Article

Exploring Academic Self-Concepts Depending on Acculturation Profile. Investigation of a Possible Factor for Immigrant Students' School Success

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Abstract: Academic achievement and academic self-concepts are reciprocally related; hence, investigating academic self-concepts should offer a potential approach for gaining a better understanding of immigrant students' (lack of) school success. Proposing that immigrant students' acculturation orientations need to be taken into account, in this study, we empirically investigate whether immigrant students' general and domain-specific academic self-concept facets differ from those of non-immigrant students depending on their acculturation profile. Based on data from the German National Educational Panel Study (NEPS), we find initial indications that immigrant students' academic self-concept facets are subject to their acculturation profile. The idea that acculturation may influence the known comparisons relevant for self-concept development will be discussed.

Keywords: academic self-concept; acculturation; immigrant students; school success

1. Introduction

Addressing academic self-concepts, i.e., the individuals' self-perception of his or her academic abilities in general and in different domains [1] can help gain insight into educational inequalities as academic self-concepts have been shown to be reciprocally related to a variety of academic outcomes [2,3]. While this has been done with regard to gender and socio-economic differences [4], the study of academic self-concepts has not received much attention in examining immigrant students' academic outcomes [5]. Therefore, this study seeks to improve our understanding of the (lack of) academic success of immigrant students, which has been repeatedly revealed by international school achievement studies, by examining the academic self-concept of immigrant students in Germany.

In one of the first studies to investigate the academic self-concept of immigrant students in Germany over 20 years ago, Roebers, Mecheril, and Schneider [6] hypothesized that immigrant students would show lower academic self-concepts than non-immigrant students due to the "acculturative stress" they face during adaptation to the new cultural context. This notion referred to Berry [7] and his understanding of migration as a critical life event, which may result in a lack of confidence in one's own skills. Although this reasoning has been taken up by others addressing immigrant students' academic self-concept in relation to their academic achievement [8], studies so far have widely failed to consider that Berry's acculturation model proposes four different patterns of acculturation, which are associated with different degrees of acculturative stress and adaptation outcomes.

To narrow this research gap, in this study, we aim to investigate immigrant students' academic self-concepts depending on their acculturation orientation. To do so, we employ data on ninth grade students in Germany collected within the framework of the German National Educational Panel Study (NEPS). Moreover, for a complex examination of immigrant students' acculturation orientation, acculturation profiles based on Latent Profile

Analysis considering affective, behavioral, and cognitive aspects of acculturation will be utilized in exploring different academic self-concept facets as a function of immigrant students' acculturation.

2. Theoretical and Empirical Background

2.1. Acculturation Orientations and Immigrant Students' School Success

2.1.1. Theory of Acculturation

Immigrants have to juggle two different cultures, i.e., the culture of the country of their or their family's origin and the culture of the country of residence. Considering the situation of immigrant students, everyday life entails switching back and forth between the family and the school context with both possibly being connected with different values and beliefs, languages, and cultural practices. Acculturation describes the processes following when different cultures are in enduring contact, resulting in changes on the side of one or both cultures involved [9]. Regarding the individual, these processes of change are also referred to as psychological acculturation [10] and are likely to occur on different levels, e.g., altering attitudes and/or behavioral changes [7,11].

Berry [7,12] postulated four different patterns of cultural orientation in his acculturation model: Integration, where the individual's orientation toward both the culture of the country of origin and the host culture is strong; assimilation, where the individual's orientation toward the culture of origin is weak while it is strong toward the host culture; separation describes the opposite pattern, where the individual's orientation toward the culture of origin is strong while it is weak toward the host culture; and marginalization, where the individual's orientation toward both the culture of origin and the host culture is weak. Following a stress and coping paradigm, Berry proposed that acculturation orientations differentially relate to different levels of acculturative stress and therefore may promote or hamper successful adaptation. In general, integration is considered most adaptive because this pattern is associated with the lowest level of acculturative stress. Marginalization, on the other hand, is considered the least adaptive. The adaptability of assimilation and separation is considered mediocre, since these patterns relate to intermediate levels of acculturative stress.

Based on Berry's fourfold acculturation model, acculturation researchers have developed new conceptualizations and found new approaches to gain a more complex understanding of the acculturation of immigrants. Among the most prominent approaches, there have been models including influences of context or situation, emphasizing more strongly that acculturation is not only a consequence of individual decisions and expresses itself in the same way in all domains of life [13]. Further, Motti-Stefanidi, Berry, Chryssochoou, Sam, and Phinney [14] were the first to address the issue that a broad understanding of immigrant children's and youths' adaptation and adjustment needs to consider developmental processes and developmental tasks that are intertwined with their acculturation (for a detailed review on the evolution of acculturation models please refer to Juang & Syed [15]).

2.1.2. Immigrant Students' Acculturation and Academic Achievement

Employing the notion of different acculturation orientations into studies, empirically investigating immigrant students' school success has shown that the academic achievement of students from ethnic minority backgrounds in fact relates to their acculturation orientation. In an attempt to systematize the findings of empirical research on acculturation in the school context, Makarova and Birman [16] found that a bi-cultural orientation, i.e., integration, was predominantly positively associated with the school adaptation of minority youths. However, some studies also identified assimilative attitudes as beneficial for student performance, and psychological and behavioral adaptation. Since the review included mainly studies conducted in the US (school) context, it is difficult to directly transfer the findings to others (school contexts), as the link between acculturation orientation and adaptation is context-dependent [7].

With regard to Germany, there has been some research in recent years investigating relationships between immigrant students' acculturation orientation and school-related outcomes, showing relationships with competence and grades [17–20], and even envisaged school-leaving certificate [21]. Furthermore, acculturation has been shown to relate to other outcomes than achievement, such as immigrant students' emotional school engagement [22]. The general pattern of findings shown in these studies is that a strong orientation toward the German culture—as is the case for integrated and assimilated immigrant students—is linked to more favorable outcomes on the side of immigrant students' school success.

Generalizations across these studies, however, are problematic, as there is a lack of methodological consensus regarding the operationalization of immigrant students' acculturation pattern. Whereas in the majority of studies, acculturation attitudes and ethnic identity have been in focus [17–19,22], Lilla and colleagues [21] identified patterns of acculturation, taking affective, behavioral, and cognitive aspects of acculturation into account [20,21]. Conducting latent profile analysis in a sample of 4400 immigrant students from secondary schools in Germany, four distinct acculturation profiles were identified. Three of the profiles identified resembled assimilation, integration, and separation. The fourth profile, which was characterized by a rather ambiguous tendency of orientation for all of the considered aspects irrespective of the culture behind, was labeled *indifferent*. Latent profile analysis offers the advantage of empirically modeling acculturation without anticipating any patterns in advance, and has already been applied occasionally in acculturation research [23–26]. In the sample of secondary immigrant students in Germany, the indifferent profile was rather prevalent, comprising 46% of immigrant students, while the assimilated profile comprised only 12%, and the integrated profile and the separated profile comprised 20 and 22% of immigrant students, respectively. In line with the general pattern of findings from studies conducted in Germany, Lilla and colleagues found that students with integrated acculturation profiles and students with assimilated acculturation profiles did not differ from non-immigrant students whereas students with separated and indifferent acculturation profiles achieved lower reading competences [20], and were more likely to envisage a low school-leaving certificate instead of an Abitur, i.e., the highest school-leaving certificate than non-immigrant students [21].

2.2. Academic Self-Concept and Immigrant Students' School Success

2.2.1. Academic Self-Concept

Academic self-concept is defined as the individual's self-perception of his or her academic ability in general and in specific domains [1,27]. Based on the notion of a hierarchical and multidimensional self-concept structure [28], the academic self-concept is widely assumed to consist of a general and several domain-specific facets (for a detailed discussion on the structure of the academic self-concept, please refer to Arens, Jansen, Preckel, Schmidt, and Brunner [29]). The Marsh and Shavelson [30] model of academic self-concept, which proposes that academic self-concept is divided into a verbal self-concept and a mathematical self-concept, also specifies how students develop their academic self-concept through both an internal and external frame of reference. The external frame of reference involves comparisons with significant others within the social environment [31]. Especially the context of the classroom is a relevant source for social comparisons of one's performance (e.g., how well do I do compared to my classmates). The performance feedback from teachers and grades function as external signals in social comparison. In addition, parents and further significant others within the family have been discussed as relevant sources for the development of the academic self-concept [32,33]. The internal frame of reference involves intra-individual comparisons such as temporal comparisons, where current performance is compared with previous achievements [34], and dimensional comparisons, where the performance in one domain is set as standards of comparison for the evaluation of the performance in other domains [35]. If there is a discrepancy in performance between

the domains, the self-concept in the domain with the better performance is valued more positively and the self-concept in the weaker discipline is devalued.

2.2.2. Academic Self-Concept and Academic Achievement

Numerous studies give empirical support for the relationship between academic self-concept and academic achievement [27,30,36–38]. Based on the finding that the relationship with academic achievement was especially strong when the link between domain-specific self-concept and domain-specific achievement was regarded [38,39], it has been suggested that verbal self-concept and mathematical self-concept should be considered, rather than focusing on a single general facet of academic self-concept. In consequence, the verbal self-concept and the mathematical self-concept have been extensively researched, showing strong relationships with achievement in L1 subjects and mathematical subjects, respectively. Also, the link showed to be more positive when grades instead of standardized test results were used as indicators for domain-specific achievement [40]. Though the relationships between achievement and general academic self-concept were shown to be less strong, general academic self-concept also proved to be a valid dimension.

Whereas the causal ordering has been in question for some time, today empirical evidence suggests a reciprocal relationship between students' academic self-concepts and academic achievement [3,41]. Further, academic self-concept has been shown to impact interest or intrinsic motivation [42,43], educational aspirations, school attainment, and learning behavior [2,3], as well as education-related decisions such as course choice and subject interest [44,45].

2.2.3. Immigrant Students' Academic Self-Concept and Academic Achievement

Based on the notion of a reciprocal relationship between academic achievement and academic self-concept, for immigrant students it has been typically hypothesized that due to their weak(er) academic performance, they lack confidence in their own abilities [6,8].

However, empirical investigations frequently observed that immigrant students, on average, demonstrate considerable positive academic self-concepts despite their low academic achievement. For example, Seo, Shen, and Benner's [46] investigation of the link between self-concept and academic achievement in minority students in the US found that Black and Latinx students demonstrated lower academic achievement (GPA and standardized test scores) but not lower academic self-concepts (general and domain-specific) than their White peers. Furthermore, the impact of value in schoolwork, which was hypothesized to be lower in Black and Latinx adolescents due to gradual disidentification with school following from repeated negative academic experiences [47], and external attributions, i.e., perceived school fairness, were considered. Neither helped explain the paradox of positive academic self-concept but low academic achievement: Black and Latinx students showed to place greater value in schoolwork, which was positively related to academic self-concept regardless of students' ethnicity. In addition, external attribution did not explain the paradox as a later self-concept showed to be similarly related to previous achievement between Black and White adolescents and even more closely related among Latinx adolescents.

In a recent study in Germany, Siegert and Roth [33] focused on the general academic self-concept of ninth graders with a Turkish immigrant background. Descriptive analyses showed no difference in the levels of academic self-concept between non-immigrant students and immigrant students with Turkish background despite lower competence levels in reading and mathematics and higher proportions in attending the lowest school track [Hauptschule]. Considering family background, gender, average competencies on the individual and class level, and type of school attended, however, their analysis revealed significantly more positive academic self-concepts for Turkish immigrant students than for non-immigrant students. More positive general academic self-concepts were especially true for Turkish immigrant students attending Gymnasium, i.e., the highest school track. As a possible starting point for explaining their results, the authors draw on Billmann-Mahecha

and Tiedemann's [48] assumption that Turkish immigrant students possibly ignore negative feedback to protect self-esteem and rather compare themselves within their social environment to family members who often exhibit low levels of education themselves.

In another German study conducted with secondary students, Schöber, Retelsdorf, and Köller [49] did not find significant differences in verbal self-concept between immigrant and non-immigrant students although immigrant students' achievement was significantly lower. Longitudinal analysis revealed reciprocal effects between achievements in the language domain and verbal self-concept, which were robust regardless of the type of school and migrant background.

Considering both domain-specific facets of academic self-concept, namely verbal self-concept and mathematical self-concept of 15-year-old immigrant students' in German Hauptschulen, Shajek, Lüdtke, and Stanat [8] revealed significantly lower verbal self-concepts but higher mathematical self-concepts for immigrants compared to non-immigrants also when grades in German and in mathematics were considered. Given that immigrant students' grades were comparable to non-immigrants in mathematics but significantly worse in German, this complex pattern of findings was interpreted as evidence for the existence of the internal reference effect.

2.2.4. Immigrant Students' Academic Self-Concept and Acculturation

There is some anecdotal evidence suggesting significant relationships between immigrant students' integration, assimilation, separation, and marginalization, and their academic self-concept from the US context.

Investigating the relationship among acculturation, academic self-concept, and academic achievement in a sample of Latino community college students ($N = 148$), Hernandez [50] found that acculturation level, operationalized linearly on a continuum from very Mexican oriented to very Anglo oriented, moderated the association between academic self-concept and GPA, lowering the strength of academic self-concept in predicting GPA.

Further, a study on 200 Caribbean American adolescents lent some support to the hypothesis that immigrant students' acculturation relates to academic self-concept [51]. Correlational findings showed that as heritage and mainstream orientations, which were considered as two separate components of acculturation, increased, academic self-concept also increased. These positive correlations were interpreted as support for the notion that integration, where both heritage and mainstream orientation are strong, is related to more positive academic self-concepts, whereas marginalization, where heritage as well as mainstream orientation are weak, is associated with lower academic self-concept.

The only study we know of which considered integration, assimilation, separation, and marginalization as distinct categories of individuals' acculturation orientation, was conducted in a sample of 97 Mexican-American students around the age of 15 years [52]. The analysis identified a significant difference in academic self-concept for integrated students in comparison to assimilated students. No significant difference was observed between integrated students' academic self-concept and students categorized as rejection (i.e., separation) and deculturated (i.e., marginalized). A serious limitation of this study, however, is that acculturation categories were operationalized based on a midpoint scale split technique, which led to disproportional distributions across categories (e.g., 73% were identified as integration and only 9% as assimilation). Also, confounding background characteristics such as gender or generational status were only considered regarding mean differences but not controlled for in the main analysis.

Though generalization and transferability of the findings from minority students in the US to immigrant students in Germany are limited, findings from these studies can be understood to confirm that "acculturation, which is an extremely important process for immigrant youths, plays a significant role in understanding academic self-concept in this population" (p. 120) [51]. Furthermore, the state of research is limited as academic self-concept was assessed on a global level rather than evaluating several facets of academic self-concept.

2.3. Research Questions of the Present Study

Taking up the notion that acculturation relates to immigrant students' academic self-concept [6,8,52], which might be a possible explanation for immigrant students' (lack of) school success, this study examines possible associations between immigrant students' acculturation orientation and their academic self-concepts. For this purpose, a representative sample of ninth graders in Germany is investigated to examine whether immigrant students differ from non-immigrant students regarding their academic self-concepts depending on their acculturation profile. Doing so, general academic self-concept as well as subject-specific academic self-concepts are considered.

More specifically, this article examines the following research questions:

(1) What is the nature of general and domain-specific academic self-concepts of immigrant students depending on their acculturation profile in comparison to non-immigrant students?

(2) What are the relationships between general and domain-specific academic self-concepts and grades in German and in mathematics in immigrant students depending on their acculturation profile?

(3) What are the relationships between immigrant students' acculturation profile and their general and domain-specific academic self-concepts when controlling for grades, students' gender, socio-economic background, and attended school track?

3. Methods

3.1. Sample

The empirical basis of the study is the data from the German National Educational Panels Study (NEPS), a longitudinal study on educational trajectories following a multi-cohort sequence design A detailed description of the panel study can be found in Blossfeld et al. [53]. The overall sample of ninth graders who took part in Starting Cohort 4 comprises 16,425 students. The data from 1186 students attending special schools were excluded for our analysis. The resulting analyses sample comprises $N = 15{,}239$ students (47.6% male, 47.3% female, 5.1% did not indicate their gender) who were approximately 15 years old ($M = 14.73$, $SD = 0.72$) at the time of the survey. The sample includes a total of $n = 4070$ students characterized as immigrant students in first, second, or third generation. The major immigrant groups were from Turkey (19.5%), the Former Soviet Union (17.0%), and Poland (10.8%).

3.2. Measures

3.2.1. Acculturation Profiles

Within the NEPS, immigrant students were assessed with scales on feeling of belonging to the host society and the society of origin ("How much do you yourself identify with the people from Germany/this country overall?") and the feeling of connectedness (e.g., "I feel closely connected to the people from Germany/this country") [54], cultural habits, addressing e.g., listening to music, cooking, public holidays, and language use within the family. Based on these affective, behavioral, and cognitive aspects of acculturation, patterns of acculturation orientations were empirically identified conducting Latent Profile Analysis revealing four distinct profiles of acculturation. Following Berry's [7] theoretical model, profiles were interpreted as assimilated, integrated, separated, and indifferent (for a detailed description of the method and the resulting profiles please refer to Lilla et al., [21]; Thürer et al. [20]).

3.2.2. Academic Self-Concepts

Different instruments were implemented measuring students' academic self-concepts [55]. Employing three short scales with three items each, the general dimension of academic self-concept along with subject-specific dimensions, i.e., verbal self-concept and mathematical self-concept, were administered (sample item general academic self-concept: "I learn quickly in most school subjects."; sample item domain specific self-concept: "I

get good grades in German [/mathematics].") [56]. For all items, answer options read 1 = 'does not apply at all', 2 = 'does rather not apply', 3 = 'does rather apply', and 4 = 'does completely apply'.

3.2.3. Grades in German and Mathematics

Students' self-reported grades in German and mathematics from the most recent student report card ranging from 1 (*very good*) to 6 (*insufficient*) were administered. For our analysis, grades were recoded so that higher values indicate more favorable school outcomes.

3.2.4. School Track

The German secondary school system provides different school tracks to which students are assigned to on the basis of prior achievement in primary school. Five school tracks distinguished in the NEPS were considered: Vocational school track (*Hauptschule*) offering the lowest school leaving certificate; intermediate school track (*Realschule*); academic track (*Gymnasium*) offering the highest school leaving certificate (Abitur) allowing students to attend university; as well as a comprehensive school track (*Gesamtschule*); and schools offering several tracks (*Schulen mit mehreren Bildungsgängen*).

3.2.5. Control Variables

Students' gender and the highest value of parents' International Socio-Economic Index of Occupational Status (HISEI, [57]) as an indicator of students' socio-economic background were accounted for as relevant background characteristics.

3.3. Statistical Analysis

Prior to conducting the main analysis, latent profile analyses (LPA) were conducted using Mplus Version 8.2 [58]. All subsequent statistical analysis conducted to asses our research questions were performed using IBM SPSS 25. Following descriptive and correlational analysis, we performed a series of multiple regression analysis using three different scales measuring academic self-concept as dependent variables, i.e., general academic self-concept, verbal self-concept, and mathematical self-concept. Controlling for grades in German and mathematics (first step), immigrant students' acculturation profiles were included in a second step in the form of dummy-coded predictors with non-immigrant students as the reference group. Finally, students' gender, socio-economic background, and attended school track (as dummy-coded variables with the vocational track being the reference group) were included in a third step.

If immigrant students' acculturation profiles relate to their academic self-concepts, this would be indicated by significant coefficients for the corresponding acculturation profile. A positive coefficient would indicate that the self-concepts of immigrant students with the specific acculturation profile are more positive than non-immigrant students' self-concepts. Negative coefficients would indicate that that the self-concepts of immigrant students with the specific acculturation profile are less positive than non-immigrant students' self-concepts.

Missing values were imputed multiple times considering all variables contained in the analysis model. Coefficients presented below refer to the pooled dataset.

4. Results

4.1. Characteristics of Non-Immigrant Students and Immigrant Students Depending on Their Acculturation Profile

Table 1 gives an overview of the group characteristics of the non-immigrant students and immigrant students depending on their acculturation profile. ANOVAs conducted on general academic self-concept, verbal self-concept, mathematical self-concept, grades in German, and grades in mathematics yielded substantial differences between groups. To follow up on that, simple contrasts were conducted to obtain comparisons between

non-immigrant students and immigrant students with an assimilated, an integrated, a separated, and an indifferent acculturation profile, respectively.

There were no substantial differences in simple contrasts between assimilated immigrant students and non-immigrant students regarding general academic self-concept ($p = 0.79$), verbal self-concept ($p = 0.91$), and mathematical self-concept ($p = 0.06$). The same applied regarding grade in German ($p = 0.69$) and grade in mathematics ($p = 0.17$).

Contrasting the group of immigrant students with an integrated acculturation profile against non-immigrant students showed significant differences in general academic self-concept and verbal self-concept, which both were substantially lower for integrated students (ps < 0.001). Regarding mathematical self-concept, there was no significant difference ($p = 0.87$). Grades in German ($p < 0.001$) and in mathematics ($p = 0.035$) showed to be less favorable for the group of integrated students.

Contrasting the group of separated immigrant students to non-immigrant students revealed no substantial differences regarding general academic self-concept ($p = 0.70$) and verbal self-concept ($p = 0.47$), while mathematical self-concept was substantially lower ($p = 0.015$). At the same time, however, the separated immigrant students' grades in German and mathematics were significantly less favorable ($p = 0.004$ and $p < 0.001$) than for non-immigrant students.

Finally, direct comparisons of the group of indifferent immigrant students to non-immigrant students showed no substantial difference in general academic self-concept ($p = 0.12$), while both verbal and mathematical self-concept showed to be significantly lower ($p = 0.008$ and $p = 0.001$), and grades in German and mathematics were substantially less favorable (ps < 0.001).

Regarding control variables, chi-square analysis showed that male and female students were unequally distributed across groups, χ^2 (($4, N = 15{,}545) = 13.72, p = 0.003$). An ANOVA conducted on students' socio-economic background yielded significant differences and the same simple contrasts showed significantly lower levels of HISEI for immigrant students with integrated, separated, and indifferent acculturation profiles in comparison to non-immigrant students (ps ≤ 0.001). Between the group of immigrant students with an assimilated acculturation profile and non-immigrant students, no significant difference existed ($p = 0.84$). Regarding school track, chi-square analysis showed unequal distribution across groups, except for the intermediate track (vocational track: χ^2 ($4, N = 16{,}323) = 545.06$, $p < 0.001$; intermediate track χ^2 ($4, N = 16{,}323) = 9.25, p = 0.055$; comprehensive schools: χ^2 ($4, N = 16{,}323) = 214.93, p < 0.001$; academic track: χ^2 ($4, N = 16{,}323) = 312.01, p < 0.001$).

Table 2 shows intercorrelations of all continuous variables. This shows a similar pattern for immigrant students and non-immigrant students. To follow up on that, the intercorrelations of self-concept scales and grades in German and mathematics were looked at depending on immigrant students' acculturation profile. Figure 1 shows intercorrelations of self-concept measures depending on immigrant students' acculturation profile without controlling for any background characteristics, possibly affecting the associations between academic self-concept facets and grades.

Table 1. Descriptives for the Variables of Interest for Non-Immigrant Students and Immigrant Students as a Function of Acculturation Profile.

| | Non-Immigrant Students (*n* = 11,923) | | | Immigrant Students | | | | | | | | | | | |
| | | | | Assimilated Profile (*n* = 517) | | | Integrated Profile (*n* = 359) | | | Separated Profile (*n* = 1559) | | | Indifferent Profile (*n* = 1965) | | |
Scale	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
General academic self-concept	11,096	2.88	0.57	515	2.88	0.64	356	2.74	0.57	1550	2.87	0.59	1954	2.89	0.58
Verbal self-concept	11,114	2.95	0.62	515	2.96	0.62	355	2.72	0.67	1549	2.92	0.63	1953	2.88	0.64
Mathematical self-concept	11,097	2.54	0.92	516	2.42	0.98	356	2.55	0.93	1548	2.44	0.93	1955	2.48	0.93
Grade in German (*recoded*)	10,640	4.19	0.81	495	4.19	0.78	333	3.83	0.83	1463	4.08	0.82	1827	3.92	0.81
Grade in mathematics (*recoded*)	10,581	4.08	1.01	495	4.02	1.05	330	3.94	1.03	1462	3.90	1.04	1827	3.82	1.03
Gender (female)	11,923	49.0%		517	53.8%		359	43.9%		1559	51.9%		1958	50.4%	
HISEI	7268	53.84	19.82	310	53.55	20.81	170	46.53	21.30	896	51.28	21.40	899	42.67	20.33
Vocational track	11,923	19.1%		517	21.7%		359	44.0%		1559	26.4%		1965	40.7%	
Intermediate track	11,923	20.3%		517	20.3%		359	18.4%		1559	18.7%		1965	17.7%	
Comprehensive schools	11,923	8.3%		517	14.5%		359	14.5%		1559	17.4%		1965	15.9%	
Academic track	11,923	35.4%		517	37.3%		359	17.0%		1559	31.2%		1965	16.8%	

Note. For grades, higher scores represent outcomes that are more favorable.

Table 2. Intercorrelations of the Variables of Interest for Non-Immigrant Students and Immigrant Students.

	1	2	3	4	5	6
1. General academic self-concept	-	0.41 ***	0.26 ***	0.35 ***	0.29 ***	0.06 **
2. Verbal self-concept	0.41 ***	-	−0.10 ***	0.54 ***	0.01	0.08 ***
3. Mathematical self-concept	0.32 ***	−0.06 ***	-	0.00	0.64 ***	0.02
4. Grade in German	0.42 ***	0.55 ***	0.05 ***	-	0.31 ***	0.21 ***
5. Grade in mathematics	0.37 ***	0.07 ***	0.64 ***	0.39 ***	-	0.11 ***
6. HISEI	0.09 ***	0.08 ***	0.04 ***	0.15 ***	0.11 ***	-

Note. Intercorrelations for immigrant students are presented above the diagonal, and intercorrelations for non-immigrant students are presented below the diagonal. ** $p < 0.01$, *** $p < 0.001$.
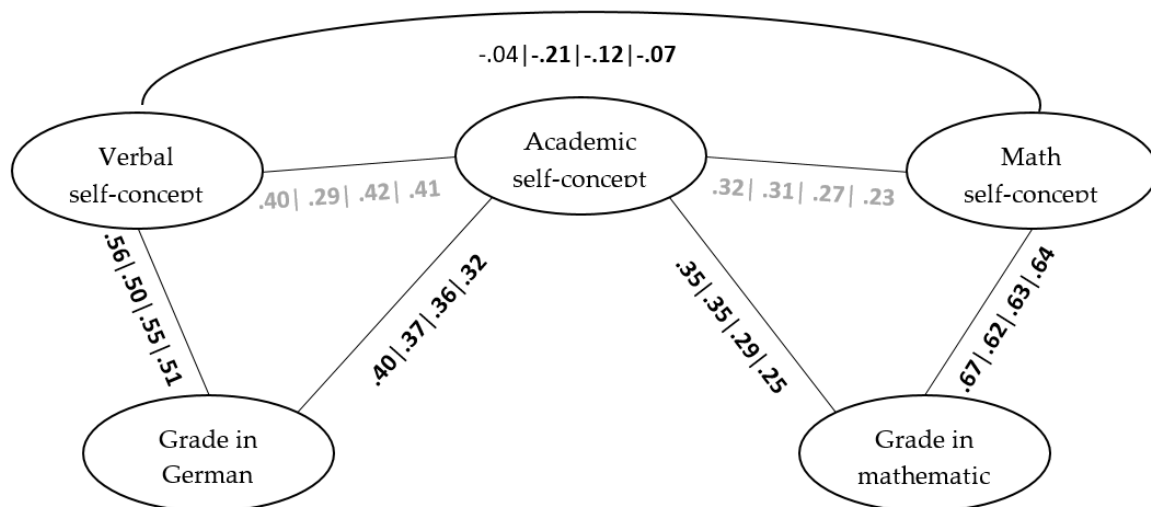
Figure 1. General Intercorrelations of Academic Self-Concept Measures and Grades depending on Immigrant Students' Acculturation Profile. *Note.* Numbers represent general intercorrelations for immigrant students with assimilated profile, integrated profile, separated profile, and indifferent profile; Bold numbers stand for significant intercorrelations ($p < 0.01$).

There is a strong positive correlation between grade in German and verbal self-concept for all acculturation profiles ($rs \geq 0.50$), i.e., more favorable grades in German are associated with a more positive verbal self-concept and vice versa.

Grades in mathematics show to be even more strongly positively correlated with mathematical self-concept for all acculturation profiles ($rs \geq 0.62$), i.e., more favorable grades in mathematics are associated with a more positive mathematical self-concept and vice versa.

Verbal self-concept and mathematical self-concept show to be differentially correlated depending on acculturation profile. While for the group of immigrant students' with an assimilated profile, there is no significant correlation, there are significant, however, weak, negative correlations between verbal and mathematical self-concept within the group of integrated, separated, and indifferent immigrants.

General academic self-concept shows to correlate moderately with both grade in German ($rs \geq 0.32$) and grade in mathematics ($rs \geq 0.25$), hence the correlations are less strong than the intercorrelations between grades and domain-specific self-concepts. Differences between immigrant students depend on their acculturation profile. Regarding the link between verbal self-concept and grade in German, intercorrelation was comparatively weaker for the group of indifferent immigrant students. Regarding the link between mathematical self-concept and grade in mathematics, intercorrelations were comparatively weaker for the group of separated and indifferent immigrant students.

General academic self-concept also showed to be correlated to both verbal and mathematical self-concept. General academic self-concept and verbal self-concept in general showed to be positive moderately related. Students with an integrated acculturation profile ($r = 0.29$, $p < 0.01$) were lower than for all other profiles ($r \geq 0.40$, $p < 0.01$). Regarding the link between general academic self-concept and mathematical self-concept, intercorrelations were comparatively lower, especially for immigrant students with separated ($r = 0.27$, $p < 0.01$) or indifferent profile ($r = 0.23$, $p < 0.01$).

4.2. Academic Self-Concepts of Immigrant Students as a Function of Their Acculturation Profile

Table 3 shows the results of the multiple regression analysis predicting the different facets of academic self-concept depending on immigrant students' acculturation profile controlling for grades in German and mathematics, and additionally taking gender, HISEI, and school track into account.

Table 3. Hierarchical Multiple Regression Analyses Predicting Immigrant Students' Academic Self-Concepts Depending on Acculturation Profile.

	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
	(dv: Verbal Self-Concept)			(dv: Mathematical Self-Concept)			(dv: General Academic Self-Concept)		
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Constant	4.16 *** (0.02)	4.15 *** (0.02)	4.12 *** (0.03)	4.26 *** (0.02)	4.26 *** (0.02)	4.52 *** (0.04)	3.92 *** (0.02)	3.92 *** (0.02)	4.01 *** (0.03)
Grade German	0.43 *** (0.01)	43 *** (0.01)	0.42 *** (0.01)				0.22 *** (0.01)	0.23 *** (0.01)	0.24 *** (0.01)
Grade mathematics				0.59 *** (0.01)	0.59 *** (0.01)	0.58 *** (0.01)	0.14 *** (0.01)	0.14 *** (0.01)	0.13 *** (0.01)
Non-immigrant (Ref)									
Assimilated Profile		0.01 (0.02)	0.01 (0.02)		−0.09 ** (0.03)	−0.07 * (0.03)		0.01 (0.02)	0.02 (0.02)
Integrated Profile		−0.07 * (0.03)	−0.08 ** (0.03)		0.09 * (0.04)	0.06 (0.04)		−0.04 (0.03)	−0.05 (0.03)
Separated Profile		0.02 (0.02)	0.02 (0.02)		−0.00 (0.02)	0.01 (0.02)		0.04 ** (0.02)	0.05 ** (0.02)
Indifferent Profile		0.05 *** (0.01)	0.04 ** (0.01)		0.09 *** (0.02)	0.07 *** (0.02)		0.11 *** (0.01)	0.11 *** (0.01)
Gender (1 = female)			0.09 *** (0.01)			−0.39 *** (0.01)			−0.08 *** (0.01)
HISEI			0.00 (0.00)			−0.00 * (0.00)			0.00 (0.00)
Intermediate track			−0.03 * (0.01)			−0.01 + (0.02)			−0.02 (0.01)
Comprehensive schools			−0.06 *** (0.02)			−0.09 *** (0.02)			−0.07 *** (0.02)
Academic track			−0.04 *** (0.01)			−0.05 *** (0.02)			−0.06 *** (0.01)
R^2	0.31	0.31	0.32	0.43	0.43	0.47	0.23	0.23	0.24

Note. N = 15,239 + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

For all dependent variables, the first step of the regression models shows strong positive effects of grade on the specific subject on domain-specific self-concept or grade in German and mathematics for the prediction of general academic self-concept.

In Model 1, predicting verbal self-concept, including acculturation profiles in the second step (Model 1b), shows a significant negative coefficient for integrated immigrant students and a significant positive coefficient for immigrant students with indifferent acculturation profiles. For assimilated and separated acculturation profile, no significant coefficient emerged. This pattern of findings remains stable also after including gender, HISEI, and school track in the third step (Model 1c).

In Model 2, predicting mathematical self-concept, including acculturation profile in the second step (Model 2b) shows a significant negative coefficient for the assimilated profile and significant positive profiles for integrated and indifferent profile. For separated acculturation profile, no significant coefficient emerged. Including gender, HISEI, and school track in the third step (Model 2c), the coefficient for the integrated acculturation profile no longer reached statistical significance.

In Model 3, predicting general academic self-concept, including acculturation profile in the second step (Model 3b), showed significant positive coefficients for separated and indifferent acculturation profiles. For assimilated and integrated acculturation profiles, coefficients were not statistically significant. Including gender, HISEI, and school track in the third step (Model 3c), the pattern of findings remained stable.

5. Discussion

Academic self-concept has proven to be a relevant factor for or against academic achievement [30,36]. Given that immigrant students perform more poorly, it is important to understand the factors that influence the academic self-concepts of immigrant students if their academic achievement is to be improved.

The German state of research on immigrant students' academic self-concept, however, is limited. Findings from singular studies revealed either more positive self-concepts for secondary immigrant students in comparison to non-immigrant students, e.g., more positive general academic self-concepts in Turkish immigrant students [33], or no differences in self-concept, e.g., regarding immigrant students' verbal self-concept [49], though immigrant students achieved significantly lower across studies. Only the study from Shajek and colleagues [8] showed more negative verbal self-concepts for students with non-German first languages, while their mathematical self-concepts were more positive in comparison to students speaking German in the family.

With the odds for academic performance not in favor for immigrant students and regarding the fact that academic self-concept is reciprocally related to academic achievement, this study aimed to contribute to this area of research by investigating academic self-aspects of ninth grade immigrant students. Furthermore, this study aimed to enhance the state of existing research as it investigated academic self-concept of immigrant students depending on their acculturation profile. To do so, relationships between both general and domain-specific facets were investigated.

Acculturation profiles were empirically identified in a prior study [20,21] following a latent profile approach in order to capture distinct profiles of acculturation without prior anticipation of acculturation patterns [23].

Descriptive findings revealed differences in grades for immigrant students with an integrated, separated, and indifferent acculturation profile, indicating that in comparison to non-immigrant students, they receive less positive performance feedback. However, for assimilated immigrant students, direct comparisons did not reveal any significant differences in grades. Though this applies to only 12% of students with an immigrant background in the sample, it questions the validity of generalized statements about immigrant students' academic underachievement. Furthermore, this finding is in line with findings from studies conducted in Germany on the relationships between immigrant students' acculturation and their academic achievement operationalized with standardized performance tests [17–20].

Following the notion of a reciprocal relation between academic achievement and academic self-concept, lower self-concepts could be expected for integrated, separated, and indifferent immigrant students. In direct comparison to non-immigrant students, in fact, integrated immigrant students were found to show lower levels of general academic self-concept and verbal self-concept, separated immigrant students showed lower levels in mathematical-self-concept, and indifferent immigrant students were found to exhibit lower levels in both domain-specific self-concept facets. No discrepancies were found for assimilated immigrant students' academic self-concept facets.

Intercorrelations between self-concept scales and grades showed the expected strong positive relationships between grades and self-concept scales with only slight variation in strengths depending on acculturation profile.

Though not in the focus of this study, the intercorrelations between verbal self-concept and mathematical self-concept showed an unexpected finding. For integrated, separated, and indifferent immigrant students, negative relationships emerged, though according to the internal/external frame of reference-model, domain-specific self-concepts are supposed to be uncorrelated [39], which was true for non-immigrant students and immigrant students with an assimilated profile in the sample. Future research on acculturation and self-concept should follow up on that interesting finding.

As it is hard to draw conclusions from studies on the relationships between acculturation and academic self-concept, which have not considered relevant background characteristics [50–52], we further investigated possible associations of academic self-concept with immigrant students' acculturation profile in a multivariate procedure. Doing so, our analysis at first sight showed a rather scattered pattern of findings depending on the predicted facets of academic self-concept. Taking a second look, however, reveals interesting patterns across self-concept facets: For assimilated immigrant students, the analysis conducted finds no significant difference in verbal self-concept in comparison to non-immigrant students, while mathematical self-concept is significantly lower. For integrated immigrant students, the opposite pattern, i.e., lower verbal-self-concept and even slightly more positive mathematical self-concept, can be found. These findings resemble the pattern of results from the study by Shajek and colleagues [8], testing the internal/external frame of reference in a sample of immigrant students, indicating the effect of dimensional comparisons. Interestingly, assimilated students seem to devaluate their mathematical self-concept while integrated students devaluate their verbal self-concept. Admittedly, though significant, the coefficients were rather small and need to be followed up by future research conducting path analysis to substantiate these findings. Neither assimilated nor integrated immigrant students differed regarding their level of general academic self-concept.

On the contrary, for separated immigrant students, no significant differences emerged regarding the domain-specific self-concept facets, but regarding general academic self-concept, which showed to be more positive. Interestingly, indifferent immigrant students showed more positive verbal, mathematical, and general academic self-concepts than non-immigrant students, also when grades were controlled for and possible confounders considered. Trying to put some meaning into this finding, it is conceivable that these results indicate that indifferent students and maybe to some extent also separated immigrant students use other frames of reference and set comparison standards different from those applied by assimilated and integrated students. Whereas the latter two groups possible orient more toward native peers for social comparison, the former two groups possibly rather check their academic performance against significant others outside of the school context, maybe from the same ethnic group. All of these interpretations remain only tentative as long as there are no further studies to substantiate the empirical findings.

Discussing the results of our study, it must be borne in mind that the analysis is based on data that was collected in 2010/2011. Since that time, the immigrant situation in Germany has certainly changed, for instance due to immigration of refugees in the last decade. To what extent the acculturation profiles and their associations with different facets of academic self-concept differ today remains an open question at this point.

6. Conclusions

A positive self-concept is widely valued as a desirable outcome [3]. Hence, our findings raise the question whether the more positive academic self-concepts shown for indifferent students are a consequence of their acculturation profile, acting as a protective factor against negative feedback and making these immigrant students more resilient. On the other hand, our findings might as well be understood as a sign of disidentification with school [47].

As already mentioned, findings and their interpretations need to be treated with some respect, as coefficients were only small. Further research would be needed to follow up on the topic, for instance by applying path analytic approaches or structural equation modeling techniques. Incorporating longitudinal analysis would also help to investigate the reciprocal relationship within acculturation patterns more thoroughly. To gain more knowledge on possible comparison partners, future surveys may collect more data on the students' social environment or directly ask students for their social comparison partners, which could be compared between acculturation patterns. If further investigations show support for differential academic self-concepts depending on immigrant students' acculturation profile, teachers and other school personnel need to be informed about possibilities to promote the academic achievement of immigrant students, e.g., by interventions facilitating both the orientation toward the host culture and a positive academic self-concept.

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