Immigrant Students' Educational Trajectories: The Influence of Cultural Identity and Stereotype Threat

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Abstract   Research has shown that stereotype threat can inhibit immigrant students to unlock their full potential. Individual differences in cultural identity could be associated with immigrants' stereotype vulnerability. This longitudinal study ($n = 516$) investigates the influence of recurring experiences of stereotype threat at school, and how adolescent immigrants' cultural identity and stereotype vulnerability affect their educational achievement. The results show a stronger decline of immigrants' (vs. non-immigrants') GPA, domain identification, and sense of academic belonging, as well as higher dropout rates. Higher stereotype vulnerability predicted a stronger decline in GPA, and lower levels of academic belonging. Stronger ethnic identity was related to higher stereotype vulnerability. An experimental belonging treatment failed to improve students' educational achievement. This research combines stereotype threat and acculturation research within the educational context.

Keywords: stereotype threat; immigrants; cultural identity; ethnic identity; academic belonging

Immigration leads to more diversity in society and bears high benefits for the receiving countries. Yet, both in the US and in European countries, the consistent achievement gap between immigrant students and their non-immigrant peers troubles the educational system. As documented by the Organization for Economic Cooperation and Development (OECD, 2015), immigrant students often underachieve in educational settings, drop out of school earlier, and do not attend higher educational institutions. A prerequisite for future life opportunities and career chances, however, is attaining higher education. Efforts to close the achievement gap are a persistent and highly relevant challenge, as numbers of immigrants to many countries within the OECD are on the rise (OECD, 2015).

Factors such as socio-economic status (SES), family resources, and language can only partly explain the systematic underachievement of immigrant students. In addition, psychological effects within the educational environment may contribute to the achievement gap (Martin, Liem, Mok, & Xu, 2012; McKown & Strambler, 2008). Previous research suggests that minority students might possess a substantial amount of untapped intellectual potential, hidden by consequences resulting from psychological threats (Walton & Spencer, 2009). Stereotype threat, an aversive and stress-related state that affects members of negatively stereotyped groups, inhibits educational advancement at times of preparation and learning, as well as in testing situations (e.g., Appel & Kronberger, 2012; Huguet & Régner, 2007). Immigrant students, who regularly face negative stereotypes in a society, might suffer recursive experiences of stereotype threat, which supposedly influence their educational trajectories (cf. Inzlicht, Aronson, & Mendoza-Denton, 2009).

The consequences of chronic experiences of stereotype threat are in the center of this research. The aim of this work is to connect stereotype threat theory with the acculturation framework. Acculturation research has shown that immigrants' acculturation orientations, comprising of their level of identification with the residence culture and their ethnic background are key predictors for well-being, mental health, and educational success (Nguyen & Benet-Martínez, 2013).

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In a longitudinal field study, set in Central Europe, we intended to identify factors both interfering with and fostering adolescent immigrants' educational careers, based on findings from acculturation and stereotype threat research. Over the course of one school year, we examined the trajectories of immigrant and non-immigrant students regarding their grade point average (GPA), sense of academic belonging, and domain identification. Stereotype vulnerability was included as an indicator of recurring experiences of stereotype threat. This variable represents an individual's tendency to perceive the world in terms of negative stereotypes about a group the individual belongs to, and to be affected by these negative stereotypes (Aronson & Inzlicht, 2004). Immigrant students were expected to suffer chronic experiences of stereotype threat, as indicated by higher levels of stereotype vulnerability (vs. non-immigrant students). We investigated whether a brief experimental treatment to foster sense of belonging improved immigrant students' educational achievement. Building upon previous research on stereotype threat interventions, we implemented a short treatment at the beginning of the school year, with two follow-up assessments after four and eight months. We further focused on individual differences in immigrants' cultural identity (i.e., ethnic identity and residence culture identity) as crucial predictors for immigrants' stereotype vulnerability.

Stereotype threat in educatinoal settings - a chronic hazard for immigrants?

Members of certain immigrant groups are faced with comprehensive ability stereotypes of low cognitive achievement, laziness, and low performance motivation (e.g., Asbrock, 2010; Froehlich, Martiny, Deaux, & Mok, 2016; Kahraman & Knoblich, 2000; Lee & Fiske, 2006; Phalet & Poppe, 1997). Stereotype threat theory suggests that negative stereotypes pose a psychological burden, which systematically undermines the performance of minority group members (e.g., African Americans, immigrants) and women (in some domains) in everyday educational environments (Schmader, Johns, & Forbes, 2008). The performance inhibiting effect can occur regardless of the actual level of prejudice or discrimination in a particular educational setting. Simply being aware of potential negative stereotypes against one's group can initiate threat. Affected individuals fear (a) to be judged based on these stereotypes, and (b) to confirm the negative expectations by living up to them (Steele, 1997). Negative thoughts and emotions are elicited, which result in self-regulation mechanisms, along with a physiological stress response. This consumes executive resources, which would be needed for any demanding social or cognitive task, and thus, lead to decreased performance (Schmader et al., 2008). Beyond performance in a test-taking situation, research suggests that stereotype threat can have an influence on career aspirations, achievement orientation, motivation, domain identification, and sense of belonging (Thoman, Smith, Brown, Chase, & Lee, 2013).

Since it was first introduced to the research community (Steele & Aronson, 1995), hundreds of experiments have demonstrated the performance inhibiting effect for African American students in academia and women in math-related fields (for a meta-analytic review see for example Nguyen & Ryan, 2008). Initial evidence has been gathered that stereotype threat also impairs the cognitive performance of certain immigrant groups (e.g., from North Africa or the Balkans in European countries or Latino Ame-

ricans in the US; for a meta-analytic review see Appel, Weber, & Kronberger, 2015).

Previous studies, commonly conducted in the laboratory or under highly regulated circumstances, often focused on stereotype threat based on situational triggers that undermine performance in standardized testing situations. Such studies revealed central underlying mechanisms and identified important moderators, showing that not all individuals are equally prone to experience stereotype threat (Schmader et al., 2008; Steele, Spencer, & Aronson, 2002). However, in long-term educational environments (like school) these situational threats recur (Hall, Schmader, & Croft, 2015). For instance, an immigrant student might be frequently reminded of his or her group membership, hear explicit references to specific ability stereotypes against the group, or experience other signals of rejection (Phalet & Kosic, 2006; see also Deaux, 2006). Such cues can trigger stereotype threat, and, due to their recurrence and interaction with other factors in chronically evaluative environments, could accumulate over time. Through amplified monitoring and higher vigilance, stereotype threat may lead to different interpretations of ambiguous cues, such as scrutinizing a teacher's critical feedback on an assignment as signs of his or her prejudice against one's group, rather than attributing it to one's actual performance (Cohen, Steele, & Ross, 1999). In sum, school can become a chronically threatening environment for immigrant students, as they need to cope with stereotype threat not only as a situational contingency, but over an extended period of time (i.e., months and years) in a domain that is a central organizing feature of their daily lives (cf. Cook, Purdie-Vaughns, Garcia, & Cohen 2012; Sherman et al., 2013).

Individuals differ in their vulnerability to stereotypes in everyday settings, as shown for African American college students (stereotype vulnerability, Aronson & Inzlicht, 2004; see also Brown & Lee, 2005, for the related concept of stigma consciousness). Stereotype vulnerability is defined as the "tendency to expect, perceive, and be influenced by negative stereotypes about one's social category" (Aronson & Inzlicht, 2004, p. 829). It reflects the self-perceived magnitude of recurring situational experiences of stereotype threat. Among Latino Americans, higher stereotype vulnerability was associated with lower identification with science, which in turn predicted lower intentions to pursue an academic career (Woodcock, Hernandez, Estrada, & Schultz, 2012). Immigrants' stereotype vulnerability likely changes over time and context, depending on factors such as immigrant generation, SES, or perception by the majority culture (Deaux et al., 2007; Owens & Lynch, 2012). Yet, psychological predictors of stereotype vulnerability among immigrants remain to be examined. In the current study, we aim at identifying individual difference variables associated with immigrant students' vulnerability to stereotype threat.

The cultural identity of immigrants and stereotype vulnerability

Immigrants negotiate their cultural identities over time, shaped by a combination of self-categorization and the awareness of categorizations made by out-group members (Deaux, 2006). Acculturation theory and research highlight the relevance of both, ethnic background and residence culture. The level of identification with each culture can vary, resulting in two inde-

pendent constructs: ethnic identity strength and residence culture identity strength (Berry, Phinney, Sam, & Vedder, 2006; Brown & Zagefka, 2011). According to the acculturation framework by Berry (1997, 2001), the two cultural identities define four different acculturation orientations: *integration* (high identification with both cultures), *assimilation* (low identification with ethnic background, but highly with residence culture), *segregation* (low identification with residence culture, but highly with ethnic culture), and *marginalization* (low identification with both cultures). A sense of belonging to the group can be regarded the most important component of cultural identity, as it involves a strong affective attachment, and the feeling that one's personal fate is highly overlapping with the fate of the group (Ashmore, Deaux, & McLaughlin-Volpe, 2004; Phinney & Ong, 2007). Some studies rely on language as an indicator of immigrants' identification with the residence culture (e.g., Sherman et al., 2013, for Latino Americans); however, cultural identity goes beyond questions of country of origin, citizenship, or language use (Deaux, 2006). It encompasses the self-identification as a group member, together with attachment, feelings of belonging, and attitudes towards one's group, and thus, requires a more sophisticated measure (Phinney & Ong, 2007). Cultural identities are not stable characteristics, but malleable and subject to circumstantial and situational change (Deaux, 2006; Oyserman, Bybee, & Terry, 2006).

From a stereotype threat perspective, people who identify strongly with a stigmatized group are considered to be more susceptible to the detrimental influence of stereotype threat (Schmader, 2002; Schmader et al., 2008). Thus, a strong identification with the negatively stereotyped ethnic group could increase immigrants' vulnerability to stereotype threat. Evidence for this hypothesis comes from studies including Latino Americans in the US, in which a strong ethnic identity was associated with lower performance under threat (Armenta, 2010; Schultz, Baker, Herrera, & Khazian, n.d.). Aside from stereotype threat research, scholars found that a strong ethnic identity amplified distress resulting from discrimination, providing further evidence that a strong identification with a negatively perceived group might bear a risk (e.g., McCoy & Major, 2003; Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002; Yoo & Lee, 2008).

However, the literature on the role of cultural identity is more complex. Other research suggests that both, ethnic and residence culture identity could reduce immigrants' vulnerability to stereotypes. Findings indicate that first-generation immigrants might be more resilient against stereotype threat than second-generation immigrants, partly due to a strong ethnic identity and lower awareness of the existence of negative stereotypes (Deaux et al., 2007). Sherman et al. (2013) suggest that Latino Americans who identify less with their ethnic group are more susceptible to negative stereotypes; in turn, higher ethnic identification predicts better grades. Moreover, a strong connectedness to the majority culture was found to increase stereotype resilience (Owens & Lynch, 2012; Weber, Appel, & Kronberger, 2015). Correspondingly, higher endorsement of the residence (i.e., American) culture was associated with better grades in Latino Americans (Sherman et al., 2013). Both, racial and ethnic identity were identified as factors that buffered the negative impact of discrimination, and led to less distress and higher academic efficacy (e.g., Appel, 2012; Greene, Way, & Pahl, 2006; Oyserman, Harrison, & Bybee, 2001; Phinney, Horenczyk, Liebkind, & Vedder, 2001; Sellers & Shelton, 2003). This is in line with findings from acculturation

research, supporting the benefits of having two cultural identities (Nguyen & Benet-Martínez, 2013).

Within an immigrant sample in Europe, ethnic identity strength was unrelated to performance under explicit stereotype threat, while a strong residence culture identity was associated with better performance (Weber et al., 2015). Residence culture identity was unrelated to cognitive performance in a control condition or a more implicit threat condition. In a second study, residence culture identity was experimentally manipulated. Strengthening (vs. weakening) the identity enhanced the performance of immigrant students in a threatening cognitive performance test situation. This finding suggests that a strong identification with the residence culture could serve as a buffer. It can be assumed that the non-negatively stereotyped alternative identity enables immigrants to situationally discount negative stereotypes against their ethnic background. As the residence culture identity is not negatively associated with the ability domain, the cognitive imbalance that leads to stereotype threat is reduced (cf. Schmader et al., 2008). Research on Asian American women supports this assumption. When primed with a negatively stereotyped social identity (being a women), they showed worse performance in a math test, than when primed with a neutral social identity (McGlone & Aronson, 2006). Moreover, activating a positively connoted identity (being Asian) led to better performance (Shih, Pittinsky, & Ambady, 1999).

In sum, acculturation theory and research suggest the benefits of a strong ethnic identity, while in contrast stereotype threat theory proposes that a stronger identification with the stereotyped group might be associated with higher levels of stereotype vulnerability. Simultaneously, based on previous research, a strong attachment to the non-negatively stereotyped residence culture could serve as a buffer against stereotype threat (Owens & Lynch, 2012; Weber et al., 2015), and thus, lead to lower levels of stereotype vulnerability. As findings have been mixed, it remains unclear how ethnic and residence culture identity strength contribute to immigrants' performance in situations of stereotype threat. Further, there is no research to date that examined the influence of ethnic and residence culture identity on immigrants' stereotype vulnerability in the long run. Our first contribution to the existing research is to examine the influence of both ethnic and residence culture identity on stereotype vulnerability (for detailed hypotheses, see "Overview and predictions"). Moreover, stereotype vulnerability, as an indicator of chronic experiences of stereotype threat, is expected to impair educational performance. To the extent that stereotype threat is experienced, affected individuals might psychologically adapt to the circumstances by disidentifying with the domain and by having lower feelings of academic belonging. Therefore, we further examined immigrants' domain identification (i.e., the extent to which an individual's self-concept is shaped by one's role or performance in a particular domain, cf. Osborne & Jones, 2011), and their sense of belonging to school (i.e., the degree to which students feel socially accepted and academically adept; cf. Cook et al., 2012; Walton & Cohen, 2007).

Stereotype threat interventions

In recent years, scientists have met the challenge to reduce the detrimental effects of stereotype threat in educational settings for ethnic minority and female students (for a review see Yeager & Walton, 2011). Although psychological interventions often cannot change the learning environment itself, they may

instead alter psychological processes within complex settings (Walton, 2014). Interventions against stereotype threat can exert their influence at the vigilance stage and the threat-appraisal stage (cf. Cohen & Garcia, 2008). Interventions at the vigilance stage aim at reducing people's tendency to interpret ambivalent experiences in light of their threatened social identity (e.g., belonging interventions, cf. Walton & Cohen, 2007, 2011). In turn, interventions on the threat-appraisal stage aim at buffering people against the negative emotional impact of such an interpretation (e.g., self-affirmation exercises; cf. Cook et al., 2012; Sherman & Cohen, 2006; Sherman et al., 2013).

Treatments fostering African American college students' sense of belonging have been shown to open them up to existing learning opportunities within their educational environment (Walton & Cohen, 2007, 2011). This intervention, based on a narrative that framed social adversity in school as shared and short-lived, simply normalized doubts about social belonging. It was communicated that most first year college students, regardless of race or ethnicity, have worries about whether they belonged to university, and that these doubts diminished over time. In consequence, African American students' feelings of academic belonging increased, they showed decreased worries of being left out or criticized, and even improved their GPA over the course of three years (Walton & Cohen, 2007, 2011). Another approach aiming to make a difference on the vigilance stage is activating multiple identities – a strategy that closely ties in with situationally strengthening immigrants' residence culture identity (Oyserman et al., 2006; Rydell, McConnell, & Beilock, 2009; Shih, 2004; Weber et al., 2015; see also Oyserman, Fryberg, & Yoder, 2007).

We suggest that increasing immigrant students' sense of belonging to the residence culture may buffer the negative effects of chronic experiences of stereotype threat. As stereotype threat differs across groups, domains, and outcomes, interventions need to be tailored according to the specific needs of the affected group (Shapiro, Williams, & Hambarchyan, 2013; see also Zhang, Schmader, & Hall, 2013). Based on theory and findings from acculturation and stereotype threat research, it is hypothesized that laying the ground to increase immigrants' feelings of connectedness to the residence culture – without promoting dissociation from the ethnic culture or exerting assimilation pressure – counteracts stereotype vulnerability. A strong, non-stereotyped social identity in the educational context, independent from one's ethnic identity, could provide immigrants with a suitable alternative source of self-integrity in situations of stereotype threat, and thus, serve as a buffer when confronted with negative stereotypes against their ethnic group. Sense of belonging is a fundamental aspect of cultural identity and of students' identification with academics. Therefore, we assume that (a) normalizing immigrant students' doubts about their belonging at school, and (b) increasing their feelings of inclusion into the residence culture, has a positive impact on their educational success (cf. Walton & Cohen, 2007; Weber et al., 2015). The only previous study, which particularly examined a long-term stereotype threat intervention targeting Latino Americans (i.e., a rather heterogeneous immigrant group in the US), focused on the threat-appraisal stage by employing a self-affirmation exercise (Sherman et al., 2013). We argue that intervening on the vigilance stage could also reduce immigrant students' stereotype vulnerability by decreasing their tendency to attribute ambivalent and potentially threatening experiences at school to their ethnic identity.

Overview and predictions

The current research aims at combining questions from stereotype threat and acculturation research. The study was conducted in a 2 (immigration background: yes vs. no) x 2 (treatment: belonging vs. control) design with stereotype vulnerability, GPA, class drop out, domain identification, sense of academic belonging, and immigrants' ethnic and residence culture identity strength observed over the course of one school year. The existence of negative stereotypes or devaluation of the group within the Austrian society could be expected for all immigrant subgroups in our final sample (no student originated from a wealthy Northern European or Western country such as Germany, Sweden, or the US; see Supplement D for more detailed information on the immigrant experience). Therefore, all immigrant students were assumed to potentially experience situations of stereotype threat at school, and thus, were treated as one group.

We assumed that immigrant students report higher levels of stereotype vulnerability than their non-immigrant peers, and that they show worse trajectories regarding GPA, class drop out, domain identification, and sense of academic belonging. Our study included an intervention to reduce stereotype vulnerability and to improve the school-related variables. We expected that an intervention that strengthened sense of belonging by increasing feelings of inclusion into the residence culture could improve students' educational trajectories, particularly those of immigrant students. Thus, we expected students who received the belonging intervention to show improved stereotype vulnerability, GPA, class dropout, sense of academic belonging, and domain identification. We further assumed that lower stereotype vulnerability would be associated with higher educational achievement among students, in terms of better GPA and lower class dropout, as well as with more academic belonging and domain identification.

We further included both ethnic and residence culture identity into our model, focusing on immigrant students only. Based on stereotype threat theory and research, we assumed that ethnic identity is positively associated with immigrants' stereotype vulnerability, while a strong residence culture identity should serve as a buffer, and thus, would be negatively associated with stereotype vulnerability.

Method

Participants and procedure

Sample. All participants were recruited in the first year of Austrian high schools. Students of 22 classes from four different high schools voluntarily participated in the study. Some of the classes prepared for a non-academic career whereas others prepared for future university education. We did not expect to find large achievement differences between immigrant and non-immigrant students at the beginning of the school year, as they had already been selected into both high school tracks based on their previous school performance (see Supplement C for more details). Two thirds of the sample followed the higher educational track, $n = 349$. The initial sample at Time 1 (T1) consisted of $n = 540$ students (T2: $n = 483$; T3: $n = 423$). A total of $n = 60$ students took part at all times. Twenty-four students had to be excluded from further analyses due to lacking sufficient knowledge of the

German language and unreliable completion of the questionnaires ($n = 19$), or having a non-negatively stereotyped immigration background (e.g., Germany or Switzerland, $n = 5$). The final sample consisted of $n = 516$ students (age range: 13-19 years, $M = 14.94$, $SD = 1.05$; female: $n = 395$), with $n = 312$ (60.5%) indicating an immigration background. Compared to their non-immigrant peers, a higher percentage of immigrant students attended the lower educational track ($n = 123$ or 39.42% of the immigrants compared to $n = 44$ or 21.57% of the non-immigrants were in the non-academic track). For more demographic information, see Supplement B.

Immigration background. Participants were asked in an open question format to indicate which ethnic group they considered themselves to be a member of, as pre-formulated in the *Multigroup Ethnic Identity Measure* (MEIM; Phinney, 1992). Participants who self-identified with an ethnicity or nationality other than Austrian at T1 were ascribed an immigrant status, which resulted in $n = 312$ students indicating their belonging to a foreign ethnic background (female: $n = 229$; 73.4%). Among those students, $n = 193$ (61.8%) had the Austrian citizenship. Fifty-six students (17.9%) classified as first generation immigrants (born in a different country and entered the current residence country after their 6th birthday), while $n = 247$ students (79.2%) classified as second generation immigrants (born in the current residence country or entered before their 6th birthday; at least one parent born in a different country); nine students did not provide this information. Students listed $k = 38$ different immigration backgrounds (see Supplement A for a complete list of countries of origin), with the most frequently named origins being Balkan countries such as Bosnia ($n = 66$), Turkey ($n = 54$), Serbia ($n = 40$), Kosovo ($n = 28$), and Croatia ($n = 23$).

Belonging Treatment. Based on previous research on stereotype threat interventions (McGlone & Aronson, 2006; Shih et al., 1999; Walton & Cohen, 2007, 2011; Weber et al., 2015), we intended to increase immigrant students' sense of belonging to the residence culture, in order to decrease their susceptibility to stereotype threat. At the beginning of the school year (T1), participants read a fictitious newspaper article about a scientific study on frequent problems most students typically experience when entering high school. In the style of the belonging intervention by Walton and Cohen (2007), the text mentioned worries about school performance and feelings of non-belonging. These fears, uncertainties, and doubts, however, were described as being normal for all students, regardless of their gender, ethnicity, or country of origin. The article outlined the results of a scientific study, showing that throughout the first school year, these feelings of non-belonging had become significantly less, students had gained self-confidence, and eventually felt more capable of achieving at school. After having read the article, participants were asked in a structured writing assignment to elaborate on the topic, and to describe their own experiences, thoughts, and feelings at school. This writing exercise aimed at reducing worries about being negatively evaluated by others due to one's stereotyped group membership, without putting students' ethnic identity in the spotlight. Following up, after the first semester (T2), participants had to fill in a sentence-completion task including five sentences, which required them to think of similarities between them and their residence culture, and to describe positive aspects about their lives in Austria (e.g., "Like many other Austrians, I enjoy doing in my free time…" or "I like about Austria that…"). This task aimed at highlighting the common ground between immigrant students and their residence culture, and thus, creating a sense of communality and inclusion (Weber et al., 2015). Again, it was intended to particularly strengthen this part of students' social identity without deemphasizing their ethnic identity.

In the control condition, at T1, participants read a newspaper article about bicycling and the environment, which did not contain any information related to immigration, academic performance, or school. Students were then asked to reflect on environmentalism and pollution control. At T2, they completed five sentences on how to protect the environment (e.g., "Protected natural spaces like national parks are necessary to …"). Tasks were comparable in difficulty and length. All students – immigrants and non-immigrants – participated in the treatment and were randomly assigned to the conditions.

Procedure. The study was conducted in a 2 x 2 design, including the quasi-experimental factor immigration background (immigrant vs. non-immigrant students) and the experimental factor treatment (belonging vs. control treatment). At T1, participants were randomly assigned to one out of two experimental conditions. This resulted in having both, students with and without an immigration background, as well as both experimental conditions within each of the participating classes (number of students per class: 15-31). Students were asked to fill in the same set of scales at the beginning (T1), the middle (T2), and the end (T3) of the school year. The measurement points were equidistant, all being four months apart. During each session, participants received a booklet including all questionnaires and tasks, which took in total about 30 to 40 minutes to complete. At T1 and T2, the scales were completed before the intervention, ruling out immediate influences on the psychological measures, and ensuring independence of baseline measures at T1. The study was conducted in classrooms by two female researchers during regular school hours. Confidential and anonymous data management was ensured by using individual codes, generated by each participant. As fluency could be expected for all students in our final sample, the study material was presented in German. All ethical requirements for conducting research at schools in Austria were met. After finishing T3, participants were thanked and fully debriefed. Additionally, information leaflets about the consequences of stereotype threat and potential interventions were given to all teachers and headmasters. Each class received between 200 and 250 Euro for their participation, depending on the number of students per class.

Measures

Educational achievement. GPA and class dropout served as our main dependent variables (DVs) regarding educational achievement. Schools provided us with information on mid-term report grades (T2), annual report grades (T3), and class dropout (i.e., dropping out of the class or school over the course of the year, or failing the class). Additionally, we asked all students for their report grades at T2 and T3, while at T1 they reported their annual report grades of the previous school year from their middle schools. Grades provided by schools versus students correlated highly (MathT2: $r = .90$, $p < .001$; GermanT2: $r = .84$, $p < .001$; EnglishT2: $r = .97$, $p < .001$; MathT3: $r = .95$, $p < .001$; GermanT3: $r = .94$, $p < .001$; EnglishT3: $r = .94$, $p < .001$). Due to incomplete information on grades provided by schools (T2: $n = 235$; T3: $n = 82$), and the shown reliability of students' self-reported information, we used the self-reported

grades for our further analyses. GPA was calculated by averaging grades in the core subjects German, Math, and English. Regarding class dropout, we used the information provided by the schools at the end of the school year.

Academic belonging. Students were asked to self-report their sense of academic belonging (*Academic Belonging Scale*; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Cook et al., 2012), α(T1) = .75, α(T2) = .78, α(T3) = .76. The nine-item scale measures students' self-perceived fit into the academic environment (e.g., "People in my school accept me", "If I wanted to, I could do very well in school"). Items were answered on a six-point scale (1 = *don't agree*; 6 = *completely agree*).

Domain Identification. Two items were provided to assess students' domain identification: "It is important for me to be good at school" and "I am good at school" (Keller, 2007). A six-point scale was provided (1 = *don't agree*; 6 = *completely agree*). The two items were significantly correlated at all times (*rs* > .35, *ps* < .01).

Stereotype Vulnerability. Students' susceptibility to stereotype threat was measured with the four-item *Stereotype Vulnerability Scale* (SVS-4; Woodcock et al., 2012). The scale is designed to reflect perceived judgments of others on the basis of one's ethnicity (e.g., "If you do poorly on a test, people will assume that it is because of your ethnicity"), and comes with a five-point scale (1 = *never*; 5 = *almost always*). Reliability was good, as indicated by α(T1) = .81, α(T2) = .80, α(T3) = .84.

Cultural identity strength. We assessed ethnic identity strength with the 12-item *Multigroup Ethnic Identity Measure* (MEIM; Phinney, 1992), measuring sense of belonging and attitudes toward one's ethnic group (e.g., "I feel a strong attachment towards my own ethnic group"). Correspondingly, residence culture identity strength was measured with the *Residence Culture Identity Measure* (RCIM; Weber et al., 2015). The RCIM is based on the MEIM, comprising of parallelized items to address immigrants' identification with their residence culture (e.g., "I feel a strong attachment towards Austria"). Both scales went with a four-point scale (1 = *don't agree*; 4 = *completely agree*) and showed good reliability, MEIM: α(T1) = .88, α(T2) = .91, α(T3) = .89; RCIM: α(T1) = .87, α(T2) = .87, α(T3) = .88. In line with the presumption of independence, the two constructs were not correlated, except at T3 (T1: r = .07, p = .21, n = 302; T2: r = .06, p = .32, n = 242; T3: r = .18, p = .01, n = 189; these analyses include only immigrant students for reasons of theoretical applicability of the two constructs). Both measures we not significantly related with citizenship or immigrant generation (-.09 < *rs* < .01, all *ps* > .14).

Additional measures. Participants were further asked to complete measures on learning and achievement motivation (SELLMO; Spinath, Stiensmeier-Pelster, Schöne, & Dickhäuser, 2002), motivation at school (Stöber, 2002), well-being (WHO-5; Bech, 2004), self-esteem (Rosenberg Self-Esteem Scale; von Collani & Herzberg, 2003), self-concept clarity (Stucke, 2002), and classroom climate (Stöber, 2002). These measures were included to gain additional insight into students' motivation and psychological well-being at school, beyond measures of educational achievement, academic belonging, domain identification, stereotype vulnerability, and cultural identity. The scales were not further analyzed in the following, but are reported here for transparency reasons.

Statistical analyses

Our sample showed a substantial decrease in participants from T1 (*n* = 540) over T2 (*n* = 483) to T3 (*n* = 423). In order to reveal whether these missings were meaningful, we conducted a thorough missing data analysis, following the advice of best practices in data cleaning (cf. Baraldi & Enders, 2010; Osborne, 2012). Statistical analyses including complete cases only (i.e., listwise deletion of missing data, resulting in *n* = 360 students in the current sample) or using mean substitution both have the potential to substantially skew the results (for a detailed review see Osborne, 2012). Hierarchical linear modelling (HLM) for longitudinal data can deal effectively with incomplete data (Hox, 2010; Singer & Willett, 2003), and provides a suitable methodology for the statistical analyses of the current longitudinal dataset, including all cases instead of complete cases only.

To examine the treatment effect and the trajectories of the continuous variables GPA, stereotype vulnerability, academic belonging, and domain identification, we conducted hierarchical multilevel analyses for longitudinal data using HLM 7 for Windows (Raudenbush, Bryk, Cheong, Congdon, & du Troit, 2011). Multilevel analyses control for the nested structure of the data: three assessments (Level 1) among individuals (Level 2) nested in classes (Level 3) and schools (Level 4). Yet, to ensure high power and accurate results, it is more important to have a large number of groups than a large number of individuals per group (Hox, 2010). Since the recommendation for a minimum number of cases per level is 30, the inclusion of classes (*k* = 22) as a third level, and schools (*k* = 4) as a fourth level would potentially reduce the precision of the estimates (cf. Hox, 2010). Thus, we decided to include school (four schools, effect-coded) and current school track as control variables on Level 2, to acknowledge the potential influence of higher order variables. Additionally, we controlled for previous school track, gender, and age (see Supplement E). Predictor variables at the individual level (Level 2) were immigrant status and experimental treatment, predictor variable on Level 1 was time. Two more people were excluded from these analyses due to missing data in the predictors on Level 2, resulting in *n* = 514.

To analyze the influence of cultural identity and stereotype vulnerability, we included only immigrant students into the respective HLM analyses. Regarding the influence of individual differences on the respective DVs, we incorporated immigrant students' baseline levels of ethnic identity strength, residence culture identity strength, and stereotype vulnerability (T1) into the model as predictors on the individual level (Level 2). We had to exclude *n* = 22 people from these statistical analyses due to incomplete data regarding the predictors, resulting in *n* = 290 immigrant students. Again, we controlled for school, current school track, previous school track, gender, and age, as well as immigrant generation and citizenship (see Supplement F).

Results

Baseline analyses

At the beginning of the school year (T1), immigrant and non-immigrant students showed a trend-significant difference regarding their GPA upon entering high school, t(512) = 1.88,

Table 1

Descriptive statistics (M, SD, n) of variables at Time 1, 2, and 3

| | | Immigrant students | | | | | | Non-Immigrant students | | | | | |
		Belonging treatment M (SD)	n	Control treatment M (SD)	n	Total M (SD)	n	Belonging treatment M (SD)	n	Control treatment M (SD)	n	Total M (SD)	n
Dropout			59		72		131		25		24		49
GPA	T1	3.17 (0.83)	146	3.19 (0.72)	164	3.18 (0.77)	310	3.41 (0.78)	109	3.18 (0.67)	95	3.31 (0.74)	204
	T2	2.55 (0.88)	117	2.57 (0.81)	131	2.56 (0.84)	248	3.10 (1.00)	93	2.90 (0.93)	83	3.01 (0.97)	176
	T3	2.38 (0.81)	94	2.47 (0.87)	111	2.43 (0.84)	205	3.10 (0.94)	96	3.05 (0.86)	78	3.08 (0.90)	174
Academic Belonging	T1	4.85 (0.69)	146	4.84 (0.63)	163	4.85 (0.66)	309	4.67 (0.65)	107	4.73 (0.67)	95	4.70 (0.65)	202
	T2	4.77 (0.81)	119	4.85 (0.62)	133	4.81 (0.72)	252	4.66 (0.68)	94	4.67 (0.74)	83	4.66 (0.71)	177
	T3	4.76 (0.78)	93	4.68 (0.70)	112	4.71 (0.74)	205	4.75 (0.65)	95	4.81 (0.71)	78	4.77 (0.67)	173
Domain Identification	T1	4.85 (0.83)	146	4.79 (0.87)	165	4.82 (0.85)	311	4.68 (0.81)	109	4.51 (0.82)	95	4.60 (0.81)	204
	T2	4.67 (1.00)	117	4.69 (0.90)	132	4.68 (0.94)	249	4.45 (0.96)	94	4.39 (1.04)	83	4.42 (1.00)	177
	T3	4.34 (1.08)	93	4.38 (1.18)	112	4.36 (1.13)	205	4.45 (1.09)	95	4.49 (1.18)	78	4.47 (1.13)	173
Stereotype Vulnerability	T1	2.27 (1.03)	147	2.35 (1.00)	165	2.32 (1.01)	312	1.60 (0.59)	106	1.47 (0.49)	95	1.54 (0.55)	201
	T2	2.01 (0.93)	118	2.26 (0.97)	133	2.14 (0.96)	251	1.50 (0.50)	93	1.50 (0.63)	78	1.50 (0.56)	171
	T3	2.15 (1.05)	93	2.26 (1.02)	111	2.21 (1.04)	204	1.54 (0.65)	94	1.47 (0.59)	76	1.51 (0.62)	170
Ethnic Identity Strength	T1	3.28 (0.48)	147	3.26 (0.49)	164	3.27 (0.48)	311						
	T2	3.29 (0.51)	119	3.34 (0.54)	133	3.32 (0.53)	252						
	T3	3.42 (0.42)	93	3.39 (0.51)	112	3.40 (0.47)	205						
Residence Culture Identity Strength	T1	2.87 (0.56)	143	2.77 (0.55)	160	2.82 (0.56)	303						
	T2	2.84 (0.53)	116	2.88 (0.57)	126	2.86 (0.55)	242						
	T3	2.89 (0.56)	86	2.94 (0.58)	103	2.92 (0.57)	189						

Note. Varying *n* due to incomplete questionnaires and fluctuating attendance over time.

$p = .06$, $d = 0.17$. A more detailed look at the grades in the core subjects revealed no differences in English, $t(510) = 1.05$, $p = .29$, $d = 0.09$, and Math, $t(502) = 0.37$, $p = .71$, $d = 0.03$, but in German, $t(511) = 2.95$, $p = .003$, $d = 0.26$, demonstrating higher performance of non-immigrant students. As expected, immigrant students reported higher levels of stereotype vulnerability than non-immigrant students at the start of the experiment, $t(511) = -10.03$, $p < .001$, $d = -0.89$. In the beginning, immigrant students also reported higher levels of academic belonging, $t(509) = -2.47$, $p = .01$, $d = -.22$, and higher levels of domain identification, $t(513) = -2.91$, $p < .01$, $d = -.26$ (see Table 1 for the descriptive results).

The influence of immigrant status and belonging treatment on educational trajectories

The complete sample, containing immigrant and non-immigrant students, was included into the following analyses to explore differences in the development of both groups over the course of the school year. Immigrant status and experimental treatment served as predictors on Level 2. Time (Level 1) was included as a continuous predictor. GPA, academic belonging, domain

identification, and stereotype vulnerability served as dependent variables (see Table 2 for coefficients). For the whole group, we observed a significant decrease in GPA over time and a drop in domain identification, whereas academic belonging and stereotype vulnerability remained stable over time (Level 1, slope of time trend).

The results further show that the belonging treatment did not affect any of the educational outcomes over the course of the school year (Table 2). We identified no effect for the complete sample, nor did we find a meaningful interaction between treatment and immigrant status. Thus, our intervention failed to change educational trajectories. The only significant influence attributed to the treatment was an interaction between experimental treatment and immigrant status on the intercept of GPA. Descriptive statistics indicate that this effect was carried by a remarkably high GPA of non-immigrant students in the belonging condition (see descriptive statistics in Table 1). As we did not observe a similar interaction effect for the development over time (GPA slope) and the pattern of means was unexpected, we are hesitant to put weight on this finding. Thus, the intervention did not yield the expected effects on students' educational variables over the course of one school year. [1]
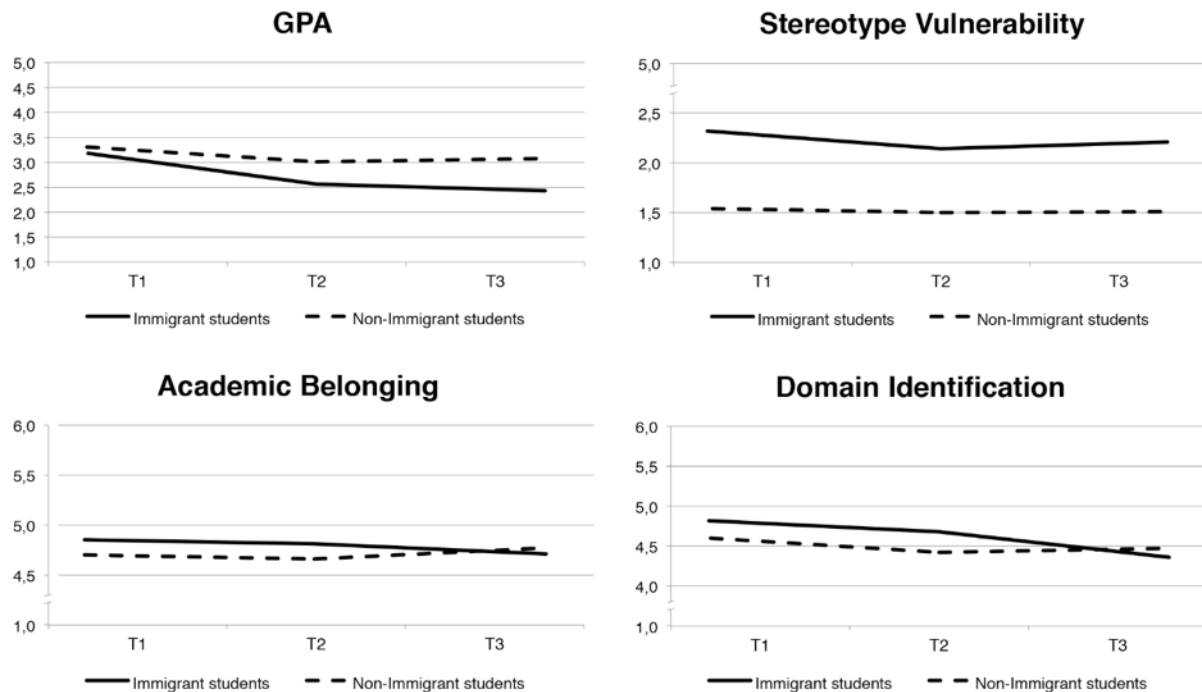

Figure 1. Educational trajectories of immigrant vs. non-immigrant students. Values are average means at each measurement occasion.

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[1] As a manipulation check, we examined whether the treatment had an effect on residence culture identity over time (among immigrant students only). There was no main effect for experimental treatment ($p = .15$), yet there was main effect for time ($p = .02$) and interaction of time*experimental treatment ($p = .02$): residence culture identity slightly increased, which was carried by the participants in the control condition, who started out with a lower baseline at T1 (see descriptive statistics in Table 1). The experimental treatment had no effect on ethnic identity: both treatment groups showed an increase over time ($p < .001$).

Table 2

Longitudinal hierarchical linear models: Predicting the trajectories of immigrant and non-immigrant students' educational achievement, belonging, identification, and stereotype vulnerability

	GPA	Academic Belonging	Domain Identification	Stereotype Vulnerability
Predictor	*B (SE)*	*B (SE)*	*B (SE)*	*B (SE)*
Intercept	3.18*** (0.03)	4.77*** (0.03)	4.70*** (0.04)	1.90*** (0.03)
Slope of time trend	-0.27*** (0.03)	-0.00 (0.02)	-0.16*** (0.03)	-0.04 (0.02)
Between-person differences, fixed effects (intercept)				
Immigrant status	-0.07* (0.03)	0.08** (0.03)	0.13*** (0.04)	0.38*** (0.03)
Experimental treatment	0.06 (0.03)	-0.02 (0.03)	0.05 (0.04)	-0.01 (0.03)
Immigrant status x Treatment	-0.06* (0.03)	0.01 (0.03)	-0.03 (0.04)	-0.05 (0.03)
Between-person differences, fixed effects (time slope)				
Immigrant status	-0.14*** (0.03)	-0.03* (0.02)	-0.08** (0.03)	-0.03 (0.02)
Experimental treatment	-0.03 (0.03)	0.01 (0.02)	-0.04 (0.03)	-0.01 (0.02)
Immigrant status x Treatment	0.01 (0.03)	-0.00 (0.02)	0.01 (0.03)	0.00 (0.02)
Random Effects (Variance Components)				
Intercept (SD)	0.21*** (0.46)	0.25*** (0.50)	0.38*** (0.62)	0.43*** (0.65)
Time slope (SD)	0.10*** (0.31)	0.02*** (0.13)	0.16*** (0.40)	0.05*** (0.23)
Level-1 error (SD)	0.32 (0.57)	0.19 (0.44)	0.30 (0.55)	0.28 (0.52)
Deviance (k)	3017.60 (12)	2391.78 (12)	32625.75 (12)	2944.54 (12)

Notes. $DV_{ti} = \beta_{00} + \beta_{01}*Experimental\ treatment_i + \beta_{02}*Immigrant\ status_i + \beta_{03}*Immigrant\ status\ x\ Treatment_i + \beta_{10}*Time_{ti} + \beta_{11}*\ Experimental\ treatment_i\ *Time_{ti} + \beta_{12}*\ Immigrant\ status_i\ *Time_{ti} + \beta_{13}*\ Immigrant\ status\ x\ Treatment_i\ *Time_{ti} + r_{0i} + r_{1i}*Time_{ti} + e_{ti}$

$N_{Level1} = 1323$, $N_{Level2} = 514$; k = number of parameters in model. Time was coded continuously (T1 = 0, T2 = 1, T3 = 2), immigrant status and experimental treatment were effect-coded (-1 = non-immigrant, 1 = immigrant; -1 = control treatment, 1 = belonging treatment). Method of estimation: full maximum likelihood. *** $p < .001$, ** $p < .01$, *$p < .05$

We did, however, find substantial effects of immigrant status on GPA, academic belonging, domain identification, and stereotype vulnerability (see Figure 1). Over the course of one year, being a member of the immigrant group predicted a particularly large drop in GPA, a more negative trajectory of academic belonging, and a steeper decrease in domain identification. Regarding the latter two variables, immigrants started with higher scores than non-immigrants, but also showed a significantly larger decrease over time. Stereotype vulnerability was significantly higher for immigrants than for non-immigrants at all three time points, with differences between immigrants and non-immigrants remaining stable. Except for academic belonging, all results held true when we additionally controlled for previous school track, current school track, school, gender, and age (see Supplement E for results with controls included).

For the binary outcome variable class dropout we performed logistic regression analyses. A logistic regression analysis containing immigrant status (Step 1) and experimental treatment (Step 2) as predictors for class dropout revealed that immigrant status, $Exp(B) = 2.27$, $p < .001$, Nagelkerke's $R^2 = .047$ (Step 1), but not experimental treatment, $Exp(B) = 0.87$, $p = .46$, Nagelkerke's $R^2 = .049$ (Step 2), significantly predicted class dropout. The effect held true when controlling for previous school track, current school track, school, gender, and age. The results indicate that immigrant students showed higher dropout rates than non-immigrants, independently of experimental treatment.

In sum, the belonging treatment did not show the expected effect on students' educational trajectories, whereas immigrant status was shown to be a significant predictor for all dependent variables, either affecting the general level of the variables alone (higher stereotype vulnerability, higher likelihood of class dropout), or the general level as well as the trajectories over time (GPA, academic belonging, domain identification).

The influence of stereotype vulnerability and cultural identity

To explore individual differences among immigrant students, we analyzed whether initial levels of stereotype vulnerability predicted immigrant students' educational trajectories. We further expected that individual differences in ethnic identity strength and residence culture identity strength would influence immigrant students' stereotype vulnerability. All continuous predictors were assessed at T1, centered on the grand mean, and entered on Level 2. Again, we additionally controlled for previous school track, current school track, school, gender, age, as well as immigrant generation, citizenship, and experimental treatment. All effects held true after including the control variables (see Supplement F for results with controls included).

The results indicate that the initial level of stereotype vulnerability was a significant predictor of GPA development over time, as higher levels of stereotype vulnerability were associated with a larger decrease in GPA (slope, see Table 3). Higher levels of stereotype vulnerability were further associated with lower levels of academic belonging (intercept). Domain identification was unrelated to stereotype vulnerability. Regarding the binary dependent variable class dropout, we ran a logistic regression analysis that included stereotype vulnerability as a predictor. The analysis revealed a tendency for students who report higher levels of stereotype vulnerability to be more likely to drop out of class,

$Exp(B) = 0.82$, $p = .08$, Nagelkerke's $R^2 = 0.013$.

Finally, we inspected the effect of immigrants' cultural identity strength (ethnic identity and resident culture identity) on stereotype vulnerability. In line with stereotype threat theory, immigrant students who reported higher initial levels of ethnic identity showed higher levels of stereotype vulnerability (intercept). In contrast, residence culture identity strength was not associated with stereotype vulnerability. The interaction between ethnic identity and residence culture identity was not significant, indicating that ethnic identity predicted stereotype vulnerability at different levels of residence culture identity.

Discussion

School as a chronically evaluative environment can be a threatening place for immigrant students (Cook et al., 2012; Sherman et al., 2013). Statistical documentations of the numerical minority of immigrant students in higher education (OECD, 2015), along with signs of rejection in society and the presence of negative stereotypes against their group, lead to the assumption that a substantial part of the ethnic achievement gap could be explained by pervasive psychological threats, constantly undermining their performance in learning and testing situations. This might occur even in neutral educational environments, where no discrimination or overt prejudice are expressed, due to the mere association of low ability and one's group in a society (Steele, 1997). Using a longitudinal field study design, the current research provides insight into the influence of stereotype threat on the educational trajectories of adolescent immigrants in a Central European country.

In line with previous research, our findings bolster the assumption that immigrant students are indeed affected by chronic experiences of stereotype threat, and fear to be judged based on their ethnicity (Woodcock et al., 2012). They constantly reported higher levels of stereotype vulnerability than their non-immigrant peers. Confirming the immigrant achievement gap, our results indicate that immigrant students are more likely to drop out of class than non-immigrant students are within their first year of high school. Correspondingly, immigrant students showed a substantially larger decrease in GPA, domain identification, and academic belonging compared to their non-immigrants peers. Most notably, immigrant (vs. non-immigrant) students started out with higher levels of academic belonging and domain identification. Yet, over the course of the year, they dropped below their non-immigrant peers. Our belonging intervention did not show any beneficial effects.

Immigrants' initial level of stereotype vulnerability was associated with a decrease in their GPA over the course of the school year and lower levels of academic belonging. This is in line with previous research, and supports the assumption that chronic experiences of stereotype threat lead to reduced performance and undermine minority students' sense of belonging in the educational environment (Cook et al., 2012; Walton & Cohen, 2007). To explore the potential impact of individual differences in cultural identity on adolescent immigrants' stereotype vulnerability, we included ethnic identity and residence culture identity as predictors. In line with the prediction based on stereotype threat theory, ethnic identity strength was positively associated with immigrants' stereotype vulnerability. This supports the idea that a higher identification with the negatively stereotyped group increases individuals' vulnerability to stereotype threat (Schmader, 2002). Contrary to our expectations, stronger connectedness to the residence culture

Table 3

Longitudinal hierarchical linear models: Stereotype vulnerability and cultural identity among immigrant students

Predictor	GPA B (SE)	Academic Belonging B (SE)	Domain Identification B (SE)	Stereotype Vulnerability B (SE)
Intercept	3.12*** (0.04)	4.85*** (0.04)	4.84*** (0.05)	2.31*** (0.06)
Slope of time trend	-0.42*** (0.03)	-0.03 (0.02)	-0.22*** (0.04)	-0.08* (0.03)
Between-person differences, fixed effects (intercept)				
Stereotype Vulnerability	-0.04 (0.04)	0.15** (0.04)	-0.06 (0.05)	
Ethnic Identity				0.14** (0.05)
Residence Culture Identity				0.03 (0.05)
Ethnic Identity x Residence Culture Identity				-0.00 (0.05)
Between-person differences, fixed effects (time slope)				
Stereotype Vulnerability	-0.07** (0.03)	0.01 (0.02)	-0.03 (0.04)	
Ethnic Identity				-0.03 (0.03)
Residence Culture Identity				0.00 (0.04)
Ethnic Identity x Residence Culture Identity				-0.02 (0.04)
Random Effects (Variance Components)				
Intercept (SD)	0.22*** (0.46)	0.24*** (0.49)	0.47*** (0.68)	0.57*** (0.75)
Time slope (SD)	0.09*** (0.30)	0.04*** (0.19)	0.23*** (0.48)	0.08*** (0.28)
Level-1 error (SD)	0.33 (0.58)	0.18 (0.43)	0.26 (0.51)	0.38 (0.61)
Deviance (k)	1635.19 (8)	1317.63 (8)	1784.17 (8)	1846.17 (12)

Notes. Equation for DVs GPA, Academic Belonging, and Domain Identification: $DV_{ti} = \beta_{00} + \beta_{01}*Stereotype$ $Vulnerability_i + \beta_{10}*Time_{ti} + \beta_{11}*Stereotype\ Vulnerabilti_{yi}*Time_{ti} + r_{0i} + r_{1i}*Time_{ti} + e_{ti}$.

Equation for DV Stereotype Vulnerability: $Stereotype\ Vulnerability_{ti} = \beta_{00} + \beta_{01}*Ethnic$ $Identity_i + \beta_{02}*Residence\ Culture\ Identity_i + \beta_{03}* Ethnic\ Identity\ x\ Residence\ Culture$ $Identity_i + \beta_{10}*Time_{ti} + \beta_{11}*Ethnic\ Identity_i*TIME_{ti} + \beta_{12}*Residence\ Culture\ Identity_i*Time_{ti} + \beta_{13}* Ethnic$ $Identity\ x\ Residence\ Culture\ Identity_i*Time_{ti} + r_{0i} + r_{1i}*Time_{ti} + e_{ti}$

N_{Level1}= 719, N_{Level2} = 290; k = number of parameters in model. Time was coded continuously (T1 = 0, T2 = 1, T3 = 2). Predictors: Ethnic Identity and Residence Culture Identity were z-standardized; all predictors were centered on the grand mean. Method of estimation: full maximum likelihood. ******* $p < .001$, ****** $p < .01$, **p < .05*

did not decrease stereotype vulnerability.
Below, we address two remaining questions raised by this research. First, what are the theoretical and practical implications of our findings, and how do they contribute to our understanding of the immigrant achievement gap? Second, how can we explain the non-existent effect of our belonging treatment, based on previous findings from stereotype threat interventions and acculturation research?

Theoretical implications and practical relevance

Our study extends previous research in several ways. Combining theory and findings from two major fields within social psychology (i.e., stereotype threat and acculturation research), and applying it to the educational context, bears high potential for novel approaches to known problems. Following this, our findings are of particular interest for scientists in social psychology, but also for educational psychology, educational practitioners, and policy makers. Going beyond situational accounts of stereotype threat, we showed that immigrant students in a Central European country suffer chronic experiences of stereotype threat. Our results support the notion that immigrant students experience stereotype threat not only occasionally under isolated circumstances; instead, the threat may be ever-present, even in a school environment with a culturally diverse student body. It arises from individuals' awareness of and fear of being judged based on widely known negative stereotypes and group rejection. Our findings increase the external validity of stereotype threat theory. Over and above, the results suggest that a higher vulnerability to stereotype threat is associated with lower educational outcomes. Building upon previous research (e.g., Cook et al., 2012; Woodcock et al., 2012), our findings contribute to broadening the picture of long-term influences of stereotype threat. We showed that immigrant students do not only show decreased performance over the course of one year, but also a decline in domain identification and academic belonging. This supports the assumption that stereotype threat, elicited in a standard school environment, is indeed a factor to consider when trying to explain the achievement gap.

Our study furthers our understanding of the interplay of cultural identity and stereotype vulnerability in an educational context. We employed differentiating measures to assess ethnic and residence culture identity strength, going beyond language use or country of birth. By treating them as independent constructs, we could show that – in line with stereotype threat theory – ethnic identity increased immigrants' vulnerability to stereotype threat, while residence culture identity did not serve as a buffer. A higher identification with the ethnic culture led to increased stereotype vulnerability, which had a negative impact on educational advancement. This supports the assumption that higher identification with a negatively stereotyped social group increases individuals' susceptibility to stereotype threat (Schmader et al., 2008; see also Schmader, 2002). Previous research with immigrant samples found similar result patterns (e.g., Armenta, 2010; Schultz et al., n.d.), while other studies did not support the notion that a stronger ethnic identity increases vulnerability (e.g., Appel, 2012; Weber et al., 2015). In sum, our findings contribute to the controversial discussion about the role of ethnic identity in stereotype threat research. As sources and temporal extent of threat can differ, the roles of ethnic identity and residence culture identity might, however, vary depending on the respective context.

The current research bears substantial practical implications. The extent to which immigrants identify with their cultural realities depends on (a) their self-categorization, and (b) their perceptions of categorizations made by members of other groups (Deaux, 2006). To which degree individuals feel that they belong to a group, and thus, identify with a culture, is not only rooted within the person and his or her culture of origin, but also depends on characteristics of the receiving society (Arends-Tóth & van de Vijver, 2006). We suppose that members of many immigrant groups in European countries are regularly faced with signals of rejection and non-belonging, including negative ability stereotypes. This might undermine their chance to identify strongly with the residence culture. Yet, as outlined above, identification with the residence culture predicts thriving in academic settings. Further, our findings indicate that a strong ethnic identity increases immigrant students' tendency to expect, perceive, and be influenced by negative stereotypes about their ethnic group. Thus, weakening the link between ethnic identity and stereotype vulnerability is a worthwhile goal in applied settings. Students should feel free to express themselves, including their ethnic identity, without the fear of being judged based on their ethnicity (cf. Jordan & Lovett, 2007). Educators should be aware that the experience of immigrant students in a school context could differ from non-immigrant students. Our findings suggests that these differences occur due to factors such as stereotype threat and the contingencies that immigrant students might face while negotiating their cultural identities.

Generalizability of belonging interventions?

Our intervention was systematically designed based on previous interventions, which were shown to be effective against the negative impact of stereotype threat. Among African Americans in the US, a brief social-belonging intervention in school yielded positive effects concerning academic performance and health outcomes over the course of three years (Walton & Cohen, 2007, 2011). Within an immigrant sample in Europe, strengthening (vs. weakening) the sense of communality with the residence culture resulted in better test performance under stereotype threat (Weber et al., 2015). A similar approach (i.e., cultural identity salience intervention) was shown to be effective in a health-motivation context, as shown by Oyserman and colleagues (2007). Besides, activating neutral or positive identities was shown to have a positive impact on women in math (McGlone & Aronson, 2006; Shih et al., 1999). Osborne and Jones (2011) argue that embracing the existence of more than one cultural frame could support immigrant students to increase their sense of belonging in school. Accommodating, without exerting pressure to assimilate to the mainstream culture, and thus, promoting the integration approach, is suggested to help immigrant students to feel included and thus, to increase their identification with school, sense of belonging, and educational achievement (Ogbu, 1992). All of these interventions aimed at reducing the detrimental influence of stereotype threat on the vigilance stage. Our approach was based on translating these different methods into an intervention for immigrant students. We aimed at strengthening a non-negatively stereotyped cultural identity in the school context, and thus, providing a context in which the existence of negative stereotypes against the ethnic group might not result in detrimental stereotype threat effects.

Despite careful theory-driven intervention development, our treatment did not prove to be beneficial. In the face of publications showing remarkable results stemming from small social psychological interventions, it needs to be critically noted that "social-psychological interventions in education […] are not magic" (Yeager & Walton, 2011), and not "all interventions are created equal" (Shapiro et al., 2013). Controversial findings should be analyzed and critically discussed, instead of swept under the table. Sense of belonging might have not been the core problematic issue for most immigrant adolescents in our sample. The high initial level of sense of academic belonging support this assumption. As immigrant students already reported high levels of feeling included into the school environment, they might have not been in need for further improvement. Within our sample, immigrant students also did not constitute a minority, but rather the majority in some of the classes. Further, two short treatments spaced out over four months might have not been sufficient to improve educational achievement, or to decrease stereotype vulnerability. Effective interventions in previous studies were either more intense (Walton & Cohen, 2007), or delivered with higher frequency and shorter time intervals (Cohen et al., 2009; Sherman et al., 2013).

Aiming at the vigilance stage by targeting students' sense of belonging was shown to be valuable for African Americans (Walton & Cohen, 2007), while activating non-stereotyped identities was shown to be beneficial for women (McGlone & Aronson, 2006; Shih et al., 1999; Shih et al., 2006). However, these might have not been the appropriate strategies to reduce chronic influences of stereotype threat on immigrant adolescents. As yet, no research had been available that examined the long-term influence of a strengthened residence culture identity (for short-term benefits, see Weber et al., 2015). Our intervention to increase perceptions of similarity with the residence culture did not have a significant effect on residence culture identity, and thus, did not show the expected effect. Possibly, interventions to increase immigrant students' sense of belonging in the long run require the active participation of key representatives of the culture that holds negative stereotypes against their group (e.g., town council members, teachers, police officers). For Latino American immigrants in the US, previous research showed that self-affirmation exercises, aiming at the threat-appraisal stage, were more effective (Cohen et al., 2009; Sherman et al., 2013). Cultural specificity of different immigrant groups and individual differences within the groups need to be acknowledged (Appel et al., 2015; Sherman & Cohen, 2006).

Concluding, increasing minority students' sense of belonging as means of targeting stereotype threat on the vigilance stage is not an intervention true to the motto "one size fits all". It remains an open question, which group benefits from which intervention strategy, as the outcomes might vary with contextual influences and individual differences. Respecting this notion and the complexity of social-psychological interventions, it might be more effective to provide immigrants with a buffer beyond the vigilance stage.

Limitations and frontiers

Stereotype threat cannot explain all of the variance within the ethnic achievement gap. Meta-analyses suggest that the effect of stereotype threat triggers in the lab is small to medium in size; due to the large heterogeneity of studies within the field of stereotype threat, more research is needed that focuses on specific target groups, including large sample sizes (Flore & Wicherts, 2015). Stereotype threat theory can contribute to the bigger picture of immigrants' educational trajectories, over and above other important variables, including poverty, family resources, or language. School dropout, for instance, could also be influenced by higher residential mobility of immigrants, leading to a change of school due to geographical change, and not necessarily due to bad performance or disidentification. Notably, when we controlled for demographic variables, immigrant generation was a predictor for sense of academic belonging, while citizenship predicted GPA (see Supplement F). In his landmark article, Steele (1997) noted structural and cultural threats as the first factors to consider in understanding the racial achievement gap. Whenever stereotype threat is taken into account, it should be regarded as one of multiple factors contributing to the gap. While we were trying to reduce the impact of chronic stereotype threat, other causes might have been more influential to immigrants' educational trajectories.

Future research is encouraged to further explore the factors both interfering with and fostering the educational success of different groups, which are affected by stereotype threat. Most notably, not all immigrant groups might be similarly affected; a more differential perspective on the heterogeneity of immigrant groups in European countries might be advisable. As our immigrant sample showed considerably heterogeneity in ethnic backgrounds, the current intervention might have not been suitable for all subgroups, despite the fact that negative stereotypes apply to all immigrant groups within the current study. However, the sample was drawn from regular school classes in a Central European country; it represents the heterogeneous learning context that all students are facing. In line with previous research, we suggest that interventions need to be tailored to accommodate different needs in different environments, triggered by different threats (Shapiro et al., 2013; Zhang et al., 2013). In particular, there is a need for more in-depth research on the effects of chronic experiences of stereotype threat among immigrants and how to counteract them. Thereby, both situational and long-term interventions and effects should be considered, as they might apply differently.

Conclusion

Consistent with other work showing the detrimental influence of chronic experiences of stereotype threat on educational success, domain identification, and academic belonging, our research suggests that chronically experiencing threat might cause a negative cycle for adolescent immigrants, eventually increasing the risk of low performance and dropout. Consequently, immigrant students have lower chances to tap their full potential and acquire higher education, and thus, to be adequately integrated into the labor market. By including cultural identity as a meaningful predictor for immigrants' susceptibility to stereotype threat in the school environment, this research offers a significant theoretical expansion of antecedents and consequences of chronic experiences of stereotype threat among immigrants. Notwithstanding that our treatment did not show the expected effects, our findings encourage social scientists and educational practitioners alike to find ways to provide a positive learning environment for all students, to support immigrants in our educational systems, and thus, to enhance their future life opportunities.

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Supplementary material for
"Immigrant Students' Educational Trajectories: The Influence of Cultural Identity and Stereotype Threat"

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Supplement A: Countries/Regions of origin of immigrant adolescents

Countries/Regions of origin, as reported by the immigrant adolescents in our final sample. Number of adolescents reporting a specific background is in brackets.

Afghanistan ($n = 12$), Albania ($n = 7$), Arab ($n = 1$), Armenia ($n = 1$), Bosnia ($n = 66$), Brazil ($n = 1$), Bulgaria ($n = 1$), Czech Republic ($n = 3$), Chechnya ($n = 14$), Congo ($n = 4$), Croatia ($n = 23$), Dominican Republic ($n = 1$), Egypt ($n = 6$), Georgia ($n = 2$), Ghana ($n = 1$), India ($n = 1$), Iraq ($n = 2$), Iran ($n = 5$), Italy ($n = 4$), Kosovo ($n = 28$), Kurdistan ($n = 3$), Lebanon ($n = 1$), Macedonia ($n = 3$), Mauritius ($n = 1$), Mexico ($n = 1$), Moldavia ($n = 1$), Nigeria ($n = 2$), Pakistan ($n = 1$), Philippines ($n = 1$), Poland ($n = 1$), Portugal ($n = 1$), Rumania ($n = 10$), Russia ($n = 1$), Serbia ($n = 40$), Thailand ($n = 1$), Tunisia ($n = 2$), Turkey ($n = 54$), Vietnam ($n = 5$)

Supplement B: Demographics

Immigrant versus non-immigrant students differed with respect to their religious affiliation (immigrants: Christian $n = 67$, Muslim $n = 186$, no religious affiliation $n = 13$, other $n = 44$; non-immigrants: Christian $n = 190$, Muslim $n = 1$, no religious affiliation $n = 8$, other $n = 5$), and languages spoken at home (immigrants: German $n = 11$, German and other languages $n = 141$, other languages $n = 159$; non-immigrants: German $n = 192$, German and other languages $n = 8$, other languages $n = 4$). Relatively more immigrant students reported a lower educational background of their parents (immigrants: university $n = 53$, high school $n = 54$, vocational school $n = 98$, secondary school $n = 82$; non-immigrants: university $n = 29$, high school $n = 59$, vocational school $n = 81$, secondary school $n = 23$), and higher unemployment rates of their parents (immigrants: unemployed $n = 62$, employed $n = 129$; non-immigrants: unemployed $n = 15$, employed $n = 104$). There was a slight age difference between the two

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groups (immigrants: $M = 15.19$, $SD = 1.12$; non-immigrants: $M = 14.57$, $SD = 0.81$). Regarding previous school track, relatively more immigrant students came from lower educational middle schools (immigrants: non-academic $n = 231$, academic $n = 79$; non-immigrants: non-academic $n = 129$, academic $n = 75$) before entering high school.

Supplement C: Background of the current study

The present study was conducted with first year high school classes. The transition from middle to high school has been shown to be a precarious time (Catterall, 1998). First-year students are new to high school, which comes with high levels of uncertainty and doubts about their belonging. They need to adapt to the new context, socially as well as academically. Consequently, the adolescents in our sample were observed within a sensitive time frame, in which they are susceptible of change.

In Austria, where the experiment was implemented, after finishing eight years of compulsory schooling in primary and middle school, students can voluntarily decide to attend high school, where they have the choice between two educational tracks[1]. Coming from various different types of middle schools (i.e., educational institutions preparing for the academic vs. the non-academic track), they can choose to attend school for four additional years, which qualifies them to pursue a recognized occupation requiring formal training (non-academic track, *Berufsbildende Mittlere Schule*, BMS), while choosing to attend five more years additionally prepares them for future college and university education (academic track, *Berufsbildende Höhere Schule*, BHS). Both types of high school were included in our sample. Based on the grade-dependent preselection process during the transition from middle to high school, all students are supposed to reach up to certain grades in order to be granted to high school. According to official statistics, immigrant students are more likely to attend lower educational institutions, and less likely to continue school for a higher educational career (BMUKK, 2012; OECD, 2015). In densely populated areas in Austria (similar to other European countries such as Belgium, France, and the Netherlands), there is an overrepresentation of immigrants compared to the total percentage of immigrants in the country, leading to higher percentages of students with an immigrant background in schools (BMUKK, 2012; OECD, 2015).

Supplement D: The immigrant experience

It needs to be acknowledged that "immigrants" might be special when looking at stereotype threat effects; considerable heterogeneity exists between different immigrant groups, as people with diverse backgrounds migrate to various countries, where they face different social contexts (Appel et al., 2015). In contrast to pluralistic nations, such as Canada, assimilationist and mono-ethnic nations (most European countries) are based on a common cultural descent. Such states often advocate social and cultural assimilation as the preferred strategy, by expecting immigrants to adjust to the public values of the host nation (e.g., the "diligent Germans") and neglecting the emerging cultural diversity (for a

review see Phalet & Kosic, 2006). Comparable to most European countries, many people in Germany and Austria still take the perspective that immigrants should assimilate to the majority culture; simultaneously, ethnic prejudice is still widespread (Christ et al., 2013; Phalet & Kosic, 2006). Especially the popularity of radical right-wing parties and their anti-immigrant propaganda has lately dramatically increased in Europe (Langenbacher & Schellenberg, 2011; Zick, Pettigrew & Wagner, 2008), sending signals of general rejection to immigrants and conveying a feeling of non-belonging. Similar to other European nations, young immigrants of any descent in German speaking countries often face prejudice, because their accent or language difficulties are attributed as deficits in ability and performance (Lüddecke, 2005), or they are described as lazy and aggressive (Uslucan & Yalcin, 2012). Stereotype threat research has shown that anti-immigrant propaganda of radical right political parties – clear signals of rejection from the Austrian majority culture – undermines the intellectual performance of adolescent immigrants (Appel, 2012).

Supplement E: The influence of immigrant status and belonging treatment on educational trajectories

We included the variables *previous school track, current school track, school* (SD11, SD 12, SD13), *gender*, and *age* into the model to control for demographic characteristics (see Table 1). The results complement the analyses shown in Table 2 in the manuscript.

Extended model:

$$DV_{ti} = \beta_{00} + \beta_{01}*Immigrant\ status_i + \beta_{02}*Experimental\ Treatment_i + \beta_{03}*Immigrant\ status\ x\ Treatment_i + \beta_{04}*Age_i + \beta_{05}*Current\ school\ track_i + \beta_{06}*Previous\ school\ track_i + \beta_{07}*Gender_i + \beta_{08}*SD11_i + \beta_{09}*SD12_i + \beta_{010}*SD13_i + \beta_{10}*Time_{ti} + \beta11*Immigrant\ status_i*Time_{ti} + \beta_{12}*Experimental\ Treatment_i*Time_{ti} + \beta_{13}*Immigrant\ status\ x\ Treatment_i*Time_{ti} + \beta_{14}*Age_i*Time_{ti} + \beta_{15}*Current\ school\ track_i*Time_{ti} + \beta_{16}*Previous\ school\ track_i*Time_{ti} + \beta_{17}*Gender_i*Time_{ti} + \beta_{18}*SD11_i*Time_{ti} + \beta_{19}*SD12_i*Time_{ti} + \beta_{110}*SD13_i*Time_{ti} + r_{0i} + r_{1i}*Time_{ti} + e_{ti}$$

Supplement F: The influence of stereotype vulnerability and cultural identity

Again, we extended the model by including the variables *experimental condition*, *previous school track*, *current school track*, *school*, *gender*, and *age* to control for demographic characteristics and our experimental treatment (see Table 2). We further included *immigrant generation* and *citizenship*. The results complement the analyses shown in Table 3 in the manuscript.

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[1]A third track, the *Gymnasium*, is an academic high school which attracts only very small numbers of immigrants. Therefore, no classes of this type of school were included in the courrent study.

Table 1

Longitudinal hierarchical linear models: Predicting the trajectories of immigrant and non-immigrant students' educational achievement, belonging, identification, and stereotype vulnerability

	GPA	Academic belonging	Domain identification	Stereotype Vulnerability
Predictor	*B (SE)*	*B (SE)*	*B (SE)*	*B (SE)*
Intercept	3.49*** (0.47)	4.60*** (0.48)	5.18*** (0.58)	1.23*** (0.62)
Slope of time trend	0.58 (0.36)	0.62* (0.27)	0.23 (0.43)	0.09 (0.38)
Between-person differences, fixed effects (intercept)				
Immigrant status	-0.08* (0.03)	0.06 (0.03)	0.11** (0.04)	0.35*** (0.04)
Experimental treatment	0.05 (0.03)	-0.02 (0.03)	0.05 (0.03)	-0.01 (0.03)
Immigrant status x Treatment	-0.06* (0.03)	0.01 (0.03)	-0.02 (0.04)	-0.05 (0.03)
Previous school	-0.25*** (0.04)	-0.00 (0.03)	-0.09* (0.04)	-0.04 (0.04)
Current school	0.13*** (0.03)	-0.03 (0.03)	0.07 (0.04)	-0.06 (0.04)
School (Sd11)	-0.05 (0.04)	0.01 (0.04)	0.00 (0.05)	0.02 (0.05)
School (Sd12)	-0.07 (0.05)	-0.04 (0.04)	-0.06 (0.05)	0.03 (0.06)
School (Sd13)	-0.00 (0.05)	0.03 (0.04)	0.11* (0.05)	-0.01 (0.05)
Gender	0.07 (0.04)	0.01 (0.03)	0.04 (0.05)	-0.03 (0.05)
Age	-0.04 (0.03)	0.01 (0.03)	-0.04 (0.04)	0.05 (0.04)
Between-person differences, fixed effects (time slope)				
Immigrant status	-0.09*** (0.02)	-0.03 (0.02)	-0.08** (0.03)	-0.03 (0.02)
Experimental treatment	-0.01 (0.02)	0.01 (0.02)	-0.02 (0.03)	-0.01 (0.02)
Immigrant status x Treatment	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.03)	0.00 (0.02)
Previous school	0.31*** (0.02)	0.06*** (0.02)	0.14*** (0.03)	-0.03 (0.02)
Current school	-0.06* (0.03)	0.03 (0.02)	-0.08* (0.03)	0.01 (0.03)
School (Sd11)	0.12*** (0.03)	0.02 (0.02)	0.01 (0.04)	0.01 (0.03)
School (Sd12)	0.02 (0.03)	-0.01 (0.03)	-0.04 (0.04)	0.02 (0.03)
School (Sd13)	0.10*** (0.03)	0.08*** (0.02)	0.06 (0.04)	0.03 (0.03)
Gender	-0.00 (0.03)	-0.01 (0.02)	0.05 (0.04)	0.00 (0.03)
Age	-0.04 (0.02)	-0.04* (0.02)	-0.02 (0.03)	-0.01 (0.03)
Random Effects (Variance Components)				
Intercept (SD)	0.15*** (0.39)	0.24*** (0.49)	0.35*** (0.59)	0.42*** (0.65)
Time slope (SD)	0.03*** (0.18)	0.01* (0.08)	0.13*** (0.36)	0.05*** (0.23)
Level-1 error (SD)	0.30 (0.55)	0.19 (0.44)	0.31 (0.55)	0.27 (0.52)
Deviance (k)	2809.03 (26)	2348.04 (26)	3209.28 (26)	2932.55 (26)

Notes. N_{Level1} = 1323, N_{Level2} = 514; k = number of parameters in model. Time was coded continuously (T1 = 0, T2 = 1, T3 = 2). Effect-coded control variables: immigrant status (-1 = non-immigrant, 1 = immigrant), experimental treatment (-1 = control, 1 = belonging), previous school track (-1 = non-academic track, 1 = academic track), current school track (-1 = non-academic track, 1 = academic track), school (Sd11, Sd12, Sd13), gender (-1 = male, 1 = female). Method of estimation: full maximum likelihood. *** $p < .001$, ** $p < .01$, *$p < .05$

Table 2

Longitudinal hierarchical linear models: Stereotype vulnerability and cultural identity among immigrant students

Predictor	GPA	Academic Belonging	Domain Identification	Stereotype Vulnerability
	B (SE)	B (SE)	B (SE)	B (SE)
Intercept	4.03*** (0.68)	5.80*** (0.68)	6.91*** (0.82)	2.44** (0.98)
Time trend	0.83 (0.54)	0.74* (0.38)	0.53 (0.61)	-0.09 (0.57)
Between-person differences, fixed effects (intercept)				
Stereotype Vulnerability	-0.03 (0.04)	-0.15*** (0.04)	-0.06 (0.05)	
Ethnic Identity				0.15** (0.05)
Residence Culture Identity				0.04 (0.06)
Ethnic Identity x Residence Culture Identity				0.00 (0.05)
Experim. treatment	-0.01 (0.04)	-0.01 (0.04)	0.03 (0.05)	-0.05 (0.06)
Citizenship	0.09* (0.04)	-0.04 (0.04)	0.07 (0.05)	0.04 (0.06)
Immigr. Generation	-0.03 (0.05)	-0.14* (0.06)	-0.11 (0.06)	-0.08 (0.09)
Previous school	-0.24*** (0.05)	0.10* (0.04)	0.04 (0.07)	0.05 (0.07)
Current school	0.11** (0.04)	-0.02 (0.04)	0.07 (0.06)	-0.09 (0.06)
School (Sd11)	0.02 (0.05)	-0.05 (0.05)	-0.00 (0.07)	0.06 (0.07)
School (Sd12)	0.04 (0.08)	0.01 (0.07)	0.11 (0.09)	0.03 (0.11)
School (Sd13)	0.05 (0.05)	0.02 (0.05)	0.13* (0.06)	-0.05 (0.07)
Gender	0.03 (0.05)	-0.02 (0.04)	0.05 (0.06)	0.01 (0.06)
Age	-0.06 (0.04)	-0.05 (0.04)	-0.12* (0.05)	0.00 (0.06)
Between-person differences, fixed effects (time slope)				
Stereotype Vulnerability	-0.07** (0.03)	0.03 (0.02)	-0.03 (0.03)	
Ethnic Identity				-0.03 (0.03)
Residence Culture Identity				-0.00 (0.04)
Ethnic Identity x Residence Culture Identity				-0.03 (0.04)
Experim. treatment	-0.03 (0.03)	0.00 (0.02)	-0.03 (0.04)	-0.01 (0.03)
Citizenship	-0.02 (0.03)	-0.05* (0.02)	-0.01 (0.04)	0.04 (0.04)
Immigr. Generation	-0.01 (0.04)	0.03 (0.04)	0.03 (0.06)	0.08 (0.05)
Previous school	0.29*** (0.03)	0.02 (0.03)	0.11* (0.05)	-0.06 (0.04)
Current school	-0.01 (0.03)	-0.00 (0.03)	-0.07 (0.05)	0.03 (0.04)
School (Sd11)	0.21*** (0.04)	0.10*** (0.03)	0.13** (0.05)	0.02 (0.05)
School (Sd12)	0.08 (0.06)	-0.02 (0.05)	0.04 (0.06)	0.12* (0.05)
School (Sd13)	0.12*** (0.03)	0.10*** (0.03)	0.10* (0.05)	0.09* (0.05)
Gender	-0.02 (0.03)	0.02 (0.03)	0.04 (0.05)	-0.02 (0.04)
Age	-0.06 (0.03)	-0.05* (0.02)	-0.04 (0.04)	0.00 (0.04)
Random Effects (Variance Components)				
Intercept (SD)	0.14*** (0.37)	0.22*** (0.47)	0.41*** (0.64)	0.54*** (0.74)
Time slope (SD)	0.01* (0.12)	0.01*** (0.12)	0.20*** (0.44)	0.06*** (0.25)
Level-1 error (SD)	0.33 (0.57)	0.19 (0.43)	0.27 (0.52)	0.38 (0.61)
Deviance (k)	1507.17 (28)	1261.70 (28)	1740.67 (28)	1825.02 (32)

Notes. N_{Level1} = 719, N_{Level2} = 290. Time was coded continuously (T1 = 0, T2 = 1, T3 = 2). Effect-coded control variables: experimental condition (-1 = control, 1 = belonging), immigrant generation (-1 = first generation, 1 = second generation), citizenship (-1 = Austrian, 1 = other), previous school track (-1 = non-academic track, 1 = academic track), current school track (-1 = non-academic track, 1 = academic track), school (Sd11, Sd12, Sd13), gender (-1 = male, 1 = female). Method of estimation: full maximum likelihood. Stereotype Vulnerability,

a) Predictor: Stereotype Vulnerability

$DV_{ti} = \beta_{00} + \beta_{01}*Age_i + \beta_{02}*Stereotype\ Vulnerability_i + \beta_{03}*Experimental\ treatment_i + \beta_{04}*Current\ school\ track_i + \beta_{05}*Previous\ school\ track_i + \beta_{06}*Gender_i + \beta_{07}*SD11_i + \beta_{08}*SD12_i + \beta_{09}*SD13_i + \beta_{010}*Citizenship_i + \beta_{011}*Immigrant\ generation_i + \beta_{10}*Time_{ti} + \beta_{11}*Age_i*Time_{ti} + \beta_{12}*Stereotype\ Vulnerability_i*Time_{ti} + \beta_{13}*Experimental\ treatment_i*Time_{ti} + \beta_{14}*Current\ school\ track_i*Time_{ti} + \beta_{15}*Previous\ school\ track_i*Time_{ti} + \beta_{16}*Gender_i*Time_{ti} + \beta_{17}*SD11_i*Time_{ti} + \beta_{18}*SD12_i*Time_{ti} + \beta_{19}*SD13_i*Time_{ti} + \beta_{110}*Citizenship_i*Time_{ti} + \beta_{111}*Immigrant\ generation_i*Time_{ti} + r_{0i} + r_{1i}*Time_{ti} + e_{ti}$

b) Predictors: Ethnic Identity and Residence Culture Identity

$SVS_{ti} = \beta_{00} + \beta_{01}*Age_i + \beta_{02}*Ethnic\ Identity_i + \beta_{03}*Residence\ Culture\ Identity_i + \beta_{04}*Ethnic\ Identity\ x\ Residence\ Culture + \beta_{05}*Experimental\ treatment_i + \beta_{06}*Current\ school\ track_i + \beta_{07}*Previous\ school\ track_i + \beta_{08}*Gender_i + \beta_{09}*SD11_i + \beta_{010}*SD12_i + \beta_{011}*SD13_i + \beta_{012}*Citizenship_i + \beta_{013}*Immigrant\ generation_i + \beta_{10}*Time_{ti} + \beta_{11}*Age_i*Time_{ti} + \beta_{12}*Ethnic\ Identity_i*Time_{ti} + \beta_{13}*Residence\ Culture\ Identity_i*Time_{ti} + \beta_{14}*Ethnic\ Identity\ x\ Residence\ Culture*Time_{ti} + \beta_{15}*Experimental\ treatment_i*Time_{ti} + \beta_{16}*Current\ school\ track*Time_{ti} + \beta_{17}*Previous\ school\ track_i*Time_{ti} + \beta_{18}*Gender_i*Time_{ti} + \beta_{19}*SD11_i*Time_{ti} + \beta_{110}*SD12_i*Time_{ti} + \beta_{111}*SD13_i*Time_{ti} + \beta_{112}*Citizenship_i*Time_{ti} + \beta_{113}*Immigrant\ generation_i*Time_{ti} + r_{0i} + r_{1i}*Time_{ti} + e_{ti}$

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