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EMPIRICAL RESEARCH

Is Integration Always most Adaptive? The Role of Cultural Identity in Academic Achievement and in Psychological Adaptation of Immigrant Students in Germany

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Abstract Immigrant adaptation research views identification with the mainstream context as particularly beneficial for sociocultural adaptation, including academic achievement, and identification with the ethnic context as particularly beneficial for psychological adaptation. A strong identification with both contexts is considered most beneficial for both outcomes (integration hypothesis). However, it is unclear whether the integration hypothesis applies in assimilative contexts, across different outcomes, and across different immigrant groups. This study investigates the association of cultural identity with several indicators of academic achievement and psychological adaptation in immigrant adolescents ($N = 3894$, 51% female, $M_{age} = 16.24$, $SD_{age} = 0.71$) in Germany. Analyses support the integration hypothesis for aspects of psychological adaptation but not for academic achievement. Moreover, for some outcomes, findings vary across immigrant groups from Turkey ($n = 809$), the former Soviet Union ($n = 712$), and heterogeneous other countries ($n = 2373$). The results indicate that the adaptive potential of identity integration is limited in assimilative contexts, such as Germany, and that it may vary across different outcomes and groups. As each identification is positively associated with at least one outcome, however, both identification dimensions seem to be important for the adaptation of immigrant adolescents.

Introduction

As the number of immigrants increases worldwide, it is of major scientific and public concern to identify factors that promote a successful adaptation of immigrants and their descendants to their new environment. Research on how well immigrant students[1] adapt provides a mixed picture. Studies on school achievement show that students with an immigrant background often lag behind their peers from native-born families (e.g., OECD 2010; Stanat and Christensen 2006). Academic achievement is an important aspect of adolescents' sociocultural adaptation that entails the acquisition of knowledge and skills relevant for successfully managing one's life within mainstream society (Ward 1996). At the same time, research indicates that immigrant students often show similar or even higher levels of psychological adaptation, such as life satisfaction or self-esteem, as their native peers (Berry et al. 2006; Mood et al. 2016). Thus, school success tends to be a challenge whereas

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[1] In line with previous studies (e.g., Stanat and Christensen 2006; Walsh et al. 2016), the term "immigrant students" as it is used here refers to children and adolescents who were not born in the assessment country (first generation) and to children and adolescents who were born in the assessment country but have at least one parent who was born abroad (second generation).

psychological adaptation appears to be less problematic for immigrant adolescents.

One factor that seems to affect both sociocultural adaptation, including academic achievement, and psychological adaptation of immigrant students is their cultural identity[2], which is broadly defined as a sense of belonging to particular cultural groups and the feelings associated with these group memberships (Phinney et al. 2001). Cultural identity is often construed as a multidimensional construct that captures a variety of aspects, including self-categorization, commitment and feelings of attachment to relevant ethnic groups, identity exploration, as well as importance and salience of the perceived group membership. Commitment and attachment are often seen as highly important aspects of cultural identity (Phinney and Ong 2007).

Prominent acculturation frameworks (e.g., Arends-Tóth and van de Vijver 2006; Berry 1997) view cultural identity as an essential aspect of acculturation orientations that entail attitudinal, behavioral, and identity-related facets (Berry et al. 2006). In line with the common two-dimensional conceptualization of acculturation orientations, cultural identity encompasses immigrants' identification with the mainstream context and the ethnic context (Liebkind 2006; Phinney et al. 2006).

Developing an understanding of the self in the social context is a major task in adolescence (Erikson 1968). Immigrant adolescents face specific challenges in their development of a social identity, as they typically have to deal with the mainstream context and the ethnic context and thus need to develop an identity in relation to members of both contexts (Berry 1997). Moreover, some authors assume that these two identity dimensions affect the two adaptation outcomes differentially. Specifically, mainstream identification is expected to mainly foster sociocultural adaptation whereas ethnic identification is expected to mainly advance psychological adaptation (e.g., Ward 2001). Moreover, the integration hypothesis, which is widely held by acculturation research, suggests that a strong identification with both contexts (identity integration) should be most conducive for both sociocultural adaptation and psychological adaptation (Berry et al. 2006; Phinney et al. 2001).

Whether identity integration is uniformly helpful, however, is unclear. While several studies found it to be most adaptive for sociocultural and psychological adaptation (Nguyen and Benet-Martínez 2013), others revealed different patterns (e.g., Edele et al. 2013; Hannover et al. 2013;

Phinney and Devich-Navarro 1997). Possible explanations for the mixed findings are that the adaptive potential of identity integration depends on the mainstream context's diversity climate (Bourhis et al. 1997), on the outcome, or on the immigrant group (Birman and Simon 2014). Starting from these assumptions and findings, we examine the role of cultural identity in the adaptation of immigrant adolescents in Germany. Our main objective is to probe the robustness of the integration hypothesis for an assimilationist mainstream context, for indicators of sociocultural adaptation and psychological adaptation, and for different immigrant groups.

Cultural Identity and Academic Achievement

As a prerequisite of school success, academic achievement is crucial for participation in society, and it is therefore viewed as a highly important aspect of immigrant children's and adolescents' sociocultural adaptation (e.g., Phinney et al. 2001). Both theory and research suggest that immigrant students' mainstream identification fosters their academic achievement within the mainstream school system. For instance, some theoretical accounts propose that a strong sense of belonging to the mainstream context motivates investment in educational success (e.g., Alba and Nee 2003). The role of ethnic identification in academic achievement is less clear. While some scholars argue that ethnic identification buffers negative effects of discrimination and thereby boosts academic achievement (e.g., Eccles et al. 2006; Wong et al. 2003), the cultural ecological perspective (Fordham and Ogbu 1986) argues that ethnic identification can entail an oppositional stance toward the mainstream context and lower students' investment in educational success because they view academic success as a domain of mainstream society members. Moreover, research on stereotype threat (Steele and Aronson 1995) indicates that being aware of negative stereotypes about achievement among one's own ethnic group may foster self-doubt and anxiety, which can deteriorate students' actual performance. Immigrants with a strong ethnic identification seem to be particularly vulnerable to stereotype threats (e.g., Cole et al. 2007). Accordingly, a strong ethnic identification may undermine academic achievement among negatively-stereotyped students.

Consistent with these theoretical arguments, empirical studies on the relationship between mainstream identification and sociocultural adaptation in school revealed positive associations between mainstream identification and school-related attitudes (Birman et al. 2010; Horenczyk 2010), GPAs (Trickett and Birman 2005), school careers (Baysu et al. 2011), and academic motivation (Kiang et al. 2013) while findings on the role of ethnic identification are mixed. Some studies identified small positive associations with

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[2] In line with other authors (e.g., Horenczyk 2010; Schwartz et al. 2006), we use "cultural identity" as an umbrella term that includes both, identification with members of the mainstream context and identification with members of the ethnic context. In the literature, the term "ethnic identity" is also common, yet it sometimes refers to both contexts and sometimes specifically to the ethnic context. The notion of "cultural identity" avoids this potential confusion.

academic motivation (Kiang et al. 2013), academic attitudes (e.g., Byrd and Chavous 2009), and GPAs (e.g., Altschul et al. 2006; Wong et al. 2003). In addition, some findings suggest that a strong ethnic identification buffers negative effects of perceived discrimination on immigrant students' GPAs (Eccles et al. 2006; Wong et al. 2003) and boosts mathematics performance in groups for whom positive achievement-related stereotypes exist (Armenta 2010). Others found no relationships with school-related attitudes and behavior (Vedder and Virta 2005) or GPAs (e.g., Birman 1998; Trickett and Birman 2005). Some studies identified negative relationships between ethnic identification and GPAs (Umaña-Taylor et al. 2012). Moreover, Armenta (2010) found that a strong ethnic identification exacerbated the detrimental effects of perceived achievement stereotypes on mathematics performance in groups about whom negative achievement stereotypes exist. One possible explanation for the mixed findings is the heterogeneity of cultural identity measures used in the studies. Whereas numerous studies analyzed aspects of commitment to particular groups, some additionally included other aspects of cultural identity, such as self-categorization (Trickett and Birman 2005) or the importance of the perceived group membership (Byrd and Chavous 2009; Kiang et al. 2013). Another possible explanation is the limited quality of the adaptation indicators used in some of the studies (see section on the integration hypothesis). In addition, it is likely that the relationship between ethnic identification and academic achievement is moderated by perceived obstacles in the mainstream context that could vary across immigrant groups.

Cultural Identity and Psychological Adaptation

Psychological adaptation promotes resilience, physical health, and professional success in adulthood (Lyubomirsky et al. 2005), and it is therefore another key adaptation outcome (Ward 1996, 2001). Cultural identity, particularly ethnic identification, should advance adolescents' psychological adaptation. The social identity perspective (Tajfel and Turner 1979) predicts a positive association between in-group identification, i.e., identification with the group perceived as one's own, and self-esteem. According to this view, people develop a positive social identity through favorable in-group-out-group comparisons which, in turn, enhances self-esteem. An important characteristic that constitutes social in-group-membership and out-group-membership is ethnicity (Phinney 1990).

Immigrants potentially view members of the mainstream context and of the ethnic context as their in-groups and, hence, as sources of self-esteem. Yet, immigrants often face obstacles in the mainstream context and may feel rejected, which can lower their identification with members of the

mainstream context (Jasinskaja-Lahti et al. 2009). For immigrants who face obstacles in the mainstream context, ethnic group membership may, in fact, be a particularly important source of self-esteem (Phinney et al. 1997). The *Rejection-Identification-Model* (Branscombe et al. 1999) argues that ethnic identification protects adolescents' psychological well-being by buffering identity threat resulting from perceived ethnic discrimination. Although some accounts propose that ethnic identification may also have negative effects on psychological adaptation (e.g., Yip et al. 2008), the literature predominantly suggests a positive relationship between ethnic identification and psychological adaptation (e.g., Gartner et al. 2014; Phinney et al. 1997; Smith and Silva 2011; Verkuyten 1995). Ethnic identification should therefore play a more pivotal role than mainstream identification for immigrant students' psychological adaptation.

Acculturation research has examined multifaceted aspects of ethnic identification in relation to psychological adaptation (see Rivas-Drake et al. 2014). The bulk of existing evidence does, in fact, show a positive relationship between ethnic identification, particularly positive feelings related to a perceived ethnic group membership, and psychological adaptation (e.g., Kiang et al. 2013; Phinney et al. 1997; for a meta-analysis see Rivas-Drake et al. 2014). A smaller number of studies explored the association between mainstream identification and psychological adaptation and yielded inconclusive findings. While some analyses found no effect of mainstream identification on psychological adaptation (Aydinli-Karakulak and Dimitrova 2016; Dimitrova et al. 2015; Phinney et al. 1997; Phinney and Devich-Navarro 1997), others reported a positive relationship (e.g., Birman et al. 2010; Kiang et al. 2013). However, most of the studies were conducted in the United States where—compared to other countries—diversity oriented policies were quite common (Huddleston et al. 2011). The few studies conducted in more assimilative contexts, such as Germany, found no correlation between mainstream identification and psychological adaptation (Aydinli-Karakulak and Dimitrova 2016; Dimitrova et al. 2015). However, these analyses focused on adolescents with a Turkish immigrant background, and it is unclear whether the findings generalize to other immigrant groups.

The Integration Hypothesis

The *integration hypothesis*, which is widely held in acculturation research, suggests that a concurrent orientation toward the mainstream context and the ethnic context is more adaptive than an orientation toward only one context, for both sociocultural and psychological adaptation (Berry et al. 2006; Ward 2013). This assumption is also applied to cultural identity (Phinney et al. 2001). Identity integration is

viewed as most beneficial because it is assumed to foster supportive networks, to increase creativity and flexibility, and to promote competence in managing the demands of both cultures (e.g., Benet-Martínez et al. 2006; Nguyen and Benet-Martínez 2013). According to this view, then, a strong identification with members of both contexts should be most adaptive, whereas a strong identification with members of the mainstream context (but not the ethnic context) and a strong identification with members of the ethnic context (but not the mainstream context) should result in intermediate outcomes. A weak identification with members of both contexts is assumed to be least adaptive (Berry et al. 2006; Phinney et al. 2001). However, several arguments challenge the universal validity of the integration hypothesis.

First, contextual perspectives suggest that the adaptiveness of integration depends on its fit with the policies and ideologies prevalent in the larger society (Bourhis et al. 1997; Ward 2013). For example, identity integration may not be advantageous in assimilative contexts that demand the adoption of mainstream values, such as schools in countries with an assimilation-oriented climate (Makarova and Birman 2015). In such schools, mainly a strong mainstream identification should promote academic success whereas ethnic identification should be less relevant. Similarly, integrating more than one culture may be challenging for individuals when cultural values are in conflict (Brown et al. 2013; Phinney 1990) or when the general societal climate is low in diversity-orientation. Such a conflict could undermine immigrants' self-concept and a coherent view of the self, thereby impairing psychological adaptation.

Second, it is questionable whether the integration hypothesis generalizes across adaptation outcomes. Previous studies on the role of cultural identity for sociocultural adaptation in school provide ambiguous results. A potential explanation for this is that the studies used a variety of adaptation indicators which are often ambiguous and questionable. For instance, it is not clear whether academic attitudes, such as a sense of school belonging, reflect sociocultural adaptation (as is typically assumed) or psychological adaptation, for which different mechanisms may be at work. Furthermore, previous studies mostly relied on self-reported indicators of academic performance that may be inaccurate (Kuncel et al. 2005). The validity of grades or teacher ratings as indicators of student achievement may also be limited as they can be tainted by biased expectations (Lorenz et al. 2016; Ready and Wright 2011). Using objective indicators of academic achievement, such as standardized test scores, should yield more valid findings, yet analyses of the association between cultural identity and objective measures of school success are scarce (for exceptions see Edele et al. 2013; Hannover et al. 2013).

Third, the literature suggests that the adaptiveness of identity integration may vary across immigrant groups (Birman and Simon 2014; Phinney et al. 2001). Due to group differences in immigration histories, background characteristics, associated stereotypes and other factors, their level of (perceived) acceptance in the mainstream society can vary remarkably (e.g., Liebkind and Jasinskaja-Lahti 2000; Snellman and Ekehammar 2005). According to Baysu and colleagues (2011) identity integration is not beneficial for academic motivation and success of immigrants who perceive low levels of acceptance, because the perceived rejection prevents them from linking the two identity dimensions. It is also questionable whether identity integration is most adaptive for the psychological adaptation of immigrants who perceive low levels of acceptance. In these groups, ethnic identification should be important in buffering the adverse psychological effects of perceived rejection by members of the mainstream context, while mainstream identification should play a minor role or could even exacerbate negative effects of perceived discrimination (e.g., Branscombe et al. 1999; Schaafsma 2011). Thus, identifying with members of both contexts should be beneficial for academic achievement and psychological adaptation of immigrant groups who feel accepted. However, in groups who feel less accepted, having only a mainstream identification might be conducive for academic achievement while having only an ethnic identification might foster psychological adaptation.

A considerable body of research has investigated the integration hypothesis for acculturation orientations and the results often support the adaptive advantage of the integration pattern (e.g., Berry et al. 2006; Nguyen and Benet-Martínez 2013). A smaller number of studies examined the integration hypothesis for cultural identity. Some of these analyses supported the integration hypothesis for GPAs (Oysermann et al. 2003), academic motivation (Kiang et al. 2013), and psychological adaptation (e.g., Schwartz et al. 2015), yet others found no support for GPAs (Altschul et al. 2008) or psychological adaptation (e.g., Phinney and Devich-Navarro 1997; Ryder et al. 2000). Some findings suggest that the adaptive potential of identity integration varies depending on the perceived level of discrimination in the larger society. Baysu and colleagues (2011) studied the role of cultural identity in school careers of young adults with a Turkish immigrant background in Belgium. They found identity integration to be most adaptive for the school careers of immigrants who perceive low levels of discrimination whereas it was not adaptive for participants who perceived high levels of discrimination. For these immigrants a solely strong mainstream identification was most adaptive.

Most research on this issue, however, was conducted in the United States. Fewer studies were carried out in

countries with more recent immigration histories, like Germany, which is often characterized as a context that exerts assimilative pressure on immigrants and their off-spring (Bourhis et al. 1997; Frankenberg et al. 2013; Yağmur and van de Vijver 2012; Zick et al. 2001). Although attempts to promote multiculturalism have increased in Germany over the last years (Banting and Kymlicka 2013) and the diversity climate is currently changing in the United States, multicultural policies are still less prevalent in Germany than in North American or the Nordic European countries (Banting and Kymlicka 2013; Huddleston et al. 2011).

Two studies carried out in Germany investigated the relationship between cultural identity and academic achievement using achievement tests (Edele et al. 2013; Hannover et al. 2013), and neither of them confirmed the integration hypothesis. However, the validity of these findings is restricted. Edele et al. (2013) investigated different immigrant groups, yet they measured each of the cultural identity dimensions with a single item, and the reliability of the indicator is therefore unclear. Their study also employed the median split method to distinguish different levels of identification with the mainstream context and the ethnic context, which entailed a loss of information (Berry and Sabatier 2011). Hannover et al. (2013) did not distinguish different immigrant groups. In addition, both studies only used a German reading comprehension test as an indicator of academic achievement. Therefore, it remains unclear whether the findings generalize across immigrant groups and other aspects of academic achievement, such as performance in mathematics. Moreover, the studies did not simultaneously examine psychological adaptation and therefore provide an incomplete picture of the role cultural identity plays in the adaptation of immigrant youth.

Studies focusing on the psychological adaptation of immigrant students in Germany also failed to support the integration hypothesis (Aydinli-Karakulak and Dimitrova 2016; Dimitrova et al. 2015), yet these studies focused on Turkish immigrants. There is, however, some evidence for variations between ethnic groups (e.g., Edele et al. 2013; Nguyen and Benet-Martínez 2013). A more comprehensive test of the extent to which the integration hypotheses holds in an assimilationist context like Germany needs to analyze different adaptation outcomes and immigrant groups.

Immigrant Groups in Germany

Compared to traditional immigration countries, Germany has a more recent immigration history. The two largest immigrant groups currently living in Germany came from Turkey and the former Soviet Union. Turkish immigrants were mostly recruited as so-called "guest workers" to compensate for a shortage in the labor force in the 1960s and early 1970s. They typically had relatively low levels of education and worked in low-skilled jobs. Although the intention was for them to stay for a limited period of time, many eventually brought their families to Germany and settled permanently. Findings indicate that members of the mainstream society perceive a relatively large distance between the Turkish and the German cultures (Blohm and Wasmer 2008; Kleinert 2004), and that negative stereotypes about Turkish immigrants exist (Asbrock 2010; Kahraman and Knoblich 2000). Moreover, findings show that Turkish immigrants perceive comparably high levels of discrimination (Salentin 2007; Tucci et al. 2014). Results also indicate that Turkish immigrant adolescents show more positive affect toward members of their ethnic in-group than toward their native German peers (Brüß 2005).

Immigrants from the former Soviet Union mostly came to Germany either after the end of World War II or the collapse of the former Soviet Union in the early 1990s. Many of them are so-called "resettlers" with German ancestry. On average, they had higher levels of education than "guest workers" (Kogan 2011), and they tend to be perceived as less "foreign" by members of the mainstream society, who associate the term "foreigner" more often with people of Turkish descent than immigrants from the former Soviet Union (Asbrock et al. 2014). Accordingly, immigrants from the former Soviet Union perceive comparably low levels of discrimination (Titzmann et al. 2011) and "resettler" adolescents show positive affect toward their native German peers (Brüß 2005). The study by Brüß (2005) also indicates that students without an immigrant background view "resettler" peers more positively than their Turkish immigrant peers. Hence, the conditions for cultural identity development and adaptation are different for these two groups.

The Present Study

The present study examines the role of cultural identity in the adaptation of immigrant students in Germany and aims at testing the robustness of the widely held integration hypothesis. We probe the hypothesis in an assimilative context (Germany) using different outcomes (several indicators of academic achievement and psychological adaptation) and data from several immigrant groups. According to the integration hypothesis, a concurrent identification with both contexts (identity integration) should produce better outcomes for students' academic achievement (hypothesis 1a) and psychological adaptation (hypothesis 2a) than a strong identification with only one context or a weak identification with both.

However, neither the theoretical assumptions nor the existing findings unequivocally support the integration

hypothesis across adaptation outcomes. We therefore test the integration hypothesis against the competing hypotheses that only mainstream identification is relevant for academic achievement or that only ethnic identification is relevant for psychological adaptation. Accordingly, we hypothesize no adaptive advantage for identity integration compared to a solely strong mainstream identification for academic achievement (hypothesis 1b) and no adaptive advantage of identity integration compared to a solely strong ethnic identification for psychological adaptation (hypothesis 2b).

Moreover, theoretical assumptions as well as empirical results indicate that the association between cultural identity and adaptation may to some extent differ between groups, as the role of cultural identity in adaptation apparently depends on the level of discrimination that immigrant groups perceive in the mainstream society. We therefore test whether the integration hypothesis and the competing hypotheses apply differently to different immigrant groups. We assume that only mainstream identification is relevant for academic achievement in Turkish immigrant students (hypothesis 3a) as immigrants from Turkey perceive comparably high levels of discrimination. In contrast, we expect immigrant students from the former Soviet Union to benefit from identity integration in their academic achievement (hypothesis 3b) because this group experiences relatively low levels of discrimination. Moreover, we assume that only ethnic identification is relevant for the psychological adaptation of Turkish immigrant students (hypothesis 4a). In contrast, we expect that the integration hypothesis holds for immigrant students from the former Soviet Union as their psychological adjustment should benefit from both identifications (hypothesis 4b).

Method

Participants and Procedure

We used data from the National Educational Panel Study (NEPS), a longitudinal study conducted in Germany (Blossfeld et al. 2011). Our sample includes ninth-grade students from Starting Cohort 4[3], selected with a stratified multistage sampling strategy (Aßmann et al. 2011). Student questionnaire data and test scores from the 2010/11 school year provide the basis of our analyses. Of the 16,425 students in Starting Cohort 4 (Skopek et al. 2013),

3894 students from 512 schools in 878 classrooms have a first or second generation immigrant background (51% female, $M_{age} = 16.24$, $SD_{age} = 0.71$). They form the subsample of our study.

Measures

Academic achievement

We included standardized test scores and grades as indicators of academic achievement.

Reading comprehension test Our first indicator of academic achievement is a reading comprehension test in German (Gehrer et al. 2013). This test is based on the concept of literacy (OECD 1999) and provides a broad, unidimensional indicator of receptive language proficiency (Haberkorn et al. 2012). Using IRT-scaling, a partial credit model was applied to the 31 test items resulting in weighted maximum likelihood estimates (WLEs, Haberkorn et al. 2012; Warm 1989). Cronbach's alpha was 0.85 for our study sample.

Mathematics test Our second measure of academic achievement is a mathematics test (Neumann et al. 2013) that assesses mathematical literacy (OECD 2003) and is based, in part, on students' school curriculum. Again, using IRT-scaling, a partial credit model was applied to the 22 items resulting in WLEs (Duchhardt and Gerdes 2013). Cronbach's alpha for our study sample was 0.77.

Grades in German and mathematics We also analyzed school grades as additional indicators of academic success, which allows us to test the robustness of findings across different indicators. As no equivalent to GPA exists in Germany, we used students' self-reported grades in German and mathematics from the most recent student report card ranging from 1 (very good) to 6 (unsatisfactory). We reverse-coded these grades so that higher values indicate more favorable school outcomes.

Psychological adaptation

Two scales in the student questionnaire captured students' psychological adaptation.

Life satisfaction The first measures students' overall life satisfaction (Cummins and Lau 2005; TNS Infratest Sozialforschung 2012), i.e., a subjective evaluation of the quality of their life. Students evaluated their satisfaction with five domains of daily life, such as school and friends, ranging from 0 (entirely dissatisfied) to 10 (entirely

satisfied). We computed the mean across the five items for our study sample (Cronbach's alpha = 0.77).

Self-esteem The second measure is an adapted version of Rosenberg's *self-esteem* scale (Rosenberg 1965; von Collani and Herzberg 2003) including ten items with response options ranging from 1 (*does not apply*) to 5 (*applies completely*). We computed the mean across the five items for our study sample (Cronbach's alpha = 0.83).

Cultural identity

The student questionnaire included two four-item scales to assess students' cultural identity, capturing commitment to a particular group and positive affect related to this group membership. The scales are analogously constructed for the mainstream context and the ethnic context. The items were adapted from previous research (Phinney 2006; Sabatier 2008).

Mainstream identification One scale assesses a sense of belonging to the mainstream context (e.g., "I feel closely related to the German culture"). Response options range from 1 (*does not apply at all*) to 4 (*applies completely*). We averaged the four items resulting in a scale with good internal consistency in our sample (Cronbach's alpha = 0.90).

Ethnic identification The second scale assesses a sense of belonging to the ethnic context (e.g., "I feel closely related to this culture of origin"[4]). Response options range from 1 (*does not apply at all*) to 4 (*applies completely*). We averaged the four items resulting in a scale with good internal consistency in our sample (Cronbach's alpha = 0.91).

Immigrant group

We included the immigrant families' country of origin to test the generalizability of findings across groups with different immigration histories and ethnic backgrounds. Specifically, we distinguished the two largest immigrant groups in Germany, namely immigrants from Turkey (*n* = 809, 21% of our sample) and immigrants from the former Soviet Union (*n* = 712, 18%). As all other groups were too small

for separate analyses, the remaining students were assigned to the heterogeneous category of "other countries" encompassing a large number of ethnic groups with different immigration histories (*n* = 2373, 61%). Within this category, the largest groups are from Poland (*n* = 341, 9%) and Former Yugoslavia (*n* = 336, 9%). The third largest group within this category are students who clearly have an immigrant background but whose country of origin was ambiguous, such as when the parents of second-generation immigrants were born in different countries (*n* = 315, 8%, Olczyk et al. 2014).

Control variables

We took into account several background characteristics that could affect cultural identity, academic achievement, and psychological adaptation (Berry 1997; Phinney et al. 2006; Ward 2001). In addition to students' gender and age, the analyses controlled for their migration-related circumstances and family background as well as for the attended school track.

Born abroad The first aspect of migration-related circumstances is whether students were born abroad. We differentiate between first-generation (i.e., they were born in another country than Germany, *n* = 946, 24%) and second-generation immigrant students (i.e., they were born in Germany but at least one parent was born in another country, *n* = 2948, 76%; see Olczyk et al. 2014 for details).

Language use A second characteristic is the language used within the family context. We averaged the scores of three items (language used with mother, father, and siblings), resulting in a scale ranging from 1 to 4 where higher values indicate more use of German at home.

Number of books Three sociocultural and socioeconomic characteristics served as controls for students' family background: As a first indicator, we included the number of books in the household ranging from "none or only very few (0 to 10 books)" to enough to fill shelf units (more than 500 books)" to control for students' sociocultural family background.

Parental education Parents' highest degree of education distinguishing between no or low-level degrees (equivalent to 9 years of schooling at most), intermediate-level degrees (equivalent to about 10 years of schooling), and high-level degrees (equivalent to at least 12 years of schooling) served as a second indicator of students' sociocultural family background.

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[4] Before answering the questions on the identification with the ethnic context, immigrant students were asked to fill in the country their family originated from. Afterwards, the instruction reads as follows: "In the following questions, we will call the culture of the country you just wrote down 'culture of origin'. For example: "If you or your parents were born in Russia, we will call the Russian culture your 'culture of origin' in the following questions."

Socioeconomic status A third indicator of the students' family background is the family's socioeconomic status represented by the highest *International Socio-Economic Index of Occupational Status* (ISEI; Ganzeboom 2010) with higher values indicating a higher status.

School track The secondary school system in Germany assigns students to different tracks[5] that differ in terms of curriculum and degrees students may complete. Although school types differ between the 16 federal states, five tracks can generally be distinguished: the academic track (*Gymnasium*) leading to a university entrance degree, a vocational school track (*Hauptschule*), an intermediate school track (*Realschule*), a comprehensive school track (*Gesamtschule*), and a school with several educational tracks (*Schule mit mehreren Bildungsgängen*). As the student composition varies across these tracks, we controlled for this school-level factor in all analyses.

Data Analyses

To test whether the hypotheses hold for immigrant students in general as well as across different groups, we conducted the analyses for the overall study sample and separately for the two largest immigrant groups in Germany, namely Turkish immigrant students and former Soviet Union immigrant students, as well as a heterogeneous group originating from other countries[6]. In a first step, we performed a series of one-way ANOVAs with post hoc Scheffé contrasts to test potential group differences in the study variables. In a second step, we estimated a multivariate path model predicting all adaptation outcomes simultaneously to account for the correlated residuals of some of the endogenous variables. To take the multilevel structure of the data into account, we estimated cluster-robust standard errors (Williams 2000).

Some of the variables had missing values due to item non-response. The proportion of missing values was lowest for mathematics achievement (about 3% in the overall sample and in the subsamples) and highest for the family background characteristics, such as parental education and the family's socioeconomic status (ranging from 33 to 43% in the overall sample and the subsamples). Most students had missing values only on single variables and different missing patterns emerged which suggests the data are less

likely to be missing systematically (McKnight et al. 2007). Hence, we used full information maximum likelihood (FIML) estimation to improve the accuracy and statistical power of the multivariate analyses (Arbuckle 1996).

We performed a series of multivariate analyses controlling for gender, age, whether the student was born abroad, language used within the family context, number of books in the household, parents' highest degree of education, socioeconomic status of the family, and school track. We also included the immigrant families' country of origin in our models for the overall sample. To test our general hypotheses, the analyses predicted the adaptation outcomes with the mean-centered continuous variables for mainstream identification and ethnic identification, allowing us to test for additive benefits of identification with each context in the overall sample. In order to check whether identity integration unfolds its adaptive potential in a multiplicative rather than additive manner, we subsequently entered a term for the interaction between identification with the mainstream context and the ethnic context.

To explore whether the findings are robust across different immigrant groups, we further conducted multigroup analyses using the same models as for the overall sample. We distinguished the two largest immigrant groups, namely Turkish immigrant students and immigrant students from the former Soviet Union as well as the Heterogeneous Other group. After examining the relationships among the variables within each of the groups, we tested whether the coefficients differ significantly using Wald χ^2 tests (Wald 1943) and applied Bonferroni correction to adjust p values.

Results

Preliminary Analyses

Table 1 shows descriptive statistics for our overall sample as well as for the Turkish, former Soviet Union, and Heterogeneous Other groups. On average, the students in the overall sample reached WLE-scores slightly below zero on the standardized achievement tests, indicating that they performed somewhat below the entire sample of Starting Cohort 4 in the NEPS whose mean WLE was set to zero (Pohl and Carstensen 2012). The means of the reverse-scored grade points of the students in our sample were slightly above the theoretical mean, indicating that, on average, immigrant students earned intermediate to high grades. The discrepancy between achievement levels and grades is partly due to the stratified school system where achievement expectations differ between tracks. Because immigrant students are overrepresented in the less challenging tracks with lower expectations, their average grades are comparable to those of other students although their

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[5] In 14 of the federal states this occurs after 4th grade, in two states after 6th grade.

[6] For the sake of brevity, we refer to the subsample of Turkish immigrant students as "Turkish group", to the subsample of immigrant students from the former Soviet Union as "group from the former Soviet Union" and to the subsample of the heterogeneous group as "Heterogeneous Other group."

Table 1 Descriptive statistics for the overall sample, the Turkish group, the group from the former Soviet Union, and the Heterogeneous Other group

	Overall (N = 3894)			Turkey (N = 809)			Former Soviet Union (N = 712)			Heterogeneous Other (N = 2373)			F value	(p value)	Post hoc tests (Scheffé)		
	n	M/%	SD	n	M/%	SD	n	M/%	SD	n	M/%	SD			T - O	F - O	T - F
Read. achievement	3527	−0.46	1.24	716	−0.98	1.13	646	−0.46	1.16	2165	−0.29	1.26	85.27	(<0.001)	***	**	***
Math. achievement	3784	−0.37	1.11	794	−0.72	0.90	689	−0.37	1.05	2301	−0.24	1.17	56.77	(<0.001)	***	*	***
Grade German[h]	3455	3.97	0.86	715	3.84	0.85	632	3.92	0.85	2108	4.02	0.86	12.56	(<0.001)	***	*	
Grade math.[h]	3446	3.86	1.04	713	3.78	1.00	632	3.98	1.03	2101	3.85	1.05	6.06	(<0.01)		*	**
Life satisfaction	3369	7.87	1.66	680	8.09	1.70	617	7.82	1.55	2072	7.82	1.68	7.00	(<0.001)	**		*
Self-esteem	3762	3.93	0.61	787	3.95	0.59	683	3.91	0.60	2292	3.93	0.63	0.70	(.4981)			
MI	3115	3.01	0.77	664	2.77	0.79	626	3.06	0.72	1825	3.07	0.76	40.27	(<0.001)	***		***
EI	3064	3.08	0.85	669	3.30	0.78	616	2.89	0.85	1779	3.06	0.86	39.34	(<0.001)	***	***	***
Female	3894	50.95		809	48.21		712	51.69		2373	51.66						
Age	3894	16.24	0.71	809	16.29	0.69	712	16.39	0.74	2373	16.19	0.70	23.87	(<0.001)	**	***	*
Born abroad	3894	24.29		809	11.37		712	50.56		2373	20.82						
Language use	2791	2.72	0.80	670	2.53	0.68	556	2.63	0.81	1565	2.83	0.83	39.98	(<0.001)	***	***	
Number of books	3687	3.23	1.46	775	2.83	1.28	671	3.20	1.35	2241	3.38	1.53	42.23	(<0.001)	***	*	***
Parents' education																	
Low-level	598	22.80		265	47.15		30	7.44		303	18.28						
Intermediate-level	866	33.02		181	32.21		186	46.15		499	30.10						
Higher-level	1159	44.19		116	20.64		187	46.40		856	51.63						
SES	2664	44.94	21.00	477	36.97	18.20	465	40.96	19.48	1722	48.22	21.35	66.82	(<0.001)	***	***	*
School track																	
Vocational	1468	37.70		393	48.58		294	41.29		781	32.91						
Several tracks	161	4.13		16	1.98		41	5.76		104	4.38						
Intermediate	758	19.47		143	17.68		168	23.60		447	18.84						
Comprehensive	506	12.99		117	14.46		69	9.69		320	13.49						
Academic	1001	25.71		140	17.31		140	19.66		721	30.38						

Note: The sum of percentages may deviate from 100% due to rounding

As some of the variances in the outcome variables were unequal across groups, we also conducted non-parametric tests (Kruskal-Wallis) that yielded equal results

Read. Reading, *Math.* Mathematics, *MI* Mainstream identification, *EI* Ethnic identification, *SES* Socioeconomic status

T Turkey, *O* Heterogeneous Other, *F* Former Soviet Union

[h] We reverse-coded the original scale so that higher values indicate more favorable school outcomes

$* p < 0.05$, $** p < 0.01$, $*** p < 0.001$

achievement levels are lower. Results further indicate that the immigrant students in our sample were, on average, satisfied with their life and possess high self-esteem. In addition, participants scored above the theoretical mean on both cultural identity dimensions, indicating that they identified strongly with both, the mainstream context and the ethnic context. A Wilcoxon signed-rank test further revealed that, on average, identification with the ethnic context was significantly stronger than identification with the mainstream context in the overall sample ($z = 4.752$, $p < 0.001$), yet the difference was small. Within the immigrant groups, however, mainstream identification was weaker than ethnic identification for the Turkish students ($z = 10.552$, $p < 0.001$) and stronger than ethnic identification for the students from the former Soviet Union ($z = 2.326$, $p < 0.05$). No differences between mainstream identification and ethnic identification emerged for the Heterogeneous Other group ($z = 1.037$, $p = 0.2997$).

One-way ANOVAs showed that the immigrant groups also differed considerably on most of the other variables, except self-esteem (Table 1). Post hoc Scheffé contrasts revealed that Turkish immigrant students scored below immigrant students from the former Soviet Union and immigrant students from the Heterogeneous Other group in reading and mathematics achievement, yet they were more satisfied with their lives than the other groups. The mainstream identification of Turkish students was, on average, weaker than the mainstream identification of immigrant students from the former Soviet Union and immigrant students from the Heterogeneous Other group while immigrant students from the former Soviet Union and students from the Heterogeneous Other group did not differ in their mainstream identification. Moreover, Turkish students showed higher levels of ethnic identification than the other two immigrant groups and immigrant students from the former Soviet Union rated their ethnic identification lower than the two remaining immigrant groups.

Table 2 provides pairwise correlations between the study variables in the overall sample. As expected, mainstream identification and indicators of academic achievement were positively correlated. In contrast, correlations between ethnic identification and all aspects of academic achievement were consistently negative. The indicators of psychological adaptation—life satisfaction and self-esteem—showed positive relationships with both mainstream identification and ethnic identification.

For academic achievement, pairwise correlations between the two cultural identity dimensions and the adaptation outcomes for the three immigrant groups largely resembled the overall results for academic achievement, although some exceptions emerged for the Turkish group (Table 3): Mainstream identification was positively related to the achievement scores in all groups. Mainstream

Table 2 Pairwise correlations between study variables in the overall sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Read. achievement	–													
(2) Math. achievement	0.54***	–												
(3) Grade German[h]	0.26***	0.18***	–											
(4) Grade math.[h]	0.16***	0.31***	0.34***	–										
(5) Life satisfaction	0.00	0.00	0.13***	0.17***	–									
(6) Self-esteem	0.04	0.08***	0.10***	0.08***	0.36***	–								
(7) MI	0.24***	0.20***	0.14***	0.10***	0.09***	0.09***	–							
(8) EI	-0.18***	-0.17***	-0.09***	-0.07***	0.15***	0.12***	-0.29***	–						
(9) Female	0.11***	-0.16***	0.20***	-0.10***	-0.03	-0.13***	0.06	-0.01	–					
(10) Age	-0.25***	-0.24***	-0.16***	-0.14***	-0.07***	-0.04	-0.12***	0.11***	-0.08***	–				
(11) Born abroad	-0.11***	-0.08***	-0.09***	-0.01	-0.01	-0.02	-0.09***	0.12***	-0.04	0.22***	–			
(12) Language use	0.23***	0.16***	0.12***	0.00	-0.01	0.01	0.28***	-0.31***	0.07	-0.16***	-0.25***	–		
(13) Number of books	0.37***	0.33***	0.20***	0.12***	0.02	0.03	0.18***	-0.16***	0.05	-0.23***	-0.11***	0.20***	–	
(14) SES	0.25***	0.26***	0.16***	0.08*	0.01	0.05	0.17***	-0.15***	0.00	-0.14***	-0.07*	0.19***	0.39***	–

Note: Spearman's rank correlation. p values are calculated using Bonferroni type adjustment

Read. Reading, *Math.* Mathematics, *MI* Mainstream identification, *EI* Ethnic identification, *SES* Socioeconomic status

[h] We reverse-coded the original scale so that higher values indicate more favorable school outcomes

*p < 0.05, **p < 0.01, ***p < 0.001

Table 3 Pairwise correlations of academic achievement and psychological adaptation with cultural identity in the Turkish group, the group from the former Soviet Union, and the Heterogeneous Other group

	Read. achievement	Math. achievement	Grade German[h]	Grade math.[h]	Life satisfaction	Self-esteem
MI						
Turkey ($n = 809$)	0.19***	0.13*	0.11	0.03	0.08	0.05
FSU ($n = 712$)	0.19***	0.26***	0.17***	0.14*	0.11	0.07
Other ($n = 2373$)	0.23***	0.17***	0.12***	0.09**	0.10***	0.11***
EI						
Turkey ($n = 809$)	−0.08	−0.07	−0.04	−0.03	0.14*	0.11
FSU ($n = 712$)	−0.17**	−0.20***	−0.13*	−0.11	0.07	0.04
Other ($n = 2373$)	−0.19***	−0.17***	−0.09*	−0.07	0.15***	0.15***

Note: Spearman's Rank Correlation. p values are calculated using Bonferroni type adjustment

MI Mainstream identification, *EI* Ethnic identification, *FSU* Former Soviet Union, *Other* Heterogeneous Other, *Read.* Reading, *Math.* Mathematics

[h] We reverse-coded the original scale so that higher values indicate more favorable school outcomes

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

identification was also positively related to grades in the group from the former Soviet Union and the Heterogeneous Other group, but not in the Turkish group. Ethnic identification showed negative correlations to reading achievement, mathematics achievement, and German grades, but not to mathematics grades in the group from the former Soviet Union or in the Heterogeneous Other group. Yet, in the Turkish group there was no significant association between ethnic identification and academic achievement.

Bivariate correlations also revealed positive correlations between both cultural identity dimensions and aspects of psychological adaptation for the Heterogeneous Other group, thus corroborating the findings from the overall analyses. Moreover, ethnic identification showed a significant positive correlation with life satisfaction in the Turkish group. Although the other correlations were also positive in the Turkish group and the group from the former Soviet Union, they were not significant.

The Integration Hypothesis

To test whether identity integration is associated with more positive outcomes for academic achievement (hypothesis 1a) and psychological adaptation (hypothesis 2a) than the identification with only one context (hypotheses 1b and 2b), we estimated a multivariate path model for the overall sample including all adaptation outcomes simultaneously and controlled for gender, age, whether the student was born abroad, language used within the family context, number of books in the household, parents' highest degree of education, socioeconomic status of the family, school track, and the immigrant families' country of origin (Table 4). As predicted, the results showed positive relationships between mainstream identification and academic achievement (Models 1, 3, 5, and 7). The effects were small

but consistent across all indicators. In contrast, the associations between ethnic identification and academic achievement were slightly negative, but they only reached significance for mathematics achievement (Model 3). Because only mainstream identification was significantly and positively associated with academic achievement, there seems to be no additive benefit of mainstream identification and ethnic identification for academic achievement. However, to further explore whether the effects of identity integration unfold in a multiplicative manner, we subsequently entered an interaction term of identification with the mainstream context and the ethnic context (Models 2, 4, 6 and 8). Results showed no such multiplicative effect. Thus, for academic achievement the findings for the overall sample support the competing hypothesis (1b) rather than the integration hypothesis (1a).

Subsequently, we analyzed the relationship between cultural identity and psychological adaptation in the overall sample (Table 4). In line with assumptions and previous findings, ethnic identification was positively related to life satisfaction and self-esteem in the main effects models (Models 9 and 11). Mainstream identification was also positively related to both psychological adaptation outcomes in the main effects Models 9 and 11. The positive association of both cultural identity dimensions with both outcomes of psychological adaptation indicates that students seem to benefit from identity integration in both psychological adaptation outcomes in an additive manner. We then added the interaction term to the Models 10 and 12. This term was not significant for life satisfaction, indicating that each identification contributes independently to this outcome. For self-esteem, a small negative interaction effect emerged, implying that the effect of one cultural identity dimension decreases as the level of the other dimension increases. Post hoc analyses revealed a positive

Table 4 Multivariate path model predicting academic achievement (reading achievement, mathematics achievement, grades in German, grades in mathematics) and psychological adaptation (life satisfaction and self-esteem) in the overall sample

	Read. achievement		Math. achievement		Grade German[h]		Grade math.[h]		Life satisfaction		Self-esteem	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β	b(SE) / β
MI[a]	0.12*** (0.03) / 0.07	0.12*** (0.03) / 0.08	0.08*** (0.02) / 0.06	0.08*** (0.02) / 0.06	0.07** (0.02) / 0.06	0.08*** (0.02) / 0.06	0.09** (0.03) / 0.07	0.09** (0.03) / 0.06	0.27*** (0.05) / 0.13	0.27*** (0.05) / 0.13	0.08*** (0.02) / 0.11	0.09*** (0.02) / 0.11
EI[a]	−0.04 (0.02) / −0.03	−0.04 (0.03) / −0.03	−0.05* (0.02) / −0.04	−0.04 (0.02) / −0.04	−0.01 (0.02) / −0.01	0.00 (0.02) / 0.00	−0.04 (0.03) / 0.00	−0.04 (0.03) / −0.03	0.32*** (0.04) / 0.16	0.31*** (0.05) / 0.16	0.11*** (0.02) / 0.16	0.12*** (0.02) / 0.17
MI[a] × EI[a]		−0.03 (0.03) / −0.01		−0.03 (0.03) / −0.01		−0.04 (0.02) / −0.04		0.00 (0.03) / −0.03		0.01 (0.06) / 0.00		−0.05** (0.02) / −0.05
R^2	0.37	0.37	0.39	0.39	0.11	0.11	0.06	0.06	0.05	0.05	0.05	0.06

Note: $N = 3894$. Cluster-robust standard errors in parentheses. Analyses controlled for gender, age, whether the student was born abroad, language used within the family context, number of books in the household, parents' highest degree of education, socioeconomic status of the family, school track, and immigrant families' country of origin

MI Mainstream identification, *EI* Ethnic identification, *Read.* Reading, *Math.* Mathematics

[a] Mean centered

[h] We reverse-coded the original scale so that higher values indicate more favorable school outcomes

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

simple slope for ethnic identification at a level of mainstream identification one standard deviation above the mean ($b = 0.09$, $SE = 0.02$, $p < 0.001$) and an even steeper positive slope at a level of mainstream identification one standard deviation below the mean ($b = 0.16$, $SE = 0.02$, $p < 0.001$) (Fig. 1). Even in the interaction model, however, both identity dimensions were positively related to self-esteem. Thus, our results suggest that students benefit from both identification types in an additive manner, both in their life satisfaction and—at least to some extent—their self-esteem. This pattern supports the integration hypothesis (2a) rather than the competing hypothesis (2b)[7]. Yet, the results do not confirm a multiplicative benefit of identity integration.

The Relationship of Cultural Identity and Adaptation in Different Immigrant Groups

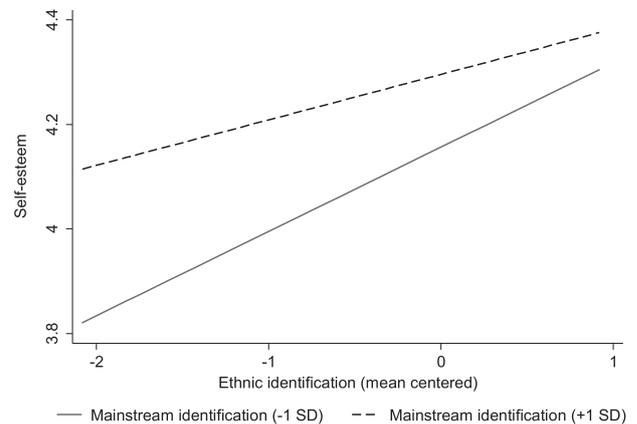We then conducted our analyses separately for Turkish students, immigrant students from the former Soviet Union,

Fig. 1 Associations between self-esteem and ethnic identification at different levels of mainstream identification in the overall sample

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[7] We further checked the robustness of our results for the integration hypothesis with the commonly used approach of conducting a median split on the mainstream identification and the ethnic identification scales, distinguishing four patterns of identification (e.g., Baysu et al. 2011; Edele et al. 2013; Ward and Rana-Deuba 1999): strong identification level with both the mainstream context and the ethnic context (identity integration), strong identification level with the mainstream context, strong identification level with the ethnic context, low identification level with both the mainstream context and the ethnic context. Results further support the findings from the analyses using continuous variables: For academic achievement, no adaptive advantage for identity integration emerged compared to only a strong identification with the mainstream context. For life satisfaction and self-esteem, however, the relationship with identity integration was more positive than with any of the other identity patterns. Thus, these analyses also support the integration hypothesis for psychological adaptation.

and students from heterogeneous other countries controlling for gender, age, whether the student was born abroad, language used within the family context, number of books in the household, parents' highest degree of education, socioeconomic status of the family, and school track (Table 5). In the Turkish group, mainstream identification showed a significant positive correlation with reading achievement (Model 1) whereas it was not significantly related to the other indicators of academic achievement in the main effects models (Models 3, 5, and 7). Ethnic identification was not significantly associated with any indicator of academic achievement (Models 1, 3, 5, and 7). The interaction terms (Models 2, 4, 6, and 8) were also not significant. Thus, there seems to be neither an additive advantage nor a multiplicative benefit of identity integration for achievement in the Turkish group. The findings in the Turkish group thus contradict the integration hypothesis and partially support the competing hypothesis (3a).

For immigrant students from the former Soviet Union, mainstream identification was positively related to mathematics achievement and grades in mathematics (Models 3 and 7) but neither to reading achievement nor to grades in German in the main effects models (Models 1 and 5). Moreover, ethnic identification was not significantly related to any of the indicators of academic achievement. None of the interaction terms was significant (Models 2, 4, 6, and 8). Thus, there is neither an additive nor a multiplicative benefit of identity integration for academic achievement among students from the former Soviet Union. These findings thus contradict our expectation that the integration hypothesis holds for this group (hypothesis 3b).

For the students from the Heterogeneous Other group, mainstream identification showed significantly positive associations with reading achievement, grades in German, and grades in mathematics in the main effects models (Models 1, 5, and 7); only the coefficient for mathematics achievement failed to reach significance (Model 3). In contrast, ethnic identification was not related to any indicator of academic achievement (Models 1, 3, 5, and 7). A small negative interaction effect of mainstream identification and ethnic identification emerged for grades in German (Model 6). Post hoc testing revealed a slightly negative simple slope for ethnic identification at a level of mainstream identification one standard deviation above the mean ($b = -0.04$, $SE = 0.03$, n.s.) that was not significant as well as a significant positive slope for ethnic identification at a level of mainstream identification one standard deviation below the mean ($b = 0.10$, $SE = 0.04$, $p < 0.05$). The findings on academic achievement for this group thus show neither an additive nor multiplicative benefit of identity integration and therefore support the competing hypothesis on academic achievement rather than the integration hypothesis.

For psychological adaptation, the expected positive associations between ethnic identification and life satisfaction and self-esteem emerged in the Turkish group in the main effects models (Models 9 and 11). At the same time, mainstream identification was not significantly related to life satisfaction and self-esteem in this group (Models 9 and 11). Contrary to our overall findings, Turkish students thus seem to benefit only from their ethnic identification in their psychological adaptation. We subsequently included the interaction terms, which were not significant (Models 10 and 12). Thus, we found neither an additive nor multiplicative benefit of identity integration, which is in line with our expectations and supports the competing hypothesis (4a) rather than the integration hypothesis for psychological adaptation in the Turkish group.

In the group from the former Soviet Union, there were no significant correlations between ethnic identification and psychological adaptation, whereas mainstream identification was positively related to life satisfaction in the main effects model (Model 9). However, the coefficients for self-esteem were not significant (Model 11). Moreover, none of the interaction terms was significantly related to any of the psychological adaptation outcomes (Models 10 and 12). Contrary to our expectations, the findings for the group from the former Soviet Union thus contradict the integration hypothesis (hypothesis 4b).

In the Heterogeneous Other group, both cultural identity dimensions were positively related to life satisfaction and self-esteem in the main effects models (Models 9 and 11). This indicates an additive benefit of identity integration in this group. Including an interaction term yielded no significant effects for life satisfaction (Model 10) but a small negative interaction for self-esteem (Model 12). Simple slope analyses revealed a significant positive slope for ethnic identification at a level of mainstream identification one standard deviation above the mean ($b = 0.11$, $SE = 0.02$, $p < 0.001$) and a significant positive slope at a level of mainstream identification one standard deviation below the mean ($b = 0.19$, $SE = 0.03$, $p < 0.001$) which is consistent with the findings on self-esteem in the overall sample.

For a more thorough test of group differences, we further compared the path weights between the groups using Wald χ^2 tests. This allows us to investigate potential differences between the immigrant groups in the relationships of cultural identity and adaptation more directly. The between-group comparisons revealed a significant difference between the Turkish group and the group from the former Soviet Union in the association of mainstream identification and mathematics grades, with a positive relationship in the group from the former Soviet Union and no association in the Turkish group ($\chi^2 = 5.63$, $p = 0.05$). In addition, the association between ethnic identification and life satisfaction was stronger in the Heterogeneous Other group than in

Table 5 Multivariate multigroup path model predicting academic achievement (reading achievement, mathematics achievement, grades in German, grades in mathematics) and psychological adaptation (life satisfaction and self-esteem) in the Turkish group, the group from the former Soviet Union, and the Heterogeneous Other Group

	Read. achievement				Math. achievement				Grade German[h]				Grade math.[h]				Life satisfaction				Self-esteem			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β	b(SE)	β
Turkey (N = 809)																								
MI[a]	0.16** (0.05)	0.10	0.19** (0.05)	0.12	0.06 (0.04)	0.06	0.08 (0.04)	0.05	0.07 (0.04)	0.07	0.08 (0.05)	0.07	0.02 (0.06)	0.02	0.03 (0.06)	0.03	0.14 (0.09)	0.07	0.14 (0.10)	0.06	0.01 (0.03)	0.01	0.02 (0.04)	0.03
EI[a]	−0.06 (0.05)	−0.04	−0.07 (0.05)	−0.05	−0.06 (0.04)	−0.05	−0.07 (0.04)	−0.05	−0.06 (0.05)	−0.06	−0.07 (0.05)	−0.07	−0.08 (0.05)	−0.06	−0.08 (0.05)	−0.07	0.35*** (0.10)	0.18	0.34*** (0.09)	0.18	0.10** (0.03)	0.14	0.10** (0.03)	0.13
MI[a] × EI[a]			−0.10 (0.06)	−0.05			−0.05 (0.05)	−0.03			−0.03 (0.05)	−0.02			−0.05 (0.06)	−0.03			0.03 (0.12)	0.01			−0.04 (0.05)	−0.05
R²	0.29		0.30		0.30		0.30		0.10		0.10		0.06		0.06		0.08		0.08		0.07		0.07	
FSU (N = 712)																								
MI[a]	0.01 (0.06)	0.01	0.01 (0.06)	0.01	0.18*** (0.05)	0.13	0.18*** (0.05)	0.12	0.05 (0.05)	0.05	0.06 (0.05)	0.05	0.22*** (0.06)	0.16	0.22*** (0.06)	0.17	0.26* (0.11)	0.12	0.27* (0.11)	0.12	0.07 (0.04)	0.09	0.07 (0.04)	0.09
EI[a]	−0.10 (0.05)	−0.07	−0.11 (0.06)	−0.07	−0.08 (0.04)	−0.06	−0.06 (0.04)	−0.06	−0.05 (0.05)	−0.05	−0.07 (0.05)	−0.05	−0.05 (0.06)	−0.04	−0.06 (0.06)	−0.05	0.11 (0.09)	0.06	0.10 (0.09)	0.05	0.05 (0.03)	0.06	0.05 (0.03)	0.08
MI[a] × EI[a]			0.02 (0.06)	0.01			−0.09 (0.05)	−0.05			0.08 (0.05)	0.06			0.04 (0.07)	0.03			0.02 (0.13)	0.01			−0.04 (0.04)	−0.04
R²	0.35		0.35		0.41		0.41		0.12		0.12		0.09		0.10		0.04		0.04		0.06		0.06	
Other (N = 2373)																								
MI[a]	0.13*** (0.04)	0.08	0.13*** (0.04)	0.08	0.06 (0.03)	0.04	0.05 (0.03)	0.04	0.08** (0.03)	0.07	0.09** (0.03)	0.08	0.09* (0.04)	0.06	0.08* (0.04)	0.06	0.31*** (0.06)	0.14	0.31*** (0.06)	0.14	0.11*** (0.02)	0.14	0.12*** (0.02)	0.15
EI[a]	−0.03 (0.03)	−0.02	−0.02 (0.04)	−0.01	−0.03 (0.03)	−0.02	−0.03 (0.03)	−0.02	0.01 (0.03)	0.01	0.03 (0.03)	0.03	−0.02 (0.03)	−0.01	−0.02 (0.04)	−0.02	0.36*** (0.06)	0.18	0.35*** (0.06)	0.18	0.14*** (0.02)	0.19	0.15*** (0.02)	0.21
MI[a] × EI[a]			−0.03 (0.05)	−0.02			0.01 (0.04)	0.00			−0.09** (0.03)	−0.07			0.02 (0.04)	0.01			0.00 (0.07)	0.00			−0.05* (0.02)	−0.06
R²	0.36		0.36		0.40		0.40		0.11		0.11		0.06		0.06		0.05		0.05		0.07		0.07	

Note: $N = 3894$. Cluster-robust standard errors in parentheses. Analyses controlled for gender, age, whether the student was born abroad, language used within the family context, number of books in the household, parents' highest degree of education, socioeconomic status of the family, and school track

MI Mainstream identification, *EI* Ethnic identification, *FSU* Former Soviet Union, *Other* Heterogeneous Other, *Read.* Reading, *Math.* Mathematics,

[a] Mean centered

[h] We reverse-coded the original scale so that higher values indicate more favorable school outcomes

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$

the group from the former Soviet Union ($\chi^2 = 5.68$, $p = 0.05$). After Bonferroni adjustment, however, these differences just failed to reach significance at the 5% level[8]. No significant differences between the groups emerged for the other outcomes. Overall, our findings suggest that the role of mainstream identification and ethnic identification varies across immigrant groups, thus contradicting the assumption of a general superiority of identity integration.

Discussion

Identifying factors that facilitate successful adaptation of immigrants and their descendants to the mainstream society is a major scientific and public concern. One factor the research literature discusses is the role cultural identity has for two pivotal adaptation outcomes, namely academic achievement and psychological adaptation. According to the widely-held integration hypothesis (Berry et al. 2006; Phinney et al. 2001), identity integration, i.e., the concurrent identification with the mainstream context and the ethnic context, is most adaptive for both outcomes. However, several arguments challenge the overall superiority of identity integration and question its generalizability across societal contexts, outcomes, and immigrant groups (e.g., Birman and Simon 2014). To date, only a few studies investigated the role of cultural identity in different adaptation outcomes and across different immigrant groups in countries with an assimilative climate. Based on a relatively large sample of immigrant adolescents in Germany, our study tested whether the integration hypothesis describes the role of cultural identity in academic achievement and psychological adaptation in the assimilative context of Germany. We also probed whether the integration hypothesis holds across different outcomes, including objective measures of achievement, and whether it generalizes across different immigrant groups.

Our findings do not support the integration hypothesis for academic achievement. There were neither additive nor multiplicative benefits of a simultaneous identification with the mainstream context and the ethnic context for any of the

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[8] We used the conservative approach of Bonferroni adjustment in calculating the p values to account for multiple comparisons. To further check the robustness of the findings, we also performed an analysis with an overall model including two-way interactions between each cultural identity dimension and the immigrant groups and three-way interactions between mainstream identification, ethnic identification, and the immigrant groups. These findings largely resemble the results of the multigroup analyses, showing significant differences between the Turkish group and the group from the Former Soviet Union in the association of mainstream identification and mathematics grades and between the group from the Former Soviet Union and the Heterogeneous Other group in the association of ethnic identification and life satisfaction.

achievement indicators in the overall sample. Exclusively the identification with the mainstream context is crucial for adolescents' school success. This pattern is consistent with the findings from previous studies conducted in Germany (Edele et al. 2013; Hannover et al. 2013). As some authors have argued (e.g., Frankenberg et al. 2013; Makarova and Birman 2015), mainstream identification apparently fits the expectation of an assimilative school context like in Germany and seems therefore to be most adaptive, whereas ethnic identification is of minor benefit in such a context. An assimilation ideology may affect students' educational outcomes by influencing their interactions within the school context (Baysu et al. 2011), such as interactions of teachers and peers with students. Schools that assert assimilative pressure on immigrant students may increase their perceived discrimination which could foster academic disidentification (Fordham and Ogbu 1986) or activate stereotype threats (Steele and Aronson 1995) and consequently lower their school success (e.g., Baysu et al. 2011; Eccles et al. 2006).

Our study confirms that mainstream identification not only predicts self-reported indicators of adolescents' school adaptation, as previous studies have shown (Birman et al. 2010; Horenczyk 2010; Kiang et al. 2013), but also academic achievement. This is an important finding, as the indicators of school adaptation that prior research has used, such as school-related attitudes (e.g., "I feel uneasy about going to school in the morning;" Berry et al. 2006: 312), overlap with psychological adaptation, for which different mechanisms are at work. Furthermore, objective measures of academic achievement are less prone to bias, such as incorrect self-representation, than self-reported indicators of school adaptation (e.g., Kuncel et al. 2005). Although it is widely accepted that academic success is a core aspect of adolescents' sociocultural adaptation (e.g., Phinney et al. 2001), only few investigations on the role of cultural identity in adaptation have thus far used objective measures of achievement as indicators of sociocultural adaptation (for exceptions see Edele et al. 2013; Hannover et al. 2013), and these studies had several methodological constraints and used reading comprehension as the only outcome. Yet, reading tests are sometimes criticized as being differentially valid in groups with different linguistic and cultural backgrounds, so that their cultural fairness is at stake (e.g., Steffensen et al. 1979). Our study extends the existing findings by including not only grades and a reading comprehension test but also a mathematics test as an indicator of academic achievement in the analyses. Although we cannot be sure that the mathematics test is completely culturally fair, it should be less prone to bias than reading tests. That our results corroborate earlier findings across achievement domains strengthens the argument that mainstream identification is beneficial for success in the larger society.

In contrast to the findings on academic achievement, psychological adaptation was positively related with both mainstream identification and ethnic identification in the overall sample. This finding indicates an additive benefit of identity integration and supports the notion that identifying with both contexts could foster supportive networks (Nguyen and Benet-Martínez 2013) which, in turn, foster psychological adaptation (e.g., Mood et al. 2017). Another explanation for the adaptive advantage of identity integration is that the identification with both, the mainstream context and the ethnic context, boosts immigrant adolescents' competence in managing demands of both contexts (Nguyen and Benet-Martínez 2013), which should promote a coherent view of the self and psychological functioning. However, a slightly negative interaction effect of mainstream identification and ethnic identification emerged for self-esteem. This suggests that managing identity integration may, to some extent, also make it harder to develop a coherent view of the self. For instance, if cultural values are in conflict, integrating views from peers of different contexts can potentially be a challenge. However, both identity dimensions contributed to predicting life satisfaction and self-esteem in an additive manner, which indicates that immigrant adolescents on the whole benefit from the identification with both, the mainstream context and the ethnic context. Our results thus support the integration hypothesis for psychological adaptation in the assimilative context of Germany.

We further probed whether the integration hypothesis applies robustly across immigrant students from different countries of origin, namely Turkey, the former Soviet Union, and heterogeneous other countries. As in the overall sample, ethnic identification was not significantly related to academic achievement in any of the subsamples. For mainstream identification, we identified positive correlations with academic achievement, yet the findings varied between immigrant groups and were inconsistent for the single indicators. The pattern of results for academic achievement is thus not commensurable with the integration hypothesis in any of the groups and contradict our expectation on the adaptive advantage of identity integration in immigrant students from the former Soviet Union. Despite high levels of acceptance, identification with the ethnic context does thus not facilitate this group's social adjustment. However, the findings partly support our expectation that Turkish immigrant students only benefit from their identification with the mainstream context. These findings again support the notion that only mainstream identification is beneficial in an assimilative school context and that ethnic identification and its associated resources play a minor role, regardless of the particular immigrant background.

Moreover, comparisons of the path coefficients revealed two significant group differences, one for the relationship between mainstream identification and mathematics grades and one for the relationship between ethnic identification and life satisfaction (see below). Mathematics grades of immigrant students from the former Soviet Union thus benefit more from the students' mainstream identification than the mathematics grades of Turkish students. One possible explanation for the group differences points to the role of group-specific teacher expectations, as grades are not only based on the students' performance but also on teacher ratings. There is some indication that teacher expectations for mathematics achievement are negatively biased for Turkish immigrant students and positively biased for immigrant students with Eastern European ancestry in Germany (Lorenz 2017). Hence, teachers may reward students' mainstream identification differentially for different immigrant groups.

For psychological adaptation, mainstream identification and ethnic identification were differentially related to life satisfaction and self-esteem within the subsamples. Ethnic identification, but not mainstream identification, was positively related to both aspects of psychological adaptation in the Turkish sample. This was in line with our expectations and with previous studies on adolescents with a Turkish immigrant background (Aydinli-Karakulak and Dimitrova 2016; Dimitrova et al. 2015). Hence, Turkish immigrant students benefit from their ethnic identification and its associated resources in the evaluation of their life circumstances and in their self-esteem. A feasible explanation for this finding is that ethnic identification is particularly important for the well-being of immigrant groups who perceive high levels of discrimination (Branscombe et al.1999), which seems to be the case for Turkish immigrants and their descendants (Salentin 2007; Tucci et al. 2014). Our findings thus support the notion that ethnic identification serves as a buffer against such experiences and promotes psychological functioning (e.g., Mossakowski 2003).

In the group from the former Soviet Union, mainstream identification was positively related to life satisfaction, but we detected no other significant relationship between the cultural identity dimensions and psychological adaptation. The positive relationship between mainstream identification and life satisfaction is in line with the expectation that members of immigrant groups, which perceive comparably high levels of acceptance by the majority population, benefit from their identification with members of the mainstream context. Many immigrant students from the former Soviet Union are of German ancestry and previous studies indicate that they have positive feelings toward members of the mainstream context. Furthermore, members of the mainstream context are more accepting of these immigrants than,

for instance, Turkish immigrants (Brüß 2005). As a result, immigrant students from the former Soviet Union may perceive members of the mainstream context as their in-group which should enhance their psychological adaptation through favorable in-group-out-group comparisons (Tajfel and Turner 1979).

In contrast, ethnic identification evidently plays a minor role in the psychological adaptation of immigrant adolescents from the former Soviet Union. One possible explanation for this finding is the fact that these immigrants are often of German ancestry. Consequently, they may actually view members of the mainstream context as their in-group and thus ethnic identification would not generate any additional resources for their psychological adaptation. This finding is corroborated by the second significant group difference, showing that immigrant adolescents from the former Soviet Union benefit significantly less from identification with the ethnic context than their peers from heterogeneous other countries in life satisfaction. The findings for the psychological adaptation of the Heterogeneous Other group support the integration hypothesis. In sum, the immigrant groups included in our analyses show several similarities but also notable differences. This indicates that the particularities of immigrant groups affect the relationship between their cultural identity and adaptation.

While our study extends the existing findings on cultural identity and adaptation, it also has several limitations. One limitation is that we examined the research questions in only one context, namely Germany. To test the role of context in the adaptiveness of cultural identity, an examination of multiple contexts simultaneously would be preferable. Moreover, due to sample size restrictions, we could only differentiate between the two largest immigrant groups in Germany and a heterogeneous group from other countries in our analyses, which required the inclusion of a larger number of control variables. Distinguishing additional groups would have been more informative. Moreover, it would have been desirable to assess the perceived levels of discrimination of students from different immigrant groups directly. Another limitation is that we cannot draw causal inferences due to the cross-sectional nature of our data. Although theory (e.g., Berry 1997) suggests that cultural identity influences adaptation, it is also reasonable to assume the reverse causality. For instance, some studies indicate that higher levels of academic success increase both the identification with the mainstream context and the ethnic context (de Vroome et al. 2014). A further potential limitation is unobserved heterogeneity. Although we included many control variables, it cannot be ruled out that additional factors, such as personality traits, play a role as well.

Future research should therefore conduct longitudinal analyses to estimate possible directional and reciprocal associations among mainstream identification and ethnic identification on the one hand, and immigrant students' adaptation on the other. Moreover, more studies comparing several contexts are needed. Ideally, future investigations should also include perceived discrimination and school context indicators, such as attitudes of relevant others (e.g., teachers and peers) toward cultural diversity (e.g., Hachfeld et al. 2015; Schachner et al. 2016). In addition, studies should investigate cultural identity and adaptation outcomes across a larger number of immigrant groups.

Conclusion

Our study demonstrates that identity integration is not always most adaptive. In Germany, only the identification with the mainstream context, but not with the ethnic context, is associated with academic achievement. These results for academic achievement are in line with contextual models of acculturation suggesting that contextual conditions moderate the adaptiveness of cultural identity (e.g., Bourhis et al. 1997). In contrast, both cultural identity dimensions seem to be beneficial for psychological adaptation, although to varying degrees in different immigrant groups. Some differences between immigrant groups emerged, indicating that the relationship between cultural identity and adaptation is moderated by specific characteristics of the immigrant groups, such as their immigration histories and levels of acceptance in the mainstream society. In addition, the relationship between cultural identity and adaptation varies not only between the broad adaptation domains, academic achievement and psychological adaptation, but also between specific indicators of each domain. Distinguishing the general domains of sociocultural and psychological adaptation is theoretically sound but may be too broad to capture the role of cultural identity in the adaptation of immigrant adolescents comprehensively. Overall, our findings indicate that the role of cultural identity in adaptation depends on the domain of adaptation, on the immigrant group and—to some extent—on the indicator of the respective adaptation domain. Although identity integration is not invariably most adaptive, our findings still support the view that identification with both, the mainstream context and the ethnic context, is important for a positive development of immigrant adolescents because each contributes to at least one type of adaptation outcome. Adolescence is a critical period. It is crucial for parents and teachers to closely pay attention to the individual needs of adolescents and to create a positive climate to support them in their academic development, emotional development, and identity formation in this vulnerable period of life. A promising strategy is most likely to endorse multicultural policies and a diversity-oriented societal climate in the larger society, which would allow immigrant

students to develop both identity orientations and to profit from their adaptive potential.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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