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Parental Influence on Students' Educational Choices in the United States and Germany: Different Ramifications—Same Effect?

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Despite the historical trend in all Western societies to increase educational participation irrespective of students' social origin, the correlation between parents' education and socioeconomic status and the educational outcomes of their offspring remains a rather universal phenomenon. Although comparative studies have consistently found this association in various nations which differ in many ways in their educational systems, little is known about the mechanism behind this effect. Drawing on the assumption that career decision points are the major gateway for social background influences, we assume that similarities, as well as differences in the structure of the correlation between parents' socioeconomic background and students' school success, can be explained. Using two longitudinal data sets from the United States ($N = 1425$) and Germany ($N = 1755$) covering the school careers from Grade 7 to Grade 10, the analyses supported the hypothesis that (a) achievement information is the best predictor of career relevant decisions in both nations, (b) parents' background variables are

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independent additional predictors of career decision but not for actual learning progress, and (c) the assumed accumulation process of social background influences is more pronounced in the German than in the U.S. school system.

Key Words: socioeconomic status; academic learning and achievement; international comparison; longitudinal studies; school learning; cross-cultural studies; social mobility; social structure and organization.

Most comparative studies on education deal with the role that educational institutions play in the intergenerational reproduction of the class structure in a given society. Usually, the correlation between parents' socioeconomic status (SES), on the one hand, and children's highest educational degree or status/prestige of their occupation, on the other hand, is used as indicator for the strength of this effect (cf. Blau & Duncan, 1967; Erikson & Goldthorpe, 1993; Erikson & Jonsson, 1996a; Featherman & Hauser, 1978; Ganzeboom, Treiman, & Ultee, 1991; Kerckhoff, 1995; Mare, 1981; Müller & Karle, 1993; Shavit & Blossfeld, 1993). Despite the various political efforts in most Western countries after World War II to open up educational opportunities, research has consistently failed to provide empirical evidence of substantial change in this intergenerational association in the second half of the past century (for the United States, see, e.g., Hout & Dohan, 1996). As Jonsson, Mills, and Müller (1996) have shown using survey data from Sweden, Britain, and Germany, the relation between class origin and educational destination did attenuate consistently across nations as early as the first half of the past century. This effect is most likely due to the general social changes that came with modernization (Erikson & Jonsson, 1996c; see also Grubb, 1985). Specific educational reform projects—most of them brought into effect decades later—did surprisingly little. Nowadays, the association between socioeconomic background of parents and educational attainment of their offspring in different countries has seemed to converge in size, although national differences persist (cf. Shavit & Blossfeld, 1993). In summarizing a comparison of intergenerational class structure reproduction in nine countries, Müller (1996, p. 178) concludes that "indeed, for all nations the data show a large commonality in the pattern of class effects."

The similarity and historical convergence of strength in the correlation of parents' and children's social status does not necessarily imply that the mechanisms at work are the same across nations. It suggests, however, that along the educational and professional career functionally equivalent processes occur in different societies. Using two longitudinal studies in Germany and the United States, the purpose of the present study is to compare the genesis and development of the impact of parental SES on students' school careers during high school.

Bidwell and Friedkin (1988) identify three major avenues that lead to a correlation between parents' social background and educational attainment: (1) The education process in middle- and upper-class families might promote the development of attitudes and traits that match the demand of the school-type learning environment, (2) upper class families simply provide better learning resources, and (3) upper class students enjoy direct favoritism in the formal or informal setup of the school system. Coleman (1987, 1988) has similarly discussed these three aspects as

human, financial, and social capital, alluding to Bourdieu's more universal concept of cultural capital (Bourdieu, 1984).

Erikson and Johnson (1996b) have suggested a comprehensive model (EJ model) basically reframing Coleman's model as a rational-choice model of decision making. The core model assumes a simple utility function for all perceived alternatives at a certain decision point for the child's further education. The function takes both the perceived likelihood of success and the perceived costs of the alternatives into account. It is important to note that the EJ model conceptualizes the relevant variables as psychological constructs. For example, it is not the real costs that influence the decision-making process of students and parents, but the *perceived* costs; it is not the objective chance to succeed in a particular educational program that drives the decision but the *perceived* likelihood. As (Heckhausen, 1999) has pointed out, the school system creates age-normative sociostructural constraints and the required decisions trigger developmental regulation processes, which for children are controlled by the parents. The decisions have to be made with considerable uncertainty. If the educational system requires (more or less irreversible) decisions with lasting effects, the parents' perceived chances for their child's success are likely to be influenced by their own educational biography, independent of the presumably strong influence of the child's actual performance. It is obvious that this effect should be the more pronounced the earlier relevant decisions are enforced by the school system in the child's life. For school and career decisions in adolescence a longer school history can be taken into account and the decision is likely to be less determined by the parents than the student him- or herself.

This is an obvious structural drawback of school systems where the type of secondary school has to be chosen for most of the children when they are about 10 years old, as it is the case in Germany. For later career decisions, the roles of the parents might be better characterized as consultants who influence the decision-making process of their daughter or son. And again, parents who successfully finished full-time college are likely to see a lower risk of failure for their children and encourage them to go to college than parents who cannot underpin their judgment with first-hand experience. In general, more highly educated parents tend to maximize their children's exposure to a more demanding curriculum, which, in turn, yields substantial competence advantages down the road, as Useem (1992) has shown for American within-school tracking in mathematics.

In the following we want to provide empirical evidence that in both school systems, the effect of SES in fact is related to and accumulated over educational decisions. This, in turn, means that in time periods where no decision is required, SES does not effect the educational progress of the child. This should hold to be true in both societies even if the structure of the school system differs.

DIFFERENCES BETWEEN THE GERMAN AND U.S. HIGH SCHOOL SYSTEMS

The major difference between the two school systems that is relevant to the question at hand is the way that students are tracked and the demands of the curriculum to which a student is exposed (Fig. 1).

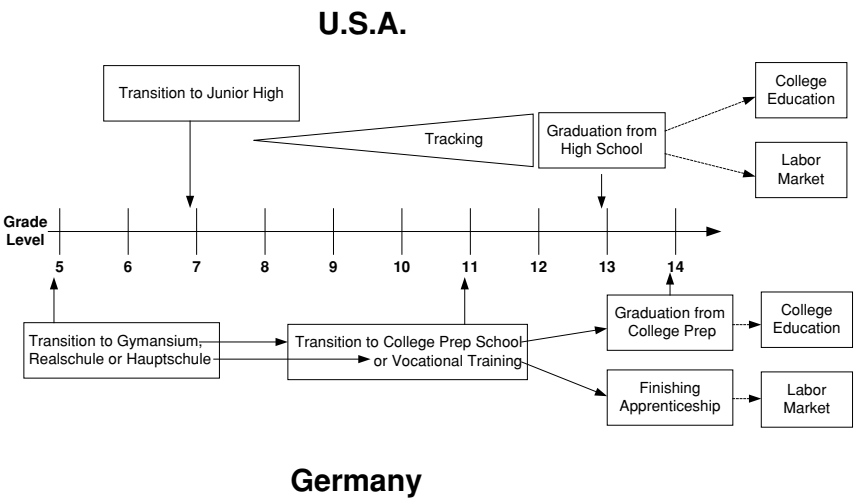

FIG. 1. Common career trajectories within the German and U.S. high school systems.

While the comprehensive American high school is characterized by mechanisms of within-school tracking, usually starting in Grade 8 or 9, the German school system is characterized by between-school, three-tier tracking starting as early as age 10. Given students' achievement and social behavior in school, parents decide on the basis of the elementary school's recommendation at the end of elementary school, usually at the end of Grade 4 (in some states at the end of Grade 6), what type of high school their child will attend in 5th grade. The three school types (Gymnasium, Realschule, and Hauptschule) differ remarkably with regard to the depth and breadth of the curriculum and predetermine the educational and professional trajectory of the student (Ditton, 1992). About 30% of a given student cohort move on to the Gymnasium. After graduation from the Gymnasium track with a University entrance certificate (Abitur), approximately 80% of them move on to full-time college education (Schnabel & Gruehn, 2000). The majority of youth in Germany, however, enroll in the Realschule or Hauptschule, from which they graduate—varying by state—after Grade 9 or 10 (i.e., at the age of about 16). These graduates typically start a full-time vocational apprenticeship, which usually comprises a 3-year integrated training program in a private company or small firm in combination with general instruction given in a public vocational school 1 day a week ("Dual System"; Raggatt, 1988; Schenkel, 1988).

Although changing school types is rare, enrollment in a lower tier school type does not necessarily determine the certificate at the end of secondary education. In most German states, graduates from the Realschule after Grade 10 who have reached a certain GPA level qualify to enroll in the "Gymnasiale Oberstufe," the last 3 years of the Gymnasium education (college prep school), without further requirements. About 15% of all graduates from the Realschule (approximately a third of those eligible) choose this option each year. Similarly, there are various ways to upgrade the certificate from the Hauptschule, often in combination with

successful passing of the vocational training exam. Despite the *formal* flexibility, it is *empirically* evident that the choice of secondary school type more or less predetermines much of a student's pathway into either an academic or a vocational career (Hamilton, 1990; Heinz, 1999).

In contrast, there is no required age in the United States at which young people must make a decision about their educational pathways and postsecondary training, although tracking within high schools exists and college-bound students can easily be identified among the high school graduates (Oakes, 1985; Rosenbaum, 1976).

RESEARCH QUESTIONS

A direct application of decision-making approaches like the EJ model would imply the exploration of perceived costs, benefits, and risks of all perceived options at each decision point, further complicated by the fact that this information would have to be collected for all persons actively involved in the decision-making process. Indirect evidence of the underlying decision-making processes, however, can be given. In all modern educational systems, the most crucial determinant for many educational decisions in elementary and high school is the actual performance of the student. Empirical studies which do not include actual achievement yield ambiguous results at best. The major contribution of the present study is the inclusion of this information in both longitudinal data sets. Whether the SES of the parents has an influence over and above the actual competence level of the students at a given decision point defines the core question and empirical paradigm for the analyses to be presented.

In addition, the present study also includes psychological variables that prior educational research has shown influences school outcome or later career decisions. As Marsh (1988, 1990) has shown, students' perception of their own competence influences later school success, even after controlling for achievement. Using longitudinal data for German upper high school students, Köller, Daniels, Schnabel, and Baumert (2000) demonstrated the specific relevance of the academic self-concept for advanced placement courses. Two meta-analyses, integrating a decade of empirical research on this topic, have provided strong evidence that test anxiety (disposition to get distracted by worry cognition in evaluative situations) is detrimental for academic performance (Hembree, 1988; Seipp, 1991). Since testing is an integral part of any sorting or allocation procedure for students, it is possible that test anxiety indirectly influences the decision making about a student's future career. Another possible factor relevant in the deliberations about a student's educational future is "school weariness." Even if a student's grades look promising, he or she might simply be "fed up" with school. The reasons for this lack of motivation may vary, ranging from problems with the peers to mismatch between personal learning style and the form of instruction.

In the present study, we investigated the role of the socioeconomic background of parents compared to the variables described above at five major decision points: school type choice (Germany), track placement (United States), decision to move on to college prep high school (Germany), advanced placement course selection

(United States), and plans to enroll in a full-time college (United States/Germany). The following hypotheses were tested:

H1: Socioeconomic background is an independent factor in all school career related decisions in both countries.

H2: The student's socioeconomic background does not affect the learning success of students in phases where no educational decision has to be made.

H3: Achievement information is the most important predictor of school career decision.

H4: Achievement is the most important indirect gateway for SES to affect school careers.

H5: In Germany, SES effects on academic achievement become more pronounced over the course of schooling.

Hypothesis 1 is directly derived from the decision-making paradigm, assuming a considerable amount of uncertainty about the child's actual future development in every school system, based on the assumption that parents are likely to base their decision or recommendation on their own educational history. Although Hypothesis 1 does not logically exclude other mechanisms that might cause a correlation between SES and educational success, the decision-making approach gains strength if Hypothesis 2 holds in addition. Hypothesis 3 alludes to the rationale of all modern educational systems to make educational decisions contingent on student performance. Given Hypothesis 3, Hypothesis 4 is the best explanation of why SES effects do not "wash out" in the course of time but rather transform into achievement differences. High SES parents tend to expose their children to a more demanding curriculum, causing substantial competence differences in the long run. Since differences in the learning environment are maximized by between school tracking, Hypothesis 5 can be derived for the United States/Germany comparison because the tracking practice is the major structural difference between the two systems.

METHODS

Sample

MSALT. The Michigan Study of Adolescent Life Transitions (MSALT) began as a junior high transition study in 1983, when the participants ($N > 2000$) were in 6th grade (age 12). The sample consists of lower middle and middle-class European American students recruited from 12 school districts in a major Midwestern metropolitan area in the United States. Participants were administered surveys or interviewed every few years until they were 25. In addition, available information from the students' school record was collected (achievement test scores and course enrollment; see Table 1 for MSALT sample demographics). For the present study, longitudinal data from Grades 7, 10, and 12 were used ($N = 1425$).

The empirical basis for our investigation in Germany was two subsamples (Grade 7 and Grade 10 at the first measurement point) of the cohort-sequential longitudinal study Learning Processes, Educational Careers and Psychosocial Development in Adolescence (BIJU). This two-cohort investigation was conducted by a research alliance between the Max Planck Institute for Human Development

TABLE 1
Sample Characteristics

	MSALT (USA)	BIJU (Germany)
Years of data collection (present study only)	1986–1996	1992–1995
N at Grade 10	1425	1755
Attrition rate from 7th to 10th grades	24.4%	31.1%
% Females	53%	53%
% Ethnic minority	9%	6%
Median birth year	1972	1976

in Berlin and the Institute for Science Education at the University of Kiel. Stratified random school samples were drawn in four of the 15 German states. For the present investigation, only data from the two West German states were used because the school system in East Germany underwent a radical transition during the period of observation. As we have shown elsewhere, this transformation had various effects on the socioemotional development of the students, which was not focus of the present study (Marsh, Köller, & Baumert, 2001; Schnabel, Baumert, & Roeder, 1996).

The longitudinal subsample used consists of $N = 1755$ students who participated in the study in 1992 when they were enrolled in 7th grade and who participated in the follow-up in 1995. Sample attrition was due to nonparticipation on the school and classroom level—mainly for organizational reasons (merger of classrooms or restructuring of the school) and is considered mostly at random. However, attrition did relate to achievement indicators at Grade 7. Although the effect size was small (between 0.1 to .16 of a *SD*; cf. Cohen, 1988), this finding reflects the German retention practice. Approximately 4% of students each year fail to meet the achievement requirements for promotion and repeat a grade. In comparison to the original population, the longitudinal sample, therefore, is slightly biased toward a more favorable school career. The analyses to be presented in this article, however, basically draw on measures of association (covariances). Comparison of within-wave correlations of the full Grade 7 sample and the longitudinal net sample revealed no systematic reduction in correlation coefficients, which would have indicated a systematic variance/covariance suppression.

For the data collection in Grade 12, the BIJU study expanded the sample. All students enrolled in Grades 12 and 13 of schools in the sample carrying a Gymnasiale Oberstufe were asked to participate. To increase the power of the analysis about college plans, we used all data sets available for this particular analysis (augmented sample $N = 3103$).

Dependent Variables

Career decisions and plans. The dependent variable in all analysis was either an actual educational decision or the intention to take a certain step. For the BIJU

sample, the first relevant decision was the type of secondary school chosen after elementary school (*school type*). Since data collection started in Grade 7, this decision was made just before the first data collection (Berlin) or 2 years before (North Rhine–Westphalia).[1] In Grade 7, as well as in Grade 10, the students were asked what highest educational degree they believe they will earn in the future, ranging from 0 = *no high school diploma* to 5 = *University degree* (*aspiration*). The second relevant career step in Germany is the decision to either start a vocational training after finishing 10th grade or to move on to the "Gymnasiale Oberstufe," the college prep school. The intention to move on to the Gymansiale Oberstufe at the end of 10th grade was used (*intention10*). To make a comparison to the American sample, this data was used in a dichotomized way, dividing academic versus vocational tracks using the categorization applied by Buechtemann, Schupp, and Soloff (1993).

For the MSALT sample the course enrollment for Grade 10 from the school record was used to determine students' track in mathematics and English (*Math-track* and *English-track*). Three levels were defined: college track (e.g., math: algebra 2 and trigonometry: English: literature, journalism, and theater/drama), general track (e.g., math: algebra 1, applied algebra, and applied geometry; English: advanced composition and practical writing), or vocational track (e.g., math: general/basic/remedial or no math class; English: remedial or no English class). The identification of the track was sometimes difficult in English because the course denomination was less standardized across schools compared to mathematics, where the ambiguity was negligible. In Grades 7, 10, and 12, the students were asked about their future career plans and expectations after high school [four separate questions: "starting full time work," "going into the military," "getting a technical or vocational training," and "(four year full-time) college"]. This information was integrated into one variable each wave to match the variable for the German sample ranging from 1 = *full-time work* to 5 = *full-time college* (*degree7, degree10,* and *degree12*).

Independent Variables

Achievement tests (Math achievement and English achievement). For the U.S. sample, standardized test scores in mathematics and English for Grades 7 and 10 were taken from the school records based on the Michigan Educational Assessment Program (MEAP). The tests have high content validity with respect to the subject specific curriculum for the particular grade level in the State of Michigan. The participation at MEAP testing sessions is mandatory for all public school students. MEAP scores are documented to be highly reliable, Cronbach's $\alpha \geq .85$ (Office of Michigan Merit Award Program, 2000). In the German sample, curriculum validated tests in mathematics were developed for the purpose of the BIJU study and administered in Grades 7 and 10. A two-parameter IRT model was applied to determine achievement scores for both grade levels. Similarly, an IRT score for English

[1] Analyses using state membership as a dummy variable failed to show a specific contribution in all regression models run and were not considered in the models presented throughout the article.

was constructed based on a grammar and vocabulary test. Reliability estimates for the IRT scores range from .86 to .91. Note that the language achievement score is based on native language competence in the U.S. sample, while it is a foreign language test for the German students. Although they are not comparable across countries, they do indicate achievement in another domain that mathematics in both countries. In all German states, foreign language education is mandatory in all three high school types.

Grades (GPA). In both samples, final grades in major subjects were averaged for 7th and 10th grades as a proxy for overall school achievement feedback to students and parents. In MSALT, this information was taken from the school records (Math, English, and Science). In BIJU, students self-reports were used (Math, German, and Foreign language). The German marks in Grades 7 and 10 were inversed so that a higher score reflects a better grade in all analyses.

Socioeconomic background (SES). In both samples the highest educational certificate for both parents was translated into a five-level variable (1 = *no high school degree* to 5 = *full-time college degree*). Information about the actual occupation of father and mother was collected with an open question in both studies. The data sets were jointly coded in accordance to the Standard International Socio-Economic Index of Occupational Status (ISEI) developed by Ganzeboom, De Graaf, Treiman, and De Leeuw (1992). For both samples, the validity of the ISEI has been shown to be comparable to SES indicators, which were calibrated to the specific national occupational system (see also Wolf, 1995).

Although it would have been possible to use separate SES indicators for mothers and fathers, we followed the common practice of using the maximum of either (Müller & Shavit, 1998). This reflects the conceptual assumption in SES theory that the social status of a family is high irrespective of whether the father or the mother is a physician. The status is assumed to be equally high if both parents are physicians. Combining this information is also necessary because more than 40% of the mothers in both samples were either not employed or the employment information from the student was unspecific ("works part-time"), causing a large proportion of missing data. The substitutive relation is illustrated by the fact that the ISEI scores for the parents (where this information was available) correlate at a significantly lower level ($r = .27$) than the parents educational level ($r = .56$).

Parents education (father's education and mother's education). In both studies, highest educational degree of both father and mother was coded on a scale ranging from 0 = *no degree* to 5 = *college degree* (BA/BS/Diplom/Magiser).

Psychological variables. Subject-specific self-concept of ability in mathematics and English (Math self-concept and English self-concept) was measured in both studies using four-item scales addressing the students' reflection of their own competences either in absolute terms or in comparison to classmates (e.g. BIJU: "Nobody's perfect, but I am just not good in math" and "Although I try hard, math is harder for me than for my classmates"; MSALT: "How good are

you at math?" and "If you were to rank all the students in your math class from the worst to the best in math, where would you put yourself?"). Students responded to each item on a 4-point (BIJU) or a 7-point scale (MSALT) response format. Previous research has shown for both studies independently that the scales are reliable and have convergent and discriminant validity in relation to performance variables in different school subjects and course choices (Eccles, Adler, & Meece, 1984; Köller et al., 2000). Scales were shown to be reliable (all coefficient αs $> .8$). In the BIJU study, only mathematic self-concept data were avai lable in Grade 10.

Subject-specific anxiety for mathematics and native language (*test anxiety math* and *test anxiety English*) was measured in both studies with scales derived from the Test-anxiety scale introduced by Spielberger (1978), capturing worry and emotionality cognition in evaluative test situations [MSALT: "Does your hand you write with shake when you are taking a (math/English) test?" and "How much do you worry about how well you are doing in (math/English)?"; BIJU: "When I was writing, my hand was shaking" and "When taking the exam in (math/German) last time, I started to doubt my (math/German) competences"]. Reliabilities were above $\alpha = .85$ throughout. For Grade 10, test anxiety scores are only available for the BIJU study in math. School weariness (*weariness*) was measured in MSALT using a two-item index ["I come to school because I have to" and "How much do you like school this year?" (inverse) on a 7-point rating scale]. In BIJU, the same construct was measured using a three-item scale ("It would be nice if I didn't have to go to school anymore," "I like going to school," and "There are only a few things you really enjoy in school"). The items were adapted from a German school attitude and affect questionnaire (Wieczerkowski, Nickel, Janowski, Fittau, & Rauer, 1975).

RESULTS

SES and Schooling in Grade 7

In both samples, the SES indicators, as well as the parents' education, correlate significantly with achievement indicators (tests and grades) in Grade 7 (Table 2). They also correlate in both societies with future academic plans (attending college). The association with the students' academic self-concept is—if at all significant—weaker. No substantial correlation was found with test anxiety and school weariness in the U.S. sample. If significant, the coefficients were small in the German sample also.

As a general trend, Table 2 reveals that in Germany the correlations between SES indicators and students' test scores and aspiration variables tended to be consistently stronger. The highest correlation coefficient in the German sample was found for the association between parents' SES and type of school. This confirmed prior research which has consistently shown that the high school choice at the end of elementary school can be considered a major gateway of indirect social inequality in the German school system. Although the correlation seems

TABLE 2
Correlations between Indicators of Socioeconomic Status, Achievement, Test Anxiety, and School Weariness in the United States and Germany in Grade 7

	SES		Father's education		Mother's education	
	Germany	U.S.A.	Germany	U.S.A.	Germany	U.S.A.
Math achievement	.28**	.15**	.25**	.19**	.26**	.16**
English achievement	.30**	.16**	.27**	.20**	.26**	.17**
GPA	.16**	.12**	.17**	.22**	.19**	.15**
Math self-concept	.08**	.10**	.06*	.09**	.06*	.05
English self-concept	.08**	.01	.10**	−.03	.10**	.01
Test anxiety math	−.08*	−.05	−.08**	−.06	−.07**	−.05
Test anxiety English	−.12**	−.03	−.12**	−.07*	−.09**	−.04
Weariness	−.04	−.04	−.05**	−.04	−.03	−.03
Aspiration	.35**	.16**	.34**	.23**	.33**	.17**
School type	.37**	—	.31**	—	.30**	—

** $p < .001$.
* $p < .01$.

to support this interpretation at the first glance, it does not rule out alternative explanations: Table 2 also shows a high correlation between SES indicators and achievement. The biserial correlation between both achievement scores and type of school (dummy-coded as 1 = *Gymnasium* and 0 = *Hauptschule, Realschule*) is $r = .60$ for mathematics. Because the achievement data were collected in Grade 7, i.e., 2 years after the transition in one state, this correlation might also reflect differences in the quality of schooling between school types. This would mean that the stronger correlation between SES and achievement is part due to a net school type effect.

We tested this hypothesis in a logistic-regression analysis based on an *a fortiori* argument. If there was a significant effect of SES at the transition to the tiered school system 2 years before, we get a conservative (lower bound) estimate of this effect using Grade 7 data when the type of school is predicted and the achievement information from Grade 7 is used as an additional predictor besides the SES indicators. Without the SES indicators, 57% of the (pseudo-) variance in the decision for the Gymnasium can be explained by achievement variables (Nagelkerke's R). Entering SES and father's and mother's education raises the percentage about 8.6%. This finding is in line with Hypothesis 1 for this particular educational transition, for which, of course, no equivalent exists in the United States.

SES and Schooling in Grade 10

Table 3 provides the correlation matrices between SES indicators and school-related variables for both samples 3 years later, at the end of Grade 10. The statistical test for change in correlations compared to Table 3 reveals a highly significant increase for the German sample for all correlation coefficients between the three SES indicators and mathematics and language test scores, resulting in a maximum

TABLE 3
Correlations between Indicators of Socioeconomic Status, Achievement, Test Anxiety, and School Weariness in the United States ($N = 1382$) and Germany ($N = 1723$) in Grade 10

	SES		Father's education		Mother's education	
	Germany	U.S.A.	Germany	U.S.A.	Germany	U.S.A.
Math achievement	.41**	.14**	.32**	.21**	.36**	.16**
English achievement	.42**	.19**	.36**	.26**	.34**	.20**
GPA	.17**	.20**	.13**	.27**	.15**	.23**
Math self-concept	.08**	.03	.08**	.02	.10**	.01
English self-concept	.08**	.14**	.10**	.12**	.10**	.10**
Test anxiety math	−.11**	−.05	−.12**	−.06*	−.13**	−.05
Test anxiety English	−.12**	−.04	−.12**	−.07*	−.09**	−.04
Weariness	−.07*	−.08*	−.05	−.05	−.04	−.02
Aspiration	.42**	.19**	.38**	.26**	.40**	.24**
Math-track	—	.06	—	.09**	—	.05
English-track	—	.17**	—	.29**	—	.18**
School type	.37**	—	.31**	—	.30**	—

** $p < .001$.
* $p < .01$.

association of $r = .41/.42$ for the SES. For the American sample, no trend could be observed. The highest value was found for the correlation between father's education and the GPA scores ($r = .27$).

In 10th grade, information about the tracking was available for the American sample which shares some structural aspects with the German school type variable. Although the correlation between SES indicators and tracks was lower than the respective correlation with school type in the German sample, it was nevertheless substantial, at least for the track in mathematics. The critical test of whether parental SES has an influence on childrens' math and English track beyond the academic performance appears in Tables 4a and 4b.

TABLE 4a
Prediction of Academic Track Enrollment in Mathematics Using SES Indicators, Achievement, and Motivational Information as Predictors ($N = 1135$)

	B	*SE*	*p*	Odds ratio
SES	.056	.089	.529	1.058
Father's education	.263	.097	.007	1.301
Mother's education	−.017	.077	.828	.983
Math self concept grade 7	.050	.080	.530	1.051
Math achievement grade 7	.988	.125	.000	2.685
GPA grade 7	.314	.100	.002	1.368
Test anxiety math grade 7	−.076	.080	.343	.927
Weariness grade 7	−.026	.071	.710	.974
(Constant)	−.911	.088	.000	.402

TABLE 4b
Prediction of Academic Track Enrollment in English Using SES Indicators, Achievement, and Motivational Information, as Predictors ($N = 1112$)

	B	*SE*	*p*	Odds ratio
SES	.164	.082	.045	1.178
Father's education	.004	.090	.964	1.004
Mother's education	−.021	.074	.780	.980
English self-concept grade 7	−.050	.075	.501	.951
English achievement grade 7	.299	.095	.002	1.348
GPA grade 7	−.090	.083	.274	.914
Test anxiety English grade 7	−.050	.069	.472	.952
Weariness grade 7	.091	.067	.174	1.095
(Constant)	−.911	.088	.000	.402

Applying a similar rationale as for the analysis of school-type choice in the German sample, the influence of SES on tracking was analyzed using logistic regression, including simultaneous achievement and motivational information from Grade 7 in the prediction of a dichotomized tracking variable (1 = *academic track* and 0 = *general/vocational track*). We used Grade 7 achievement information in order not to confuse cause and effect. The test scores in Grade 10 might already reflect the effect of course choices in Grades 8 and 9. For the ease of interpretation, all predictor variables in Tables 5a and 5b were standardized. The odds ratios (last columns) then can be interpreted as the change in the chance to be enrolled in the academic track when the predictor variable is raised about 1 standard deviation (*SD*). For mathematics, the major dependence of the tracking on the subject

TABLE 5a
Prediction of Learning Gains over 3 Years in Mathematics in Germany ($N = 1204$)

	Step 1		Step 2		Step 3		Step 4		Step 5	
MATH10	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Math achievement grade 7	.650	.000	.579	.000	.353	.000	.325	.000	.325	.000
SES			.176	.000	.078	.007	.058	.067		
Father's education			−.007	.837	−.049	.119	−.048	.118		
Mother's education			.048	.161	.011	.730	−.014	.637		
School type D1					−.444	.000	−.478	.000	−.485	.000
School type D2					−.231	.000	−.255	.000	−.261	.000
School type D3					−.227	.000	−.240	.000	−.244	.000
Test anxiety Math grade 7							−.013	.615	−.011	.690
Test anxiety English grade 7							−.004	.877	−.005	.866
Weariness grade 7							.036	.120	.034	.133
Math self-concept grade 7							.054	.024	.054	.023
English self-concept grade 7							.007	.785	.004	.860
Sex							.138	.000	.139	.000
R^2	42.3%		45.8%		56.9%		59.0%		58.7%	

TABLE 5b
Prediction of Learning Gains over 3 Years in Mathematics in the United States ($N = 1318$)

	Step 1		Step 2		Step 3		Step 4		Step 5	
MATH10	β	p	β	p	β	p	β	p	β	p
Math achievement grade 7	.609	.000	.590	.000	.449	.000	.438	.000	.441	.000
SES			.002	.935	.001	.973	−.003	.900		
Father's education			.029	.254	.024	.306	.028	.238		
Mother's education			.076	.010	.016	.579	.014	.610		
Track math					.310	.000	.307	.000	.314	.000
Test anxiety Math grade 7							−.034	.180	−.034	.189
Test anxiety English grade 7							−.008	.734	−.009	.709
Weariness grade 7							−.004	.847	−.005	.822
Math self-concept grade 7							.032	.137	.034	.109
English self-concept grade 7							−.021	.329	−.022	.322
Sex							−.043	.042	−.040	.054
R^2	37.1%		38.0%		44.9%		45.3%		45.2%	

specific performance is obvious. Students who are 1 *SD* above average in their math test in Grade 7 have a greater than 2.5 times higher chance than the average student to be on the academic track. Holding this subject-specific effect constant, the overall achievement reflected in the GPA slightly raises the chance of being on the upper track. However, we also found an independent effect for the father's education which is almost as strong as the GPA effect (holding test achievement constant). This suggests that the decision on the track in mathematics basically follows the meritocratic principle but is at the same time susceptible to influence of family background.

Although the pattern for tracking in English is similar, the effects were generally less pronounced. In this case, the SES, rather than the father's education, turned out to be significant. The achievement score, however, remained the (relatively) strongest predictor. As mentioned under Methods, the difference between the finding for tracking in math and English is likely due to the fact that the tracks were easier to identify in mathematics than in English. The coefficient in the prediction of the track in English, therefore, were statistically attenuated by measurement error.

SES and Learning Gains

Both studies provide school-independent achievement information in two subjects on two grade levels. This enabled us to investigate whether students' SES background affects learning gains in phases between required educational decisions, which is the critical test of Hypothesis 2. For both samples, multiple regressions were run separately for both subjects. In step 1, only the prior achievement score was introduced in order to implement an autoregression model, which can be understood as a measurement of change model; i.e., after holding prior achievement constant, further significant predictors explain unpredicted high or low achievement gains (cf. Schnabel, 1996). Step 2 introduced SES and parents

education as predictors. The third step added the school type for the German sample and the track variable for the American sample, respectively. In contrast to prior analyses, type of school was dichotomized to make the correlation coefficient meaningful; we used dummy contrast coding for the German school types in order to account for all variance that is related to this categorical variable. The dummy variables express the achievement gap of other school types against the Gymnasium, which explains their negative sign. Tables 5a and 5b show the results for mathematics in both samples. In both samples, the patterns for English were very similar to the patterns for mathematics. Therefore, they are not presented (available on request).

Comparing the gross effect between countries (Step 2 versus Step 1), SES indicators had a more pronounced impact in Germany than in the United States (3.5% versus 0.9%). For the German sample, however, the regression coefficients for the SES indicators became insignificant as soon as the school type dummy variables were introduced. For both samples, the R^2 difference from step 4 to step 5 was not significant; a net effect of SES on learning gains could not be shown. Note that the type of school caused a remarkable leap in the amount of variance explained in the German sample (additional 11.1%), indicating large differences in the learning rates between school types in this subject. The tracking variable in the U.S. sample explained 6.9% of the learning gains in mathematics. Hypothesis 2, therefore, was supported by the analyses in both samples: If between- or within-school tracking is held constant, the learning gains cannot be predicted by the student's socioeconomic background.

Moving on to the Gymnasiale Oberstufe in Germany

For German students, the end of Grade 10 also denotes a point of educational choice because they are eligible to move on to the last 3 years of college prep education (Gymnasiale Oberstufe). Students of the Gymnasium who get promoted at the end of grade 10 do not need to fulfill further requirements. Not surprisingly, more than 75% are certain to move on to the Oberstufe at the end of Grade 10. Among students of the Realschule, however, only 11% seriously consider this option. About 80% (64%) of the graduates of the Hauptschule (Realschule) opt to start an apprenticeship in either the "dual system" or a full-time vocational training school ("Berufsfachschule").

The two German states from which the samples were drawn require a minimum GPA for graduates from the Realschule if they want to move on to the Gymnasiale Oberstufe. It is, therefore, sensible to run a confined analysis focusing on graduates of the Realschule who met this criterion because only for them can a real decision-making process be assumed at this point. If Hypothesis 1 is correct, an effect of SES indicators over and above the effect of GPA should be found. A logistic regression confined to the according subsample ($N = 313$) confirmed this prediction (without table). If either parent had earned at least the "Abitur," the chances for their daughter or son to opt for the Oberstufe increased by a factor (odds ratio) of 1.7 compared to a family where the maximum education level was graduation from Realschule or less.

Hypotheses in Light of the Results

Whenever Hypothesis 1 was concerned in our analyses, it was confirmed. Even after controlling for other major factors, socioeconomic background turned out to be an independent factor in all career-related decisions observed in the period under investigation in both countries. As a ballpark figure for the net effect size, the analyses suggest that approximately 3% of the variance can be attributed to parents' education or their social status.

Also in both countries, empirical support was found for Hypothesis 2: Learning gains in two subjects were not affected by socioeconomic background variables when career-relevant decisions were held constant (type of school or track, respectively). Confirming Hypothesis 3, achievement information turned out to be the most important predictor in all school career decisions under investigation. Empirical evidence in favor of Hypothesis 4 was also provided, particularly for the German system, where the strong correlation between SES indicators and learning gains completely vanished after controlling the type of school. This indirect effect can be considered the main cause for the increase in the association between students' career development and SES in Germany—confirming Hypothesis 5.

The effects of motivational variables on the concrete decisions looked at were comparably small. Although the observed motivational variables did have varying specific shares of the variance explained after controlling for achievement and social background, it is likely that their influence is underestimated in particular because they tend to correlate moderately with the achievement variables.

DISCUSSION

It is safe to say that the correlation between education and socioeconomic status of parents and the educational and professional success of their offspring is a robust—if not ineradicable—phenomenon of modern societies. Although historical and comparative studies have shown that the relation varies across societies and became less tight over the past 50 years, the effect nevertheless remains remarkably universal and is likely to stay a major concern in the sociology of education and likewise in developmental psychology. Sociologists are more adept at seeing the means for the reproduction of distributional injustice in societies claiming to be built—at least in the realm of education—on the principle of meritocracy. In a similar vein, educational and developmental researchers question whether children from lower social strata get a comparable chance to live up to their potential.

The purpose of the present investigation was threefold: First, theoretical assumptions about the gateway of socioeconomic influences on educational trajectories were tested, drawing on the decision-making model of educational choices. The second goal was to compare the German and U.S. high school systems from a longitudinal perspective in order to understand where and when socioeconomic background influence the educational trajectory and how strong this influence is in comparison. In addition, we wanted to prove that psychological variables beyond achievement moderate the students' pathways.

Educational Decisions—Universal Gateways of SES Effects?

The analyses strongly supported the assumption that educational systems implicitly accept influences of family background on the students pathways when they leave important decisions at the discretion of the legal guardian(s). Although the deliberation processes which actually determine the relevant decisions were not observed in either longitudinal study, decision-making models like the one suggested by Erikson and Jonsson (1996b) provide explanations for the observation in the present investigation, as well as in others (Müller, 1996; Shavit & Blossfeld, 1993), that the influence of family background is more pronounced when those decisions have to be made early in the students' school career. The younger the student, the less information about his or her academic potential is available, the more uncertainty is involved in the decision. Uncertainty, however, favors "conservative" decisions, which means in this context to stick with the parents' own biography as a guiding model by default. This mechanism seems to be rather universal and applies not only to both societies but also across the full developmental period from the end of elementary school up to the point where the pros and cons of college education are being weighed.

In light of the longstanding debate about subtle within-school influences favoring higher SES students ranging from middle-class language use (cf. Bernstein, 1971, 1996), over more efficient support systems ("social capital"; Coleman, 1988), to the understanding of the relevance of cultural symbols of distinction (Bourdieu, 1984), the support of Hypothesis 2 in both studies might be surprising at first sight. However, it is important to be aware of the variables which were controlled in all analyses. In addition to the prior achievement in Grade 7, between- and within-school tracking as decision-dependent predictors were held constant as well. It is obvious, particularly in the German data, that the important decision of the type of secondary school to be attended coincides with aspects of social and cultural capital.

There is, however, a good message that can be derived from the presented analyses: In both societies, the classroom itself does not seem to be the place where discrimination of low SES children happens. At least for the period between Grades 7 and 10, learning gains in mathematics and English do not seem to be associated with parents' education or their social status. This conclusion has a somewhat paradox consequence for between-school tracking structures like the one in Germany: *Within* a given school type and, therefore, within each individual school, teachers cannot do anything substantial to prevent the exacerbation of the association between achievement and social background. Since they evidently treat high and low SES kids the same already, any effort in this regard must end in a counterdiscrimination within the school type, which undermines the meritocratic principle it was suppose to serve.

SES Effects in Germany and the United States

The comparison of effects in both countries strongly depends on the equality of measurements. In light of the correlation structure within each country for the

variable in Grade 7, there is no evidence that this assumption was violated for the central variables. As expected, socioeconomic status correlated moderately with parent's education, less strongly with students' achievement scores, and little with their GPA scores. The presented analyses reveal a consistent picture of the differences between Germany and the United States with regard to the gateways for the influence of parents' education and status on their children's school careers. Already in Grade 7, the correlations between the SES indicators and students' achievement scores are consistently higher in the German sample, although the differences at this point are rather small (e.g., $r = .28$ compared to $r = .18$ for the correlation between parents' education and mathematics). The higher correlation might be due to the fact that the between-school tracking had taken place 2 years before the first data collection in BIJU for two-thirds of the sample. Additional analysis, however, did not confirm this prediction. The correlation is the statistically the same in both German states included in the study although the students transfer into the tiered system at the end of 6th grade in one state (Berlin). Given prior research in Germany it is all but surprising that we were able to replicate evidence that the family background partly predicts the school-type choice (Ditton, 1992).

Track selection for mathematics in the U.S. sample appears to be driven mainly by achievement indicators and the students' wishes to go to college. It is interesting that the achievement score in English also plays a significant role in predicting track level in mathematics. This can be understood as a tendency to have the students in matching tracks. Despite the significant effect of parents' education on the course tracking, this did not increase the correlation between parents' education and achievement scores in Grade 10. Varying little across indicators and subjects the zero-order coefficient stays at about $r = .20$. For Germany, the significant increase for the achievement–SES correlation coefficients up to $r = .40$ is exclusively due to pronounced differences in the learning rates between the school types. The between-school tracking system in Germany obviously amplifies SES differences with regard to the actual academic competence level. In Grade 10, the substantial competence differences between students from low and high SES background are confounded with differences caused by the enrollment, in particular type of school. An independent additional influence of parents' SES in Grade 10 was found in Germany with the intention for graduates of the Realschule to move on to Gymnasiale Oberstufe, replicating findings reported using data from the German Third International Mathematics and Science Study (TIMSS; cf. Schnabel & Schwippert, 2000).

Put succinctly, the German secondary school system "bails and boosts" the effect of SES, which, at the transition at the end of elementary school, is probably not "unusually" strong when one takes 3% explained variance as a benchmark for SES effects on educational decisions. Although there is ample empirical evidence to blame the between-school tracking system for the aggravation of the SES effect on students' careers in Germany, our analyses suggest a closer look at the underlying mechanisms: The major cause is not the tracking itself but the differences in the learning rates between the school tracks. It is most likely that this effect has multiple

causes. This may lead to very different strategies for improvement as long as they address the structure and the process of the decision making which we identified as the major gateway for SES effects.

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