Ramberg, J. (2015). *Special education in Swedish upper secondary schools: Resources, ability grouping and organisation* (Doctoral dissertation). Department of Special Education, Stockholm University, Stockholm, Sweden.
- Ramberg, J., Brodin Låftman, S., Fransson, E. & Modin, B. (2019). School effectiveness and truancy: A multilevel study of upper secondary schools in Stockholm. *International Journal of Adolescence and Youth*, 24(2), 185–198. <https://doi.org/10.1080/02673843.2018.1503085>
- Ramberg, J. & Modin, B. (2019). School effectiveness and student cheating: Do students' grades and moral standards matter for this relationship? *Social Psychology of Education*, 22(3), 517–538. <https://doi.org/10.1007/s11218-019-09486-6>
- Riphahn, R. T. (2003). Cohort effects in the educational attainment of second generation immigrants in Germany: An analysis of census data. *Journal of Population Economics*, 16(4), 711–737. <https://doi.org/10.1007/s00148-003-0146-1>
- Rutter, M. & Maughan, B. (2002). School effectiveness findings 1979–2002. *Journal of school psychology*, 40(6), 451–475. [https://doi.org/10.1016/S0022-4405\(02\)00124-3](https://doi.org/10.1016/S0022-4405(02)00124-3)
- Rutter, M., Maughan, B., Mortimore, P. & Ouston, J. (1979). *Fifteen thousand hours: Secondary schools and their effects on children*. Open Books.
- Sahlgren, G. H. (2013). *Dis-location. School choice, residential segregation and educational inequality (Research report 4)*. Centre for Market Reform of Education.
- Scheerens, J. (2016). *Educational effectiveness and ineffectiveness: A critical review of the knowledge base*. Springer.
- Schneeweis, N. (2011). Educational institutions and the integration of migrants. *Journal of Population Economics*, 24(4), 1281–1308. <https://doi.org/10.1007/s00148-009-0271-6>
- Schnepf, S. V. (2007). Immigrants' educational disadvantage: An examination across ten countries and three surveys. *Journal of Population Economics*, 20(3), 527–545. <https://doi.org/10.1007/s00148-006-0102-y>
- Sellström, E. & Bremberg, S. (2006). Is there a “school effect” on pupil outcomes? A review of multilevel studies. *Journal of Epidemiology & Community Health*, 60(2), 149–155. <http://dx.doi.org/10.1136/jech.2005.036707>
- SFS 2010:800. Education Act 2010:800. Stockholm: Department of Education.
- SNAE (2010). *Rustad att möta framtiden? PISA 2009 om 15-åringars läsförståelse och kunskaper i matematik och naturvetenskap*. [Equipped to meet the future? PISA 2009 about 15-year olds reading comprehension and knowledge in mathematics and science]. Report 352. Fritzes.

- SNAE. (2016). Official statistics retrieved from: <https://www.skolverket.se/skolutveckling/statistik/om-skolverkets-statistik>
- SNAE. (2018). *Analys av familjebakgrundens betydelse för skolresultaten och skillnader mellan skolor. En kvalitativ studie av utvecklingen över tid i slutet av grundskolan*. [Analyses of the importance of the family background for school results and differences between schools. A qualitative study of the development over time at the end of compulsory school]. Skolverket.
- SOU (Official Government Report). (2017:35). *Samling för skolan. Nationella målsättningar och utvecklingsområden för kunskap och likvärdighet. Slutbetänkande* [Gathering for the school – National strategy for knowledge and equivalence]. Fritzes.
- Trumberg, A. (2011). *Den delade skolan: Segregationsprocesser i det svenska skolsystemet* (Doctoral dissertation, Örebro universitet).
- West, P., Sweeting, H. & Leyland, A. (2004). School effects on pupils' health behaviours: Evidence in support of the health promoting school. *Research Papers in Education*, 19(3), 261–291. <https://doi.org/10.1080/02671522.2004.10058645>
- Yang Hansen, K. & Gustafsson, J. E. (2016). Causes of educational segregation in Sweden—school choice or residential segregation. *Educational Research and Evaluation*, 22(1–2), 23–44. <https://doi.org/10.1080/13803611.2016.1178589>
- Östh, J., Andersson, E. & Malmberg, B. (2013). School choice and increasing performance difference: A counterfactual approach. *Urban studies*, 50(2), 407–425. <https://doi.org/10.1177/02F0042098012452322>