

“I Don’t Really Belong Here”

Examining Sense of Belonging in Immigrant and Nonimmigrant Teacher Students

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Abstract: The present study investigates the role of sense of belonging on dropout intention in teacher education with a special focus on immigrant teacher students. We present data from a survey of 925 German teacher students using two times of measurement. The results confirm the significance of sense of belonging for the dropout rate among students in teacher education and support our hypotheses that immigrant students show a lower sense of belonging and higher dropout intentions.

Keywords: teacher education, immigrant students, sense of belonging, student dropout

Wo gehöre ich dazu? Bedeutung des Zugehörigkeitsgefühls im Lehramtsstudium

Zusammenfassung: Die vorliegende Studie untersucht die Bedeutung des Zugehörigkeitsgefühls von Lehramtsstudierenden für deren Studienabbruchintention mit besonderer Berücksichtigung von Studierenden mit Migrationshintergrund. Es wurden 925 deutsche Lehramtsstudierende zu zwei Messzeitpunkten befragt. Die Ergebnisse bestätigen die Bedeutung des Zugehörigkeitsgefühls für die Studienabbruchintention von Lehramtsstudierenden. Strukturgleichungsmodelle zeigen, dass Studierende mit Migrationshintergrund ein geringeres Zugehörigkeitsgefühl und höhere Studienabbruchintention berichten.

Schlüsselwörter: Lehramtsstudium, Studierende mit Migrationshintergrund, Zugehörigkeitsgefühl, Studienabbruch

Internationally, the number of students with an immigrant background in higher education is on the increase (Higher Education Statistics Agency, 2018; McFarland et al., 2018), yet students with an immigrant background are still underrepresented in teacher education (Donlevy et al., 2016). Nevertheless, teachers with an immigrant background are in strong demand, for various reasons: to act as cultural mediators, as role models for students, and to positively affect the development and success of their students (Ingersoll & May, 2011). Therefore, the call is going out for more students with an immigrant background to opt for teacher education and to successfully complete their studies and graduate (Lengyel & Rosen, 2015; Villegas & Lucas, 2004). At the same time, previous research shows that teacher students with an immigrant background face numerous difficulties at teacher education institutions, complicating their path to successful graduation and increasing their dropout intentions (Allen et al., 2016; Basit et al., 2006; Donlevy et al., 2016). To foster the academic success and retention of teacher students with an immigrant background, more research is needed to understand why students consider dropping out of teacher education.

Closely linked to the academic success and retention of students with an immigrant background is the concept of *sense of belonging*, i.e., the fundamental human need to build and maintain close relationships (Baumeister & Leary, 1995; Clark et al., 2012; Robbins et al., 2004; Zumbrunn et al., 2014). Although many studies report on the importance of sense of belonging in higher education, only a few studies have actually focused on teachers' or teacher students' sense of belonging and its various impacts (Bjorklund et al., 2020; Gillies, 2017; Skaalvik & Skaalvik, 2011; Zander & Höhne, 2020). Seen against the background of the rather unique structure of teacher education programs in which students work in alternating learning groups and various academic cultures, sense of belonging may be of special importance to teacher students. This paper focuses on whether sense of belonging as a key factor of academic success can explain the challenges that teacher students with an immigrant background face during teacher education (i.e., student dropout). We report findings from a study that investigated the mediating role of sense of belonging in teacher-education courses with a special focus on students with an immigrant background.

Sense of Belonging in Higher Education

The experience of feeling connected to other persons, groups, organizations, or environments is described as a sense of belonging and is distinct from other concepts like loneliness, social support, or community (Baumeister & Leary, 1995; Hagerty et al., 1992; Strayhorn, 2012). In educational settings, sense of belonging refers to "the extent to which students feel personally accepted, respected, included, and supported by others" (Goodenow, 1993, p. 80).

As a result of basic need satisfaction, sense of belonging is also reflected in Deci and Ryan's self-determination theory and associated with diverse positive consequences such as academic achievement and well-being (Clark et al., 2012; Deci & Ryan, 2000; Niemiec & Ryan, 2009; Stebleton et al., 2014; Suhlmann et al., 2018). Both correlational and experimental studies indicate a positive impact on academic self-efficacy, motivation, achievement, and grades (e.g., Clark et al., 2012; Freeman et al., 2007; Pittmann & Richmond, 2007; Walton et al., 2012; Zumbrunn et al., 2014). Considerable research indicates that especially minority students, such as female students in science, technology, engineering, and mathematics (STEM), first-generation students as well as students with an immigrant background, feel a lower sense of belonging than majority students (Cook et al., 2017; Höhne & Zander, 2019a; Stebleton et al., 2014).

To develop a sense of belonging within a group or environment, students need to feel valued and accepted, and experience a fit between themselves and their context through shared or complementary values, beliefs, and expectations (Hagerty et al., 1992; Strayhorn, 2012; Walton & Brady, 2017). Therefore, sense of belonging depends on the particular social context (Strayhorn, 2012). Although the importance of sense of belonging for academic success has been studied thoroughly in multiple contexts, to the best of our knowledge, only a few studies have investigated sense of belonging in the particular context of teacher education (e.g., Björklund et al., 2020; Zander & Höhne, 2020).

Depending on the country, teacher-education programs consist of concurrent or consecutive structures or represent a mixture of both. In consecutive programs, future teachers attend basic educational courses (e.g., pedagogy, psychology, sociology) after having finished a subject-specific degree (teaching subjects), whereas in concurrent programs, teacher students simultaneously study academic subjects in addition to taking educational foundation courses (Musset, 2009). The structure of concurrent teacher education programs, in which simultaneous inte-

gration in alternating learning groups and various academic cultures is necessary, may particularly negatively influence students' sense of belonging. Therefore, this paper focused on sense of belonging specifically in teacher education courses and assessed students' sense of belonging for subject-specific and educational foundation courses separately.

Sense of Belonging and Student Dropout

In his theoretical framework on student dropout, Tinto (1975) argued that integration into social and academic systems in institutions of higher education influences student retention. Based on this theoretical approach, the importance of sense of belonging for student dropout was investigated rather thoroughly (Hausmann et al., 2007; Hausmann et al., 2009; Lotkowski et al., 2004; Robbins et al., 2004; Suhlmann et al., 2018; Thomas & Galambos, 2004). The results of these studies show that students in higher education who feel a stronger sense of belonging experience stronger intentions to persist. Nevertheless, several authors demanded an adjustment to Tinto's model for students from diverse backgrounds (e.g., Hurtado & Carter, 1997; Wolf-Wendel et al., 2009; Xu & Webber, 2018).

Immigrant Students in Higher Education

A variety of terms describe diversity within institutions of higher education (Donlevy et al., 2016). The term *immigrant background*, which we use in this paper, is widely used in OECD analyses and applies to those students who are either foreign-born themselves or have at least one foreign-born parent (OECD, 2018b). Some studies presented below also focus on *ethnicity*, which entails students' self-reported sense of belonging to an ethnic group (e.g., Black or Asian), or *foreign background*, referring to students who are citizens of a foreign country (Donlevy et al., 2016). Although the populations of these studies may differ from our sample of immigrant students, it seems likely that the situation of the students with an immigrant background included in this study is, to a great extent, comparable to the situation of those other groups of students mentioned in the literature.

Internationally, the number of students with an immigrant background in higher education has increased in recent years and will likely continue to do so in the foreseeable future (McFarland et al., 2018). In Germany, around 20 % of undergraduate students have an immigrant background (Middendorff et al., 2017), a rate similar to that found in other countries like the United Kingdom

or the United States (Arbeit et al., 2016; Higher Education Statistics Agency, 2018). A representative study on German teacher education by Middendorff and colleagues (2017) reported a rate of 20 % of teacher students with an immigrant background¹.

Recent findings indicate that students with an immigrant background of all subjects face many difficulties at institutions of higher education. Even during high school, their academic achievement and grades are often lower than those of their native classmates (Besa & Vietgen, 2017; OECD, 2018a). These disadvantages remain prevalent during higher education, and students with an immigrant background thus tend to earn fewer academic credits and are less likely to achieve good grades and graduate successfully compared to their native peers (Broecke & Nicholls, 2007; Greene et al., 2008; Severiens & Wolff, 2008). This is also reflected in the fact that, compared to native students, students with an immigrant background drop out of their studies more frequently (Ebert & Heublein, 2017; Zorlu, 2011). Immigrant teacher students appear to face the same problems as immigrant students in other subjects (Allen et al., 2016; Donlevy et al., 2016).

The overall higher dropout rate for students with an immigrant background may be due to specific factors, which are generally associated with dropout and also often apply to students with an immigrant background: nontraditional routes to higher education, extrinsic study motivation, financial problems, and their parents' educational background (Ebert & Heublein, 2017). Students whose parents do not have a university degree, often called *first-generation students*, show less academic engagement, receive lower grades, and are more likely to drop out when compared to non-first-generation students (Soria & Stebleton, 2012; Terenzini et al., 1996). First-generation students with an immigrant background are particularly at risk of dropping out (Ebert & Heublein, 2017).

In addition to these academic challenges, students with an immigrant background also report social problems such as a lack of social support, less contact with fellow students, and experiences of discrimination on campus. These experiences can negatively affect the well-being of students, can result in student dropout, and can threaten students' sense of belonging at institutions of higher education (Clark et al., 2012; Hurtado et al., 2007; Locks et al., 2008). International research reveals and supports the assumption that students with an immigrant background feel a lower sense of belonging (Clark et al., 2012;

Cook et al., 2017; Walton & Cohen, 2007). On the other hand, a few studies (Hagerty et al., 1996; Hausmann et al., 2007) failed to find any group differences regarding the sense of belonging in immigrant and native students.

Walton and Cohen (2007) argue that developing a strong sense of belonging is especially challenging for immigrant students as members of an underrepresented group, which is negatively categorized in academic and professional settings. As a result, they are more sensitive to their social relationships and more uncertain about their sense of belonging (Walton & Brady, 2017; Walton & Cohen, 2007). Another explanation is proposed by Thomas (2002, 2012): Based on Pierre Bourdieu's work on cultural capital and habitus as the disposition to act in certain ways influenced by interactions with family and social institutions, Thomas argues that students whose habitus is different from that of their higher education institution experience a lower sense of belonging.

Against this background, the question arises whether sense of belonging as a key factor of academic success can explain the problems students with an immigrant background face during teacher education. In summary, the theoretical approaches and empirical findings on the situation of students with an immigrant background in higher education suggest that students' sense of belonging plays an important role in terms of student dropout. Therefore, we assumed that sense of belonging is an explanatory and mediating factor in the relationship between immigrant background and dropout intention.

Present Study

The present study investigated immigrant teacher students' sense of belonging in order to understand why some students with an immigrant background do not succeed as well as their fellow native students and how we can increase their adjustment and retention rates at teacher-education institutions. Based on data from Germany (i.e., a country with concurrent teacher-education programs), this study was the first to investigate the role of sense of belonging for immigrant students' dropout intention in the special context of teacher education.

First, this paper examined the significance of sense of belonging in the particular context of teacher education. Based on general research on sense of belonging in higher education, we hypothesized that teacher students – independent of their immigrant backgrounds – with a stronger sense of belonging in teacher education courses report

¹ A special analysis of the 21st Social Survey of *Deutsches Studentenwerk* (Middendorff et al. (2017), conducted by the German Centre for Higher Education Research and Science Studies (DZHW) at the author's request.

lower dropout intentions (*Hypothesis 1*). Since it is often difficult to assess actual student dropout since many students who drop out of higher education often also drop out of the samples and are thus out of reach, we considered the dropout intentions of students, which has been identified as a strong predictor for actual student dropout (e.g., Bean, 1982).

Second, we focused on students with an immigrant background in teacher education. We aimed to further replicate previous findings that reveal that teacher students with an immigrant background show higher dropout intentions than their native peers (*Hypothesis 2*). In line with previous research, we expected teacher students with an immigrant background to report a lower sense of belonging than their native fellow students (*Hypothesis 3*).

Based on these hypotheses, we hypothesized that the higher dropout intention found in students with an immigrant background could be explained by a lower sense of belonging in these students (*Hypothesis 4*).

Method

Sample and Study Design

Our sample consisted of 925 teacher students (68.2% female) with a mean age of 22.48 years ($SD = 3.50$). 28.5% were students with an immigrant background, which is slightly higher than the rate of 20% reported in a representative study of a similar population². 15.4% of these students were first-generation immigrants (i.e., foreign born themselves); 133 immigrant students shared information on their country of origin. In our sample, the largest subgroup consisted of immigrant students of Turkish origin (14.0%), along with several smaller groups (e.g., 4.9% Polish origin, 2.7% Russian origin).³

Our total sample included teacher students in different semesters ($M = 5.15$, $SD = 2.59$) and from various subjects; however, 51% were studying at least one subject in the STEM domain. Grade point average (GPA) upon leaving school was measured, with 1 being the highest and 6 being the lowest grade within the German school grading system ($M = 2.27$, $SD = 0.59$, range = 1.0–4.0). The teacher students were enrolled in courses representing the different school tracks of the German school system: primary school (13.4%), lower and intermediate-track school (14.8%), academic-track school (48.3%), voca-

tional-track school (16.1%), and special education (7.2%). Participants came from four universities in different federal states in Germany, each of which differs in terms of size and type of degree. Universities 1 and 3 offer the bachelor/master system, whereas students at University 2 graduate with a state examination, while University 4 recently changed from the state examination program to the bachelor/master system. With up to 2,000 teacher students, universities 3 and 4 represent smaller teacher education institutions; universities 1 and 2, with 6,000 to 8,000 teacher students respectively, are comparatively large teacher-education institutions.

Our data were collected as part of the research project "Returns and Development of Educational Knowledge – Validation of a Competence Test for Teacher Students" (BilWiss-UV). Two measurement points were used in this analysis. The first time of measurement (t1) originally involved 925 teacher students and was conducted during the summer of 2017. Participants were recruited through the teacher-education courses they were attending. They participated voluntarily and received compensation in the form of a €25 voucher. Approximately 6 months later, 552 students participated again at the second time of measurement (t2) and received compensation in the form of a €30 voucher.

Measures

Immigrant background as our independent variable, sense of belonging as the mediator, and the covariates educational background, gender, age, final school GPA, school track, university location, and subject of study were measured at t1. At t2, we assessed the dependent variable dropout intention and the participants' respective semester of study.

Immigrant background was measured at t1, considering information about the students' and their parents' countries of birth. Students with immigrant backgrounds consisted of participants who were born outside of Germany or who had at least one parent who was born in a country other than Germany (dummy coded as 1). *Sense of belonging* was measured using a German version of a subscale of the Student Engagement Scale from PISA 2000 (adapted from OECD, 2002). Because the scale was originally used to measure students' sense of belonging in middle or academic-track schools, we adapted the items for the university context. We assessed sense of belonging

² A special analysis of the 21st Social Survey of *Deutsches Studentenwerk* (Middendorff et al. (2017), conducted by the German Centre for Higher Education Research and Science Studies (DZHW) at the author's request.

³ Based on 253 students who provided information on their immigrant background.

in subject-specific and educational foundation courses separately using five items each; items (e.g., "In my interdisciplinary courses at university, I feel like an outsider") were measured on a 6-point Likert scale. The reliability of the scales was measured using coefficient Omega (ω) (McDonald, 1999), which can be interpreted similarly to that of Cronbach's α . This resulted in $\omega = .84$ for sense of belonging in subject-specific courses and $\omega = .83$ for sense of belonging in educational foundation courses, indicating good internal consistency. *Dropout intention* was measured using four items (e.g., "I am seriously thinking of completely abandoning teacher education.", adapted from Ditton, 1998; Trautwein et al., 2007). We adapted the scale to teacher education because it was originally used to assess students' dropout intentions in general. Items were measured on a 6-point Likert scale with sufficient reliability ($\omega = .83$).

To control for potential confounds, we included educational background, gender, school track, university location, and subject of study as covariates (categorical covariates were dichotomized and dummy coded as 0/1). Educational background is negatively associated with students' sense of belonging and dropout (Cook et al., 2017; Soria & Stebleton, 2012). Keeping this in mind, we assessed students' educational backgrounds while considering information about their parents' highest educational attainment. The distinction between first-generation students and non-first-generation students is well-established (e.g., Ramos-Sánchez & Nichols, 2007; Soria & Stebleton, 2012; Terenzini et al., 1996). Students whose parents do not have a university degree were considered as first-generation students ($0 = \text{non-first-generation student}$; $1 = \text{first-generation student}$). Given gender differences regarding students' sense of belonging (Gopalan & Brady, 2020), we assessed students' gender using the categories female, male, and other. In the latent models, students' gender was dummy coded (0/1), and female was used as a reference category. Similar coding was also applied to our covariates school track and university location, where primary school and university 1 were used as reference categories. Context variables such as university location, school track, and subject of study were included to determine the context dependence of our construct of sense of belonging. The subjects of the study were categorized as subjects in the STEM domain versus other subjects⁴. Because age, semester, and prior academic achievement are associated with student dropout (Fike & Fike, 2008; Heublein, 2014), we included them as continuous covariates. Age, semester, and GPA were

assessed using self-reports. For all subsequent analyses, GPA was recoded so that high values indicate high achievement.

Data Analysis

Because our students are nested within four universities, our observations on the individual level may not be independent from each other, thus leading to an inaccurate estimation of standard errors. Therefore, we conducted intraclass correlations (ICC) that do not indicate substantial differences in students' ratings of sense of belonging in subject-specific courses ($ICC_1 = .01$), sense of belonging in educational foundation courses ($ICC_1 = .03$), and dropout intention ($ICC_1 = .02$) among the four universities in our sample. Against this background, and keeping the small number of observations on level 2 (university location) in mind, we thus applied structural equation modeling using MPlus Version 8 (Muthén & Muthén, 2017). Our latent models were analyzed using the TYPE = general command and the maximum likelihood estimator (ML).

To address *Hypotheses 1 and 2*, we conducted latent regression models with dropout intention as a dependent variable; to test *Hypotheses 3 and 4*, we conducted latent mediation models. In each model, the relationship between immigrant background and dropout intention was mediated by sense of belonging. We estimated separate models for sense of belonging in subject-specific courses and for sense of belonging in educational foundation courses, since the model fits decreased considerably in a shared model. As model fit indices the chi-square values, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR) are reported (Chen, 2007). CFI values higher than .95 reflect an excellent fit, whereas values less than or equal to .05 are considered a good fit for the RMSEA and SRMR values. Moreover, the Wald test was used to calculate the difference between the null and our alternative models (e.g., Ward & Ahlquist, 2018). All significance testing was undertaken at the .05 level.

Missing Data

Like many other empirical studies, we also face the problem of missing values in our data because some

⁴ The coding is based on the categorization of the German network "Go MINT," which is supported by the Competence Center Technology-Diversity-Equal Opportunities e. V. (2019) of the Federal Ministry of Education and Research.

participants did not answer all the items or dropped out of the study. The rate of missing values was acceptable for most variables (0.2 % for subject of study; 7.6 % for GPA). Because we measured the variables dropout intention and semester of the study only at t2, students' ratings were missing for 41.8 % of the sample. In dropout analyses (results were estimated using SPSS Version 26, IBM Corp., 2019), we found statistically significant differences in terms of age, GPA, gender, educational background, and university location among the participants who participated at both times of measurement and those who dropped out after t1. Students who participated twice reported a stronger sense of belonging in subject-specific courses, $t = -3.89$, $p = .001$, and educational foundation courses, $t = 2.74$, $p = .019$.

To address missing data and increase statistical power, we estimated missing data by employing multiple imputations using Mplus Version 8 (Muthén & Muthén, 2017). This approach is highly recommended in methodological literature and superior to traditional methods such as listwise deletion because it avoids the over- and underestimation of parameters (Enders, 2010; Peugh & Enders, 2004; Schafer & Graham, 2002). We conducted 30 imputed datasets in which all missing data were replaced by plausible values, using all information on students' gender, age, educational and immigrant background, GPA, semester, type of subject, and school track, as well as information on sense of belonging and dropout intention in the imputation process. Moreover, we used completed information on students' university location as an auxiliary variable. All parameter estimates and standard errors were combined following Rubin's (1987) rules.

Results

The descriptive statistics of our central variables are presented in Table 1. On average, students felt a strong sense of belonging in subject-specific and educational foundation courses compared to the midpoint of the scale (theoretical mean = 3.5). Furthermore, students reported low dropout intentions, again compared to the theoretical mean of 3.5.

Latent bivariate correlations of all variables are presented in Table 2. Latent correlations show that sense of belonging in subject-specific and educational foundation courses were statistically related, and both factors were negatively associated with dropout intention. The negative correlations indicate that stronger sense of belonging in teacher education courses is related to lower dropout intentions.

Table 1. Descriptive statistics for central variables ($N = 925$)

	<i>M</i>	<i>SD</i>	Range
Sense of belonging – subject-specific	4.93	0.90	2–6
Sense of belonging – educational foundation	4.62	0.94	2–6
Dropout intention	1.96	0.95	1–6

Note. Means (*M*) and standard deviations (*SD*).

Latent Regression Models

To address our first hypothesis regarding whether intention to drop out of teacher education was predicted by sense of belonging, we estimated two separate latent regression models for sense of belonging in subject-specific courses and for sense of belonging in educational foundation courses with dropout intention as a dependent variable (Models 1a & 1b, see Figure 1). As hypothesized, the model results showed that sense of belonging in subject-specific courses predicted dropout intentions. Similar results were found for sense of belonging in educational foundation courses. The model fit of the regression models were excellent at $X^2_{22} = 45.85$, $p = .002$, CFI = .99, RMSEA = .03, SRMR = .05 for the subject-specific courses, and $X^2_{22} = 34.54$, $p = .043$, CFI = .99, RMSEA = .03, SRMR = .03 for the educational foundation courses. To investigate *Hypothesis 2*, i.e., whether students with an immigrant background report higher dropout intentions, we conducted a latent regression model with immigrant background predicting dropout intentions (Model 2, see Figure 1). As expected, results showed that students with an immigrant background report higher dropout intentions. The model fit was excellent at $X^2_4 = 7.01$, $p = .136$, CFI = .99, RMSEA = .03, SRMR = .02.

Latent Mediation Models

Subsequently, we investigated whether sense of belonging as a mediator might explain why students with an immigrant background reported higher dropout intentions. Therefore, in the next step, we set up two separate mediation models that added the latent mediator sense of belonging (Models 3a & 3b, see Table 3). The model results showed that immigrant background directly predicted sense of belonging in subject-specific courses. We found similar results for sense of belonging in educational foundation courses: Immigrant background directly predicted sense of belonging. After we added the mediator variables into the models, the direct effects of immigrant status on dropout intention decreased. This applied for sense of belonging in subject-specific courses as well as

Table 2. Latent bivariate intercorrelations (N = 925)

	1	2	3	4	5	6	7	8	9	10	11	12
1 Immigrant background	-											
2 Sob – subject-specific	-.171***	-										
3 Sob – educational foundations	-.124**	.732***	-									
4 Dropout intention	.147***	-.279***	-.175***	-								
5 First-generation student	.135***	-.011	-.061	.068	-							
6 Age	.047	-.066	-.043	-.070	-.021	-						
7 GPA	-.128***	.151***	.032	-.083	-.067	-.202***	-					
8 Gender	-.052	-.141***	-.061	.072	-.014	.169***	-.053	-				
9 School track	-.127***	.018	.066	-.013	.089**	.126***	-.045	.069*	-			
10 University location	-.102**	.054	.021	-.077	-.042	.183***	.072*	.084*	.249***	-		
11 STEM subject	-.058	-.001	-.003	-.057	-.057	.040	.091**	.099**	-.310***	.071*	-	
12 Semester	-.034	-.032	-.123**	-.017	-.104*	.524***	-.068	.112**	.032	.204***	.030	-

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

for educational foundation courses. Regarding indirect effects, the results showed significant indirect effects of immigrant background on dropout intention, mediated by sense of belonging in subject-specific courses, $\beta = .093$, $p = .001$, and educational foundation courses, $\beta = .040$, $p = .001$. The model fit of the mediation models was excellent (see Table 3).

In the final step, we added the covariates predicting sense of belonging and dropout intention (see Figure 2). All standardized coefficients and effect sizes are presented in Table 3. The pattern of results stayed mainly the same, whereas the path coefficients of the direct effects of immigrant background on dropout intention and sense of belonging decreased. The indirect effects were significant with $\beta = .018$, $p = .034$ for subject-specific courses, and $\beta = .040$, $p = .001$ for educational foundation courses. The size of the indirect effects can be considered very small. Regarding the covariates, the model results showed lower dropout intentions for older students. Students identifying with the third gender reported higher dropout intentions. Moreover, male students reported a lower sense of belonging in subject-specific courses than female students, whereas students with higher prior achievement (GPA) report a stronger sense of belonging. Compared to our reference group (University 1), students at University 3 reported a stronger sense of belonging in educational foundation courses, whereas students at University 2 reported a stronger sense of belonging in subject-specific courses and lower dropout intentions.

Discussion

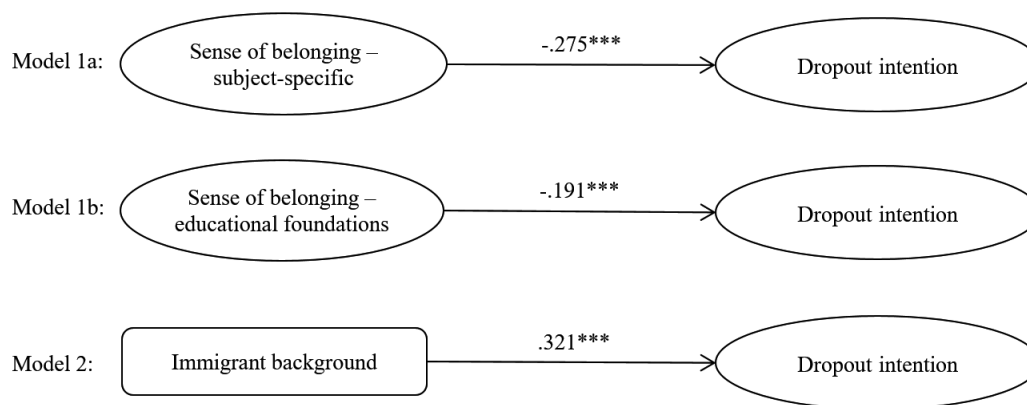
Sense of Belonging in Teacher Education

In line with *Hypothesis 1*, our results showed that teacher students who felt a lower sense of belonging in their teacher education courses at university revealed more doubts about their studies. Similar results have already been found in several other contexts at institutions of higher education (e.g., Hausmann et al., 2009; Suhlmann et al., 2018). But, as far as we know, our study was the first to investigate sense of belonging in teacher education at the university level. The separate measurement of sense of belonging in subject-specific and educational foundation courses allowed us to take a closer look at differences between these courses of teacher education. A possible explanation might be the different organizational structures. In subject-specific courses, students mainly choose their courses based on a structured curriculum and study more or less in a cohort, which is why most students know each other since the first semester. The organizational

Table 3. Results of mediation models without covariates (Models 3) and with covariates (Models 4)

Predictors	Subject-specific						Educational foundation					
	Direct effects on dropout intention			Direct effects on sense of belonging			Direct effects on dropout intention			Direct effects on sense of belonging		
	β	SE	p	β	SE	p	β	SE	p	β	SE	p
Models 3:												
Immigrant background	.235	.092	.011	-.361	.083	.001	.271	.092	.001	-.273	.083	.001
Sense of belonging	-.258	.046	.001				-.177	.042	.001			
R^2	.088	.026	.001	.027	.012	.031	.052	.019	.007	.015	.009	.103
Models 4:												
Immigrant background	.096	.045	.033	-.162	.040	.001	.117	.044	.008	-.097	.039	.014
Sense of belonging	-.247	.046	.001				-.182	.044	.001			
First-generation student	.030	.041	.464	-.023	.039	.549	.013	.041	.753	-.064	.038	.097
Age	-.108	.054	.045	.006	.054	.911	-.104	.053	.049	.032	.055	.563
GPA	-.056	.045	.220	.111	.043	.010	-.076	.045	.094	-.035	.042	.400
Gender – male	.036	.046	.428	-.151	.040	.001	.058	.046	.205	-.072	.039	.065
Gender – other	.100	.048	.038	-.033	.039	.396	.100	.048	.036	-.044	.040	.267
Track – lower/intermediate	.041	.059	.490	.016	.054	.766	.019	.059	.755	-.101	.054	.061
Track – academic	.058	.072	.423	.072	.067	.279	.029	.072	.690	-.052	.066	.432
Track – special	-.003	.048	.946	-.007	.048	.876	-.015	.048	.755	-.070	.047	.135
Track – vocational	-.010	.069	.890	.027	.065	.681	-.028	.070	.688	-.053	.065	.415
University 2	-.112	.054	.038	.103	.050	.040	-.146	.054	.007	-.053	.050	.286
University 3	-.015	.051	.762	.084	.048	.083	-.007	.052	.892	.150	.048	.002
University 4	.023	.056	.673	.002	.041	.957	.013	.056	.812	-.048	.041	.238
STEM subject	-.032	.048	.513	-.022	.044	.612	-.040	.048	.411	-.07	.043	.102
Semester	.044	.051	.388	-.036	.065	.576	.029	.051	.564	-.134	.070	.056
R^2	.076	.020	.001	.144	.032	.001	.117	.031	.001	.081	.022	.001

Note. Significant at $p < .05$ in gray. Fit indices models 3: $\chi^2_{29} = 58.92$, $p < .001$, CFI = .99, RMSEA = .03, SRMR = .05 for the subject-specific courses, $\chi^2_{29} = 46.23$, $p = .022$, CFI = .99, RMSEA = .03, SRMR = .03 for the educational foundation courses. Fit indices models 4: $\chi^2_{127} = 337.353$, $p < .001$, CFI = .929, RMSEA = .042, SRMR = .035, Wald- $\chi^2_{31} = 115.316$, $p < .000$ for the subject-specific courses, $\chi^2_{127} = 299.913$, $p < .001$, CFI = .936, RMSEA = .038, SRMR = .031, Wald- $\chi^2_{31} = 105.501$, $p < .000$ for the educational foundation courses.

**Figure 1.** Latent regression models, including standardized coefficients. * $p < 0.5$, ** $p < .01$, *** $p < .001$.

structure of educational foundation courses differs between teacher education institutions. This is also reflected in our results, as we found differences between the universities in our sample. In summary, our results high-

light the special situation of teacher education students and support the necessity to separately assess sense of belonging for these two parts of university studies.

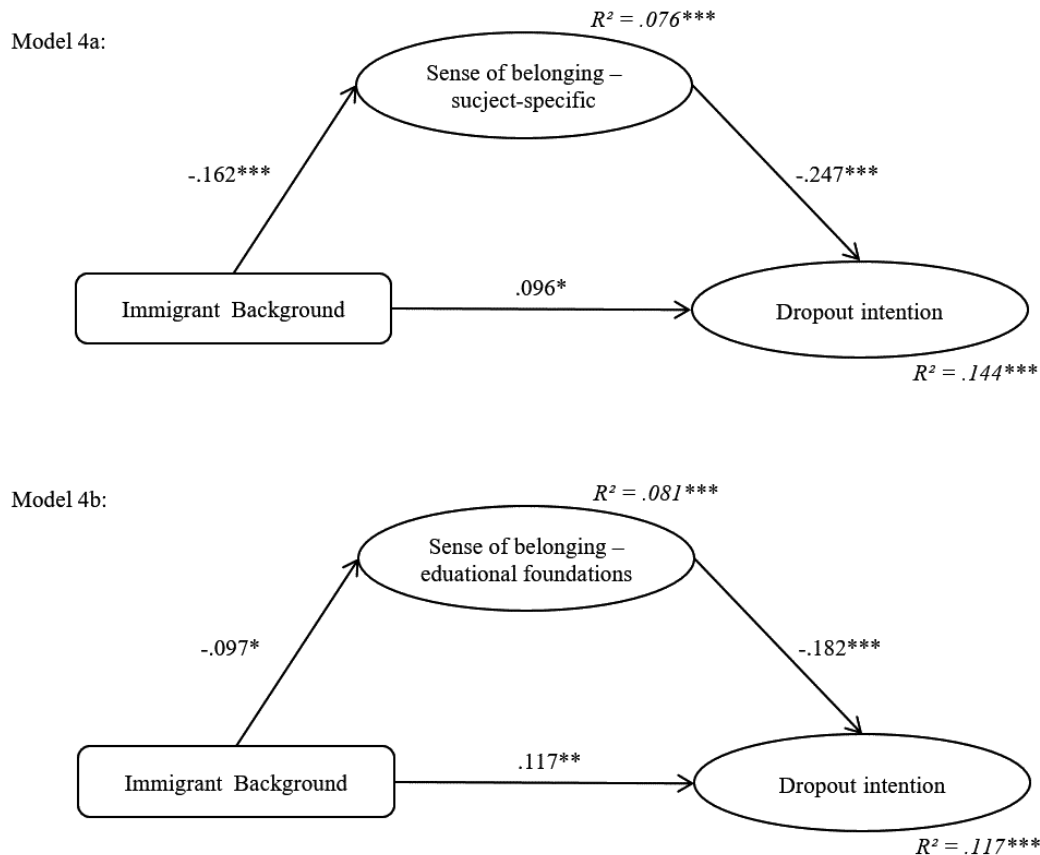


Figure 2. Latent mediation models, including standardized coefficients. * $p < 0.5$, ** $p < .01$, *** $p < .001$.

Immigrant Students in Teacher Education

Similar to previous findings (e.g., Allen et al., 2016; Basit et al., 2006), and in line with *Hypothesis 2*, our results indicate that students with an immigrant background are more likely to report dropout intentions. In our study, we focused on immigrant background as one possible aspect of student diversity. However, other studies resonate findings investigating student subgroups such as ethnic minority students (e.g., Broecke & Nicholls, 2007; Clark et al., 2012). In the overview, the studies show similar results, indicating that minority students are at higher risk of educational failure than most other students. As our results show, the link between immigrant background and student dropout remains, even while simultaneously considering students' educational backgrounds, which is closely linked to their immigrant backgrounds. Our findings are therefore evidence that, beyond our covariates, students' immigrant backgrounds seem to be of particular importance for their dropout intentions.

In *Hypothesis 3*, we investigated the importance of sense of belonging especially for students with an immigrant background, finding that these students reported a lower

sense of belonging in educational foundation and in subject-specific courses. Therefore, our findings replicated previous findings on general university studies (e.g., Clark et al., 2012; Cook et al., 2017).

Because the feeling of belonging is closely tied to individual values and experiences, as well as social and cultural identity (Strayhorn, 2012), it might also be interesting to consider other constructs associated with immigrant background, like students' social and cultural identity or their first language. There is still limited empirical evidence that investigates this association, especially in teacher education (e.g., Bjorklund et al., 2020; Gillies, 2017; Skaalvik & Skaalvik, 2011). Consequently, more research is needed to understand why students with an immigrant background feel a lower sense of belonging. Researchers might therefore consider qualitative interviews with immigrant students to gain deeper insights into their experiences (e.g., Meinhardt & Zittlau, 2009; Morley, 2003; Naumann, 2011).

In the next step, we investigated whether sense of belonging might explain why students with an immigrant background reported higher dropout intentions. Our results support *Hypothesis 4*, i.e., that sense of belonging

in subject-specific and educational foundation courses could explain the link between immigrant background and dropout intention. This finding is not surprising given that immigrant background and sense of belonging are just two out of many possible factors influencing student dropout. As a complex process, student dropout is influenced by many internal and external factors (Heublein, 2014; Robbins et al., 2004), which is why only small parts of the variance in students' dropout intentions were explained in our model and why the indirect effect sizes were small.

Nevertheless, our study provided a new perspective on sense of belonging in teacher education. Although the effect sizes of our study were small, we consider them to be practically relevant since, in contrast to many other factors, sense of belonging can actually be fostered by the institutions themselves. In contrast to other factors associated with student dropout, like educational background, personality traits, strained financial situation, or lack of family support, sense of belonging can actually be influenced and changed by educators and institutions (see the section "Practical Implications"). It seems important to further explore how institutions of higher education can improve immigrant students' sense of belonging in order to reduce student dropout rates.

Strengths and Limitations

We relied on a strong database of German teacher students from different teacher training programs, different school tracks, and different subjects of study. This allows us to generalize our results across different institutions and courses within teacher education. Because much of the presented literature comes from US-American research, our study is a valuable contribution to examining the role of sense of belonging against the background of the German concurrent teacher-education system.

However, we investigated teacher students only in Germany. The generalizability of our findings to other European countries or other educational systems (e.g., consecutive systems) requires further investigation. Because of a lack of consistency in indicators used to describe students' diversity (e.g., immigrant status, ethnic minority background), no comparative data exist for the whole of Europe. Although prior studies showed similar findings for immigrant and ethnic minority students, it is important to consider the different indicators used in different studies or countries.

The previous studies presented above are mainly cross-sectional and of a correlational nature, which means that they cannot provide conclusions about causal effects. By

including two measurement times and applying complex statistical methods like structural equation modeling, our study extends previous research. However, there was a very short time interval between our two times of measurement, and we did not implement an experimental design. Thus, causal interpretations should only be made with extreme caution. To capture the development of sense of belonging and its long-term effects, future research would benefit from more measurement times throughout the course of study. Furthermore, we used self-report measures to assess sense of belonging and dropout intention, thus running the risk that social desirability may have influenced students' responses. Following a multiperspective approach on sense of belonging might be particularly interesting for future research.

When interpreting our results, it is also important to note that, although ICCs and number of observations on level 2 are small, there still is a risk of inflation in Type I errors, which could lead to incorrect conclusions (Musca et al., 2011). Based on Baumeister and Leary (1995) and Goodenow (1993), we conceptualized sense of belonging in terms of social attachment, acceptance, and connectedness. A considerable amount of research also considers ability or academic belonging as a second facet of belongingness in educational or professional settings, which refers to doubts about one's abilities, skills, academic capacities, or intellectual fit in a specific domain (Banchefsky et al., 2019; Höhne & Zander, 2019b; Lewis & Hodges, 2015; Skourletos et al., 2013). Results indicate that it may be worthwhile to expand the concept of sense of belonging in future research.

When interpreting our results, it is also important to keep in mind that we did not assess actual student dropout. Although dropout intention is one of the strongest predictors (Bean, 1982), intentions should not be equated with actual dropout. More work is thus needed to reach the target group and to find out more about their reasons for dropping out. Therefore, qualitative studies might provide interesting results (e.g., Szencsi & Spillman, 2012).

Practical Implications

Our findings indicate that sense of belonging can be a positive influence on teacher students and the doubts they have about their course of study. Fostering teacher students' sense of belonging might be a valuable approach that can be used to support their academic success and retention.

Prior research indicates that increasing peer interactions and supportive contact between students and staff might enhance students' sense of belonging (Cook et al.,

2017; Zumbrunn et al., 2014). Findings suggest that the academic and social support of lecturers, like well-implemented instruction, respectful and meaningful interactions, and student feedback, are important for students' sense of belonging (Cook et al., 2017; Freeman et al., 2007; Zumbrunn et al., 2014). To increase peer interactions, lecturers might create learning environments that require student cooperation. Goodenow (1993) investigated sense of belonging in school and supported the idea of using cooperative learning activities, peer tutoring, or school projects to strengthen students' cooperation and, in turn, foster their sense of belonging.

Increasing student activities outside higher education courses may also be useful. Even outside of the classroom, students' cooperation can influence students' sense of belonging (Hurtado & Carter, 1997; Szencsi & Spillman, 2012). As a result, institutions of higher education should also encourage extracurricular student activities like student groups or other social activities. Maintaining social contacts, especially during the orientation phase, influences how students adjust themselves, which, in turn, is closely linked to the development of sense of belonging (Hausmann et al., 2009; Hurtado et al., 2007). First experimental studies have already yielded promising results, showing the effectiveness of special interventions to enhance college and university students' sense of belonging (Marksteiner et al., 2019; Walton & Cohen, 2011; Walton et al., 2012). Moreover, prior research indicates that it is important to create an inclusive climate and diverse learning environments (Hurtado & Ruiz Alvarado, 2015).

Regarding our sample of teacher students, the enhancement of sense of belonging during teacher education offers another advantage. As disseminators and prospective teachers, teacher students' own experiences with sense of belonging and their knowledge about positive consequences might help foster their own students' sense of belonging when subsequently working as teachers in schools (see also Gillies, 2017).

Our results hint at the existence of a group of students with a particular need for support, namely, students with an immigrant background. Although supporting students with an immigrant background to help them be as successful as their native fellow students may be a valuable contribution toward improving educational equality, this idea also involves the risk of stigmatization and labeling. Special treatment could label students with an immigrant background, in general, as *at-risk students* and thus strengthen their feelings of being different (Kimmelmann & Lang, 2014). In addition, special treatment for students with an immigrant background may not be appreciated or required by the students themselves (Szencsi & Spillman, 2012). The problem of generalization

is further reinforced by the fact that students with an immigrant background are a very heterogeneous group; findings are often highly dependent on the country of origin and immigrant generation (Besa & Vietgen, 2017; Jackson et al., 2012). Unfortunately, our sample size did not allow for an examination of the different experiences of student subgroups. This involves the danger of overgeneralizing the experiences of the most dominant groups of students. Researchers might therefore consider an oversampling of students with an immigrant background to analyze different subgroups in more detail.

Conclusion

Overall, there is still limited empirical evidence on students with an immigrant background in general and especially in teacher education (Donlevy et al., 2016; Lengyel & Rosen, 2015). Our research could be the starting point for taking a closer look at the potential of sense of belonging in teacher education. Overall, future research and interventions of institutions of higher education should focus on and support at-risk students, regardless of their immigrant background. Most importantly, these students should receive support that meets their needs in order to successfully graduate.

References

- Allen, R., Bibby, D., Parameshwaran, M., & Nye, P. (2016). *Linking ITT and workforce data (Initial Teacher Training Performance Profiles and School Workforce Census)*. Retrieved from https://ffteducationdatalab.org.uk/wp-content/uploads/2016/07/Linking_ITT_and_workforce_data.pdf
- Arbeit, C. A., Staklis, S., & Horn, L. (2016). *New American undergraduates: Enrollment trends and age at arrival of immigrant and second-generation students* (NCES No. 2017–414). Retrieved from <https://nces.ed.gov/pubs2017/2017414.pdf>
- Banchefsky, S., Lewis, K. L., & Ito, T. A. (2019). The role of social and ability belonging in men's and women's STEM persistence. *Frontiers in Psychology*, 10, 2386. <https://doi.org/10.3389/fpsyg.2019.02386>
- Basit, T. N., Roberts, L., McNamara, O., Carrington, B., Maguire, M., & Woodrow, D. (2006). Did they jump or were they pushed? Reasons why minority ethnic trainees withdraw from initial teacher training courses. *British Educational Research Journal*, 32(3), 387–410. <https://doi.org/10.1080/01411920600635411>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Bean, J. P. (1982). Student attrition, intentions, and confidence: Interaction effects in a path model. *Research in Higher Education*, 17(4), 291–230. <https://doi.org/10.1007/BF00977899>
- Besa, K.-S., & Vietgen, S. (2017). Repräsentanz, Integration und Abbruchintentionen von Studierenden mit Migrationshinter-

- grund in Lehramtsstudiengängen: Eine Analyse anhand der Daten des Nationalen Bildungspanels (NEPS) [Representativeness, integration, and dropout intentions of immigrant students in teacher preparation programs: An analysis of NEPS-data]. *Beiträge zur Lehrerinnen- und Lehrerbildung*, 25(1), 195–206.
- Bjorklund, P., Daly, A. J., Ambrose, R., & van Es, E. A. (2020). Connections and capacity: An exploration of preservice teachers' sense of belonging, social networks, and self-efficacy in three teacher education programs. *AERA Open*, 6(1), 1–14. <https://doi.org/10.1177/2332858420901496>
- Broecke, S., & Nicholls, T. (2007). *Ethnicity and degree attainment* (Research Report No RW92). Retrieved from <http://dera.ioe.ac.uk/6846/1/RW92.pdf>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14, 464–504. <https://doi.org/10.1080/10705510701301834>
- Clark, C. R., Mercer, S. H., Zeigler-Hill, V., & Dufrene, B. A. (2012). Barriers to success of ethnic minority students in school psychology graduate programs. *School Psychology Review*, 41(2), 176–192.
- Competence Center Technology-Diversity-Equal Opportunities e.V. (2019). Komm mach MINT! [Go MINT!]. Retrieved from <https://www.komm-mach-mint.de/>
- Cook, S. L., Komissarov, S., Murray, B. L., & Murray, J. (2017). Predictors for growth mindset and sense of belonging in college students. *SSRN Electronic Journal* (Advance online publication). <https://doi.org/10.2139/ssrn.2981141>
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Ditton, H. (1998). Studieninteresse, kognitive Fähigkeiten und Studienerfolg [Interest, cognitive ability, and study success]. In J. Abel & C. Tarnai (Eds.), *Pädagogisch-psychologische Interessenforschung in Studium und Beruf* (pp. 45–61). Waxmann.
- Donlevy, V., Meierkord, A., & Rajania, A. (2016). *Study on the diversity within the teaching profession with particular focus on migrant and/or minority background*. Brüssel. Retrieved from http://ec.europa.eu/dgs/education_culture/repository/education/library/study/2016/teacher-diversity_en.pdf, <https://doi.org/10.2766/015763>
- Ebert, J., & Heublein, U. (2017). *Ursachen des Studienabbruchs bei Studierenden mit Migrationshintergrund: Eine vergleichende Untersuchung der Ursachen und Motive des Studienabbruchs bei Studierenden mit und ohne Migrationshintergrund auf Basis der Befragung der Exmatrikulierten des Sommersemesters 2014* [Causes of dropout among immigrant students: A comparative study on the causes and motives of dropout among immigrant and non-immigrant students based on the survey of exmatriculated students in summer term 2014]. Retrieved from https://www.stiftung-mercator.de/media/downloads/3_Publikationen/2017/Mai/Ursachen_des_Studienabbruchs_bei_Studierenden_mit_Migrationshintergrund_Langfassung.pdf
- Enders, C. K. (2010). *Applied missing data analysis. Methodology in the social sciences*. Guilford.
- Fike, D. S., & Fike, R. (2008). Predictors of first-year student retention in the community college. *Community College Review*, 36(2), 68–88. <https://doi.org/10.1177/0091552108320222>
- Freeman, T. M., Andermann, L. H., & Jensen, J. M. (2007). Sense of belonging in college freshmen at the classroom and campus levels. *The Journal of Experimental Education*, 75(3), 203–220. <https://doi.org/10.3200/JEXE.75.3.203-220>
- Gillies, A. (2017). Teaching pre-service teachers about belonging. *International Journal of Whole Schooling*, 13(1), 17–25.
- Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in Schools*, 30(1), 79–90. [https://doi.org/10.1002/1520-6807\(199301\)30:1<79::AID-PITS2310300113>3.0.CO;2-X](https://doi.org/10.1002/1520-6807(199301)30:1<79::AID-PITS2310300113>3.0.CO;2-X)
- Gopalan, M., & Brady, S. T. (2020). College students' sense of belonging: A national perspective. *Educational Researcher*, 49(2), 134–137. <https://doi.org/10.3102/0013189X19897622>
- Greene, T. G., Marti, C. N., & McClenney, K. (2008). The effort–outcome gap: Differences for African American and Hispanic community college students in student engagement and academic achievement. *The Journal of Higher Education*, 79(5), 513–539. <https://doi.org/10.1353/jhe.0.0018>
- Hagerty, B. M., Lynch-Sauer, J., Patuskay, K., Bouwsema, M., & Collier, P. (1992). Sense of belonging: A vital mental health concept. *Archives of Psychiatric Nursing*, 6(3), 172–177. [https://doi.org/10.1016/0883-9417\(92\)90028-H](https://doi.org/10.1016/0883-9417(92)90028-H)
- Hagerty, B. M., Williams, R. A., Coyne, J. C., & Early, M. R. (1996). Sense of belonging and indicators of social and psychological functioning. *Archives of Psychiatric Nursing*, 10(4), 235–244. [https://doi.org/10.1016/S0883-9417\(96\)80029-X](https://doi.org/10.1016/S0883-9417(96)80029-X)
- Hausmann, L. R. M., Ward Schofield, J., & Woods, R. L. (2007). Sense of belonging as a predictor of intentions to persist among African American and white first-year students. *Research in Higher Education*, 48(7), 803–839. <https://doi.org/10.1007/s11162-007-9052-9>
- Hausmann, L. R. M., Ye, F., Schofield, J. W., & Woods, R. L. (2009). Sense of belonging and persistence in white and African American first-year students. *Research in Higher Education*, 50(7), 649–669. <https://doi.org/10.1007/s11162-009-9137-8>
- Heublein, U. (2014). Student drop-out from German higher education institutions. *European Journal of Education*, 49(4), 497–513. <https://doi.org/10.1111/ejed.12097>
- Higher Education Statistics Agency. (2018). *Higher education student statistics: UK 2016/17 student numbers and characteristics*. Retrieved from <https://www.hesa.ac.uk/news/11-01-2018/sfr247-higher-education-student-statistics/numbers>
- Höhne, E., & Zander, L. (2019a). Belonging uncertainty as predictor of dropout intentions among first-semester students of the computer sciences. *Zeitschrift Für Erziehungswissenschaft*, 22(5), 1099–1119. <https://doi.org/10.1007/s11618-019-00907-y>
- Höhne, E., & Zander, L. (2019b). Sources of male and female students' belonging uncertainty in the computer sciences. *Frontiers in Psychology*, 10, 1740. <https://doi.org/10.3389/fpsyg.2019.01740>
- Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education*, 70(4), 324–345. <https://doi.org/10.2307/2673270>
- Hurtado, S., Han, J. C., Sáenz, V. B., Espinosa, L. L., Cabrea, N. L., & Cerna, O. S. (2007). Predicting transition and adjustment to college: Biomedical and behavioral science aspirants' and minority students' first year of college. *Research in Higher Education*, 48(7), 841–887. <https://doi.org/10.1007/s11162-007-9051-x>
- Hurtado, S., & Ruiz Alvarado, A. (2015). *Discrimination and bias, underrepresentation, and sense of belonging on campus*. Retrieved from <https://www.heri.ucla.edu/PDFs/Discrimination-and-Bias-Underrepresentation-and-Sense-of-Belonging-on-Campus.pdf>
- IBM Corp. (2019). *IBM SPSS Statistics for Windows: Version 26.0*. Author.
- Ingersoll, R., & May, H. (2011). *Recruitment, retention, and the minority teacher shortage* (CPRE Research Report No. RR-69). Retrieved from http://www.cpre.org/sites/default/files/researchreport/1221_minorityteachershortagereportrr69septfinal.pdf, <https://doi.org/10.12698/cpre.2011.rr69>

- Jackson, M., Jonsson, J. O., & Rudolphi, F. (2012). Ethnic inequality in choice-driven education systems. *Sociology of Education*, 85(2), 158–178. <https://doi.org/10.1177/0038040711427311>
- Kimmelmann, N., & Lang, J. (2014). Lehramtsstudierende mit Migrationshintergrund und ihre Schwierigkeiten an der Universität [Teacher students with an immigrant background and their difficulties at university]. In J. Seifried, U. Faßhauer, & S. Seeber (Eds.), *Jahrbuch der berufs- und wirtschaftspädagogischen Forschung 2014* (pp. 135–146). Budrich.
- Lengyel, D., & Rosen, L. (2015). Minority teachers in different educational contexts: Introduction. *Tertium Comparationis. Journal für International und Interkulturell Vergleichende Erziehungswissenschaft*, 21(2), 153–160.
- Lewis, K. L., & Hodges, S. D. (2015). Expanding the concept of belonging in academic domains: Development and validation of the Ability Uncertainty Scale. *Learning and Individual Differences*, 37, 197–202. <https://doi.org/10.1016/j.lindif.2014.12.002>
- Locks, A. M., Hurtado, S., Bowman, N. A., & Oseguera, L. (2008). Extending notions of campus climate and diversity to students' transition to college. *The Review of Higher Education*, 31(3), 257–285. <https://doi.org/10.1353/rhe.2008.0011>
- Lotkowski, V. A., Robbins, S. B., & Noeth, R. J. (2004). *The role of academic and non-academic factors in improving college retention* (ACT Policy Report). Retrieved from <https://eric.ed.gov/?id=ED485476>
- Marksteiner, T., Janke, S., & Dickhäuser, O. (2019). Effects of a brief psychological intervention on students' sense of belonging and educational outcomes: The role of students' migration and educational background. *Journal of School Psychology*, 75, 41–57. <https://doi.org/10.1016/j.jsp.2019.06.002>
- McDonald, R. P. (1999). *Test theory: A unified treatment*. Erlbaum.
- McFarland, J., Hussar, W., Wang, X., Zhang, J., Wang, K., Rathburn, A., Barmer, A., Forrest Cataldi, E., & Bullock Mann, F. (2018). *The condition of education 2018* (NCES No. 2018–144). U.S. Department of Education. Retrieved from <https://nces.ed.gov/pubs2018/2018144.pdf>
- Meinhardt, R., & Zittlau, B. (2009). *BildungsinländerInnen an deutschen Hochschulen am Beispiel der Universität Oldenburg: Eine empirische Studie zu den erfolgshemmenden Faktoren im Studienverlauf und Empfehlungen zur Verbesserung der Studienleistungen durch HochschullotsInnen* [Bildungsinländer at German Universities using the example of the University of Oldenburg]. *Schriftenreihe des Interdisziplinären Zentrums für Bildung und Kommunikation in Migrationsprozessen (IBKM) an der Carl-von-Ossietzky-Universität Oldenburg*: Vol. 42. BIS-Verlag.
- Middendorff, E., Apolinarski, B., Becker, K., Bornkessel, P., Brandt, T., Heißenberg, T., & Poskowsky, J. (2017). *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016* [The economic and social situation of students in Germany 2016]. Berlin. Retrieved from https://www.bmbf.de/pub/21._Sozialerhebung_2016_Zusammenfassung.pdf
- Morley, K. M. (2003). Fitting in by race/ethnicity: The social and academic integration of diverse students at a large predominantly white University. *Journal of College Student Retention*, 5(2), 147–174. <https://doi.org/10.2190/K1KF-RTLW-1DPW-T4CC>
- Musca, S. C., Kamiejski, R., Nugier, A., Méot, A., Er-Rafiy, A., & Brauer, M. (2011). Data with hierarchical structure: Impact of intraclass correlation and sample size on type-I error. *Frontiers in Psychology*, 2, 74. <https://doi.org/10.3389/fpsyg.2011.00074>
- Musset, P. (2009). Initial teacher education and continuing training policies in a comparative perspective: Current practices in OECD countries and a literature review on potential effects (OECD Education Working Papers No. 48). Retrieved from <https://www.oecd-ilibrary.org/docserver/5kmbphh7s47h-en.pdf?expires=1539337146&id=id&accname=guest&checksum=1EBC9810951C9249473C40B4AFE19D63>, <https://doi.org/10.1787/19939019>
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th). Author.
- Naumann, I. (2011). *Lehramtsstudierende mit Migrationshintergrund an der Universität Kassel: Eine Analyse qualitativer Interviews im Rahmen des Projektes "Mentoring für Lehramtsstudierende mit Migrationshintergrund"* [Teacher student with immigrant background at the University of Kassel]. Kassel. Retrieved from http://www.uni-kassel.de/projekte/fileadmin/datas/projekte/mentoring-mig/PDF_Datein/forschungsbericht_mentoring_naumann_end.pdf
- Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom. *School Field*, 7(2), 133–144. <https://doi.org/10.1177/1477878509104318>
- OECD (2002). *Programme for international student assessment (PISA): Manual for the PISA 2000 database*. OECD Publishing. <https://doi.org/10.1787/9789264176201-en>
- OECD (2018a). *PISA 2015: Results in focus*. OECD Publishing. Retrieved from <https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf>
- OECD (2018b). *The resilience of students with an immigrant background: Factors that shape well-being*. OECD Publishing. <https://doi.org/10.1787/9789264292093-en>
- Peugh, J. L., & Enders, C. K. (2004). Missing data in educational research: A review of reporting practices and suggestions for improvement. *Review of Educational Research*, 74(4), 525–556. <https://doi.org/10.3102/00346543074004525>
- Pittmann, L. D., & Richmond, A. (2007). Academic and psychological functioning in late adolescence: The importance of school belonging. *The Journal of Experimental Education*, 75(4), 270–290. <https://doi.org/10.3200/JEXE.75.4.270-292>
- Ramos-Sánchez, L., & Nichols, L. (2007). Self-efficacy of first-generation and non-first-generation college students: The relationship with academic performance and college adjustment. *Journal of College Counseling*, 10, 6–18.
- Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, 130(2), 261–288. <https://doi.org/10.1037/0033-2909.130.2.261>
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. Wiley.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147–177. <https://doi.org/10.1037/1082-989X.7.2.147>
- Severiens, S., & Wolff, R. (2008). A comparison of ethnic minority and majority students: Social and academic integration, and quality of learning. *Studies in Higher Education*, 33(3), 253–266. <https://doi.org/10.1080/03075070802049194>
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27(6), 1029–1038. <https://doi.org/10.1016/j.tate.2011.04.001>
- Skourletos, J. C., Murphy, M. C., Emerson, K. T.U., & Carter, E. A. (2013). Social identity and academic belonging: Creating environments to minimize the achievement gap among African American and Latino students. *Modern Psychological Studies*, 18(2), 23–29.
- Soria, K. M., & Stebleton, M. J. (2012). First-generation students' academic engagement and retention. *Teaching in Higher Education*, 17(6), 673–685. <https://doi.org/10.1080/13562517.2012.666735>

- Stebbleton, M. J., Soria, K. M., & Huesman, R. L. (2014). First-generation students' sense of belonging, mental health, and use of counseling services at public research universities. *Journal of College Counseling*, 17(1), 6–20. <https://doi.org/10.1002/j.2161-1882.2014.00044.x>
- Strayhorn, T. L. (2012). *College students' sense of belonging: A key to educational success for all students*. Routledge.
- Suhlmann, M., Sassenberg, K., Nagengast, B., & Trautwein, U. (2018). Belonging mediates effects of student-university fit on well-being, motivation, and dropout intention. *Social Psychology*, 49(1), 16–28. <https://doi.org/10.1027/1864-9335/a000325>
- Szencsi, T., & Spillman, C. (2012). Unheard voices of minority teacher candidates in a teacher education program. *Multicultural Education*, 19(2), 24–29.
- Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education*, 37(1), 1–22. <https://doi.org/10.1007/BF01680039>
- Thomas, E. H., & Galambos, N. (2004). What satisfies students? Mining student-opinion data with regression and decision tree analysis. *Research in Higher Education*, 45(3), 251–269. <https://doi.org/10.1023/B:RIHE.0000019589.79439.6e>
- Thomas, L. (2002). Student retention in higher education: The role of institutional habitus. *Journal of Education Policy*, 17(4), 423–442. <https://doi.org/10.1080/02680930210140257>
- Thomas, L. (2012). *Building student engagement and belonging in higher education at a time of change: Final report from the What Works? Student retention & success programme*. Retrieved from https://www.heacademy.ac.uk/system/files/what_works_final_report.pdf
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89–125. <https://doi.org/10.3102/00346543045001089>
- Trautwein, U., Jonkmann, K., Gresch, C., Lüdtke, O., Neumann, M., & Klusmann, U. (2007). *Transformation des Sekundarschulsystems und akademischer Karrieren (TOSCA): Dokumentation der eingesetzten Items und Skalen (Welle 3)* [Transformation of the secondary school system and academic careers: Documentation of items and scales (Wave 3)]. Max Planck Institute for Human Development.
- Villegas, A., & Lucas, T. (2004). Diversifying the teacher workforce: A retrospective and prospective analysis. In M. Smylie & D. Miretzky (Eds.), *Developing the teacher workforce: The 103rd yearbook of the National Society for the Study of Education* (pp. 70–104). University of Chicago Press.
- Walton, G. M., & Brady, S. T. (2017). The many questions of belonging. In A. Elliot, C. Dweck, & D. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (2nd ed., pp. 272–293). Guilford.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82–96. <https://doi.org/10.1037/0022-3514.92.1.82>
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451. <https://doi.org/10.1126/science.1198364>
- Walton, G. M., Cohen, G. L., Cwir, D., & Spencer, S. J. (2012). Mere belonging: The power of social connections. *Journal of Personality and Social Psychology*, 102(3), 513–532. <https://doi.org/10.1037/a0025731>
- Ward, M. D., & Ahlquist, J. S. (2018). *Analytical methods for social research. Maximum likelihood for social science: Strategies for analysis*. Cambridge University Press. <https://doi.org/10.1017/9781316888544>
- Wolf-Wendel, L., Ward, K., & Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development*, 50(4), 407–428. <https://doi.org/10.1353/csd.0.0077>
- Xu, Y. J., & Webber, K. L. (2018). College student retention on a racially diverse campus: A theoretically guided reality check. *Journal of College Student Retention: Research, Theory & Practice*, 20(1), 2–28. <https://doi.org/10.1177/1521025116643325>
- Zander, L., & Höhne, E. (2020). Too good to belong: Kompetenzbezogene und soziale Prädiktoren des Zugehörigkeitsgefühls im Lehramtsstudium Sonderpädagogik [Too good to belong: Competence-related and social predictors of sense of belonging in special needs teacher education]. In G. Hagenauer & D. Raufelder (Eds.), *Soziale Eingebundenheit: Sozialbeziehungen im Fokus von Schule und Lehrer*innenbildung* (pp. 237–252). Waxmann.
- Zorlu, A. (2011). *Ethnic disparities in degree performance* (IZA Discussion Paper Series No. 6158). Bonn. Retrieved from <http://ftp.iza.org/dp6158.pdf>
- Zumbrunn, S., McKim, C., Buhs, E., & Hawley, L. R. (2014). Support, belonging, motivation, and engagement in the college classroom: A mixed method study. *Instructional Science*, 42(5), 661–684. <https://doi.org/10.1007/s11251-014-9310-0>

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