

Narrowing the Gap? The Role of All-Day Schools in Reducing Educational Inequality in Germany

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Abstract: The introduction of all day-schools in Germany was due in part to the results of the Programme for International Student Assessment (PISA) study 2000, which revealed a striking social inequality in the German education system. It was expected that in all-day schools especially “at risk” groups would be supported and thus the gap in achievement based on socioeconomic status (SES) would be narrowed; however, few studies have explored this. In this paper the potential of all-day secondary schools is investigated through analysis of data from a nationwide study on the development of all-day schools (StEG [Studie zur Entwicklung von Ganztagschulen]). The findings support the idea that all-day schools could help to narrow the gap between low and high SES students in several ways.

Keywords: all-day schools, extracurricular activities, social inequality

1 Introduction

In virtually no other OECD (Organisation for Economic Co-operation and Development) country were the results of the Programme for International Student Assessment (PISA) 2000 as influential as in Germany. PISA revealed that in Germany a student’s chance of success at school is highly dependent on his or her socioeconomic status (SES) (Baumert/Schümer 2001). It also showed that socioeconomic background is an important predictor of school performance at the school level. Thus, children attending schools composed of students with higher SES were likely to perform better than their peers of the same SES in schools where the mean SES was lower (OECD 2010).¹

The so-called “PISA-shock” led the German government to take various steps to address the social inequality in the education system, including the financial support of all-day schools. It was expected that in all-day schools especially at risk groups of students would be better supported; thus, the SES-based gap in achievement would

¹ Although the results of PISA 2009 show that this relationship has weakened between 2000 and 2009, the impact of family background on the performance of students in Germany was still slightly above the OECD average (OECD 2010). As this research is based on data from 2009, the focus is on PISA 2009 here. This research was funded by the German Federal Ministry on Education and Research and the European Social Fund.

be narrowed (BMBF 2003). Between 2003 and 2009 the German Federal Ministry of Education and Research financially supported converting and equipping schools to the all-day format through its 4-billion-euro Zukunft Bildung und Betreuung (IZBB) [Future of Education and Care] investment program. Analyses in this paper are based on 2009 data of the study on the development of all-day schools (StEG) which was conducted to evaluate the implementation of the new school format.

This study adds to previous research by investigating how all-day schools can help reduce social inequality in the German education system, a topic which hardly has been investigated. In the following, a definition of all-day schools in Germany will be given and their assumed impact on social inequality in the education system will be reflected. Furthermore, results of prior research will be summarized and corresponding research findings from StEG will be presented.

The Assumed Impact of All-Day Schools on Social Inequality

The Standing Conference of the Ministers of Education and Cultural Affairs of the Laender in the Federal Republic of Germany defines all-day schools as schools that offer timetabled lessons and an all-day program at least seven hours a day and at least three days a week. Moreover, extracurricular activities in the afternoon have to be organized under the supervision and responsibility of the school principal and related conceptually to classroom lessons. Finally, all-day schools have to provide lunch on the days they offer all-day supervision (Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Laender in the Federal Republic of Germany 2008, p. 356). In addition, different types of all-day schools are distinguished according to the students' obligation to participate² (Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Laender in the Federal Republic of Germany 2012):

- (1) Open all-day schools: Participation is voluntary and each student chooses to participate individually.
- (2) Compulsory all-day schools: Students are required to stay at school for extended hours at least three days a week.
- (3) Mixed all-day schools: Certain groups (i.e., one grade or one group per grade) join the all-day program.

Between 2003 (the onset of the investment program) and 2011 the number of all-day schools in Germany increased from 23% (6,810 schools) to 54% (15,349 schools). In 2011, 31% of all students in Germany participated in an all-day program (Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Laender in the Federal Republic of Germany 2013).

The organization and structure of all-day schools are based on different guidelines of the 16 federal states of Germany and therefore differ considerably with respect to organization and conceptual base across the country. Despite these differences, they all provide, in addition to regular lessons, academic enrichment programs

² The selection process into the three types of schools is complex because students in most German states can freely choose their secondary school. Moreover, the federal states have different strategies to support all-day schools (for example equipping schools of lowest vs. highest track to the all-day format, building all-day schools in socially deprived areas, etc.).

such as remedial courses and homework support, as well as extracurricular activities such as sports, drama, and gardening (Fischer/Klieme 2013). Based on the extended school day concept, all-day schools were expected to offer more academic support to students, which in turn might help reduce the influence of family background on academic achievement.

The introduction of all-day schooling was the result of a number of motivations and various changes in German society (BMFSFJ 2005). *Education policy arguments*, for example, were in response to the aforementioned poor PISA results. At the beginning of the investment program, it was anticipated that the extracurricular activities offered at all-day schools would boost academic achievement (Tillmann 2004). In particular, as all-day schools offer additional support for weaker students (e.g., homework support, remedial lessons in specific subjects), it was argued that all-day education would provide at-risk groups with the assistance needed to achieve better results at school. This could prevent *primary effects* of the family background that rely on social, economic and cultural resources provided by the family (Boudon 1974). Thus, in all-day schools the link between academic achievement and social background in Germany should be weakened. Because all students seem to need to participate in all-day school programs to achieve these results, compulsory all-day schools in particular are expected to succeed in diminishing the influence of SES on students' achievement.

Family policy arguments emphasized that having both parents gainfully employed causes changes in family structures and thus in a child's upbringing (Baumert/Cortina/Leschinsky 2003). Due to the growing number of double income households there is a growing demand for professional child care, which can be provided in all-day schools.³ Traditionally, it was expected that parents would support their children's preparation for school (Wissenschaftlicher Beirat für Familienfragen 2002). All-day schools were supposed to help families educate their children by supporting the students' academic and psychosocial development. Families of low SES are particularly in need of such support because differences in parents' abilities to provide a stimulating learning environment for their children are reflected in the primary background effects mentioned above (Boudon 1974). Thus, supporting parents could be another way to weaken the link between SES and children's performance at school.

Youth policy arguments assumed that young people's psychosocial development and their integration into the adult world would be enhanced by attending all-day schools. This assumption was based not only on the extension of academic learning time but also on the provision of extracurricular activities. In Germany there is a long tradition of youth activities organized by clubs and institutions outside of school. Research has shown that participation in these activities is socially selective (Zerle 2008; Rauschenbach/Bien 2012; Grgic/Züchner 2013): children from low SES and immigrant families rarely join sports clubs or participate in music and arts activities (Engels/Thielebein 2011; Thole/Höblich 2008). According to Boudon (1974), this can lead to *secondary background effects*, which are based on decisions of families concerning the children's education (Ditton/Krüsken/Schauenberg 2005; Merkens 2012).⁴ Thus, all-day schools were expected to prevent secondary background ef-

3 Note that the employment policy perspective emphasizes that all-day schools increase parents' opportunities to be gainfully employed or working – this is in line with findings from StEG (Züchner 2012).

4 A common example is transition to secondary school in Germany. The education systems in the various German states consist of either a two- or a three-tiered structure. Secondary effects may stem from parents from

fects by providing extracurricular activities such as sports, music and arts, and so they should benefit especially children from low SES families (BMBF 2003).

To summarize, all-day schools could help to reduce social inequality in schools in Germany by addressing primary and secondary background effects through the provision of academic support, extracurricular activities and parental support. This is a topic that scarcely has been analyzed in empirical research. In the next section a short summary of empirical results is given with a focus on previous analyses of the StEG data.

Research on Social Inequality in All-Day Schools

Prior research on educational effectiveness of all-day schools in Germany is scarce and often limited with respect to sample size, representativeness, and methodology (Ludwig 1993; Radisch 2009). Hence, results of the very few studies comparing academic achievement in all-day schools and half-day schools have been inconsistent (Balluseck 1996; Bellin 2012; Köller/Trautwein 2003; Radisch/Klieme/Bos 2006; Witting 1997). However, all-day schools seem to compare rather favorably with half-day schools concerning their influence on social integration and school climate (Witting 1997; Köller/Trautwein 2003).⁵ A recent longitudinal study investigating participation in extracurricular music and arts programs revealed that these activities are not as socially selective when offered in all-day schools as when they are offered outside of school (Lehmann-Wermser et al. 2010). However, if all-day schools are to provide support and to promote integration of children at risk, it is crucial that children with diverse family backgrounds are reached. This is the case in secondary schools. In the StEG data no differences in participation rates based on SES or immigrant background were found (Fischer/Klieme 2013; Steiner 2011). Previous analyses of the StEG data supported the assumption that the quality and quantity of extracurricular activities are crucial to achieve positive outcomes from participating in them. Thus, duration of participation is associated with advantages in the development of academic performance from grades 5 to 9 (Fischer/Kuhn/Klieme 2009; Kuhn/Fischer 2011). Student perceived quality (i.e., autonomy, challenge and social support) in extracurricular activities is related to the development of school attachment and, indirectly, to achievement. Moreover, long-term participation in extracurricular activities and quality of the activities are associated with better social behavior (Fischer/Kuhn/Züchner 2011). Nevertheless, all these results are independent of the students' SES (StEG-Konsortium 2010). So, in this paper – instead of emphasizing quality and dosage of extracurricular participation – the potential of all-day schools to reduce social inequality in the education system was focused analyzing the social gradient, parents' support and extracurricular participation.

high SES households being more likely to enroll their children in the highest school track, which in turn helps those children develop superior competencies (Maaz et al. 2008).

5 This could also be shown with the StEG data, enduring extracurricular participation throughout secondary school is associated with less deviant behavior at school (Fischer/Kuhn/Züchner 2011).

2 Research Questions and Hypotheses

In this paper the remedial potential of all-day schooling in secondary schools is determined first by investigating whether all-day schools succeed in overcoming primary effects of school-level SES on students' performance in mathematics and German. As stated above, especially enduring extracurricular participation leads to positive results. As students in compulsory all-day schools are obliged to participate in extracurricular activities, it is expected that in these schools the relationship between social background and academic performance is weaker than in all-day schools with voluntary participation. The second question is whether all-day schools support especially low SES parents by providing academic support to their children and thereby preventing primary background effects. Experts argue that all-day schooling is needed to compensate for the ongoing decline in the quality of children's upbringing at home (Appel 2004). In particular, it is assumed that all-day schools will help raise children to become successful adults by supporting families of low SES, children at risk, and immigrant children. Above all, the decision to participate in after-school activities can be seen as a secondary effect of social background. Thus, the third question is whether all-day schools reach all children, independent of SES, with extracurricular sports, arts and music activities. Our hypotheses are as follows:

Hypothesis 1: The socioeconomic gradient (i.e., the relationship between school-level SES and, in this study, school performance in mathematics and German) is lower in compulsory all-day schools than in open all-day schools.

Hypothesis 2: Parents feel supported by all-day schools in terms of handling academic challenges (e.g., helping their children with homework) and other education issues. Low SES parents feel especially supported.

Hypothesis 3: In all-day schools there is no significant gap between children from high SES families and those from low SES families in participating in extracurricular sports, music and arts programs.

3 Method

Study Design

StEG is a multi-perspective and multi-criteria longitudinal study⁶ involving 371 schools in a nationwide sample. Questionnaires were completed at three measurement points in 2005, 2007 and 2009. This paper is based on the data collected in 2009 of secondary school students and their parents. For sample size information see Table 1. Students completed the questionnaire at school. Each student took one parents' questionnaire home to be completed either by their father, mother or legal guardian. Thus, the sample size of the parents was smaller than the students'. The parents' willingness to answer the questions declined with the age of their children.

⁶ Further information: www.projekt-steg.de.

So, for the students in grade 9, more than half of their parents' questionnaires were missing. Missing data analyses have revealed that low SES and immigrant background often predicts parents' non-participation in such data collection activities (Furthmüller et al. 2011).

Table 1. *Sample (StEG: 2009) (Gender, age and grade in the table refer to children)*

	total	female	male	5th grade	7th grade	9th grade	mean age (SD)
Students	24,488	11,710	12,614	6,808	8,840	8,840	13.1 (1.8)
Parents	14,323	6,989	6,910	5,038	5,252	4,033	12.7 (1.8)

Note. *M* = Mean, *SD* = standard deviation.

Measures

The following variables were included in the analyses:

a) Dependent Variables

Grades: As a measure of school performance, students' grades in mathematics and German on their latest report card were assessed. In Germany, grades range from 6 (lowest) to 1 (highest). For the analyses grades were recoded: low numbers indicated low achievement and high numbers indicated high achievement.

Participation in extracurricular activities in all-day schools: The students were asked whether they participated in extracurricular sports, arts and/or music activities on a weekly basis in their all-day school. The corresponding dummy variable distinguished between students who did not participate in the pertinent extracurricular activities at all and those who participated in them.

Parents' support and relief: Parents were asked if they felt supported by the all-day school in two ways: a) relief from the task of helping their children with their homework (academic support, 1 = yes), and b) support from the school in raising their children (upbringing support 1 = yes).

b) Independent Control Variables

The following dummy variables were controlled at the individual level.

Single father/mother: 1 meant that the father/mother stated that he/she was not living with a partner.

Immigrant background: This variable was coded 1 if one of the parents or their child was born outside of Germany.

Employment: 1 meant that both parents (or the single father/mother) were employed/working.

Active in a sports club: This variable was coded 1 if the student was participating in a sports club outside of school at least once a week.

Instrument: This variable was coded 1 if the student stated that he/she played a musical instrument at least once a week outside of school.

Grade 7 and grade 9: These are two binary variables indicating whether the students were attending fifth, seventh or ninth grade at the time of the assessment.

In addition, the following interval-scaled variables were controlled for:

Intensity: Number of days per week that the students attended the all-day program of their school.

KFT: The result of the verbal subtest of a cognitive ability test (Heller/Perleth 2000) was included in the analyses at the individual level.

Two binary control variables were included in the analyses at the school level:

Highest track: The variable was coded 1 if the student attended a school of the academic track (Gymnasium).

East Germany: This variable was coded 1 for schools located in the eastern states of Germany, which formed the territory of the German Democratic Republic (GDR) from 1949 to 1990.

c) Independent (Predictor)Variables

SES (at the school level and the individual level) and all-day school types were analyzed as predictors.

All-day school type: As stated above, there are different types of all-day schools. The compulsory school variable was coded 1 if participation in the all-day program was obligatory for all students.

SES: The international socioeconomic index of occupational status, a measure to capture income and education, was used to assess SES. The index is based on the father's or the mother's occupation, whichever is higher (HISEI; Ganzeboom/de Graaf/Treiman 1992). The HISEI scale ranges from 16 to 90, with 16 being an unskilled worker and 90 being a courtroom judge. On average, the students' families had a value of 47.4 (SD = 16.4), which corresponds approximately to the average HISEI in the German PISA 2009 sample (=48, Klieme et al. 2010). The sample was grouped into quartiles for the analyses based on the HISEI. Comparison groups were the highest and lowest quartile (high SES/low SES) and the two quartiles in the middle (middle SES).

Statistical Analyses

To analyze the relationship between SES and performance (*hypothesis 1*) the social gradient, that is, the average gap in performance between students from different socioeconomic backgrounds, was investigated. It was calculated corresponding to PISA 2000 (Baumert/Schümer 2001).⁷ The HISEI values were z-standardized at the mean of all participants in order to estimate the social gradient of students attending

7 PISA 2009 Germany: 44 score points/OECD average was 38 score points (OECD 2010).

all-day schools in Germany. To analyze the relationship between grades and SES, a linear regression model was estimated for each school with the z-standardized HISEI as the independent variable. Subsequently, the slope coefficients were compared to determine the influence of SES on grades. A slope almost equal to 0 indicates a weak relationship between social background and grades.

The percentage of parents feeling supported by the all-day school was associated with SES (*hypothesis 2*). Moreover, two multilevel logistic regression models were estimated to identify factors leading to the feeling of relief. Variables confounded with missing values in the parents' sample were included in the analyses as control variables.

Furthermore, descriptive statistics were analyzed to determine whether participation in extracurricular activities varied among students from low, high and middle SES households (*hypothesis 3*). Additionally, three multilevel logistic regression models were estimated to explain variance of the three dependent binary variables indicating participation in extracurricular sports, music and arts activities in all-day schools. By doing this, the influence of the school level and thereby the different opportunities schools offered could be taken into account.

Multilevel regression analysis was used to test hypotheses 2 and 3. This made it possible to take into account the clustered structure of the data and differences among schools. Multilevel models allow residual components at each level. The residual variance is split into a between-school and a within-school component. Between-school residuals indicate the unobserved school characteristics that affect the outcomes (Goldstein 2010).

4 Results

Hypothesis 1: Social Gradients in Different Types of All-Day Schools

Social gradients differed according to the all-day school type (see Table 2). Nonetheless, a positive correlation between SES and grades in mathematics and German was found in all types of all-day schools. The students' average grades in mathematics and German were better when the mean SES of the school's student body was higher.

Table 2. *Average social gradient of school grades at different types of all-day schools (2009)*

	Slope b mean grade in mathematics (SD)	Slope b mean grade in German (SD)
Schools with an open all-day program (n=78 schools)	.114 (.134)	.112 (.156)
Compulsory all-day schools (n=37 schools)	.068 (.145)	.077 (.153)
Mixed school type (n=58 schools)	.107 (.132)	.102 (.100)
Significance of the difference (ANOVA)	**	n.s.

Note. Source: StEG 2009, Students' survey (secondary schools), parts of these analyses are also reported in Züchner/Fischer 2014.

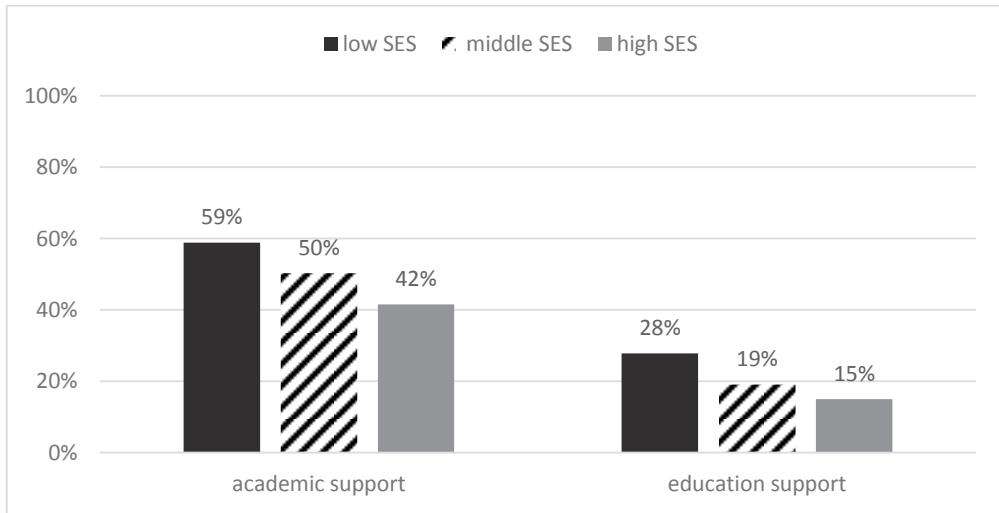
n = sample size, * = $p < .05$; ** = $p < .01$, unstandardized estimates and standard deviations (*SE*) Grades recoded. Range Grades: 1 (lowest) to 6 (highest).

Comparing the means of the slope coefficients revealed that the relationship between performance and SES was weaker in compulsory all-day schools than in open all-day schools. However, this difference was significant only for the grades in mathematics. To determine whether the relationship between SES and achievement in mathematics was lower, if the number of students attending the all-day program was higher, the correlation of the social gradient of grades in mathematics and the percentage of students participating in all-day programs in each school was analyzed. A correlation of $r = .128^*$ ($p < .05$, $n = 236$ schools) was found. Thus, the relationship between SES and grades in mathematics was weaker if more students attended the all-day program.

Hypothesis 2: Support and Relief for Parents via All-Day Schools

In StEG, parents were asked if they felt support or relief by means of the all-day program. Figure 1 shows that parents reported feelings of relief from the task of giving homework support to their children and that particularly parents from low SES households felt supported when their children attended all-day schools. Overall, about half of the parents felt relieved of homework support. About 20% of the parents reported that all-day schools supported them in educating their child. This also differed according to the parents' SES.

Figure 1. Percentage of parents feeling supported, because their children attend all-day schools according to SES



Source: StEG parent survey 2009; only parents whose children attended all-day schools; this data also is presented in Züchner 2011.

To analyze this in detail, two multilevel regressions were established (Table 3). Results showed that especially parents with low SES or with an immigrant background as well as single parents felt supported by the all-day school. However, the parents' employment status did not significantly affect that kind of relief. Support was experienced more strongly if the children were attending the all-day program more frequently during the week. Moreover, results showed that parents felt more relieved if they had a son or if their child was scoring low on cognitive tests. At the school level, parents of children in the lower track schools (mainly composed of low SES students) reported that they felt even more supported in educational problems. These results indicate that the all-day program particularly supports parents with low SES in raising their children. Furthermore, all-day schools in eastern Germany (the former GDR) were more often rated as supportive concerning education issues. Overall, these results confirm the importance of all-day schools especially for families with low SES or an immigrant background.

Table 3. *Logistic multilevel analysis on the support parents receive from all-day schools*

	Academic support		Educational support	
	b (SE)	Odds ratio	b (SE)	Odds ratio
Fixed effects				
Intercept	-.697 (.177)***		-1.996 (.181)***	
Individual level				
SES (HISEI, gm-centered)	-.011 (.002)***	1.0	-.007 (.002)**	1.0
Immigrant background (both parents)	.417 (.133)**	1.5	.899 (.134)***	2.5
Single father/mother	.380 (.119)**	1.5	.513 (.125)***	1.7
Employment	.041 (.071)	1.0	-.071 (.083)	0.9
Age (gm-centered)	-.121 (.020)***	0.9	.025 (.022)	1.0
Sex: male	.177 (.066)**	1.2	.266 (.077)***	1.3
KFT_testb score (gm-centered)	-.032 (.009)***	1.0	-.033 (.009)***	1.0
Intensity (per week)	.366 (.029)***	1.4	.249 (.030)***	1.3
School level				
Highest track	-1.019 (.175)***	0.4	-.860 (.144)***	0.4
Eastern Germany	.185 (.137)	1.2	.325 (.097)***	1.4
Random effects				
School level variance	.661 (.813)		.105 (.325)	
Deviance	5,922.5		4,399.7	
n (parents)	5,081		5,007	
n (schools)	218		219	

Note. Source: StEG – parent survey 2009; only parents whose children attended all-day schools.

n = sample size, * = $p < .05$, ** = $p < .01$, *** = $p < .001$, unstandardized estimates and standard deviations (SE)

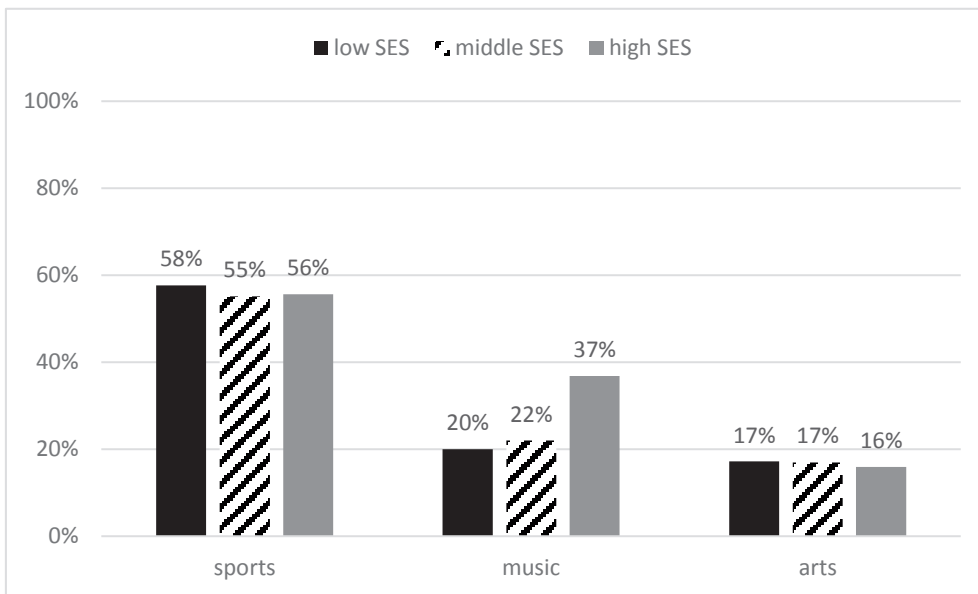
^agm-centered = grand mean centered. ^bKFT_Test = verbal subtest of the cognitive ability test

Hypothesis 3: Participation in Extracurricular Activities at All-Day Schools

A recent study on out-of-school engagement of German youth (AID:A, Grgic/ Züchner 2013) showed that while 72% of children aged 13 to 17 from high SES households participated in sports activities after school, only about 50% from low SES households did so (calculation: Züchner). It is assumed that all-day schools have the potential to reach all students with their extracurricular activities. This was examined using the 2009 StEG data of 5th, 7th and 9th graders (aged 10 to 17). Figure 2 shows the percentage of students participating in extracurricular sports, music and arts activities at all-day schools. More than half of the students attending all-day schools were participating in sports activities. About a quarter of the students were participating in music and about 17% in arts (multiple answers were possible). Compared to the activities organized by the clubs and institutions outside of school, participation in

extracurricular activities at all-day schools depended far less on the children's social backgrounds.

Figure 2. Percentage of students participating in different types of extracurricular activities in all-day schools according to SES



Source: StEG- student survey 2009, secondary schools, only students attending all-day schools; these results also are depicted in Züchner/Arnoldt 2011.

Figure 2 illustrates that the students' socioeconomic background had no significant influence on participation in extracurricular sports and arts activities. Nevertheless, it seems that children from high SES households more often participated in music activities at all-day schools. This was examined by conducting logistic multilevel regression analyses.

Table 4. *Multilevel logistic regression model to analyze participation in extracurricular activities (sports, music, arts) at all-day schools*

	Participation in sports activities		Participation in music activities		Participation in arts activities	
	b (SE)	Odds ratio	b (SE)	Odds ratio	b (SE)	Odds ratio
Fixed effects						
Intercept	-.137 (.119)		-2.928 (.176)***		-3.004 (.144)***	
Individual level						
Sex: male	.476 (.047)***	0.6	-.723 (.058)***	2.1	-1.612 (.065)***	5.0
SES (HISEI, gm-centered)	-.004 (.002)*	1.0	-.001 (.003)	1.0	.001 (.002)	1.0
Immigrant background	.384 (.073)***	1.5	-.061 (.089)	0.9	.294 (.083)***	1.3
School grade (ref.: Grade 5)						
Grade 7	.034 (.058)	1.0	.134 (.069)	1.1	-.020 (.069)	1.0
Grade 9	-.264 (.062)***	0.8	.067 (.075)	1.1	-.031 (.075)	1.0
Intensity (per week)	.128 (.021)***	1.1	.110 (.024)***	1.1	.099 (.025)***	1.1
Active in a sports club	1.031 (.049)***	2.8				
Instrument			1.444 (.175)***	4.2		
Interaction term HISEI* Instrument			.010 (.004)**	1.1		
School level						
Highest track	-.275 (.105)**	0.8	.584 (.104)***	1.8	.146 (.113)	1.2
Compulsory all-day school	.218 (.092)*	1.2	.019 (.094)	1.0	.009 (.098)	1.0
Eastern Germany	.088 (.084)	1.1	-.064 (.087)	0.9	.080 (.092)	1.1
Random effects						
School variance	.213 (.462)		.169 (.411)		.209 (.458)	
Deviance	11,267.285		8,124.7		82,733.7	
n (students)	8,929		9,011		9,995	
n (schools)	210		210		210	

Note. Source: StEG- student survey 2009, secondary schools; only students attending all-day schools
n = sample size, * = *p* < .05; ** = *p* < .01, *** = *p* < .001, unstandardized estimates and standard deviations (*SE*)

^agm-centered = grand mean centered

Table 4 reveals that students from lower SES households and/or with an immigrant background were *more* likely to participate in sports activities at school.

For music activities, the multilevel regression showed that there was no direct influence of SES on participation. However, the interaction term of SES and playing an instrument outside of school had a significant impact on music participation. Thus, the SES difference in Figure 2 was moderated by the ability (or opportunity) to play

an instrument (outside of school), which in itself depended on the students' SES. The number of days students participated in the all-day programs evidently played an important role. Furthermore, in the highest school track these extracurricular activities were offered more often. The multilevel regression analysis also showed that girls and students with an immigrant background were overrepresented in arts activities. However, in these activities there was no significant influence of the students' SES.

5 Discussion

Research on the impact of all-day schools on social equality in the German education system has been scarce. Furthermore, results of the few studies that examined academic achievement in all-day schools are diverse. Obviously, this relies partly on the huge differences in the organization and conceptual bases of all-day schools in the German federal states. Moreover, schools have different structures and concepts independent of school type and federal state. Thus, it is no surprise that effects are rather small. In this paper, new indicators of social equality were considered to collect evidence for the assumption that all-day schools can narrow the gap between students and families with high SES and those with low SES in Germany based on the nationwide study StEG.

The potential of all-day schools to reduce primary and secondary background effects was analyzed. Concerning primary effects of SES on achievement, it was shown that the relationship of SES and school performance was weakened in compulsory all-day schools, where all students are obliged to participate in extracurricular activities. Further analysis revealed that this result could be based on the fact that in compulsory schools *more* students were reached by the all-day program. Thus, the number of students participating seemed to have an influence on social equality. This could be an argument in favor of compulsory schools, which might be more effective in narrowing the gap than voluntary models. Nevertheless, the extent to which this relies on the specific opportunities and learning environments in compulsory all-day schools or just on a high percentage of students participating remains unclear. Further analyses of the StEG data could focus on structures and quality of the pertinent school types and relate that to the social gradient. Moreover, this finding is limited to grades in mathematics. Unfortunately the StEG design did not include tests to assess achievement. Consequently, additional research that includes achievement tests to differentiate between students' competencies and effects of a school's grading practices is needed. Due to the diversity of all-day programs across Germany, it is difficult to give general recommendations on how to organize an all-day school.

As for all-day schools providing parents with support in educating and upbringing their children and thereby preventing primary background effects, by and large, parents reported that all-day schools were supportive. This is especially true for parents with low SES and for parents with immigrant backgrounds. Thus, by providing homework support and helping parents solve education problems, all-day schools in Germany seem to meet the needs of low SES parents in particular. This is an important finding although it is not clear how the fact that parents felt supported related to the behavior and achievement of their children. Although, it already has been shown

that all-day schools have the potential to improve social behavior of children with high SES *as well as* of those with low SES (Fischer/Kuhn/Züchner 2011), additional research is needed to relate parents' feeling of being supported to their children's outcomes. Also, it must be borne in mind that fewer parents with low SES completed the questionnaire. The data remain self-reports that can be influenced for example by the different aspiration levels and expectations of parents with low or with high SES.

Differences in enrollment in extracurricular activities offered by the school can be seen as secondary effects of SES on the education of children. This paper supports the assumption that participation in extracurricular activities at all-day schools depends far less on the children's social background than participation in similar activities outside of school does. The multilevel regression results indicate students from lower SES households and/or with an immigrant background are *more* likely to participate in extracurricular sports activities. Although the time spent in school and being enrolled in a sports club outside of school influence the likelihood of participating in extracurricular sports activities, a small compensatory effect of all-day schools (compared to sports clubs out of school) can be identified. Moreover, participation in extracurricular arts and music activities at all-day schools does not depend directly on SES. As stated above, this already has been shown for participation in extracurricular music activities (Lehmann-Wermser et al. 2010). Consequently, all-day schools provide children from low SES households with opportunities to enhance extracurricular learning experiences. Nevertheless, until now there has been no strong evidence for a link between participation in extracurricular activities and a decrease in the social gradient in all-day schools. Therefore, StEG currently is collecting data on participation profiles of individual students and quality features of extracurricular activities to predict the results of achievement tests. Thus, in the near future, hopefully more will be known about processes that can help to narrow the gap.

In summary, the results substantiate the assumption that all-day schools may offer opportunities to reduce social inequality by supporting students and their families especially those with low SES and by offering advanced opportunities because they provide a broad range of extracurricular activities. Nevertheless, further research is needed to strengthen evidence that all-day schools are a valuable instrument to increase social equality in the German education system.

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