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Challenges of Upward Track Mobility into German Upper Secondary Education for Students' Academic Self-Concept

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Abstract: In this study I examine the academic self-concept (ASC) of students who changed from vocational to academic tracking at the transition to upper secondary education in Germany. I ask (1) how their ASC differs to the ASC of their established peers in academic tracking, and (2) how their ASC is affected by the change in the learning environment. Using a subsample of the German National Educational Panel Study (NEPS; N = 4109), findings show that newcomers to academic tracking have a stronger ASC than their peers. However, social differences between the social milieu of origin and the one prevailing at school significantly reduce the ASC. These differences are interpreted as being social-habitual and tested via socioeconomic status, cultural capital, and parental solidarity expectations at the school level. Results differ according to immigrant origin; immigrant newcomers to academic tracking have higher ASC than their established peers, and context effects are more influential. I complement previous research by using a quantitative approach to test the theoretical mechanisms of a qualitative research perspective on upward mobility.

Keywords: *Academic self-concept, migration contexts, stratified education systems, upper secondary education, upward track mobility.*

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Introduction

Research on the academic self-concept (ASC) has a long tradition in pedagogical psychology (Eccles & Wigfield, 2020) and is of growing interest to educational sociology (Siegert & Roth, 2020). ASC describes the subjective and retrospective assessment of one's own academic abilities, which results from a comparison with the abilities found in the social environment (Eccles & Wigfield, 2002). The more positive these assessments and comparisons, the stronger the self-concept and the more likely students are to invest in education and learning (Marsh & Martin, 2011). In recent years, due to the immense importance of ASC to students' educational trajectories (Nieminen, 2021; Susperreguy et al., 2018; Wu et al., 2021), there has been increased discussion about how self-concept relates to educational choices (Nauck & Genoni, 2019) and to educational aspirations (Kisfalusi, 2023), and how it is influenced by ability tracking (Dockx et al., 2019).

In this study, I examine the ASC of students who moved up from a vocational track in lower secondary education to one of the more demanding academic tracks of upper secondary education in Germany. In the stratified German education system, the transition to upper secondary education is crucial for vocationally tracked students as they decide whether to start an apprenticeship or – if qualified – to attempt to reach a university entrance qualification in one of the academic tracks. Such upward track mobility, however, is challenging due to the different curricula in the different education tracks and the correspondingly different demands on educational performance. Accordingly, upwardly mobile newcomers to academic tracking not only have higher dropout rates in academic upper secondary education (Dollmann & Weißmann, 2020) but also later on in tertiary education at university (Müller & Schneider, 2013). This particularly afflicts upwardly mobile immigrant students (Klein & Neugebauer, 2023).

To shed light on a potential reason for these patterns, I ask (1) whether the ASC of upwardly mobile newcomers to academic tracking is stronger or weaker than the self-concept of their established peers who were already in academic tracking in lower secondary education. I further differentiate by immigrant origin. In addition, I ask (2) how upward track

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mobility and the associated change in the learning environment affect the ASC. Generally, theoretical considerations suggest (and empirical findings show) that belonging to a low-performing learning group or attending a prestigious school can strengthen the ASC, as students find it easier to perceive themselves as high achievers in these frames of reference (Trautwein et al., 2006). The study of such contextual effects is of great importance for the impact of stratified education systems on educational trajectories in general and for the analysis of upward track mobility within these systems in particular, as students climb from lower- to higher-performing learning groups and transition to higher-status schools as part of their upward mobility (Baumert et al., 2006).

Academic Self-Concept

ASC refers to students' assessment of their own academic performance (Eccles & Wigfield, 2020). According to Marsh's (1986) frame of reference model, students form their ASC to a significant extent by comparing themselves in an external frame of reference with others and in an internal frame of reference with their own performance in different academic domains. According to the local-dominance effect (Zell & Alicke, 2010), reliable external information for evaluating one's own performance can be obtained by comparing the performance of socially similarly situated people (i.e., schoolmates) as they often face comparable problems and challenges (Trautwein & Möller, 2016). Thus, in stratified education systems with ability tracking, schools play a specific role in the development of ASC, as educational ability is confounded with social origin. Parents of academically tracked students, for instance, have a higher average socioeconomic status (SES) and are more likely to have at least a high school diploma (Baumert et al., 2006). The school and the classroom thus provide a reliable frame of reference in which students can compare themselves with higher-performing, equal-performing, and lower-performing classmates. Depending on the point of reference, these comparisons can devalue or enhance self-concept and facilitate an assessment of one's own performance (Jónsdóttir & Blöndal, 2023; Liem et al., 2013). In sociological subjective expected utility models and in psychological expectancy-value models, ASC is a key aspect of educational investment and choice with respect to the probability of success (Eccles & Wigfield, 2020). Investments and decisions are thus made not only in consideration of costs and utilities, but also in consideration of the expected probability of realizing those utilities. In these models, expectancy of success is defined by students' ASC, that is, their beliefs about how well they will perform on a task, either in the immediate or longer-term future (Eccles & Wigfield, 2002). Accordingly, empirical research shows that ASC positively influences patience (Wu et al., 2021) and engagement (Cai et al., 2018) in learning and, thus, educational trajectories (Marsh & Martin, 2011; Susperreguy et al., 2018; Wu et al., 2021).

Frame of Reference Effects

Frame of reference effects are particularly relevant in the context of upward track mobility, as changing to a higher-performing and more prestigious learning environment should have a strong impact on the (re)evaluation of newcomers' ASC.

Big-Fish-Little-Pond & Basking-In-Reflected-Glory Effects

The best-known reference group effect in the literature is the big-fish-little-pond effect (BFLPE) (Fleischmann et al., 2023). It results from comparing individual performance with the average performance of school- and classmates. According to this effect, a lower-performing learning environment has a positive effect on ASC because comparison with a lower-performing environment is potentially better than comparison with a higher-performing environment (Marsh, 1987): In these environments, students can perceive themselves in the external frame of reference as high performers—as “big fish”. Research could show that when considering individual performance, the ASC of students is indeed stronger in low-ability tracks than in high-ability tracks (Jónsdóttir & Blöndal, 2023; Liem et al., 2013). Accordingly, upwardly mobile newcomers in stratified systems change as “big fish” from a lower-performing environment to a higher-performing one. As Marsh et al. (2007) could show that the ASC reacts only slowly to changing conditions, BFLPE can be expected to be stable during the transition phase, but may change in the further trajectory of upward mobility (Dockx et al., 2019; Jónsdóttir & Blöndal, 2023; Liu et al., 2005).

BFLPE contrast with the basking-in-reflected-glory effect (BIRGE), according to which the self-concept is positively affected by belonging to a high-performing or prestigious group (Cialdini et al., 1976), as the positive assessment of the group's performance and social status spills over into the assessment of one's own performance (Wolff et al., 2021). Accordingly, empirical findings show that when considering individual social status, attending a high-performing or prestigious school has positive effects on individual ASC alongside negative BFLPE (Belfi et al., 2012), even when controlling for individual and school-average academic achievement (Marsh et al., 2000; Trautwein et al., 2009). Thus, in the external frame of reference, students can enhance their ASC in these environments by perceiving themselves as insiders to the prestigious group rather than outsiders.

As Trautwein et al. (2005) found BIRGE in opt-in courses (the so-called *Leistungskurse*) for academic upper secondary education in Germany, I assume that BIRGE occur during upward track mobility, as moving to a higher-performing and more prestigious learning environment could strengthen newcomers' positive self-concept.

H1: Newcomers to academic tracking have a stronger ASC than their established high school peers who attended lower secondary academic tracks.

Class-Difference Effects

Findings from qualitative research on social stratification and mobility show that upwardly mobile people often have to overcome habitual differences between their milieu of origin and their new circumstances (for an overview see Spiegler, 2018). As newcomers, they try to adapt to the social habitus of the new social milieu in order to be able to move confidently in the new social space (Bourdieu, 1987). In doing so, they often feel alienated from their family and their original setting, or feel that they will remain strangers in the new environment (Lee, 2017; Lee & Kramer, 2013).

I argue that the social differences between the learning environments of stratified education reflect class-specific logics of perception, thought, and action—the social habitus (Bourdieu, 1987). In processes of upward track mobility, these class-specific school environments could lead to a sense of insecurity, as the familiar patterns of perception and action may no longer be applicable (El-Mafaalani, 2012). Accordingly, Aries and Seider (2005) found that upwardly mobile students often feel intimidated by the economic and cultural capital of their peers, and thus often feel inadequate at school. I therefore suggest that students' ASC is affected not only by BFLP or BIRG effects, but also by the social context resulting from the social composition of the different education tracks (Baumert et al., 2006; Chevalère et al., 2023).

I assume that (habitual) class differences promote social upward comparisons that might diminish students' ASC (Fleischmann et al., 2023; Trautwein & Möller, 2016). Moreover, I assume that these effects are primarily found among those moving up the educational ladder, because upward track mobility provides special opportunities for social upward comparisons as newcomers attempt to locate their social position in the new social environment (Spiegler, 2018).

To measure the effect of (habitual) class differences, I use school-average socioeconomic status and cultural capital while controlling for individual socioeconomic status and cultural capital as well as for individual and school-average achievement. This approach is consistent with the measurement of other contextual effects such as BFLPE in other studies (Trautwein & Möller, 2016).

H2a: The higher the school-average socioeconomic status and school-average cultural capital, the lower the ASC.

H2b: The effects of school-average socioeconomic status and the school-average cultural capital are stronger for newcomers.

Sphere-Difference Effects

El-Mafaalani (2012) found that upward mobility is not only characterized by the experience of (habitual) class differences but also by the experience of (habitual) differences between the intra- and extra-familial spheres. As mentioned above, upward mobility is often an emancipation from the original milieu *and thus* from the family, as the family is often habitually attached to the milieu (Spiegler, 2018). This can become a specific challenge for upwardly mobile students, as their parents often expect them to be upwardly mobile and thus successful in the extra-familial sphere, while remaining loyal to the familiar habitus of the intra-familial sphere (El-Mafaalani, 2012).

In general, parents' social upward orientation and educational aspirations are important and supportive resources in upward mobility processes, as these attitudes provide emotional help for students to stay on track—even when difficulties occur (Bahena, 2020). Gofen (2009) points out that although there are many habitual challenges that upwardly mobile students face, they often succeed not *despite* their families, but *because* of the support and resources their families offer.

In contrast to educational institutions, however, the organizational goal of the family is not primarily the educational success of the children. Rather, the family's organizational goal is to create lifelong, unconditional loyalties and social ties (Huinink, 1995). Accordingly, parents may oppose upward educational mobility if they expect their children to become habitually alienated as a result of their upward mobility (Nauck & Lotter, 2016). In particular, solidarity obligations found in the habitus of low-SES families (Dykstra & Fokkema, 2011), such as always living nearby or helping with housework, may conflict with, for example, attending university, which is often associated with a change of residence.

Research shows that such parental expectations can influence ASC (Frome & Eccles, 1998; Lazarides et al., 2016; Pesu et al., 2018) and hinder upward mobility (Zhang & Deguilhem, 2022). I assume that the described ambivalences in parental expectations promote unfavorable social comparisons by emphasizing the socio-structural incongruence of the intra- and extra-familial spheres and thus diminish the ASC of upwardly mobile students (Fleischmann et al., 2023; Trautwein & Möller, 2016). As I am specifically interested in whether these sphere differences shape an effect on the context level, I argue that, in accordance the local-dominance effect, learning environments with a high proportion of classmates facing similar challenges should correspondingly provide more favorable opportunities for social comparison. Weaker school performance can then be classified in a more reflective way, as students become aware of their group-specific challenges and tend less to assign failures to themselves (Fleischmann et al., 2023; Jónsdóttir & Blöndal, 2023). Thus, I suggest using parental solidarity expectations to measure sphere differences as a context effect because educational institutions transmit and reproduce middle-class values and habitus (Lessky et al., 2021) and parental solidarity expectations are

more pronounced in low-SES contexts (Dykstra & Fokkema, 2011): the more expectations of solidarity there are at the context level, the smaller the differences between the intra- and extra-familial spheres. As parental solidarity expectations are more pronounced in low-SES contexts (Dykstra & Fokkema, 2011), sphere differences should be especially relevant for upwardly mobile newcomers as they change from lower-SES to higher-SES learning contexts, which should highlight these specific challenges and thus promote social upward comparisons.

H3a: The higher the school-average parental solidarity expectations, the stronger the ASC.

H3b: The effects of school-average parental solidarity expectations are stronger for newcomers.

Migration Effects

Recent studies show that immigrant students have a stronger ASC at a given achievement level in a given school track, when considering individual socioeconomic status and school-average achievement (Nauck & Genoni, 2019; Siegert & Roth, 2020). This effect is partly mediated by parental educational aspirations and is thus explained by positive self-selection into migration through so-called immigrant optimism (Kao & Tienda, 1995), according to which the decision to migrate is often based on a social upward orientation and thus associated with a positive self-concept (Siegert & Roth, 2020). Siegert and Roth (2020) argue that parents, as interpreters of reality (Frome & Eccles, 1998), have a profound influence on their children's ASC (Gniewosz et al., 2012), and thus parents' ambitious educational aspirations may be an important reason for immigrant students' high ASC.

H4a: Immigrant students have a stronger ASC.

Immigrant optimism and higher educational aspirations are found in different European education systems and in immigrants of different origins (Cebolla-Boado et al., 2021; Rudolphi & Salikutluk, 2021). In Germany, higher educational aspirations are especially reported for students of Turkish origin (Becker et al., 2022; Hadjar & Scharf, 2019; Salikutluk, 2016). However, at the transition to upper-secondary education in Germany, immigrant students are generally more likely to change from a vocational track to an academic track, given comparable educational performance and social status (Busse & Scharenberg, 2022; Dollmann & Weißmann, 2020). Thus, on average these students are upwardly mobile at lower levels of achievement and social status. Immigrant students can, accordingly, perceive themselves as an even *bigger fish* than their non-immigrant and non-mobile peers, meaning that they should also receive a stronger BIRGE due to their comparatively lower social status.

H4b: Immigrant newcomers have a stronger ASC.

Along these lines, one can argue that immigrant newcomers experience greater (habitual) class differences than non-immigrant newcomers as a result their more ambitious educational choices. Moreover, despite the greater emphasis on education in migration contexts, the ambivalence of habitual adaptation to new milieus and habitual separation from familiar settings is reinforced by the fact that immigrant youths often experience contradictory attributions and demands in majority society and especially at school, as on the one hand they are marked as not belonging through ethnicization, but at the same time they are expected to assimilate (El-Mafaalani, 2017).

H4c: The effects of school-average socioeconomic status and school-average cultural capital are stronger for immigrant newcomers.

Also (habitual) sphere differences should be more pronounced in-migrant contexts, as the family is an important support and retreat where the experiences and challenges of migration are shared (Baykara-Krumme & Fokkema, 2019). Much of the immigration to Germany (and to other European societies) comes from countries with rudimentary welfare systems (Olczyk et al., 2016), where the family fulfills essential social security functions (Böhnke, 2008). Consequently, many immigrant families in Germany can be expected to be strongly influenced by collectivist values such as solidarity and loyalty (König et al., 2018). To sum up, immigrant parents often expect greater educational success of their children than non-immigrant parents, due to their stronger social upward orientation. Likewise, they expect greater loyalty to the family habitus due to stronger family cohesion (El-Mafaalani, 2012). Controlling for parental educational aspirations, the effects of school-average parental solidarity expectations should be stronger for immigrant than for non-immigrant newcomers.

H4d: The effects of school-average parental solidarity expectations stronger for immigrant newcomers.

Methodology

Data

My empirical analyses are based on the starting cohort 4 of the German National Educational Panel Study (Blossfeld & Roßbach 2019), which tracks students throughout upper secondary education. This stratified random sample was drawn in autumn and winter 2010 from regular and special needs schools in grade 9 at the end of lower secondary education. The transition to upper secondary education took place after completion of grade 10 in autumn 2011. A two-stage

sampling, in which first the schools and then two classes within these schools were randomly selected, resulted in a subsample of 15,239 students surveyed in regular schools (Steinhauer & Zinn, 2016).

Sample

The analysis sample consists of all students in academic upper secondary education in the school year 2013, two years after completing lower secondary education. Students attending Vocational Education and Training or vocational schools ($N = 7,315$) are excluded from the analysis sample. In 2013, about 8 percent of students in academic upper secondary education showed temporary or permanent dropout. The dropout risk is generally higher for upwardly mobile students because they leave the sample school at the end of lower secondary education and are subsequently tracked and surveyed individually (Zinn et al., 2018). Such systematic sampling dropouts can lead to biased estimates because this type of missing data is not random. I address this issue using listwise deletion, because recent data simulation studies show that modern missing data techniques such as multiple imputation often produce more biased, less efficient results with worse coverage than listwise deletion when the missing data are not random (Pepinsky, 2018). However, variables indicating increased panel vulnerability often correlate with systematic dropouts (Rothenbühler & Voorpostel, 2016). For this reason, in addition to analytical considerations, I control for age, gender, immigrant origin, upward mobility, and socioeconomic background in the analyses (Steinhauer & Zinn, 2016). Including item-nonresponse, the sample contains 4,109 students in 176 schools, of whom 787 (19 percent) are immigrants.

Variables

Mean scales were formed in some cases to operationalize central concepts; factor and reliability analysis preceded the formation of these scales (see supplementary material for greater detail, Appendix A).

Dependent Variable

The dependent variable is a mean scale that indicates a student's ASC with general reference to school in the school year 2013. Students were asked, for instance, whether they think that they learn fast or perform well in most school subjects on a 4-point scale (does not apply at all, mostly does not apply, mostly applies, completely applies).

Independent Variables

I distinguish students between upwardly mobile newcomers who changed from one of the non-academic tracks of lower secondary education to academic upper secondary education ($N = 1,171$; 28.50%) and academically established students who already attended academic tracking throughout lower secondary education ($N = 2,938$; 71.50%).

For more specific analyses, an additional categorization distinguishes between immigrant and non-immigrant newcomers, and established students (see table 1). I assigned an immigrant origin to students based on their country of birth if they ($N = 134$; 3.26%), a parent ($N = 342$; 8.32%) or both parents ($N = 311$; 7.57%) were born abroad. Since the number of cases does not allow a reliable differentiation according to generation status or countries of origin, a differentiation is only made according to immigrant origin. The countries with the largest immigrant groups in the data set are Turkey, the countries of the former Soviet Union, Poland, and the countries of the former Yugoslavia (Olczyk et al., 2014).

Table 1. Newcomers and Established Students According to Immigrant Origin

	N	%
(a) Non-Immigrant Established Students	2,430	59.14
(b) Non-Immigrant Newcomers	892	21.71
(c) Immigrant Established Students	508	12.36
(d) Immigrant Newcomers	279	06.79

As graded performance varies across schools and school classes, standardized measures of competences in reading and mathematics were controlled by a summated scale derived from the individual results of the corresponding competency tests in grade 9 using Weighted Maximum Likelihood Estimates (Pohl & Carstensen, 2012). (Habitual) class differences are operationalized by the socioeconomic background and objectified cultural capital of the family. This was measured by the highest International Socio-Economic Index (ISEI) of occupational status of the parents (Ganzeboom et al., 1992), and by the number of books in the household (Bourdieu, 1986). (Habitual) sphere differences were operationalized via perceived parental solidarity expectations measured on a 4-point scale in school year 2011 (completely disagree, mostly disagree, mostly agree, completely agree), including expectations such as continuously living nearby or financial support for younger siblings. Perceived parental educational aspirations were operationalized by students' perceptions of whether they believed their parents wanted them to attend university ($N = 2,777$; 67.58%) or to start vocational training ($N = 1,332$; 32.42%), measured in wave 2010. Controls are age and gender.

Research Design and Methodology

In prior research, BFLP effects became statistically apparent via a negative effect of average academic performance at the school or class level on ASC after accounting for individual performance (Marsh, 1987; Marsh et al., 2000). Accordingly, ASC decreases for students with equal achievement when the average achievement of classmates is comparatively high. Correspondingly, BIRG effects can be documented via the positive influence of school prestige on ASC when controlling for individual competence and social status (Marsh et al., 2000). Analogously, the present study shows students' experience with socioeconomic differences via a negative effect of mean parental ISEI and mean cultural capital (indicating habitual class differences) as well as mean parental solidarity expectations (indicating habitual sphere differences) at the school level, when both controlling for individual social status and individual perceptions of parental solidarity expectations and accounting for individual and class average competencies in mathematics and reading.

The analysis strategy is to first examine the effect of the different reference groups on the ASC in a baseline model, excluding any context effects. This way, I address the question of whether newcomers have a stronger ASC than established students (H1). In the next step, mean parental ISEI and mean cultural capital at school level, and mean parental solidarity expectations, are introduced to test the impact of class and sphere differences on students' ASC (H2a & H3a). This is followed by introducing interaction terms testing differences in the impact of class and sphere differences between the ASC of newcomers and established students (H2b & H3b). Finally, to address migration-specific hypotheses, these analysis steps are repeated, distinguishing between newcomers and established students by immigrant origin (H4a-H4c). -Models are based on multilevel analyses with adjusted standard errors at school level. This is because the data are based on a two-stage sampling procedure and thus observations are clustered at class and school level. No centering or standardization was performed as all continuous variables have metrics with meaningful zeros (Dalal & Zickar, 2012); visualizations may help to interpret the interactions (see Supplementary Material).

Results

The Baseline Model, without controlling for any context effects, confirms H1: newcomers have a stronger ASC (Table 2). As an example of how to read effect sizes, consider the Baseline Model: Under the controlled conditions, the ASC of newcomers on a scale of 1 to 4 is 0.23 units higher than the ASC of established students; R^2 shows that the model explains about 13% of the variance between these units. Models 2 and 3 further confirm H2a: when controlling for individual SES and cultural capital as well as for individual and school-average achievement, schools' social contexts, i.e., mean SES and mean cultural capital, have a negative impact on student's ASC. As another reading example, consider Model 3: For each unit on the mean scale of cultural capital at school level, ASC on a scale of 1 to 4 decreases by 0.11 units under the controlled conditions; R^2 shows that the model explains about 14% of the variance *within* these units. Model 4 confirms school context effects also for family norms (H3a): controlled in the same way, mean school-average parental solidarity expectations have a positive effect on ASC: For each unit of school-average parental solidarity expectations, students' ASC increases by 0.27 units. Model 5 tests the impact of mean SES, mean cultural capital, and mean solidarity expectations in an overall model. Accounting for all context effects, only the positive effects of solidarity expectations remain significant at a 7% level. With regard to specific effects for newcomers, Models 6 and 7 reject H2b: the effects of mean SES and mean cultural capital are *not* stronger for newcomers to academic tracking in upper secondary education. Model 8 further confirms H3b: The effects of mean parental solidarity expectations are significantly stronger for newcomers by 0.30 units at a level of 6%. The main effects on newcomers in Model 8 show that newcomers have an ASC that is 0.44 units weaker if mean parental solidarity expectations are low. However, this finding is not statistically significant.

In summary, newcomers have an ASC that is about 0.22 units higher than that of established students. The size of this effect and the significance level remain constant when controlling for school-average SES and cultural capital, as well as school-average achievement. R^2 shows that these models explain up to 10% of the variance between these units. The negative effects of mean SES and mean cultural capital indicate the assumed effects of (habitual) class differences. The positive effect of mean solidarity expectations indicate that ASC is higher if (habitual) sphere differences are lower. However, in the overall model, only the effects of solidarity expectations remained statistically significant. This may be explained by the strong correlation between SES, cultural capital, and solidarity expectations (see supplementary material, table B1). In addition, previous research found that solidarity expectations are prevalent in low SES contexts, so mean solidarity expectations may explain the effects of mean SES and mean cultural capital.

Although mean SES and mean cultural capital did not vary significantly between newcomers and established peers, the reported main effects for newcomers in Model 6 suggest a basking-in-reflected-glory effect for SES, as newcomers' ASC is not significantly stronger when average SES is low but is significantly stronger when not controlling for this scenario. The main effects for newcomers' ASC in Model 7 suggest (habitual) class effects, as newcomers in a school with average low cultural capital have a significantly higher ASC of 0.63 units. Finally, the main effects on newcomers in model 8 suggest a negative effect on the ASC when sphere differences are high.

Table 2. Multilevel OLS-Regressions Predicting the Effects of (Habitual) Class and Sphere Differences on ASC in Upper Secondary Education

	Baseline	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Newcomers (Ref.: Established Students)	0.23*** (0.05) 0.00	0.22*** (0.04) 0.00	0.21*** (0.03) 0.00	0.21*** (0.03) 0.00	0.21*** (0.03) 0.00	0.34 (0.27) 0.21	0.63** (0.30) 0.03	-0.44 (0.35) 0.20
Contextual Effects								
Mean Parental ISEI		-0.01** (0.00) 0.02			-0.00 (0.00) 0.64	-0.00* (0.00) 0.06		
Mean N of Books			-0.10*** (0.04) 0.01		-0.04 (0.05) 0.40		-0.06 (0.04) 0.10	
Mean Solidarity Expectations				0.27*** (0.10) 0.00	0.20* (0.11) 0.07			0.17* (0.10) 0.08
Interactions								
Mean Parental ISEI # Newcomers						-0.00 (0.00) 0.64		
Mean N of Books # Newcomer							-0.09 (0.06) 0.15	
Mean Solidarity Expectations # Newcomer								0.30* (0.16) 0.06
Individual Competencies								
Reading	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00	0.12*** (0.01) 0.00
Mathematics	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00	0.11*** (0.01) 0.00
Socioeconomic Status								
Parental ISEI	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00	0.00*** (0.00) 0.00
N of Books	0.03** (0.01) 0.03	0.03** (0.01) 0.04	0.03** (0.01) 0.03	0.03** (0.01) 0.04	0.03** (0.01) 0.04	0.03** (0.01) 0.04	0.03** (0.01) 0.03	0.03** (0.01) 0.04

Table 2. Continued

	Baseline	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Parental Expectations								
Solidarity Expectations	-0.03** (0.01)	-0.04** (0.01)	-0.04** (0.01)	-0.04*** (0.02)	-0.04*** (0.02)	-0.04** (0.01)	-0.04** (0.01)	-0.04*** (0.02)
	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Parental Aspirations	0.11*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Competencies at School Level								
Mathematics		-0.03 (0.04)	-0.02 (0.04)	-0.01 (0.04)	-0.01 (0.04)	-0.03 (0.04)	-0.03 (0.04)	-0.02 (0.04)
		0.49	0.50	0.76	0.71	0.46	0.43	0.68
Reading		0.00 (0.05)	0.02 (0.06)	-0.01 (0.06)	0.02 (0.05)	0.00 (0.05)	0.02 (0.06)	-0.01 (0.06)
		0.98	0.71	0.86	0.65	0.95	0.70	0.86
Controls								
Immigrant Origin	0.05** (0.02)	0.05** (0.02)	0.05* (0.02)	0.04* (0.02)	0.05* (0.02)	0.05** (0.02)	0.05* (0.02)	0.04* (0.02)
	0.05	0.04	0.05	0.07	0.07	0.04	0.06	0.08
Age	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gender (<i>Ref.: female</i>)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N individual level (students)	4,109	4,109	4,109	4,109	4,109	4,109	4,109	4,109
N context level (schools)	176	176	176	176	176	176	176	176
R ² (between)	0.131	0.073	0.0961	0.100	0.118	0.125	0.157	0.107
R ² (within)	0.137	0.138	0.138	0.138	0.138	0.138	0.138	0.138

Robust standard errors in parentheses, followed by p-values

Legend: *** $p < .01$, ** $p < .05$, * $p < .1$

Source: Own calculations; doi:10.5157/NEPS:SC4:9.1.0

Table 3. Multilevel OLS-Regressions Predicting the Effects of (Habitual) Class and Sphere Differences on ASC in Upper Secondary Education According to Immigrant Origin

	Model 9	Model 10	Model 11	Model 12	Model 13
Immigrant Established Students	0.21***	0.19***	-0.18	0.09	0.47
(Ref.: Non-Immigrant Established Students)	(0.05)	(0.04)	(0.25)	(0.30)	(0.44)
	0.00	0.00	0.48	0.77	0.30
Non-Immigrant Newcomers	0.01	0.01	0.73***	0.45	-0.10
	(0.03)	(0.03)	(0.26)	(0.29)	(0.44)
	0.81	0.84	0.00	0.12	0.83
Immigrant Newcomers	0.34***	0.31***	1.29***	1.41**	-1.08***
	(0.05)	(0.04)	(0.44)	(0.61)	(0.40)
	0.00	0.00	0.00	0.02	0.01
Contextual Effects					
Mean Parental ISEI		-0.00	-0.00		
		(0.00)	(0.00)		
		0.68	0.33		
Mean N of Books		-0.04		-0.04	
		(0.05)		(0.04)	
		0.40		0.30	
Mean Solidarity Expectations		0.20*			0.17
		(0.10)			(0.12)
		0.06			0.13
Interactions					
Mean Parental ISEI # Immigrant Established Students			0.01		
			(0.00)		
			0.12		
Mean Parental ISEI # Non-Immigrant Newcomers			-0.01***		
			(0.00)		
			0.01		
Mean Parental ISEI # Immigrant Newcomers			-0.02**		
			(0.01)		
			0.02		
Mean N of Books # Immigrant Established Students				0.02	
				(0.07)	
				0.72	
Mean N of Books # Non-Immigrant Newcomers				-0.09	
				(0.06)	
				0.13	
Mean N of Books # Immigrant Newcomers				-0.25*	
				(0.14)	
				0.07	
Mean Solidarity Expectations # Immigrant Established Students					-0.13
					(0.21)
					0.54
Mean Solidarity Expectations # Non-Immigrant Newcomers					0.05
					(0.21)
					0.81
Mean Solidarity Expectations # Immigrant Newcomers					0.63***
					(0.19)
					0.00
Individual Competencies					
Reading	0.12***	0.12***	0.12***	0.12***	0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	0.00	0.00	0.00	0.00	0.00
Mathematics	0.11***	0.11***	0.11***	0.11***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	0.00	0.00	0.00	0.00	0.00

Table 3. Continued

	Model 9	Model 10	Model 11	Model 12	Model 13
Socioeconomic Status					
Parental ISEI	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
	0.00	0.00	0.00	0.00	0.00
N of Books	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)
	0.02	0.02	0.02	0.02	0.02
Parental Expectations					
Solidarity Expectations	-0.03** (0.01)	-0.04*** (0.02)	-0.04*** (0.01)	-0.04*** (0.01)	-0.04*** (0.02)
	0.01	0.01	0.01	0.01	0.01
Parental Aspirations	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)
	0.00	0.00	0.00	0.00	0.00
Average Competencies at School Level					
Mean Mathematics		-0.01 (0.04)	-0.02 (0.04)	-0.03 (0.04)	-0.02 (0.04)
		0.72	0.57	0.46	0.67
Mean Reading		0.02 (0.05)	0.02 (0.05)	0.03 (0.06)	0.01 (0.06)
		0.68	0.74	0.55	0.92
Controls					
Age	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06*** (0.01)
	0.00	0.00	0.00	0.00	0.00
Gender (Ref.: female)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)
	0.00	0.00	0.00	0.00	0.00
N individual level (students)	4,109	4,109	4,109	4,109	4,109
N context level (schools)	176	176	176	176	176
R² (between)	0.155	0.114	0.147	0.205	0.131
R² (within)	0.139	0.139	0.142	0.141	0.141

Robust standard errors in parentheses, followed by p-values

Legend: *** $p < .01$, ** $p < .05$, * $p < .1$

Source: own calculations; doi:10.5157/NEPS:SC4:9.1.0

Table 3 reports the migration-specific analyses. A baseline model and an overall model report the effects for newcomers and established students according to immigrant origin both without controlling for contextual effects (model 9) and with controlling for contextual effects (model 10). These models confirm H4a (immigrant students have a higher ASC than their peers) and H4b (this effect is stronger for immigrant newcomers), explaining up to 15% of the variance between the units of these student groups. Model 11 shows that the negative effect of school-average SES is slightly stronger for immigrant newcomers at 0.02 units, and Model 12 reports significantly stronger negative effects of mean cultural capital for immigrant newcomers at 0.25 units, controlling for individual SES and cultural capital as well as individual and school-average achievement. Findings therefore confirm H4c. In both models, immigrant newcomers' main effects show a stronger ASC when mean SES (1.29 units) or mean cultural capital (1.41 units) in a school are low. Model 13 further confirms H4d: for immigrant newcomers, the effects of mean solidarity expectations are significantly stronger, at 0.63 units. Accordingly, the main effect for immigrant newcomers shows significantly lower ASC when school-average solidarity expectations are low (minus 1.08 units).

To sum up, the significant interaction effect between the student groups, mean SES and mean cultural capital indicate that (habitual) class differences have stronger effects for immigrant students. The significant interactions of mean solidarity expectations also indicate stronger effects of (habitual) sphere differences for immigrant newcomers. The main effects confirm that immigrant newcomers' ASC is higher if (habitual) class and sphere differences are low.

Discussion

The study found stronger academic self-concept (ASC) in newcomers to the academic track in upper secondary education (H1); a negative impact of (habitual) class differences on the ASC (measured via school-average SES and school-average cultural capital) (H2a); a negative impact of (habitual) sphere differences on the ASC (measured via school-average

parental solidarity expectations) (H3a); a stronger impact of (habitual) sphere differences on newcomers' ASC compared to academically established students' ASC (H2b; H3b); a stronger ASC in immigrant students in academic upper secondary education, especially in upwardly mobile immigrant newcomers (H4a; H4b); and a stronger impact of (habitual) class and sphere differences on immigrant newcomers' ASC compared to their non-immigrant peers (H4c; H4d). Interpretively, results thus confirm earlier qualitative research findings that upward mobility is a socio-habitual challenge (Spiegler, 2018), especially for upwardly mobile immigrants (El-Mafaalani, 2012). In general, the results are consistent with other findings in ASC research that suggest that upward track mobility results in unfavorable social comparisons and thus challenges students' ASC (Fleischmann et al., 2023; Jónsdóttir & Blöndal, 2023).

The results of the tested context effects are robust in that they have statistically significant coefficients even when controlling for school-average achievement. No clear statistical evidence was found for differences between newcomer and established students regarding socioeconomic contextual effects: this does not suggest (habitual) class differences, as the interaction effects remain statistically insignificant. However, the main effects of low school-average SES and low school-average cultural capital on newcomers' ASC suggest that ASC is higher when (habitual) differences between the home and the school milieu are small.

In terms of possible reasons why the hypothesized differences were not found, it should be emphasized that theoretical constructs such as social habitus and the resulting experiences of class and sphere differences are difficult to measure quantitatively. In a recent paper, Moll et al. (2024) operationalize students' academic habitus in terms of school norms and educational values as well as academic ambition. Interestingly, they find no significant relationship between their concept of habitus and more traditional measures of parental socioeconomic status. Also recently, Kohlmeier and Fischer-Neumann (2024) use general attitudes toward education for a more refined measure of the impact of social origin in educational contexts. However, a more specific operationalization of the theoretical constructs of (habitual) class and sphere differences remains available to future research. Attitudes such as parental solidarity expectations seem to be helpful here, as attitudes are often class-specific and reflect certain norms and values—thus marking differences between social milieus.

It must remain an open question why newcomers, and especially immigrant newcomers, have higher ASC in academic upper secondary education. These effects remain significant after accounting for social origin and other family factors, i.e. parental solidarity expectations and parental educational aspirations. The finding that parental educational aspirations do not explain the higher ASC of immigrant students is consistent with previous research on the transition to upper secondary education in Germany (Siegert & Roth, 2020). The higher ASC of immigrant students in academic upper secondary education could be explained by the described big-fish-little-pond and basing-in-reflected-glory effects: Immigrant students tend to have lower enrollment rates in academic upper secondary education; this is particularly true for students of Turkish, Polish, and former Soviet origin (Busse & Scharenberg, 2022). Since these countries of origin are overrepresented among the immigrant student population in this study, the patterns found could be explained by immigrant students being more likely to perceive themselves as "big fish" and part of a successful group, which could increase their ASC. The finding is consistent with recent research on the role of ASC in the educational trajectories of immigrant students in stratified education, which suggests that the stronger ASC of immigrant students has a positive effect on their pursuit of upward mobility (Siegert & Roth, 2020). However, the interpretation of these effects remains a fruitful investigative avenue for future research.

Regarding the argument that upward mobility can be understood as emancipation from the milieu and thus from the family, it should be noted that the findings indicate that the family both supports and hampers upward mobility, as parental educational aspirations show a positive influence on ASC, while parental solidarity expectations show a negative influence. This shows that these family factors are diametrically opposed. While the positive influence of parental educational aspirations on students' self-concept has been found in previous studies (Buchmann et al., 2022; Siegert & Roth, 2020) the diametric influence of loyalty expectations is found for the first time in this study.

Conclusion

The focus of this article was the academic self-concept (ASC) of students who changed from vocational to academic tracking at the transition to upper secondary education in the stratified German education system. ASC is particularly relevant to the successful trajectory of such upward track mobility, as a strong ASC positively affects persistence and engagement in learning and, hence, academic achievement (Wu et al., 2021). For this reason, I used a subsample of the German National Educational Panel Study ($N = 4,109$) to examine factors that could constrain or strengthen ASC in upward mobility processes. The empirical analyses showed how ASC depends on the learning environment and how a change in the learning environment can create social barriers that occur in upward mobility processes and reduce ASC. Again, this is an important finding because social comparisons that reduce ASC can lower motivation to learn as well as effort and patience in learning (Kumari & Chamundeswari, 2013) furthermore affect achievement-related educational choices (Nauck & Genoni, 2019).

Recommendations

This study contributes to research on upward mobility in the transition to upper secondary education, as the question of why immigrant students have higher dropout rates in academic upper secondary education remains open (Busse & Scharenberg, 2022). The theoretical concepts of (habitual) class and sphere differences may help to explain these higher dropout rates, especially as educational sociology has begun to examine ASC as a possible predictor of these patterns (Salikutluk, 2016; Siegert & Roth, 2020). Future research investigating the educational trajectories of newcomers to upper secondary education could profitably adapt this approach and examine the effects of ASC on academic achievement, controlling for the potential effects of (habitual) class and sphere differences.

Limitations

This study is not without limitations. The cross-sectional design only indirectly tests the effects of a change in the learning environment at the transition to upper secondary education. In addition, parents' solidarity expectations may change over the course of upward mobility. This cannot be captured by the cross-sectional design because solidarity expectations were not measured prior to the transition to upper secondary school. Moreover, interpreting school-average SES and school-average cultural capital as (habitual) class differences and school-average parental solidarity expectations as (habitual) sphere differences is supported by the findings of many qualitative studies in the field of upward mobility (see literature review of Spiegler & Bednarek, 2013). Nevertheless, this operationalization remains ambitious. It is difficult to identify (habitual) class and sphere differences as specific mechanisms, given the multiple correlations among socioeconomic variables. However, recent quantitative research shows that objectified cultural capital, as measured by the number of books, is sufficiently distinct from traditional measures of socioeconomic status to support the assumption that cultural capital is an independent dimension involved in the reproduction of social status (Sieben & Lechner, 2019). The NEPS provides additional measures such as the frequency of engaging in cultural activities like going to the cinema, theater or concerts. I conducted my analyses with a mean scale based on the responses to queries concerning these activities and found the same patterns as for the number of books (result available upon request).

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Appendices

Appendix A: Operationalization and Descriptive Statistics

Table A1. Operationalizations

Concept	Question wording/answer categories	N / Mean	Percent / Std. Dev.
Academic Self-Concept	<i>How, in your own assessment, are you doing at school?</i>		
	(a) I learn fast in most of the school subjects. (b) In most school subjects, I perform well in written class tests. (c) I perform well in most school subjects.		
	(1 – does not apply at all, 2 – mostly does not apply, 3 – mostly applies, 4 – completely applies)	2.99	0.60
Mean Scale Characteristics	Inter-item-correlation: 0,59; Cronbach's α : 0,81		
Reference Groups	(a) Established Students (b) Newcomers	2,938 1,171	71.50 28.50
Reference Groups	(a) Non-Immigrant Established Students (b) Non-Immigrant Newcomers (c) Immigrant Established Students (d) Immigrant Newcomers	2,430 892 508 279	59.14% 21.71% 12.36% 06.79%
Parental Solidarity Expectations	<i>In your opinion, what kind of practical help should parents expect from their son/daughter once he's/she's fully grown?</i>		
	<i>Parents should expect their grown son/daughter...</i>		
	(a) ... to always live nearby. (b) ... to help with work around the home. (c) ... to support his/her younger siblings financially.		
	(1 – completely disagree, 2 – mostly disagree, 3 – mostly agree, 4 – completely agree)	2.13	0.56
Mean Scale Characteristics	Inter-item-correlation: 0,33; Cronbach's α : 0,75		
Parental Educational Aspirations	<i>And what kind of education would your parents like you to get after you have left school?</i>		
	My parents would like me ...		
Dichotomized Variable	(a) ... to do a vocational training (b) ... to study	1,332 2,777	32.42% 67.58%
Parental ISEI		61.41	18.81
N of Books in Household	<i>How many books do you have about in your home?</i>		
	As an aid: about 40 books fit on one meter of shelf.	4.72	1.184
	(1) 0 to 10 books (2) 11 to 25 books (3) 26 to 100 books (4) 101 to 200 books (5) 201 to 500 books (6) More than 500 books		
Gender	Women Men	2,321 1,783	56.61% 43.39%
Age		14.48	0.58

Appendix B: Additional Analyses. Multilevel OLS-Regressions predicting interaction effects between context effects and student groups on academic self-concept in academic upper secondary education

Table B1. Correlation Table for all Variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Academic Self-Concept	-														
(2) Newcomer	0.053	-													
(3) Mean Parental ISEI	-0.002	-0.327	-												
(4) Mean N of Books	-0.008	-0.421	0.803	-											
(5) Mean Solidarity Expectations	0.013	0.309	-0.551	-0.608	-										
(6) Reading	0.253	-0.281	0.184	0.219	-0.173	-									
(7) Mathematics	0.212	-0.401	0.201	0.253	-0.216	0.383	-								
(8) Parental ISEI	0.112	-0.206	0.354	0.292	-0.205	0.171	0.178	-							
(9) N of Books	0.130	-0.210	0.271	0.325	-0.194	0.236	0.226	0.444	-						
(10) Solidarity Expectations	-0.083	0.137	-0.152	-0.159	0.262	-0.180	-0.132	-0.178	-0.196	-					
(11) Parental Aspirations	0.071	-0.258	0.124	0.135	-0.049	0.073	0.122	0.150	0.133	-0.012	-				
(12) Mean Mathematics	0.023	-0.396	0.345	0.424	-0.394	0.180	0.388	0.122	0.141	-0.096	0.059	-			
(13) Mean Reading	0.031	-0.380	0.506	0.611	-0.455	0.237	0.323	0.181	0.205	-0.118	0.065	0.668	-		
(14) Immigrant Origin	-0.034	0.075	-0.062	-0.105	0.131	-0.147	-0.157	-0.186	-0.219	0.182	0.107	-0.076	-0.091	-	
(15) Age	-0.079	0.052	-0.076	-0.055	0.032	-0.054	-0.056	-0.100	-0.086	0.048	-0.026	-0.020	-0.046	0.062	-
(16) Gender	-0.022	-0.010	-0.001	-0.019	0.023	-0.084	0.271	0.039	-0.012	0.070	0.016	0.120	-0.016	-0.016	0.063

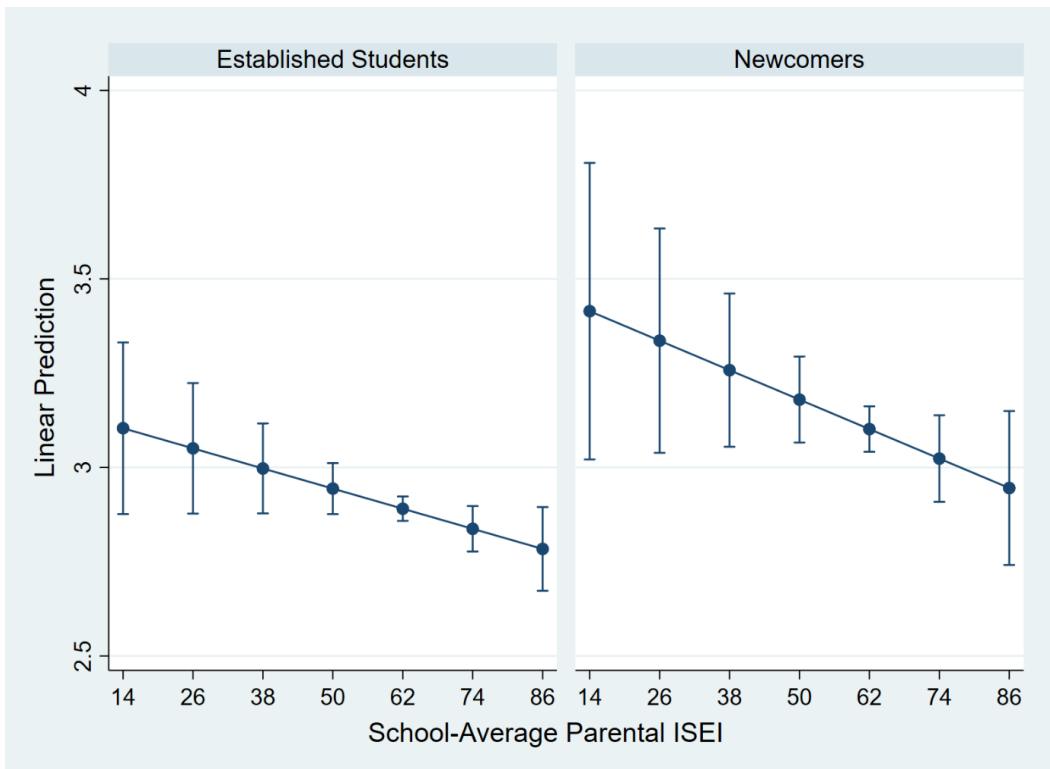


Figure B1. Interaction between Average Parental ISEI at School Level and Student Groups According to Immigrant Origin on Academic Self-Concept; Controlling for: Individual and School-Average Competencies, Parental ISEI, Number of Books, Parental Solidarity Expectations, Parental Educational Aspirations, Immigrant Origin, Age, Gender; Source: Own Calculations; doi:10.5157/NEPS:SC4:9.1.0

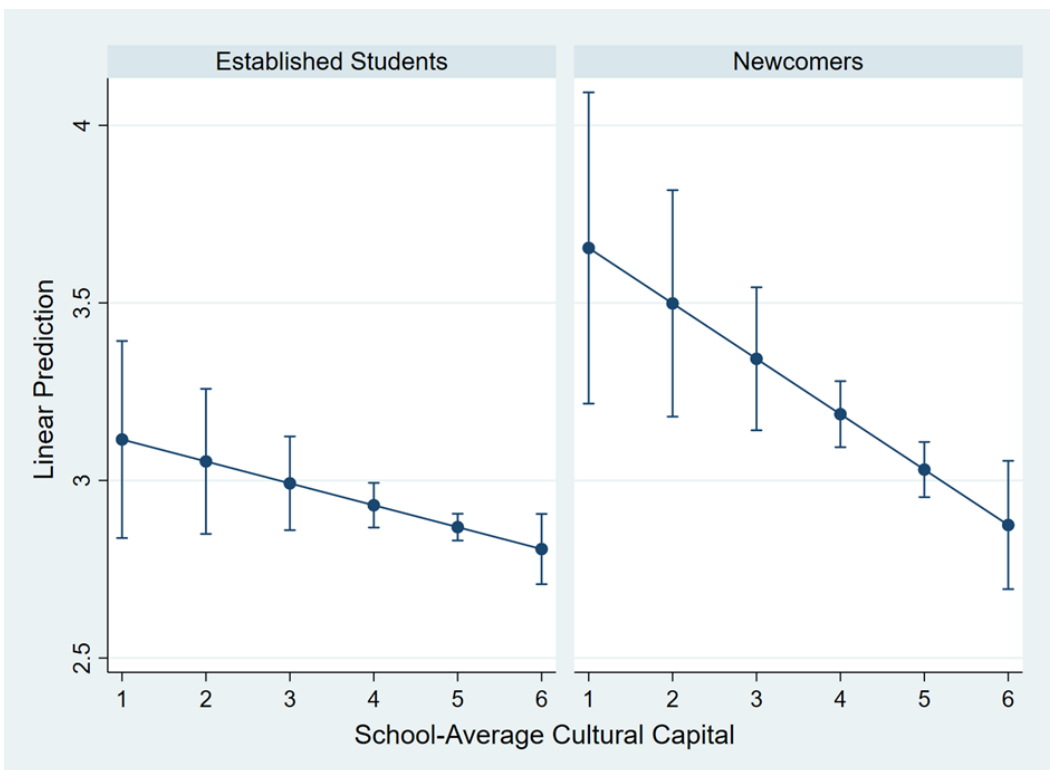


Figure B2. Interaction between Average Cultural Capital at School Level and Student Groups According to Immigrant Origin on Academic Self-Concept; Controlling for: Individual and School-Average Competencies, Parental ISEI, Number of Books, Parental Solidarity Expectations, Parental Educational Aspirations, Immigrant Origin, Age, Gender; Source: Own Calculations; doi:10.5157/NEPS:SC4:9.1.0

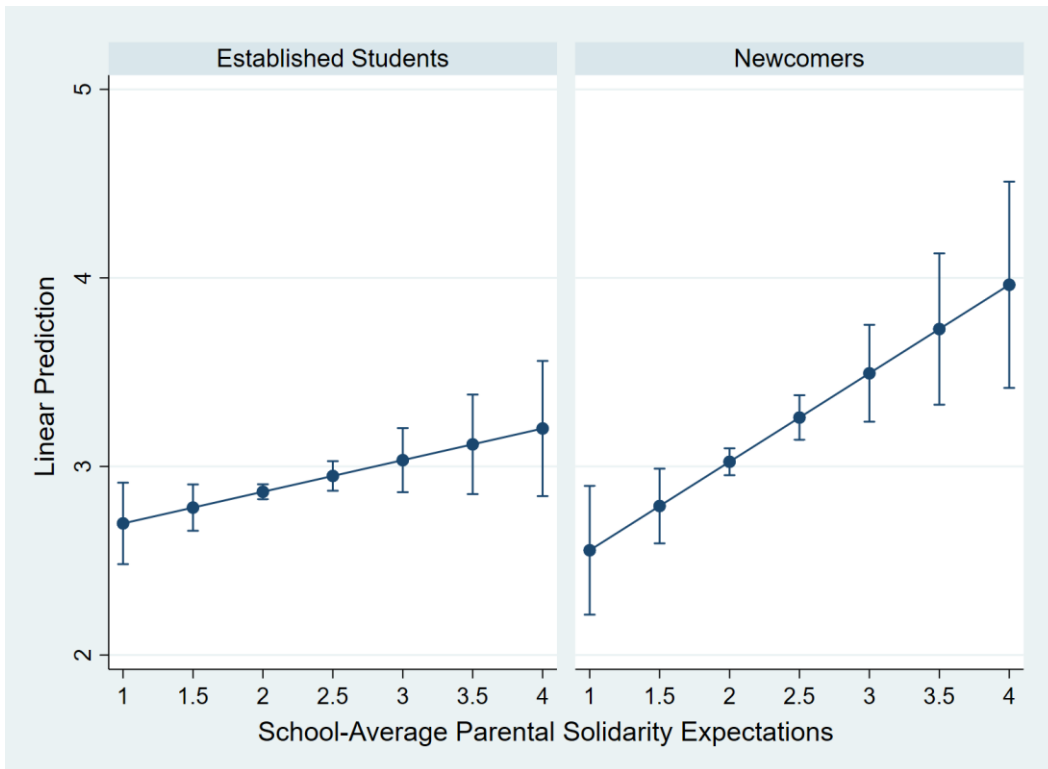


Figure B3. Interaction between Average Parental Solidarity Expectations at School Level and Student Groups According to Immigrant Origin on Academic Self-Concept; Controlling for: Individual and School-Average Competencies, Parental ISEI, Number of Books, Parental Solidarity Expectations, Parental Educational Aspirations, Immigrant Origin, Age, Gender; Source: Own Calculations; doi:10.5157/NEPS:SC4:9.1.0

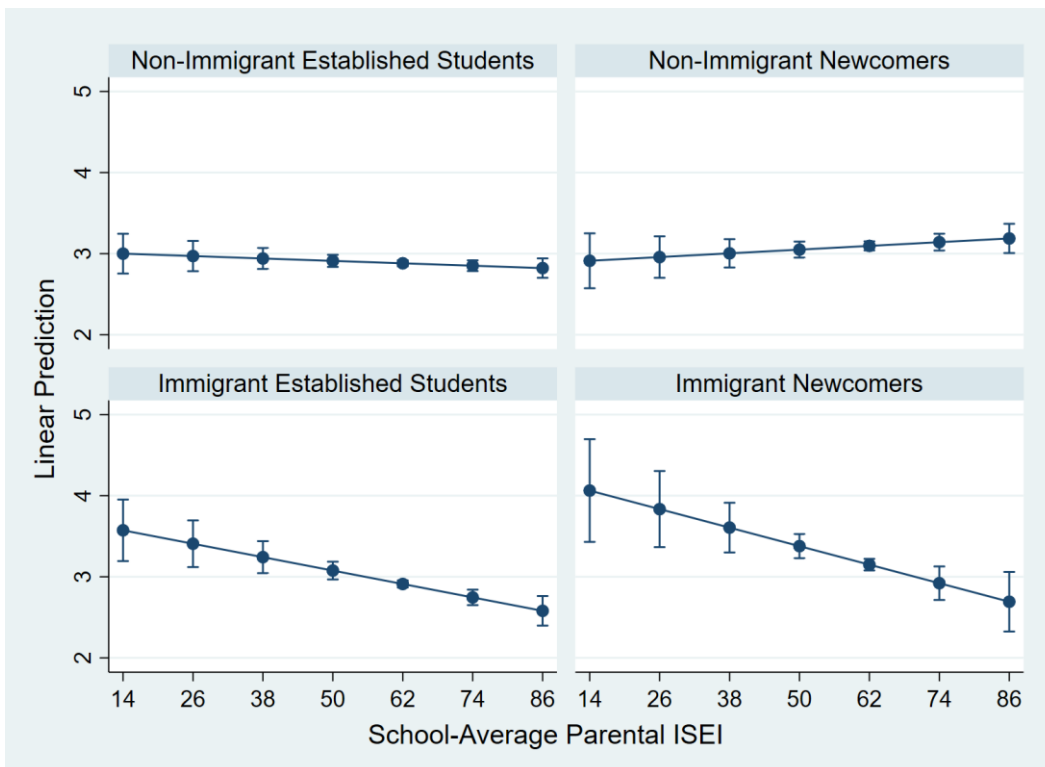


Figure B4. Interaction between Average Parental ISEI at School Level and Student Groups According to Immigrant Origin on Academic Self-Concept; Controlling for: Individual and School-Average Competencies, Parental ISEI, Number of Books, Parental Solidarity Expectations, Parental Educational Aspirations, Immigrant Origin, Age, Gender; Source: Own Calculations; doi:10.5157/NEPS:SC4:9.1.0

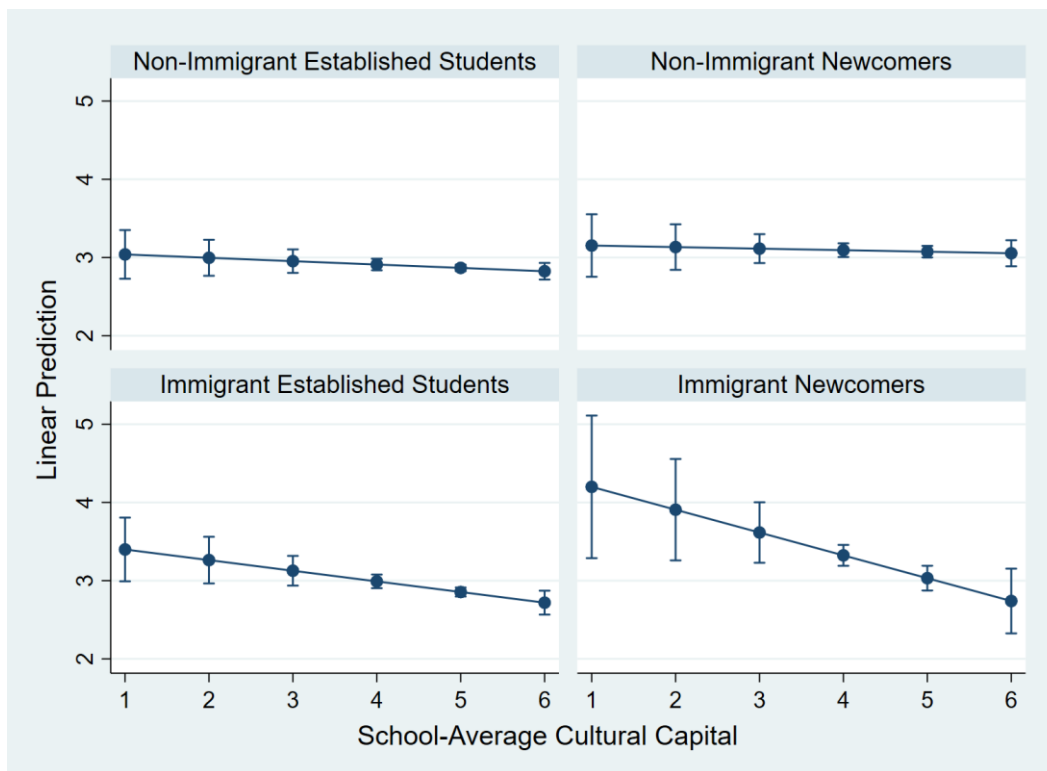


Figure B5. Interaction between Average Parental Cultural Capital at School Level and Student Groups According to Immigrant Origin on Academic Self-Concept; Controlling for: Individual and School-Average Competencies, Parental ISEI, Number of Books, Parental Solidarity Expectations, Parental Educational Aspirations, Immigrant Origin, Age, Gender; Source: Own Calculations; doi:10.5157/NEPS:SC4:9.1.0

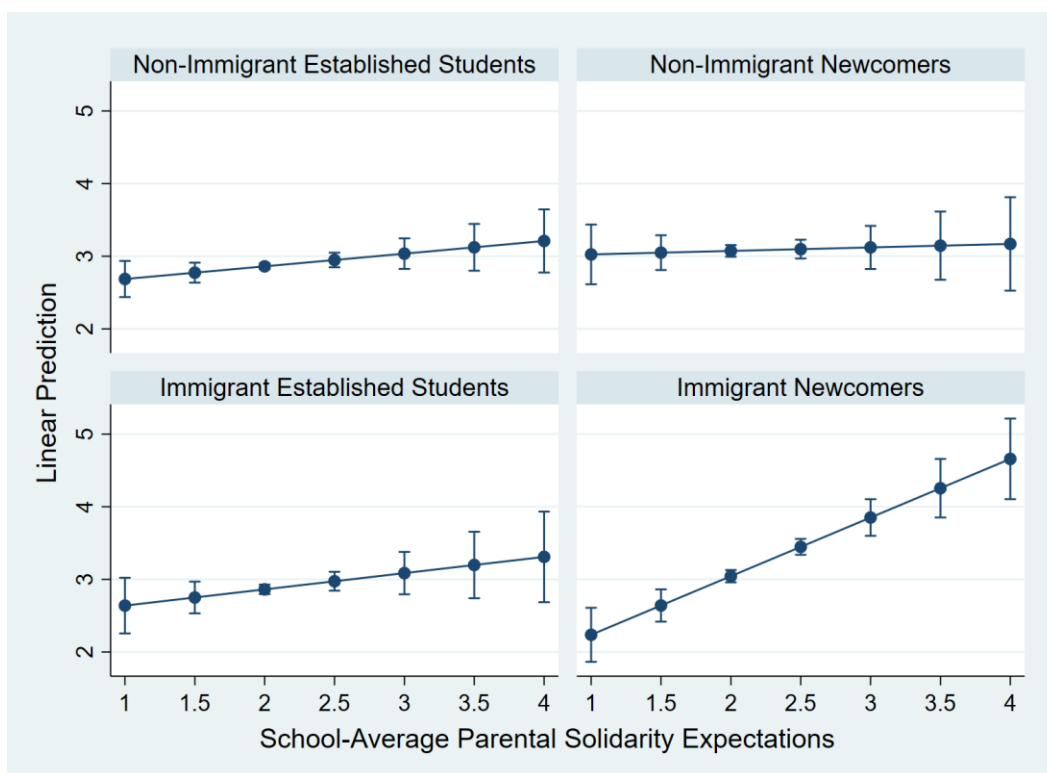


Figure B6. Interaction between Average Parental Solidarity Expectations at School Level and Student Groups According to Immigrant Origin on Academic Self-Concept; Controlling for: Individual and School-Average Competencies, Parental ISEI, Number of Books, Parental Solidarity Expectations, Parental Educational Aspirations, Immigrant Origin, Age, Gender; Source: Own Calculations; doi:10.5157/NEPS:SC4:9.1.0