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# Stereotype threat and the cognitive performance of adolescent immigrants: The role of cultural identity strength

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ABSTRACT

In many world regions students with certain immigrant backgrounds underperform in educational settings. Theory and research suggest that this achievement gap could be partially explained by stereotype threat. Stereotype threat is a detrimental psychological state that inhibits individuals who belong to a negatively stereotyped group at times of learning and performance. The aim of this work was to examine both the influence of students' residence culture identity strength and ethnic identity strength on their cognitive performance under threat. Two experimental studies, conducted in European secondary schools, are reported. Experiment 1 ($N = 132$) showed that in a situation of explicit stereotype threat, high identification of immigrants with their residence culture predicted better cognitive performance, independently of ethnic identity strength. Residence culture identity strength was unrelated to cognitive performance in a control condition or a more implicit threat condition. Experiment 2 ($N = 152$) included an experimental manipulation of residence culture identity strength. The results show that highlighting similarities with the residence culture (vs. highlighting differences) positively influences immigrant students' performance under threat. This research connects the stereotype threat framework with acculturation research, and points at ways to increase the educational achievement of immigrant students.



## 1. Introduction

Students with certain immigration backgrounds score lower in achievement tests than non-immigrant students, and they leave school earlier, in Europe and the US alike (OECD, 2010; US Department of Education, 2010). This immigrant achievement gap is a challenge for politicians, the general public as well as social scientists. Language problems and low socio-economic status explain parts of the achievement gap, but substantial variance remains to be explained. Our work is based on prior research that highlighted the impact of negative achievement-related stereotypes on the performance of minority students.

Negative stereotypes against immigrants have a longstanding history. Benjamin Franklin, for example, thought that immigrants of German background, these "swarthy", "Palantine Boors" (Franklin in Labaree, 1959), were too stupid and lazy to make a positive contribution to the English society overseas (Feer, 1952). Today, negative stereotypes against certain ethnic groups about low cognitive abilities exist in many world regions, including stereotypes about people with a Latino background in the US, or people with a North African or Balkan immigrant background in parts of Europe. In recent years, psychological theory and research showed that negative stereotypes can lead to an aversive, stress-related state called stereotype threat (Schmader, Johns, & Forbes, 2008; Steele & Aronson, 1995). Stereotype threat has a detrimental influence on cognitive performance in testing situations and at times of preparation and learning (e.g., Appel & Kronberger, 2012; Taylor & Walton, 2011). This makes stereotype threat a highly relevant phenomenon in the educational context, and provokes further questions of how to reduce its negative impact. The aim of this work is to connect the stereotype threat framework with an acculturation perspective (cf. Berry, 1997, 2001). In the latter line of research, different acculturation profiles, based on the strength of immigrants' ethnic identity as well as the strength of immigrants' identification with the culture where they live (i.e., residence culture identity strength), are considered key predictors of immigrants' adaptation, well-being, and educational success. The goal of the present studies is to examine the influence of residence culture identity strength and ethnic identity strength on immigrant students' cognitive performance under stereotype threat.

### 1.1. Stereotype threat among immigrant groups

Stereotype threat is conceived as a detrimental psychological state that impairs cognitive functioning in challenging tasks when a

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negative group stereotype is activated. More broadly, any situation in which the setting implies animosity toward or devaluation of one's group may impair cognitive performance (social identity threat, cf. Aronson & McGlone, 2009; Steele, Spencer, & Aronson, 2002). Prior research showed that the interplay of several psychological processes results in a performance decrement under stereotype threat (Schmader et al., 2008). In a situation in which a negative stereotype supposedly applies for a student, this student is likely to have negative thoughts and worries, to experience negative emotions, and to engage in emotion regulation. These processes, along with a physiological stress response elicited under threat, consume cognitive resources, which are unavailable for whatever cognitive activity a person undertakes (Schmader & Beilock, 2012). Due to reduced cognitive resources the task performance of the student belonging to a stereotyped group is impaired (Beilock, Rydell, & McConnell, 2007; Johns, Inzlicht, & Schmader, 2008).

An additional line of research focused on the preconditions and boundary conditions of stereotype threat. Integrating previous research, Schmader et al. (2008) proposed that stereotype threat is a consequence of a cognitive imbalance between a person's concept of the self, the concept of a group the person belongs to, and the concept of the ability domain. More specifically, this imbalance involves a) a positive link between an individual's self-concept and the concept of a group (individual identifies with a group), b) a positive link between an individual's self-concept and the concept of an ability domain (individual identifies with a domain), but c) a negative link between the domain and one's group.

Theory and research further highlight that not all individuals who belong to a negatively stereotyped group are equally prone to the detrimental influence of stereotype and social identity threat. Previous research showed that the more participants endorsed the negative ability stereotype themselves (negative link between domain concept and in-group concept), the more they were susceptible to stereotype threat (Schmader, Johns, & Barquissau, 2004). Likewise, participants who are more aware of the stereotype are more vulnerable to stereotype threat effects, because ambiguous cues may be interpreted as an expression of the negative stereotype (i.e., stigma consciousness, Brown & Pinel, 2003; McKown & Strambler, 2009). Other studies focused on the link between the self and the ability domain, showing that stereotype threat effects increase along with students' identification with the ability domain (e.g., Appel, Kronberger, & Aronson, 2011; Aronson et al., 1999).

In the typical experimental stereotype threat design, individuals who belong to a negatively stereotyped group are randomly assigned to either a condition in which the negative stereotype is activated in an evaluative context or a control condition (where either no stereotype is activated or where stereotype threat is removed). Thereby, the activation of the stereotype can occur in explicit (i.e., priming individual's group-based inferiority or blatant statement about the subgroup inferiority on tests, e.g., "women score lower in math than men"), moderately explicit (i.e., statement about subgroup differences in performance, but direction of the difference is left open, e.g., "this test has shown gender differences in the past"), or more indirect and subtle ways (i.e., no statement about subgroup differences, instead, the context of tests, test takers' subgroup membership, or test taking experience is manipulated, e.g., a race or gender prime, or framing a test as "diagnostic" vs. "not diagnostic"; for an overview see Nguyen & Ryan, 2008). Ultimately, mean performance of the conditions is compared. Usually, a comparison group with no prevalent negative stereotype in the domain of interest is included (e.g., men, Whites).

Since stereotype threat has been introduced to the research community (Steele & Aronson, 1995), several hundreds of studies have examined the influence of negative stereotypes on test performance and related measures. Most of these studies focused on either African Americans or women in contexts, in which their intellectual ability is met with stereotypic expectations (e.g., Huguet & Régner, 2007; Plante, de la Sablonnière, Aronson, & Théorêt, 2013). Prior meta-analyses yielded a significant and substantial stereotype threat effect (Nguyen & Ryan, 2008; Walton & Spencer, 2009). The meta-analysis by Nguyen and Ryan (2008) highlights that, while there are strong similarities in how stereotyped groups react to stereotype threat, there are important differences as well. Women, for example, suffer more detrimental effects in reaction to subtle threat-activating cues, while for ethnic minorities, stronger stereotype threat effects are observed for moderately to blatant stereotype activation.

Initial evidence has been gathered that stereotype threat might also impair the performance of negatively stereotyped immigrant groups. Studies showed that stereotype and social identity threat can impair the performance of Latino Americans in the US (e.g., Armenta, 2010; Hollis-Sawyer & Sawyer, 2008; Schmader & Johns, 2003), and of various immigrant groups in Europe (e.g., from North Africa or the Balkans), who are also confronted with a low-intelligence stereotype within the new residence country (e.g., Appel, 2012; Berjot, Roland-Levy, & Girault-Lidvan, 2011; Chateignier, Dutrévis, Nugier, & Chekroun, 2009). In other studies including immigrant participants, the main effect of the stereotype threat treatment could not be replicated, or findings were mixed (e.g., Wicherts, Dolan, & Hessen, 2005).

It remains an open question to what degree it is warranted to presume stereotype threat effects in general for immigrants. Furthermore, it is questionable to what degree the group of immigrants is comparable to other affected groups such as women in math-related fields or African Americans in academic contexts. Some immigrant groups (e.g., Turks or North Africans in European countries, who are often referred to as "guest workers") are given the blame for economic and social problems, and thus, have to deal with signals of rejection and non-belonging (cf. Zick, Pettigrew, & Wagner, 2008), whereas other immigrant groups are perceived more positively (e.g., Asians in the US, who are regarded as rather competent; cf. Fiske, Cuddy, Glick, & Xu, 2002). While it is plausible that those immigrant groups, who are confronted with negative expectations concerning their intellectual abilities, are as likely to react to stereotype threat in similar ways as other stereotyped groups, it is also clear that the category 'immigrant' may be more heterogeneous as well as less stable and clear-cut than other group-defining categories (e.g., gender). Due to differences in the trajectory of different immigrant groups, stereotype threat effects can diverge, for example in the special cases of Caribbean immigrants to the US (Deaux et al., 2007) or Asian Americans in the US (Shih, Pittinsky, & Ambady, 1999).[1] It hence may be particularly important to consider individual differences—or moderator effects—for immigrants. Individual differences of interest in this work are residence culture identity strength and ethnic identity strength, both being relevant aspects of the social identity of immigrants (cf. Berry, 1997, 2001).

[1] Deaux et al. (2007) showed that the duration of time spent in a country does not necessarily improve the situation for immigrants. It was shown that while there were no differences between the test performances of first- and second-generation Caribbean students under neutral testing conditions, it differed significantly under conditions of stereotype threat. First-generation students increased their performance, while second-generation Afro-Caribbeans were more rather than less susceptible to stereotype threat and showed decreased performance. The occurrence of stereotype threat effects in second-generation Afro-Caribbean students might be the result of assimilating to US culture; they show similar characteristics to African American students, supposedly because of being continuously stereotyped as Black (Deaux et al., 2007). In contrast to the performance inhibiting effects of stereotype threat due to negative ability stereotypes against one's group, it was also shown that positive stereotypes regarding certain immigrant groups, for example high math ability among Asian Americans, can enhance their performance (e.g., Shih et al., 1999).

### 1.2. Acculturation and social identity: conceptualization, measures and outcomes

The processes of immigration can be described from a historical, a sociological, or a psychological perspective, looking at the different trajectories of immigrant groups. The psychological and sociocultural adaptation of immigrants depends on situational and individual factors alike. While from a sociological perspective the circumstances of the migration (e.g., upward- vs. downward mobility; for a review on immigration in the US see Portes & Rumbaut, 2006) play a highly important role, psychology tends to concentrate on factors within the individual. The focus of our research lies on individual differences regarding immigrants' identification with their residence culture as well as their culture of origin.

The interplay of residence culture and ethnic background as parts of immigrants' identity is outlined in research on acculturation (e.g., Berry, 1997, 2001); cf. Brown & Zagefka, 2011; see also Oyserman, Kemmelmeier, Fryberg, Brosh, & Hart-Johnson, 2003. The experience of having to deal with multiple cultures can result in various acculturation profiles, based on the strength of identification with each group. Berry (1997, 2001) identified four different acculturation profiles, *integration* (high identification with both ethnic background and residence culture), *assimilation* (low ethnic identity strength, high residence culture identity strength), *separation* (high ethnic identity strength, low residence culture identity strength), and *marginalization* (weak identification with both ethnic background and residence culture).

Phinney (1990, 1992) conceptualizes ethnic identity as part of a person's social identity (based on the social identity approach; cf. Tajfel, 1981). All members of the ethnic group have in common that they self-identify as a group member (i.e., "ethnic identity"; to be distinguished from "ethnicity", i.e., the objective group membership based on, e.g., parents' heritage). However, they differ in their sense of belonging to, their attitudes toward, and their commitment to the ethnic group, as well as their ethnic behaviors and shared values (Phinney, 1990, 1992). This leads to individual differences in ethnic identity strength. Attitudes toward other groups (i.e., residence culture) are not part of the ethnic identity, and need to be addressed independently.

It needs to be acknowledged that there are alternative conceptualizations of ethnic identity, such as suggested by Oyserman et al. (2003). They propose a self-schema framework of racial-ethnic identity. Individuals with an ethnic self-schema have a clear and distinct perception about themselves as part of the in-group (i.e., their ethnic group), and integrate thoughts, feelings, and beliefs associated with this group-membership as part of their self-concept. Those who have not developed an ethnic self-schema are still aware of their minority-group membership, but without having an ethnic identity as part of their self-concept. Immigrants who identify with both their ethnic and their residence culture can be considered as being part of the in-group (ethnic culture) and the other-group (residence culture), and are thus regarded as having a "dual identity" (Oyserman et al., 2003).

Within the acculturation framework, ethnic identity strength and residence culture identity strength are generally considered to be two independent dimensions rather than opposite sides of one dimension (i.e., bipolar vs. bidimensional approach; for a systematic review of different approaches to assess acculturation attitudes see Arends-Tóth & van de Vijver, 2007; Rudmin, 2009).

The different acculturation profiles are associated with several outcome variables. Ample research has focused on mental health and well-being in association with acculturation, consistently showing that integrated individuals show the most favorable outcomes (for a meta-analytic review see Yoon et al., 2013). Research by Berry and colleagues, using a large sample of immigrant youths from all over the world, showed that adolescents with a marginalized or separated acculturation profile report more perceived discrimination, while those with an integrated or assimilated profile report less. At the same time, integrated adolescents showed the best psychological and sociocultural adaptation (e.g., life satisfaction or self-esteem), while those with a diffuse acculturation profile appeared to have the worst (Berry, Phinney, Sam, & Vedder, 2006; see also Berry & Sabatier, 2011).

A recent meta-analysis (Nguyen & Benet-Martínez, 2013) showed that people identifying highly with both their ethnic and residence culture (i.e., integrated individuals) showed better psychological and sociocultural adjustment than those who only identified highly with either their ethnic background (i.e., segregated individuals) or their residence culture (i.e., assimilated individuals). Trying to disentangle the influence of the two independent dimensions, Ward and Rana-Deuba (1999) found that a strong ethnic identity was associated with higher psychological well-being, while a strong residence culture identity predicted better sociocultural adaptation. Participants with an integrated acculturation profile reported less depression and less psychological distress, while assimilated individuals reported fewer social difficulties (Ward & Rana-Deuba, 1999).

### 1.3. Cultural identity strength and cognitive performance

Regarding acculturation profiles and academic success, there is some evidence that integrated individuals show better school performance, while pressure to assimilate appears to impair performance (Portes & Rumbaut, 2006). As yet, theory and research on the relationship between immigrants' social identity and cognitive performance mostly focused on ethnic background as the identity dimension of interest. Regarding individual differences in ethnic identity, it is suggested that ethnic identity has a positive influence on academic efficacy (Oyserman, Bybee, & Terry, 2006; Oyserman, Harrison, & Bybee, 2001). They showed that stronger identification with the ethnic background predicts higher academic achievement. Little emphasis has been given to individual differences with respect to immigrants' identification with their residence culture and performance. The few findings available suggest that a strong residence culture identity predicts better performance (Nguyen, Messé, & Stollak, 1999). Likewise, it was found that both ethnic and residence culture identity were positively related to school adjustment; however, the correlation was stronger for residence culture identity than for ethnic identity (cf. Phinney, Horenczyk, Liebkind, & Vedder, 2001).

Research combining questions on cultural identity strength with the perspective of the stereotype threat framework is virtually absent. Addressing the role of ethnic identity strength in the field of stereotype threat leads to an important question, as stereotype threat theory and research on groups such as women (Schmader, 2002) and African Americans (Ho & Sidanius, 2010; Sellers, Copeland-Linder, Martin, & Lewis, 2006) indicate that a strong identification with the stereotyped group (i.e., racial identity or gender identity) is a burden rather than an advantage under stereotype threat. The available data seem to support this prediction for immigrant groups: confronted with group-based stereotypes, Latino immigrants to the US who highly identified with their ethnic background were more vulnerable to stereotype threat effects (Armenta, 2010). Hispanic participants high in ethnic identity strength scored lower on a verbal test if taken under threat, whereas in the control condition, higher ethnic identity scores were associated with higher verbal exam scores (Schultz, Baker, Herrera, & Khazian, 2002).

As yet, there is no research available that examined the influence of residence culture identity strength on performance under stereotype threat. Theoretical considerations suggest that whenever immigrant students are faced with a negative stereotype addressing their ethnic group, a strong (not negatively

stereotyped) residence culture identity might work as a buffer, which reduces perceived threat and increases the cognitive resources for an upcoming cognitive task. A strong residence culture identity can enable immigrants to deject negative stereotypes that apply to their ethnic group. Focusing on the non-stereotyped residence culture identity reduces the cognitive imbalance that puts the stereotype threat into effect. This assumption is supported by prior research dealing with Asian American females. In the field of mathematics in the US, females are considered less talented than males, but Asian Americans are considered more talented than other ethnic groups (including Whites). As a consequence, female Asian Americans are confronted with contradictory expectations. For this group of students, activating the female stereotype impeded performance, while activating the Asian American stereotype bolstered performance (Ambady, Shih, Kim, & Pittinsky, 2001; Shih et al., 1999; see also Oyserman et al., 2006; Rydell, McConnell, & Beilock, 2009).

### 1.4. Overview and predictions

Stereotype threat is a predicament that prevents students who belong to a negatively stereotyped group to perform up to their full abilities. Therefore, stereotype threat is supposed to be a factor that contributes to the immigrant achievement gap (Walton & Spencer, 2009). The present research aimed at understanding individual differences of immigrant students to experience stereotype threat. Our particular aim was to examine the role of these students' cultural identity strength with regard to their performance under threat. Due to a particular scarcity of research, we laid a special focus on residence culture identity strength. Based on research in the acculturation tradition, we investigated immigrant students' residence culture identity strength as well as their ethnic identity strength in relation to their performance under threat (Experiment 1). We expected higher residence culture identity strength to be associated with better performance under threat. With regard to ethnic identity strength, prior theory and research are less clear. Whereas research from the acculturation tradition is in some support for a positive relationship with performance, research within the stereotype threat tradition suggests that this variable is associated with weaker cognitive performance under threat. Thus, no clear predictions for a main effect or an interaction between both identity dimensions were made. In Experiment 2 we manipulated rather than measured residence culture identity strength to corroborate the causal path between this variable and performance under threat.

The present studies were conducted with adolescent students in actual classroom settings. In Austria, where the studies were conducted, there is an important distinction between two types of schools (decisions for one type or the other are made early on, i.e., at the age of 10). First, there is a higher education track that prepares for university entrance. Second, there is a variety of schools that prepare for a broad range of professions. While in this latter track it in principle is possible to move on to attend university, most students in these schools prepare for jobs that do not demand for higher academic education. The majority of immigrant students follow this vocational track. Prior research suggests that stereotype threat effects are larger for students who strongly identify with academia (e.g., Aronson et al., 1999). As such strong domain identification is more likely for elite schools than for schools such as those addressed in our research, it is possible that stereotype threat effects are less observable in our samples. However, for immigrant students it is less clear whether domain identification influences school choice as much as it does for non-immigrants (there are hardly any immigrant students in the higher education track). If stereotype threat effects become visible even in such non-elite contexts, it may further highlight the importance of taking stereotype threat effects into account in any educational context. Situating our research in the typical settings for immigrant students in Europe contributes to the external validity of our results.

## 2. Experiment 1

The aim of the first experiment was to examine the influence of individual differences in residence culture identity strength and ethnic identity strength on immigrant students' cognitive performance under threat. The study involved two sessions to guarantee an independent assessment of the identity measures and the cognitive performance at different levels of threat.

### 2.1. Method

#### 2.1.1. Participants and procedure

The participants were recruited in the 8th grades of four Austrian secondary schools in two medium-sized towns. From 5th to 8th grade, Austrian schools are divided into higher education schools that prepare for future college and university education (*AHS Unterstufe*), and vocational schools that prepare for future on-the-job training and blue collar work (*Hauptschule* and *Neue Mittelschule*). All of our participants attended the latter type of school. There were 138 students who completed all materials and for whom codes of both parts of the study could be matched. Six students were excluded from further analysis because their scores were outliers on the cognitive performance measure (scores < 7) or they did not fall in the envisaged age range (13–15 years). The remaining sample consisted of 132 adolescents with and without immigration background ($M = 13.84$ years; $SD = 0.64$); about half of the sample ($n = 68$) was female. A subsample of $n = 81$ students indicated a foreign ethnic background (61.4%).

The study involved two sessions which were introduced as independent surveys. At Session 1, a booklet with a set of questionnaires on students' social identity and background measures was administered (see below). The second part of the data collection was scheduled three weeks later (Session 2), and included our main experimental treatment and the dependent variables. All study materials were presented in German, as all students were fluent or native speakers. Both sessions took place in classrooms, in groups of 14–24 students, with two researchers and a teacher present. Each group consisted of students with and without immigration background. After completing the second session, the participants were thanked and fully debriefed. All ethical requirements for conducting research at schools in Austria were met. Each class received 50 Euros for the participation.

#### 2.1.2. Measures at Session 1

*2.1.2.1. Immigration background.* Participants were required to note which ethnic group they considered themselves to be a member of in an open question format. The wording of this question was adapted from the *Multi Ethnic Identity Measure* (MEIM; Phinney, 1992). Participants who indicated a group or nationality other than Austrian were ascribed an immigration background. The most frequent immigrant backgrounds were Bosnia-Herzegovina ($n = 17$), Serbia ($n = 16$), Turkey ($n = 8$), and Kosovo ($n = 7$). Moreover, an additional question asked for the students' citizenship. Among the students indicating a foreign ethnic background, 41 had Austrian citizenship (50.6%). For all immigrant students in our sample negative achievement stereotypes regarding their ethnic background could be expected (cf. Kahraman & Knoblich, 2000), and no students in our sample listed a rich northwestern country as their ethnic background (e.g., Switzerland, Germany, France, UK, etc.).

*2.1.2.2. Ethnic identity strength.* We assessed ethnic identity strength with the *Multi Ethnic Identity Measure* (MEIM; Phinney, 1992). The MEIM consists of 12 items, measuring how strongly individuals are

inclined to explore their ethnic background culture and how strongly they feel committed to their background identity (e.g., "I feel a strong attachment towards my own ethnic group"). The items were developed to capture ethnic minority identity strength; therefore, only the scores for students with an immigrant background were analyzed. The items went with a four-point scale (1 = *don't agree*; 4 = *completely agree*) and the scale showed good reliability, $\alpha = 0.82$.

*2.1.2.3. Residence culture identity strength.* To assess the degree to which individuals explore their residence culture identity and how strongly they feel committed to their residence culture among the immigrant subgroup, the items of the MEIM were rephrased to address Austria (e.g., "I feel a strong attachment towards Austria"; *Residence Culture Identity Measure*, RCIM; see Appendix). Again, a four-point scale was provided (1 = *don't agree*; 4 = *completely agree*). The reliability was good, as indicated by $\alpha = 0.84$.

*2.1.2.4. Additional measures.* Additional measures included the four-item Devaluing Scale (Schmader, Major, & Gramzow, 2001) as a measure of domain identification ($\alpha = 0.59$) and a four-item Belonging Scale (Anderman, 2002) to assess feelings of belonging to the school ($\alpha = 0.74$). Both questionnaires were included to mark students who had entirely disidentified with school and were therefore expected to be unaffected by stereotype threat (Steele, 1997). No student fell into this category. We further included a German version of the Bicultural Identity Integration Scale (BII; Benet-Martínez & Haritatos, 2005, eight items), which appeared to be unintelligible to a number of students and showed low reliability in our German language version ($\alpha = 0.56$). This scale was not analyzed further. Participants were further asked about their socio-demographic background. The two subsamples differed with respect to their religious affiliation (non-immigrant students: Christian $n = 47$, no affiliation $n = 4$; immigrant students: Christian $n = 19$, Islam $n = 41$, no affiliation $n = 4$, other $n = 17$), the language(s) spoken at home (i.e., most immigrant students spoke German and another language at home, while all non-immigrant students only spoke German), and socioeconomic status (i.e., parents of non-immigrant students had higher educational backgrounds), but there were no differences regarding their parents' unemployment rates. Immigrant and non-immigrant students showed comparable school academic performance (i.e., grades in the core subjects; English: immigrants: $M = 2.82$, $SD = 0.83$, non-immigrants: $M = 2.94$, $SD = 0.94$; Math: immigrants: $M = 2.99$, $SD = 1.03$, non-immigrants: $M = 3.10$, $SD = 1.01$; German: immigrants: $M = 2.72$, $SD = 0.86$, non-immigrants: $M = 2.73$, $SD = 0.86$; all $ps > .47$). Importantly, participants in the three experimental conditions did not differ from each other with respect to any of the socio-demographic variables.

*2.1.3. Treatment and Measures at Session 2*

*2.1.3.1. Stereotype threat manipulation.* Participants were randomly assigned to receive one out of three booklets. All three booklets started with the same page introducing the study as an investigation on how students deal with different types of tasks at school. Then, participants were to read a newspaper article as part of a supposed comprehension task. The articles contained our experimental manipulation of stereotype threat (explicit vs. subtle vs. control): in the subtle threat condition, the newspaper article was about a prize ceremony in which students were awarded for their strong performance at school. All prize-winning students had typical Austrian names, such as Florian Holzer or Maria Fischer. In the explicit condition, the same newspaper article ended with an additional paragraph. In this paragraph, it was explicitly mentioned that no students with immigrant background qualified as high performing students, and the text speculated that immigrant students might lack the talent or diligence to excel. In the control condition an article about bicycling was presented which did not contain any information related to immigration or school.

*2.1.3.2. Cognitive performance.* A cognitive performance test served as the main dependent variable. In the two threat conditions, it was introduced as a general performance test, while in the control condition it was labeled as a picture puzzle. Cognitive performance was assessed by a language free intelligence test for children and adolescents (CFT 20-R; Weiss, 2006, subtests 1–3), measuring general fluid intelligence after Cattell (1963), in the tradition of Raven's progressive matrices. The test is a standard measure of cognitive performance, highly internally consistent, and shows good concurrent validity with other ability tests, as well as predictive validity for school success. The cognitive performance measure consisted of 45 items. Each item included three geometric pictures plus one empty field for a fourth missing picture. The participants' task was to choose the correct fourth picture out of five pictures provided. To account for guessing, an error-corrected score was calculated after the formula $CFT_{corrected} = N_{right} - N_{wrong}/(5 - 1)$. This score served as our performance measure (Leclercq, 1982). Descriptive scores for immigrants were $M_{control} = 25.05$, $SD = 6.78$; $M_{subtle} = 24.29$, $SD = 5.96$; $M_{explicit} = 24.46$, $SD = 5.85$, descriptive scores for non-immigrants were $M_{control} = 27.72$, $SD = 6.91$; $M_{subtle} = 29.28$, $SD = 5.96$; $M_{explicit} = 26.82$, $SD = 4.73$.

*2.1.3.3. Affective responses.* After completing the test, participants had to fill in a questionnaire on their experienced emotions while working on the cognitive performance test. Positive and negative affect were measured on a 7-point Likert scale ranging from 0 = *not at all present* to 6 = *very much* (12 items; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). Reliability of the scale was satisfactory (positive affect: $\alpha = 0.74$; negative affect: $\alpha = 0.84$). However, the negative affect scores were remarkably left-skewed ($M = 1.04$, $Md = 0.67$, $SD = 1.21$, skewness = 1.90, kurtosis = 4.40), indicating little variance. Neither positive nor negative affect qualified as a mediator of the results reported below.

## 2.2. Results and discussion

Theory and findings from an acculturation perspective (cf. Berry, 1997, 2001) suggest that ethnic identity and residence culture identity are more or less independent dimensions of immigrants' social identity rather than opposite sides of one dimension. In support of this assumption, a zero-order correlation between both individual difference variables yielded a non-significant relationship, $r(81) = .176$, $p = .116$. Students in the three experimental conditions did neither differ regarding their ethnic identity scores nor their residence culture identity scores ($Fs < 0.7$, $ps > .53$). When measuring ethnic or residence culture identity, sometimes a median split or the scalar midpoint is used to categorize participants into the four clusters (i.e., integration, assimilation, separation, marginalization). However, a classification of individuals via median splits results in a loss of information (cf. Berry & Sabatier, 2011) and is strongly discouraged from a methodological perspective (e.g., Maxwell & Delaney, 1993). Consequently, measuring the strength of identification with the home and the host culture independently, yielding two continuous variables appears to be conceptually and methodologically the most appropriate approach (cf. Berry & Sabatier, 2011; Demes & Geeraert, 2014; Ward & Rana-Deuba, 1999). Including both continuous variables into the model and allowing for potential interactions result in a similar, but more accurate picture than the formation of clusters (based on the concept of four distinct acculturation profiles), as the interactions of the two dimensions lead to comparable patterns of acculturation attitudes (cf. Berry & Sabatier, 2011; Phinney et al., 2001).

**Table 1**
Experiment 1: hierarchical linear regression with cognitive performance as the criterion. Results for the main effects (step 1) and the complete model (after step 5).

| Variable | Step 1 | | | | Step 5 | | | |
|---|---|---|---|---|---|---|---|---|
| | *B* | $SE_B$ | *Beta* | *p* | *B* | $SE_B$ | *Beta* | *p* |
| Intercept | 24.39 | 1.25 | | <.001 | 24.19 | 1.24 | | <.001 |
| Step 1 | | | | | | | | |
| Explicit threat vs. subtle threat (Dummy 1) | –0.29 | 1.68 | 0.00 | .986 | –0.26 | 1.69 | 0.02 | .877 |
| Explicit threat vs. control (Dummy 2) | 0.63 | 1.77 | 0.05 | .723 | 1.12 | 1.81 | 0.09 | .537 |
| Residence culture identity strength (RCIM) | 0.42 | 0.71 | 0.07 | .555 | 2.99 | 1.31 | 0.49 | .026 |
| Ethnic identity strength (MEIM) | –0.58 | 0.71 | –0.09 | .420 | –0.86 | 1.10 | –0.14 | .438 |
| Step 2 | | | | | | | | |
| RCIM × MEIM | | | | | 0.87 | 1.26 | 0.14 | .489 |
| Step 3 | | | | | | | | |
| Dummy 1 × RCIM | | | | | –4.43 | 1.71 | –0.49 | .012 |
| Dummy 2 × RCIM | | | | | –3.53 | 1.97 | –0.27 | .098 |
| Step 4 | | | | | | | | |
| Dummy 1 × MEIM | | | | | 0.91 | 1.81 | 0.07 | .617 |
| Dummy 2 × MEIM | | | | | 0.06 | 2.02 | 0.01 | .977 |
| Step 5 | | | | | | | | |
| Dummy 1 × MEIM × RCIM | | | | | 0.83 | 1.73 | 0.08 | .635 |
| Dummy 2 × MEIM × RCIM | | | | | –2.03 | 2.14 | –0.19 | .344 |

Step 1: $R^2 = .01$, $F(4, 76) = 0.27$, $p = .896$
Step 2: $\Delta R^2 = .01$, $F(1, 75) = 0.41$, $p = .525$
Step 3: $\Delta R^2 = .08$, $F(2, 73) = 3.19$, $p = .047$
Step 4: $\Delta R^2 = .01$, $F(2, 71) = 0.33$, $p = .722$
Step 5: $\Delta R^2 = .02$, $F(2, 69) = 0.93$, $p = .399$

We expected that among immigrants, a strong residence culture identity was related to better cognitive performance if the context implied threat, while we had no prediction for ethnic identity strength and did not expect an interaction. We conducted a hierarchical moderated regression analysis to test this prediction (see Table 1). The threat treatment (dummy-coded, explicit threat as the reference group) and both continuous identity measures (residence culture identity strength; ethnic identity strength, *z*-standardized) were entered first in the equation. Step 2 included the interaction between both identity measures. The next two steps included the interactions between the experimental conditions and residence culture identity strength, and the interactions between the experimental conditions and ethnic identity strength, respectively. The fifth and final step included the three-way interactions between the experimental conditions and both identity measures.

The main effects of the experimental treatment and the identity measures were not significant, $R^2 = .01$, $F(4, 76) = 0.27$, $p = .896$. Likewise, the interaction between both identity measures was unrelated to performance, $\Delta R^2 = .01$, $F(1, 75) = 0.41$, $p = .525$. Consistent with our assumptions, the interaction between the experimental treatment and the residence culture identity strength contributed significantly to the model, $\Delta R^2 = .08$, $F(2, 73) = 3.19$, $p = .047$. In contrast, the interaction between ethnic identity strength and the experimental treatment did not explain a significant portion of the performance variance $\Delta R^2 = .01$, $F(2, 71) = 0.33$, $p = .722$, nor did the three-way interaction, $\Delta R^2 = .02$, $F(2, 69) = 0.93$, $p = .399$.

To further inspect the interaction between the experimental treatment and the adolescents' residence culture identity strength, the relationship between the latter variable and performance is displayed for all three experimental groups (see Fig. 1).

Higher identification with the residence culture predicted higher scores in the cognitive performance test if taken under conditions of explicit stereotype threat, $B = 3.09$, $SE_B = 1.29$, $p = .019$ (simple slope explicit threat). There was no significant relationship between both variables observed for the other two groups, $B = –0.84$, $SE_B = 1.00$, $p = .398$ (simple slope subtle threat) and $B = –0.28$, $SE_B = 1.39$, $p = .838$ (simple slope control). Thus, our results indicate that a stronger residence culture identity is beneficial under conditions of high threat, but that this variable is unrelated to cognitive performance under low threat or control conditions.

Our key continuous measures ethnic identity strength and residence culture identity strength were not applicable to non-immigrants. However, we examined the main effects of the experimental treatment for this group. The stereotype threat treatment yielded no effect on the non-stereotyped majority group, $F(2, 48) < 1$, $p = .494$, $\Delta R^2 = .029$. Additionally, an ANOVA including the complete sample (i.e., immigrant and non-immigrant students) with cognitive performance as the dependent variable revealed that there was no main effect for experimental condition, $F(2, 126) = 0.37$, $p = .69$, but a main effect for immigration background, showing that non-immigrant students performed better than immigrant students, $F(1,126) = 9.35$, $p = .003$, partial $\eta^2 = .07$. The two-way interaction was not significant, $F(2, 126) = 0.58$, $p = .56$.

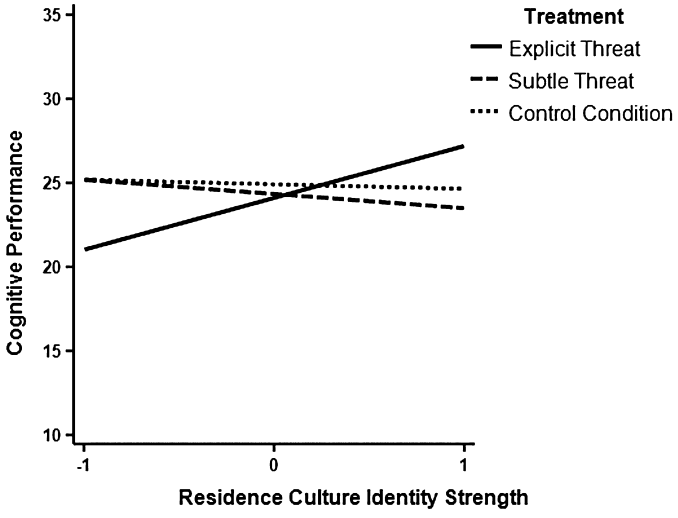


**Fig. 1.** Interaction between treatment and residence culture identity strength (Experiment 1).

Experiment 1 aimed at connecting immigrants' identification with their residence and ethnic culture to their performance under experimental conditions of stereotype threat. The results indicate that in a situation of explicit threat, strong identification with one's country of residence predicts better cognitive performance of the immigrant students. In the control condition as well as the subtle threat condition residence culture identity strength was unrelated to performance. This is a novel finding, as this is the first study to examine individual differences in residence culture identity strength within a stereotype or social identity threat experimental design. Ethnic identity strength, however, had no direct or interactive influence on cognitive performance under threat.

Our results suggest that immigrant adolescents who identify strongly with their country of residence are less vulnerable to the detrimental effects of explicit stereotype threat, independently of their ethnic identity strength. This finding is in line with previous research on acculturation outcomes, suggesting that a strong residence culture identity—without the necessity to distance oneself from the ethnic group of origin—predicts better school adjustment (Phinney et al., 2001) and better performance (Nguyen et al., 1999). In terms of acculturation profiles it is important to note that our finding does not promote the conclusion that assimilation is preferable to integration, as ethnic culture identity strength was neither positively nor negatively related to performance.

We identified an important moderator, but neither the experimental stereotype threat treatment nor the individual differences measures (i.e., MEIM and RCIM) alone had a significant influence on performance. Furthermore, it is remarkable that our findings showed little difference between the subtle threat condition and the control condition. Possibly, our subtle condition was indeed too subtle to elicit threat among the immigrant students.

## 3. Experiment 2

The aim of Experiment 2 was to provide additional evidence for our claim that residence culture identity strength is a crucial predictor for immigrants' cognitive performance under stereotype threat. In Experiment 1, we merely measured residence culture identity strength. In Experiment 2, we actually manipulated residence culture identity strength. We argue that strengthening the sense of belonging to the majority culture might have a positive influence on the cognitive performance of adolescent immigrants under threat. We aimed at testing our underlying assumption that residence culture identity strength is a cause rather than a correlate of performance under explicit threat.

### 3.1. Method

#### 3.1.1. Participants and procedure

In total, 159 students from the 7th grade of the same schools as in Experiment 1 participated in the study. Four students had to be excluded from statistical analyses because they did not finish the questionnaire or their pattern of answers indicated that they did not answer the questions seriously. One participant lacked sufficient knowledge of the German language, one student was remarkably older than the others, and one student indicated a non-stereotyped immigration background (i.e., Sweden). The final sample consisted of 152 students (age range 12–15 years, $M = 13.36$ years; $SD = 0.60$; $n = 59$ female). A subsample of $n = 90$ students self-identified as non-Austrian (59.2%), with the most frequent ethnic backgrounds being Bosnia-Herzegovina ($n = 19$), Kosovo ($n = 18$), Turkey ($n = 9$), and Egypt ($n = 9$). Among the immigrant subsample, 53 (58.9%) had Austrian citizenship.

The participants received a booklet that started with an introduction stating that the current study investigated how students deal with different types of tasks at school. Students then indicated which ethnic group they self-identified with, using the same question as in Experiment 1. Subsequently, participants were randomly assigned to one out of two identity strength manipulations (see below). All students then read the newspaper article from Experiment 1 which was meant to induce explicit threat. Thereafter, they completed the cognitive performance measure and questions on their socio-demographic background. In total, it took about 35 minutes to complete all tasks. After the experiment the participants were fully debriefed. All ethical requirements for conducting research in Austrian schools were met, and all materials were presented in German. The classes received 50 Euros for their participation.

#### 3.1.2. Identity strength treatment

The experimental treatment aimed at manipulating the strength of their sense of belonging to the residence culture. Participants had to fill in a sentence-completion task including four sentences, which required them to either think of *similarities between me and Austria* (identity strengthening condition), or thoughts on *differences between me and Austria* (identity weakening condition). Items were formulated mostly in parallel, for example, "Like many other Austrians I like eating…" (strengthening condition) vs. "In contrast to other Austrians I like eating…" (weakening condition). Immigrant students in the strengthening condition ($n = 45$) and the weakening condition ($n = 45$) did not differ from each other regarding age (weakened: $M = 13.53$, $SD = 0.66$; strengthened: $M = 13.29$, $SD = 0.59$, $p = .07$), gender distribution (weakened: $n = 22$ female; strengthened: $n = 18$ female), Austrian citizenship (weakened: $n = 26$; strengthened: $n = 27$), socio-economic status of the parents, or grades in the core subjects (English: weakened: $M = 3.29$, $SD = 1.08$, strengthened: $M = 3.04$, $SD = 0.90$; Math: weakened: $M = 3.20$, $SD = 1.13$; strengthened: $M = 3.20$, $SD = 1.01$; German: weakened: $M = 3.00$, $SD = 0.77$; strengthened: $M = 2.91$, $SD = 0.82$; all $ps > .25$).

#### 3.1.3. Cognitive performance

The participants worked on the CFT 20-R (Weiss, 2006), subtests 1 and 3. The error-corrected CFT 20-R score served as our cognitive performance measure.

#### 3.1.4. Additional measures

The four-item Devaluing Scale (Schmader et al., 2001, $\alpha = 0.67$) and the four-item Belonging Scale (Anderman, 2002, $\alpha = 0.74$) were again included to identify students who had disidentified with school.[2]

### 3.2. Results and discussion

We expected that strengthening (vs. weakening) the identification with the residence culture had an immediate positive influence on the cognitive performance of students with an immigration background. As expected, an ANOVA revealed a main effect for the identity strength manipulation among immigrants, $F(1, 88) = 6.67$;

[2] The participants also worked on the same affective response scales as in Experiment 1 (Kahneman et al., 2004; positive affect: $\alpha = 0.73$; negative affect: $\alpha = 0.82$). Again, the negative affect scores of immigrant students were remarkably left-skewed. Immigrant students in the identity strengthening condition reported more positive affect under explicit threat ($M = 3.32$; $SD = 1.41$) than immigrant students in the identity weakening condition ($M = 2.66$; $SD = 1.50$), $F(1,88) = 4.66$, $p = .034$, $\eta_p^2 = .05$. A regression analysis with positive affect as the predictor and performance as the criterion revealed a significantly positive relationship, $B = 0.69$, $SE = 0.33$, $p = .042$, $R^2 = .05$. However, a bootstrapping analysis to test whether positive affect mediated the treatment effect (Preacher & Hayes, 2008) yielded no significant mediation effect. We further included seven items selected from the RCIM, aimed at representing residence culture identity strength as a state variable. However, as this measure was originally constructed rather as a trait than a state measure, unclear validity refrained us from giving emphasis to this measure.

$p = .011$; partial $\eta^2 = .07$. Immigrant students performed better in the strengthening condition ($M = 18.41$; $SD = 4.38$) than in the weakening condition ($M = 15.91$; $SD = 4.81$). This finding supports our assumption that residence culture identity strength has a causal influence on immigrant students' performance under explicit threat. We also considered the effect of the residence culture identity strength manipulation for non-immigrant students. For this group, the treatment effect was not significant, $F(1, 60) = 2.43$; $p = .124$; partial $\eta^2 = .04$ (weakened identity: $M = 16.85$; $SD = 5.81$; strengthened identity: $M = 18.98$; $SD = 4.91$). In a model that included the complete sample and involved both treatment and immigrant status as predictors of performance, the treatment had a significant effect on performance, $F(1, 148) = 8.12$; $p = .005$; partial $\eta^2 = .05$, whereas immigrant status was unrelated to performance, $F(1, 148) = 0.86$; $p = .355$; partial $\eta^2 = .01$. The two-way interaction between both variables was also not significant, $F(1, 148) = 0.05$, $p = .816$.

The results of Experiment 2—in which conditions of explicit stereotype threat were realized for all participants—indicate that for students with an immigration background, strengthening as opposed to weakening their residence culture identity yielded a better cognitive performance. This result corresponds to the findings of Experiment 1 in which higher self-reported residence culture identity was associated with better performance under explicit threat. It needs to be noted that among non-immigrant students, the performance scores were somewhat higher in the strengthening condition than in the weakening condition, though they did not differ significantly. Although outside the lab non-immigrants are less frequently reminded of a missing overlap between themselves and the prevailing culture, our experimental task might impose a performance-inhibiting mindset for this group as well.

## 4. General discussion

### 4.1. Main findings and contribution

In many countries around the world students with an immigration background perform worse and leave school earlier than non-immigrant students. Previous research suggests that a part of this achievement gap may be due to stereotype and social identity threat—an aversive psychological state that inhibits members of negatively stereotyped groups in situations of learning and test-taking (Appel & Kronberger, 2012; Inzlicht & Schmader, 2012; Steele & Aronson, 1995). One of the key tasks in this regard is to identify students that are particularly vulnerable—or resilient—in potentially threatening situations.

Our work focused on the role of immigrant students' perceptions of belongingness, shared values, and commitment to the residence culture on the one hand, and to their ethnic background on the other hand. In particular, we first measured ethnic and residence culture identity strength (Experiment 1), and then experimentally manipulated the strength of immigrant students' residence culture identity (Experiment 2) to assess whether it was a crucial predictor for immigrants' performance under threat. We expected students with a strong identification with their residence culture to show better outcomes when confronted with negative stereotypic expectations. The results of Experiment 1 revealed two findings of interest. On the one hand, immigrant students who strongly identified with their residence culture performed better under conditions of explicit stereotype threat than those who were less identified. On the other hand, ethnic identity strength was unrelated to immigrant students' cognitive performance, suggesting that a strong identification with the ethnic background culture makes immigrant students neither more vulnerable nor more resilient in situations of stereotype threat. With respect to the four different acculturation profiles (cf. Berry, 1997, 2001), this suggests that immigrants with a strong residence culture identity (i.e., integrated and assimilated individuals) prove to be more resilient in situations of explicit stereotype threat than those who are less identified (i.e., segregated and marginalized individuals). Building upon these results, Experiment 2 provided additional evidence that strengthening as compared to weakening immigrants' identification with the residence culture was beneficial for students' cognitive performance under explicit threat, indicating a causal rather than a correlative relationship.

These results are important in several key regards. Our research and findings extend previous work on stereotype threat and connect it to theory and research in the acculturation tradition. We showed that for immigrant students a strong sense of belonging and commitment to the culture they live in contributes to better performance under threat. We believe that this variable is a key to understanding which immigrants' school careers are compromised by stereotype and social identity threat, and which careers are more likely to be unaffected. Our findings further contribute to the literature on the role of immigrants' ethnic identity strength under stereotype threat (cf. Armenta, 2010; Oyserman et al., 2001). The results of Experiment 1 are applicable to situations of stereotype threat, and suggest that in such an evaluative context a strong, non-stereotyped residence culture identity is beneficial for the performance of immigrant adolescents, independently of their ethnic identity strength. This does not imply that ethnic identity bears no relevance for academic performance of immigrants in general, nor does it promote neglecting the importance of this identity dimension for the acculturation process and its outcomes.

Extending the concept of Berry's acculturation profiles (Berry, 1997, 2001), we have shown that the strength of identification with one particular cultural identity can not only be measured but also manipulated. This might bear important implications for future research, concerning not only cognitive performance outcomes but also immigrants' physical and psychological well-being. Our approach bridges the gap between the idea of experimentally manipulating multiple social identities in evaluative contexts (Ambady et al., 2001; Hong, Morris, Chiu, & Benet-Martinez, 2000; Rydell et al., 2009; Shih et al., 1999) and the outcomes of different acculturation profiles of immigrants (Baysu, Phalet, & Brown, 2011; Berry et al., 2006; Phinney et al., 2001). Additionally, our data support the idea that the identification with multiple (cultural) identities might provide people with a valuable resource which they can draw from, for example in the face of stereotype threat (Ambady et al., 2001; Benet-Martínez, Leu, Lee, & Morris, 2002; Shih et al., 1999).

Moreover, our findings are important for scientists and practitioners in education alike, as our studies were placed in real-life school settings and our participants were students who prepare for future on-the-job training and blue collar work. Most previous studies within the stereotype threat framework were based on samples whose members belonged to upper-level academic institutions, despite the fact that negative stereotypes expected them to underperform (e.g., African Americans at elite universities; women in engineering majors). This emphasis is rooted in the early stages of theory development where minorities at elite universities were the focal group of interest (Steele, 1992, 2010). This focus as well as failures to identify stereotype threat effects among non-elite students has fuelled questions regarding the circumstances under which stereotype threat might occur, and the generalizability of stereotype threat theory and findings (e.g., Ganley et al., 2013). As students with a negatively stereotyped background unlikely attend elite schools in the first place in many countries, the contribution of the theory for large parts of the educational setting is at stake. Our sample of students attending basic level schools within the vocational track did not exhibit a stereotype threat main effect, but based on this sample we could identify a theoretically and practically important moderating variable. This suggests that stereotype threat can matter within a non-elite educational context.

### 4.2. Limitations and outlook

Despite the contributions of our work, limitations need to be noted. First, we only focused on strengthening (vs. weakening) residence culture identity strength in Experiment 2. We did not experimentally manipulate ethnic identity strength to examine its influence on performance under threat. Further research is needed to clarify the role of ethnic identity for immigrants under stereotype threat.

Second, the effects were observed on the short term; students' cognitive performance was assessed just minutes after our experimental treatment. In recent years, several field experiments demonstrated that interventions to reduce stereotype threat can have long-term effects (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Miyake et al., 2010; Walton & Cohen, 2011; for recent results on an immigrant sample see Sherman et al., 2013; cf. Gehlbach, 2010). This research, together with our findings, suggests that increasing immigrants' feelings of belonging to the residence culture and strengthening this aspect of their social identity might alleviate the burden of a negative immigrant group stereotype. This might yield better educational success for this group, due to having provided them with an alternative non-stereotyped identity domain which could buffer them in performance-relevant situations. However, long term effects of strengthening immigrant adolescents' psychological ties to their residence culture need to be corroborated by studies to come.

Third, our experiments included the performance in a cognitive ability test as the sole dependent variable. Future research may profit from examining the benefits of a strong residence culture in other fields. Theory and recent research showed that stereotype and social identity threat is a detrimental force that can inhibit students not only in test-taking situations but also at times of preparation and learning (e.g., Appel et al., 2011; Rydell, Shiffrin, Boucher, Van Loo, & Rydell, 2010; Taylor & Walton, 2011). Moreover, stereotype threat can contribute to students' disidentification in the fields that are addressed by a negative group stereotype (cf. Osborne & Walker, 2006; Steele, 1992, 1997).

Fourth, as outlined above, immigrants might differ in some respects from other stereotyped groups. Depending on the culture of origin and the country of residence, negative achievement stereotypes might apply more to some groups of immigrants than others (cf. Brown & Zagefka, 2011; Portes & Rumbaut, 2006). Thus, future research should address the important question whether and to what degree different groups of immigrants share psychological realities.

Last, the aim of our work was to examine the moderating roles of residence culture identity strength and ethnic identity strength within a stereotype and social identity threat framework. Our primary focus had not been on the mechanisms underlying stereotype threat effects. Our designs included a self-report measure of affective responses (Kahneman et al., 2004), but our results were inconclusive. Several previous studies failed to establish mediation with the help of self-reports (e.g., Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995). As our experiments were conducted at schools in classroom settings, we were limited in applying non-self-report methods. Future research is encouraged to use psychophysiological and other non-self-report measures to examine affective responses associated with social identity threat and different acculturation profiles.

### 4.3. Practical implications and conclusion

The economic development of countries largely depends on a high educational level of its inhabitants. Immigrant students might have an enormous amount of untapped intellectual potential, hidden by psychological threats. Thus, with respect to the great numbers of immigrants who nowadays live in the US and European countries alike, it remains a central task of psychological and educational science to address psychological barriers to learning and academic achievement among ethnic minority groups, including stereotype threat (cf. Gehlbach, 2010). Stereotype threat research in educational and work settings has already contributed to understanding and improving real-world achievements of minority groups (cf. Aronson & Dee, 2012; Schmader & Hall, 2014). It has shown that rather "small" social-psychological interventions can enhance minority students' educational achievement and sustainably reduce academic achievement gaps in the long run (cf. Yeager & Walton, 2011). The present research demonstrated the benefits of a strong residence culture identity for immigrant students' cognitive performance in situations of stereotype threat. As our experimental manipulation illustrates, reminding immigrant students that they belong to their country of residence (without promoting dissociation from their country of origin) is an effective intervention that could be easily incorporated in educational everyday life. This could provide immigrant students with a buffer against stereotype threat, and could therefore contribute to closing the educational achievement gap between immigrant and non-immigrant students.

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## Appendix

Residence Culture Identity Measure (RCIM):

1. I have spent time trying to find out more about Austria, such as its history, traditions, and customs.
2. I am active in organizations or social groups that include mostly Austrian members.
3. I have a clear sense of how I like Austria and what Austria means for me.
4. I think a lot about how my life in Austria will look like.
5. I am happy that I live in Austria.
6. I have a strong sense of belonging to Austria.
7. I understand pretty well what my belonging to Austria means to me.
8. In order to learn more about Austria, I have often talked to other people about it.
9. I have a lot of pride in Austria.
10. I participate in cultural practices of Austria, such as special food, music, or customs.
11. I feel a strong attachment towards Austria.
12. I feel good about Austria.

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