



Cross-cultural differences in academic self-efficacy and its sources across socialization contexts

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Abstract

This study investigated how as reported by Bandura (Self-efficacy: The exercise of control Freeman, 1997) sources of self-efficacy differ across socialization contexts for German students with diverse immigrant backgrounds. We measured all four sources of academic self-efficacy in three socialization contexts for students of former Soviet Union and Turkish descent as well as without an immigrant background, assuming that we would find differences between these groups. Participants were 1217 seventh-grade students in Germany. Multigroup structural equation analyses with latent variables revealed the differential importance of socialization contexts for the relation between academic self-efficacy and its sources across groups. For students of former Soviet Union and Turkish descent, verbal or social persuasion is the strongest contributing factor for academic self-efficacy, whereas for students without an immigrant background, it is mastery experience. In the school context, significant relationships between sources of self-efficacy and academic self-efficacy could only be observed for students without an immigrant background. The results both support and refine Bandura's social cognitive theory by showing that self-related constructs function differently in students with culturally diverse immigrant backgrounds.

Keywords Immigrant backgrounds · Socialization contexts · Sources of self-efficacy · Student academic self-efficacy · Social cognitive theory

1 Introduction

Many educational psychology studies confirm the central role of students' academic self-efficacy beliefs for academic performance across subjects and domains (e.g., Jansen et al., 2015; Parker et al., 2014; Schöber et al., 2018). A growing body of recent research has shifted its focus of study from factors impacted by academic

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self-efficacy to its determinants, also known as sources of self-efficacy (Usher & Pajares, 2008). Studies investigating these relations report correlations between subject- and domain-related as well as broad non-domain- and non-subject-related academic self-efficacy beliefs and their sources (e.g., Gebauer et al., 2020; Usher & Pajares, 2006a, 2006b). Moreover, variations in academic self-efficacy functioning and differences in the relationship between academic self-efficacy and its sources have been repeatedly found among students with diverse immigrant backgrounds (Klassen, 2004b; Salili et al., 2001). Nevertheless, most research on differences in the relationship between academic self-efficacy and its sources has been carried out in North American contexts. Little is known about academic self-efficacy in European students. Previous studies have shown that German students with and without immigrant backgrounds perform differently in school, attain different levels of academic self-efficacy and report often different cultural identities (e.g., Edele et al., 2013; Stanat & Christensen, 2006). In order to adapt teaching to prerequisites of all students' (D'Intino & Wang, 2021), further research needs to expand upon these existing results by investigating the differential contributions of different sources of academic self-efficacy among students without an immigrant background and Germany's main immigrant groups: students with an immigrant background from the former Soviet Union, students with a Turkish immigrant background. Based on North American research, it seems promising to examine whether different cultural value orientations influence academic self-efficacy formation (Bondy et al., 2017; Schöber et al., 2018). Naturally, this assumes that immigrant groups preserve the education-related cultural value orientations, beliefs, habits, knowledge, and rites of their countries of origin (see Berry, 2003). It also assumes that education-related cultural value orientations, beliefs, habits, and knowledge differ between families from diverse immigrant backgrounds (Fuligni & Fuligni, 2007). And, differences regarding socio-economic status impacts educational goals and academic self-efficacy (Han et al., 2015). Moreover, intra-individual changes and personal development in adolescence occur in the family context as well as in other socialization contexts such as school and the peer group (see Bronfenbrenner, 1986; Phinney & Ong, 2007). Recent research has demonstrated that sources of academic self-efficacy related to these three different socialization contexts contribute differentially to academic self-efficacy; therefore, it seems valuable to take into consideration the differential relationship between academic self-efficacy and its sources in students with and without immigrant backgrounds (Gebauer et al., 2020). Consequently, this paper aims to examine the differential contributions of the sources of academic self-efficacy for students' academic self-efficacy in each socialization context, taking into consideration the diverse immigrant backgrounds of German seventh graders.

2 Theoretical background

2.1 Self-efficacy and its four sources

Self-efficacy is related to achievement and performance levels through people's beliefs about and awareness of their own capabilities regarding a specific task or

course of action (Bandura, 1997; Klassen & Usher, 2010). In contrast to the self-concept, perceived capabilities are directed toward future and challenging tasks (Pajares & Schunk, 2001). As a component of self-regulated learning, academic self-efficacy refers to students' beliefs about their scholastic capabilities, which are relevant for their learning behavior and learning outcomes (Pajares & Schunk, 2001; Zimmerman & Schunk, 2001). Compared to students with low academic self-efficacy, students with high academic self-efficacy set more suitable goals, invest more effort in attaining these goals and evaluate their success or failure more appropriately by making more suitable causal attributions (Pajares, 2008). Social and contextual factors that are salient for academic self-efficacy are the family's socio-economic status and the school track attended. Han et al. (2015) found that the family's socio-economic status measured as parents' occupation, degree of education and family income is directly correlated with and predicts academic self-efficacy over time, also the social capital measured as the family member support function as a mediator. German students attending an academic school track leading to a university entrance qualification report higher academic self-efficacy compared to students attending a school track that qualifies them to begin vocational training (BMBF, 2016). Additionally, recent research investigating the effects of socio-economic status and self-efficacy on school track recommendations found that students with high self-efficacy and from families with high socio-economic status receive comparatively high school track recommendations and the home environment increases the effect of socio-economic status (Paulus et al., 2021). However, it seems that variation of school track performance may not affect the diversity in students' academic self-efficacy since no differences were found between school tracks investigating impact of students' mathematic self-efficacy on later performance (Schöber et al., 2018). Nevertheless, it remains unclear in what way high parental education, parents' occupation and family support affects academic self-efficacy. According to Bandura's (1997) social cognitive theory, the development of academic self-efficacy is rooted in four sources. These are a person's (a) *mastery experiences*, (b) *vicarious experiences*, (c) *verbal and social persuasion*, and (d) *physiological state* (Usher & Pajares, 2008). Mastery experiences strengthen people's beliefs in their own capabilities by allowing them to recognize their abilities by successfully or unsuccessfully accomplishing a task or course of action (Coulson & Harvey, 2013; Phelan et al., 1991). Successfully completing a school assignment, such as reading a text and answering the assigned questions correctly, can foster students' academic self-efficacy. The second way to foster a person's self-efficacy beliefs is vicarious experience, which is based on perceived similarities between the observer and a model (Festinger, 1954). By observing a model executing certain courses of action in a given situation and succeeding or failing at them, individuals conclude that they can also perform an equivalent or comparable task or course of action (Schunk & Pajares, 2002). For example, observing a classmates' greater learning engagement in class may foster a student's belief that she is capable of this kind of engagement as well. The third source affecting the development of self-efficacy is verbal and social persuasion by significant persons in one's life. Genuine verbal praise by significant others (Andersen & Cole, 1990) can encourage individuals'

beliefs in their ability to master a given task or course of action (Bandura, 1998; Schunk, 1984). Realistic and appropriate positive appraisals foster a person's belief in the efficacy of choosing new and challenging tasks (Ahn et al., 2016; Bandura, 1997). For instance, teachers can strengthen their students' beliefs in their own capabilities by providing words of encouragement and reminding them of their capabilities before handing out a test or quiz. Emotional and physiological state—the fourth source—also affects a person's self-efficacy. The execution of a task or course of action is influenced by one's emotional perception of task difficulty, contextual determinants, and prior experience with successfully completing a similar task or course of action (Bandura, 1997; Schachter & Singer, 1962). For example, a student who is asked to solve a math problem on the whiteboard in front of the class may be influenced by the perceived stress arousal of standing in front of other students. This perceived stress and arousal may affect the student's cognitive capability to solve the math problem correctly (Eysenck, 2012), which may decrease the student's belief in his or her own capabilities and lower his or her academic self-efficacy (Bandura, 1997).

Research has repeatedly shown correlational and predictive relationships between academic, domain-, or subject-related self-efficacy and its theoretically postulated sources (Usher & Pajares, 2008). The majority of studies focus on math self-efficacy and its sources in high school and undergraduate students (e.g., Fong & Krause, 2014; Klassen, 2004b). A smaller number of studies have investigated science self-efficacy and its sources (Britner & Pajares, 2006) or self-regulation efficacy and its sources (e.g., Usher & Pajares, 2006b). However, these previous studies have come to dissenting results. Mastery experiences and perceived personal performance seem to be the strongest predictor of academic self-efficacy in most studies examining middle and high school students reporting high positive coefficients of mastery experience on academic self-efficacy measured at the same time point (e.g., Byars-Winston et al., 2017; Pajares et al., 2007). Research investigating students' perception of models and its impact on their academic self-efficacy show varying results. Byars-Winston et al. (2017) reported negative and no impact of vicarious experience on academic self-efficacy in their meta-analysis for high school students' investigating the effects of twenty-eight studies. Other studies found positive effects of vicarious experiences even over time, indicating that students' with initially higher levels of academic self-efficacy profit from observing models, however, it seems that students' with lower levels do not perceive others as models in order to build up their confidence (Peura et al., 2021). The existing findings on the predictive power of verbal and social persuasion and physiological state for academic self-efficacy appear more coherent. Most studies report moderate positive correlational links between verbal and social persuasion and academic self-efficacy (e.g., Hampton & Mason, 2003) and verbalized positive feedback seem to be of domain specific differential impact for developing confidence (Butz & Usher, 2015). The fourth source describes a persons' emotional and physiological state, which is hypothesized to influence the development of academic self-efficacy as perceived stress or arousal influences the perception of performance and success and empirical evidence supports this assumption (e.g., Britner & Pajares, 2006; Stevens et al., 2006). Recent research found moderate positive effects of perceived stress level predicting

academic self-efficacy over time (Peura et al., 2021). However, other studies report rather low to no effects of the physiological state on the development of academic confidence (Byars-Winston et al., 2017).

2.2 German students with diverse immigrant backgrounds

In recent decades, Germany has become an increasingly multicultural and multilingual society due to immigration; it is characterized as an assimilative context (e.g., Berry et al., 2006). Educational research on the academic gap between students of diverse immigrant backgrounds and its determinants have repeatedly shown that students with a Turkish immigrant background perform significantly less well in school than students from the former Soviet Union or students without an immigrant background, and that these groups of students differ in terms of achievement-related psychological constructs (Kristen, 2003; Müller & Stanat, 2006; Schotte et al., 2018). Studies in cross-cultural psychology report a range of different factors that might distinguish these groups, describing differences in habits, values, and traditions relevant to the functioning and formation of academic self-efficacy (Klassen, 2004a). Families from the former Soviet Union are on average characterized as loyal, obedient, group-minded, and conformity-oriented (Ispa, 1995). They are mostly perceived as having high commitment of hierarchical authority and less egalitarian views, low levels of affective autonomy and mastery values (Deci et al., 2001), and comparatively higher psychological adaptation than Turkish students', which is related to educational success and higher levels of self-esteem (Schotte et al., 2018). Families with a Turkish immigrant background have mostly strong family ties (Kağıtçibaşı, 1996), with in general high levels of loyalty and close ties to their country of origin (Faist, 1999). Relationships between family members are characterized as respectful towards parents and older relatives (Harwood et al., 2006). Turkish culture is generally seen as highly collectivistic (Göregenli, 1997), and educational success is deeply affected by family influences and intergenerational mediation processes (Tepecik, 2013). In German families without an immigrant background, authoritative childrearing practice is often associated with conservative and traditional views (Barz & Liebenwein, 2018), mainstream cultural patterns are characterized as individualistic (Hofstede et al., 2010), and in most families, childrearing is egalitarian, caring, and supportive (Barz & Liebenwein, 2018; Merkle & Wippermann, 2008). A recent study validating Hofstede's (1980) individualistic and collectivistic dimensions in 56 countries demonstrated large differences on the individual-collectivistic index between states of the former Soviet Union, Turkey and Germany, whereas high and positive index scores indicate higher individualistic orientations (Minkov et al., 2017). The reported index scores (factor scores multiplied by 100) for states of the former Soviet Union ranged from 14 to -106 (Ukraine 14, Russia -21, and Kazakhstan 106). For Turkey, a score of -18 was reported, and for Germany, a score of 102. These findings indicate large differences between these countries, but also large disparities within countries. As for the Russian subsample, variation of index scores may reflect the high cultural variation between states of the former Soviet Union. As for cultural identities remaining after immigration (Berry, 2003), Edele et al. (2013)

found that 46% of students from states of the former Soviet Union and 61% of students with Turkish immigrant background reported integrated or separated cultural identities. This indicates that these students identify more strongly with their culture of origin and hold on to the views, beliefs, and traditions of their family's heritage culture. Factors relevant for identification with the majority culture are the family's socio-economic status, language spoken at home, and social ties to peer groups from the majority culture (Sonnenberg & Tietzmann, 2020). The majority of studies investigating the differential functioning of sources of academic self-efficacy among diverse groups of students have compared North Americans to residents of other countries or North Americans of European descent to North Americans with non-European backgrounds, with substantial differences between different groups of students (e.g., Ahn et al., 2016; Klassen, 2004a, 2004b). In addition, Stanat and Christensen (2006) reported that German students with immigrant backgrounds benefit slightly more from higher self-efficacy levels than students without an immigrant background. Therefore, an investigation of the differential formation of academic self-efficacy among students with diverse immigrant backgrounds seems to be of particular importance. To our knowledge, no study with German students has ever compared differences in academic self-efficacy and relations with the sources of academic self-efficacy in students with diverse immigrant and non-immigrant backgrounds. With its large population of students with diverse immigrant backgrounds who differ in terms of school achievement and academic self-efficacy (Müller & Stanat, 2006), Germany is a promising field for research on this issue.

2.3 Socialization dimensions

In social cognitive theory, triadic reciprocal determinism hypothesizes mutual interactions between personal, behavioral, and environmental characteristics (Bandura, 1997; Pajares & Usher, 2008). Persons evaluate the unique contribution of their own capabilities to each experience in a reciprocal interaction with situational and contextual aspects. Accordingly, mastery experiences, observation of models, persuasion by significant others, and emotional and physiological state vary across different situations and contexts (Bandura, 1998; Pajares, 2008). For instance, Bandura (1997, p. 169) describes children's mastery experiences as reciprocal experiences between parents and children; consequently, a mastery experiences in school differs from an experience in the family or peer context (e.g., DiBenedetto & Schunk, 2018). Systematic models defining the socio-cultural factors influencing students' academic achievement and motivation emphasize the differential relevance of diverse socialization contexts (Liem & Elliot, 2018). Correspondingly, empirical evidence highlights the significance of family, school, and peers as highly relevant contexts for students' academic achievement and academic self-efficacy (Schunk & Meece, 2006; Woelfel & Haller, 1971). Parents can consolidate their children's academic development by providing mastery experiences, vicarious experiences, verbal support, and conducive physiological states in the family context (Schunk & Mullen, 2012). Parents can steer and support their children's mastery experiences, serve as models, facilitate vicarious experiences, or convince children of their own

capabilities through verbal support (Arens & Jude, 2017; Schunk & Mullen, 2012; Schunk & Pajares, 2009). For instance, parents can serve as mentors and models for learning processes, create a stimulating environment by responding to their children's behavior in a conducive, contingent way, and create an emotionally supportive environment (Schneewind, 1995; Schunk & Mullen, 2012). School is the key socialization context for learning, performing, academic achievement, and academic self-efficacy (Schunk & Mullen, 2012). Teachers regulate and supervise students' mastery experiences by providing, for instance, assessments and tasks targeted to each student's needs while concurrently functioning as role models, providing support, and creating a positive classroom environment to foster students' academic self-efficacy beliefs (McMahon et al., 2009; Miller, & Brickman, 2004). Peer groups are a highly relevant socialization context for adolescents' personality and social identity development (Albarello et al., 2018) and the formation of academic self-efficacy (Schunk & Pajares, 2009). Peer groups form based on similarities in terms of academic achievement and achievement-related characteristics and influence their members' scholastic beliefs and goals (Altermatt & Pomerantz, 2003). Peer relations are considered more egalitarian than adult-adolescent relationships, and become more relevant over time and primary attachment to parents or peers is influenced by parenting style and students' self-esteem (Freeman & Brown, 2001; Kerr & Stattin, 2003). Peer relations seem to be relevant for social comparison and sharing experiences, thoughts and ideas, whereas teachers and parents may have expectations regarding educational success and have supportive and counseling responsibilities in regard to students' school performance (Laursen et al., 2000). Due to strong family ties and higher authoritative views, students from diverse immigrant backgrounds may have differential attachments to different socialization contexts (e.g. Harwood et al., 2006). Researchers investigating the impact of academic self-efficacy sources have repeatedly considered all three socialization contexts by referring to parents, school, or peers in their questionnaires (e.g., Hampton, 1998; Lent et al., 1991). Research comparing North American and Asian students found evidence for differential socialization contexts (Ahn et al., 2016). Other studies considering socialization contexts focused on social models and cognitive appraisals, especially for students' stemming from cultural backgrounds with rather collectivistic orientations reporting verbal and social support the most important source (Ahn et al., 2017). In addition, recent research has demonstrated differential environmental impacts on academic self-efficacy formation by simultaneously analyzing four sources of academic self-efficacy in three socialization contexts (Gebauer et al., 2020). Since social cognitive theory states that personal agency is characterized by reciprocal relations within different contexts, investigating the differential relations between academic self-efficacy and its sources across socialization contexts for students with and without immigrant backgrounds seems indispensable.

2.4 The present Study

The present study investigated differences in predicting academic self-efficacy by its sources between students with an immigrant background from the former Soviet

Union, students with a Turkish immigrant background, and students without an immigrant background. To shed further light on possible differences in students' academic self-efficacy, we extended our research by considering sources of self-efficacy in three core socialization contexts: the family, peers, and school, since recent research shows that it is worthwhile to simultaneously and systematically examine sources from differential socialization contexts (Gebauer et al., 2020). Social cognitive theory postulates that reciprocal relations in different contexts and situations lead to personal agency formation (Pajares & Usher, 2008). Therefore, investigating the differential impact of the sources of students' academic self-efficacy across different socialization contexts seems necessary.

Our first research question asks to which degree parents report having contact and engaging with the German majority culture and to what extent they seek to preserve the family's culture of origin. In-group favoritism and out-group exclusion are characteristics of a collectivistic value orientation (Berry, 2003; Yamagishi et al., 1998). Accordingly, contact with the surrounding majority culture and maintenance of the culture of origin can be treated as indicators for in-group favoritism and out-group exclusion and reveal to what degree parents aim to preserve the habits, beliefs, and traditions of the family's culture of origin. Therefore, considering these constructs is expected to support the assumption that students with an immigrant background from the former Soviet Union and students with Turkish immigrant backgrounds seek to preserve their cultural heritage and have underlying collectivist value orientations that guide their actions and self-regulated learning processes.

The second research question addresses differential relations between academic self-efficacy and its sources between students with and without immigrant backgrounds. Since Markus and Kitayama's (1991) early work, it has been assumed that cultures with collectivistic value orientations conceive of an interdependent self that is not detached from the social context but rather more linked to others. Cultures with individualistic value orientations, by contrast, conceive of an independent self that is autonomous from others and aims for uniqueness (Oyserman et al., 2002, p. 2). Studies investigating North American students with different immigrant backgrounds (Klassen, 2004b) found evidence for differential impacts of different sources of academic self-efficacy, suggesting that group-related sources such as verbal and social persuasion are more relevant for academic self-efficacy among students from Asian countries with collectivistic value orientations. In contrast, students from countries with predominantly individualistic value orientations benefit more from self-related sources such as mastery experiences. In light of these findings, we expect that students with immigrant backgrounds from the former Soviet Union and Turkey, with principally collectivistic value orientations (Minkov et al., 2017), will profit more from group-related sources such as verbal and social persuasion, while students without an immigrant background, with individualistic value orientations, will benefit more from self-related sources such as mastery experience.

The third research question asks if the socialization contexts of the family, school, and peers are of differential relevance for students' academic self-efficacy and its sources among students with and without immigrant backgrounds. A recent study reported evidence that the relationship between academic self-efficacy and its sources differs by socialization context (Gebauer et al., 2020), indicating that the predictive

power of these sources strongly depends on the contexts in which they occur, supporting the triadic reciprocal determinism hypothesis in Bandura's (1997) social cognitive learning theory. Findings demonstrating the differential relevance of socialization contexts for students from countries with predominantly collectivistic value orientations in contrast to students from countries with mostly individualistic value orientations are undisputed (Kağitçibaşı, 1996, Schneewind, 1995). Family bonds are of much higher relevance for students from countries with predominantly collectivistic value orientations than students from countries with mostly individualistic value orientations (Sonnenberg & Tietzmann, 2020). Thus, it can be assumed that the family as a socialization context is of greater importance for the relationship between academic self-efficacy and its sources among students with immigrant backgrounds from the former Soviet Union and Turkey than among German students without an immigrant background.

Since high relevance of further social and contextual factors, such as the family's socio-economic status and the school track attended by the student. These factors must be considered as control variables when examining the relationship between academic self-efficacy and its sources. Recent research indicates that family socio-economic status affects academic self-efficacy (Han et al., 2015). In order to investigate the relevance of the family as a socialization context for the formation of academic self-efficacy, it is necessary to control for this highly influential aspect. Moreover, academic and vocational school tracks in Germany offer different learning environments (Neumann et al., 2007), and German students from academic school tracks report higher academic self-efficacy (BMBF, 2016). Therefore, this factor needs to be considered when analyzing the relevance of school as a socialization context for academic self-efficacy.

3 Method

3.1 Participants

The sample consisted of 1597 seventh graders (49.5% female, mean age 12.15 years, $SD=0.75$) from 71 German middle schools in three school tracks (academic school track: *Gymnasium*, and lower and vocational school tracks: *Haupt-Realschule* and *Gesamtschule*) located in four federal states. The sample contained 161 students with an immigrant background from the former Soviet Union, 416 students with a Turkish immigrant background, and 640 with a German (non-immigrant) background (Table 1). A further 380 students had an immigrant background from countries that were of no interest to our three research questions and were therefore dropped from further analyses also removing nine cases with missing on all variables leading to a final sample of 1208 students.

3.2 Instruments

We assessed *students' immigrant background* following standard procedures for identifying this characteristic in German survey data (e.g., Stanat et al., 2010). We defined students with an immigrant background as those born abroad and born in

Table 1 Students' distribution into different school tracks

School track	Immigrant status	%
Lowest school track (<i>Hauptschule</i>)	Students with former Soviet Union background	22.0
	Students with Turkish background	36.2
	Students with no immigrant background	16.4
Integrated school track (<i>Gesamtschule</i>)	Students with former Soviet Union background	22.0
	Students with Turkish background	40.9
	Students with no immigrant background	21.5
Highest school track (<i>Gymnasium</i>)	Students with former Soviet Union background	56.0
	Students with Turkish background	22.8
	Students with no immigrant background	62.1

$N=1208$

Germany who had at least one parent or both grandparents born in one of the states of the former Soviet Union or Turkey. We also considered the language spoken at home (Russian or Turkish, and for cases of former states of the Soviet Union only Russian speaking students and parents were considered for the sample). This information was obtained through student questionnaires. In cases of non-valid student data, parents' data was considered.

We assessed students' *mastery experiences* and *physiological state* with four items and *vicarious experiences* and *verbal and social persuasion* with five items, all of which were adapted from earlier studies (e.g., Hampton, 1998; Lent et al., 1991). Previous analyses using this data had already confirmed the four-factor structure in three socialization contexts (Gebauer et al., 2020). All scales had a 4-point response scale (1 = *not at all true*, 4 = *absolutely true*). The scales showed acceptable to good reliability (see Table 2 for a descriptive overview of average mean scores, sample items, and reliability coefficients for all scales and Table 3 for correlation of all scales in analysis).

Students' *academic self-efficacy* was measured with six items on a 4-point scale ranging from 1 = *not at all true* to 4 = *absolutely true* using valid measures that had been used and validated in prior studies (Jerusalem & Satow, 1999; Kunter et al., 2002).

Parents' *contact with the majority culture* was measured with four items on a 4-point scale ranging from 1 = *not important at all* to 4 = *very important*. Parents' *preservation of the culture of origin* was measured using five items on a 4-point Likert scale ranging from 1 = *not important at all* to 4 = *very important*. Both scales are valid measures that have been deployed in previous studies following usual procedures to test for validity (Maaz et al., 2010).

To control for indicators of the *family's socio-economic status*, we added the highest score of the two parents on the *International Socio-Economic Index of Occupational Status* (HISEI) based on the parents' and students' survey data. We also controlled for *school track*, differentiating between *academic* = 1 and *vocational* = 0 school tracks (see Table 1 for student distribution).

Table 2 Scale reliability coefficients, means, standard deviations, and sample items

Scale	Sample item	SOV		TURK		NOMIG	
		α	M	α	M	α	M
ME Family	I tell my parents what I have been learning at school	.77	2.92	0.60	3.06	0.64	3.07
VE Family	My parents are always studying new things	.86	3.22	0.52	3.27	0.59	3.35
VSP Family	If I am nervous because of upcoming tests, my parents help boost my confidence	.87	3.30	0.59	3.42	0.56	3.47
PS Family	I feel good when I talk to my parents about school	.88	2.39	0.81	2.65	0.92	2.43
ME Peers	I tell my friends what I have been learning at school	.74	2.72	0.61	2.84	0.64	2.75
VE Peers	My friends are always studying new things	.69	2.69	0.56	2.79	0.64	2.80
VSP Peers	If I am nervous because of an upcoming test, my friends help boost my confidence	.82	2.78	0.58	2.96	0.62	2.89
PS Peers	I feel good when I talk to my friends about school	.85	2.03	0.72	2.23	0.84	2.12
ME School	I tell my teachers what I have been learning at school	.60	2.49	0.61	2.62	0.64	2.52
VE School	My teachers are always studying new things	.72	3.03	0.59	3.19	0.59	3.13
VSP School	If I am nervous because of an upcoming test, my teachers help boost my confidence	.75	3.03	0.61	3.23	0.54	3.15
PS School	I feel good when I talk to my teachers about school	.85	2.14	0.71	2.43	0.84	2.25
SE academic	I am sure that I can learn even challenging subjects at school	.79	2.92	0.48	2.93	0.51	3.06
CON	How important is it for you to have a lot of contact with Germans in your everyday life?	.85	3.30	0.71	3.35	0.68	
PRES	How important to you to watch TV in your native language?	.78	2.91	0.66	2.79	0.71	3.31
SES			42.53	22.01	34.66	15.09	53.83

ME = mastery experiences; VE = vicarious experiences; VSP = social/verbal persuasion; PS = physiological state, SE = self-efficacy; CON = Contact to majority culture; PRES = Preservation; SES = HISEI; SOV = students with a former Soviet Union background; TURK = students with a Turkish background; NOMIG = students without an immigrant background

Table 3 Correlation of all scales

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SE academic	.35**	.35**	.40**	.28**	.31**	.27**	.37**	.22**	.37**	.26**	.40**	.26**	.06	.08
ME Family		.56**	.51**	.45**	.45**	.35**	.43**	.30**	.36**	.30**	.31**	.30**	.04	.02
VE Family			.52**	.35**	.39**	.35**	.42**	.21**	.29**	.33**	.34**	.24**	.08	-.03
VSP Family				.30**	.32**	.28**	.43**	.10**	.23**	.24**	.36**	.18**	.10*	-.01
PS Family					.37**	.31**	.34**	.51**	.40**	.25**	.29**	.58**	.01	.07
ME Peers						.52**	.53**	.37**	.42**	.30**	.29**	.38**	-.07	-.00
VE Peers							.56**	.40**	.35**	.35**	.28**	.34**	.01	-.01
VSP Peers								.43**	.35**	.31**	.40**	.34**	.03	.05
PS Peers									.36**	.22**	.22**	.55**	.04	.05
ME School										.48**	.48**	.54**	-.02	.04
VE School											.49**	.40**	.03	.06
VSP School												.42**	.0	.04
PS School													-.02	.11*
CON														-.01
PRES														

ME = mastery experiences; VE = vicarious experiences; SVP = social/verbal persuasion; PS = physiological state,

SE = self-efficacy; CON = Contact to majority culture; PRES = Preservation

* $p < .05$. ** $p < .01$

3.3 Procedures and Analytic Strategy

Data collection took place in 2012 and was conducted by trained test administrators. The study was reviewed and approved by the local Ministries of Education and Cultural Affairs of the Federal states with regard to ethical issues. The parents of the students were informed about aims of the study and data processing and were asked to give their written consent.

We validated the theoretically postulated four-factor structure in each socialization context with confirmatory factor analysis (CFA). We used χ^2 difference tests to compare our four-factor model with a one-factor model in each socialization context (Satorra & Bentler, 2010). Our theoretically assumed four-factor structure could be confirmed in each context (family context: $\Delta\chi^2=1914.08$, $\Delta df=6$, $p < .01$; peer context: $\Delta\chi^2=1338.58$, $\Delta df=6$, $p < .01$; school context: $\Delta\chi^2=706.17$, $\Delta df=6$, $p < .01$). In order to investigate whether the measured constructs held across groups, we tested for measurement invariance (MI) (Brown, 2006). We used Raykov et al. (2012) strict invariance testing, which is suitable for multiple groups and high numbers of parameters, fits or analyses due to the large number of manifest items loading on the latent factors in our model. The results revealed good fit criteria, indicating strict and full measurement invariance: $\chi^2=8350.06$ (5204); $\chi_{SOV}^2=2258.43$; $\chi_{TURK}^2=2437.06$; $\chi_{NOMIG}^2=3654.56$; CFI=0.94; TLI=0.93; RMSEA=0.03; SRMR=0.06.¹ In order to adequately assess academic self-efficacy and the relationship to its sources in different socialization contexts, we applied multigroup structural equation modelling (SEM) and compared the differential importance of the four sources and three socialization contexts (family, peer, and school) using a latent variable approach. To uncover the differential relevance of the different sources and contexts for each group of students, we used a 12-factor model with four factors measuring sources in three socialization contexts. SEM and MI were conducted with the statistical software *Mplus* 8 (Muthèn & Muthèn, 1998–2018), which treated random missing values with the full-information maximum likelihood estimator (FIML). The extent of missing values for each variable ranged between 3.8 and 10.1%. Little's test (1988) indicated that the missing values in our data were completely at random (MCAR, $\chi^2=767.25$; $df=(791)$; $p=0.72$; Enders, 2010). We use standard fit indices and cut-off criteria for CFA, SEM, and MI to evaluate our models: the comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). In line with Hu and Bentler (1999), we followed the evaluation criteria of ≥ 0.95 for CFI and TLI and ≤ 0.05 for RMSEA and SRMR as indicating a good to excellent fit to the data. The statistical software SPSS was used to calculate descriptive statistics and prepare the data for analysis in *Mplus*. To appropriately take into account the nested structure of students within classes, we used the *Mplus* syntax TYPE=COMPLEX, weighted least square mean estimation (WLSMV), and the THETA parameterization as recommended for categorical variables (Muthèn &

¹ SOV = Subgroup of students from the former Soviet Union, TURK = subgroup of students with a Turkish immigrant background, NOMIG = students without an immigrant background.

Table 4 Results of multigroup structural equation analysis predicting academic self-efficacy by sources of self-efficacy while controlling for sex and school track

	SOV β_a	TURK β_a	NOMIG β_a
ME Family	.03	-.03	.04
VE Family	.01	.08	.14
VSP Family	.39**	.15**	.20***
PS Family	.07	.26**	.32***
ME Peers	.10	.28**	.43***
VE Peers	-.02	-.21	-.07
VSP Peers	.52**	.31**	.20***
PS Peers	.13	.10	.26***
ME School	.17	.10	.23**
VE School	.16	.05	.06
VSP School	.12	.17	.32***
PS School	.10	-.07	.42***
SES	.21*	-.05	.13**
Track	.04	.20**	.15**
R^2 (N)	.68***(162)	.72*** (422)	.73***(624)

ME=mastery experiences; VE=vicarious experiences; VSP=verbal/social persuasion; PS=physiological state; SES=family socioeconomic status; Track=school track attended (non-academic=0 and academic=1); SOV=students with a former Soviet Union background; TURK=students with a Turkish background; NOMIG=Students without an immigrant background

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

Muth en, 1998–2018). We report standardized β coefficients to examine the relationship between sources in each socialization context on academic self-efficacy (Denis & Legerski, 2006). We used the Wald test (Wald, 1943) implemented in *Mplus* to test for statistically significant differences in path coefficients between groups.

4 Results

To answer our first research question, we examined descriptive statistics and mean differences by conducting a MANOVA in the attitudes of parents with an immigrant background. Parents from the former Soviet Union and from Turkey reported high degrees of *contact and engagement with the surrounding majority culture* but also high *preservation of the family's culture of origin*, with statistically significant differences between these groups in *preserving the family's culture of origin*, $F(1, 402) = 6.44$, $p < 0.001$, $\eta^2 = 0.06$.

To answer the second and third research questions, path coefficients between sources of self-efficacy and *academic self-efficacy* were examined for each socialization context (see Table 4). Fit statistics for the model investigating the relations with the four sources in three socialization contexts for all three groups of students simultaneously revealed good fit to the data, $\chi^2 = 7142.00$ (5204); $\chi^2_{SOV} = 2101.27$;

$\chi^2_{\text{Turk}} = 2156.26$; $\chi^2_{\text{NOMIG}} = 2884.46$; CFI=0.95; TLI=0.95; RMSEA=0.03; SRMR=0.07.

For students whose families came from the former Soviet Union, the sources *verbal and social persuasion* in the family and in the peer context predicted *academic self-efficacy*. For students with a Turkish immigrant background, *verbal and social persuasion* and *psychological state* in the family and *verbal and social persuasion* in the peer context predicted *academic self-efficacy*. Significant path coefficients between *mastery experiences* and *academic self-efficacy* could be observed within the peer context. For students without an immigrant background, significant path coefficients between *verbal and social persuasion* and *academic self-efficacy* and between *physiological state* and *academic self-efficacy* were found for all socialization contexts. *Mastery experiences* is related to *academic self-efficacy* in the peer context and school context.

For students from the former Soviet Union, *family socio-economic status* is of statistical significance for *academic self-efficacy*. Positive path coefficients indicate that students' *academic self-efficacy* profits from a higher *family socio-economic status*. For students with a Turkish immigrant background, the *school track* attended is of statistical significance for *academic self-efficacy*, indicating those students' *academic self-efficacy* benefits from attending an *academic school track*. For students without an immigrant background, statistically significant path coefficients between *family socio-economic status*, attended *school track*, and *academic self-efficacy* were observed. Students without an immigrant background's *academic self-efficacy* profit from a high *family socio-economic status* and from attending an *academic school track*.

5 Discussion

The purpose of this study was to investigate potential differences in Bandura's (1997) concept of academic self-efficacy and its sources across various socialization contexts between German middle school students with diverse immigrant and non-immigrant backgrounds. The study was based on the triadic reciprocal determinism hypothesis (Pajares & Usher, 2008) and cross-cultural psychology theories stating that people from different cultures have different views of the *self* as either interdependent or independent (Markus & Kitayama, 1991; Oerter, 2020). As expected, differences in the relationship between academic self-efficacy and its sources were found among students with and without immigrant backgrounds. In addition, family socio-economic status and school track seem to be of differential importance for students from diverse cultural backgrounds.

5.1 Group differences in the relationship between students' academic self-efficacy and its sources

Even though the students in our sample are stemming from are not monolithic entities we did find systematic patterns pointing to the importance of

cross-cultural research of psychological constructs, which seem to function differently across cultures (Muthukrishna et al., 2020). The central assertion of the present study is that students with diverse immigrant backgrounds differed in terms of their academic self-efficacy development compared to students without an immigrant background. These findings provide supporting evidence that education-related cultural values, beliefs, habits, and knowledge differ in students with diverse immigrant backgrounds (e.g., Fuligni & Fuligni, 2007; Hannover et al., 2013; Schotte et al., 2018) and may lead to differential development of school related confidence. The only relevant source for students with an immigrant background from the former Soviet Union was verbal and social support. The fact that mastery experiences and vicarious experiences were not relevant for the formation of academic self-efficacy among this group of students it suggests that students from the former Soviet Union may be influenced by their rather collectivistic cultural orientation and interdependent *self* (Markus & Kitayama, 1991; Triandis, 1995; Yamaguchi et al., 1995). This corroborates with findings from other studies. Verbal and social support is a source grounded on intra-group relation and was found to be the strongest sources for students' with rather collectivistic orientations (Ahn et al., 2017). The most relevant sources for students with a Turkish immigrant background were mastery experiences, verbal and social persuasion, and physiological state. Our expectations were therefore not clearly confirmed with respect to this immigrant group. Students in this group may have adopted the cultural values of the German majority, a hypothesis which is corroborated by the hybrid cultural identities found in other studies of students with a Turkish immigrant background in Germany (Edele et al., 2013). It might also correspond with the combination of individualistic and collectivistic views typical of adolescents, known as the *autonomous-related self* (Kağıtçıbaşı, 2005, 2011). However, our findings do not provide evidence for comparatively higher psychological adaption of students' from states of the former Soviet Union (Schotte et al., 2018). Nevertheless, our results support the assumption that students with diverse immigrant backgrounds develop self-related beliefs about their own capabilities in very different ways. This is in line with several studies reporting cultural differences in the development of academic self-efficacy (e.g., Klassen, 2004a, 2004b). For students without an immigrant background, all sources except vicarious experiences predicted academic self-efficacy. Previous research has come to similar results: Among American middle school students (Usher & Pajares, 2006a, 2006b), all sources except for vicarious experience predicted academic self-efficacy. The fact that our results contradict Bandura's theoretical considerations regarding the relationship between vicarious experiences and academic self-efficacy might be explained by our use of non-task-, subject- or domain-specific measures of academic self-efficacy. In other words, we did not consider specific tasks, such as solving a math problem. The high coefficients for academic self-efficacy reveal that this theoretical approach and construct best apply to students with individualistic views (Whang & Hancock, 1994).

5.2 Differential relevance of socialization contexts

We next addressed the differential relevance of the three socialization contexts considered among students with diverse immigrant or non-immigrant backgrounds. Almost all contexts were equally relevant for students without an immigrant background, which we assumed was because these students might not experience differences in education-related cultural values, beliefs, habits, and knowledge across socialization contexts (Sabatier, 2008). Family, peers, and teachers are important factors for student motivation, engagement, and academic achievement (McInerney et al., 2005). These social and cognitive factors exhibited differential importance for academic self-efficacy among students with diverse immigrant backgrounds in our study. These results corroborate empirical evidence from other studies indicating that bonds in families from collectivistic countries seem closer and thus more relevant for students with a corresponding immigrant background (Kağıtçıbaşı, 1996; Sonnenberg & Tietzmann, 2020). Moreover, intracultural peer group ties are highly relevant for students with a Turkish immigrant background with cultural identities strongly tied to their culture of origin (Spiegler et al., 2018; Vedder et al., 2007). One concerning result of this study is that the school context is not relevant for academic self-efficacy formation among students with diverse immigrant backgrounds, contrary to empirical evidence reporting school adjustment among students with a Turkish immigrant background (Spiegler et al., 2018). In general, it would be reasonable to expect that academic self-efficacy, as a central aspect of self-regulated learning (Zimmerman & Schunk, 2001), is deeply affected by the school context, with students forming beliefs about their capabilities in a scholastic environment. In addition, since it is assumed that higher authoritarian beliefs shape Turkish and former Soviet Union cultural orientation one could assume that school context and teachers should be relevant factors. Nevertheless, maybe school alienation is a factor explaining this result (Hascher & Hadjar, 2018). However, only students without an immigrant background form their academic self-efficacy beliefs in the school context. Consequently, this raises the question of whether students' cultural backgrounds are being appropriately considered in German schools, for instance, in the form of a culturally responsive teaching and instructional environment (Ladson-Billings, 1995).

5.3 Relevance of social and contextual factors for academic self-efficacy

Further results of this study concern the differential relevance of the control variables socio-economic status and school track for academic self-efficacy. Family socio-economic status was relevant for academic self-efficacy among students from the former Soviet Union and students without an immigrant background. This corroborates previous evidence concerning the influence of family socio-economic status and parental involvement for achievement and achievement-relevant constructs (e.g., Arens & Jude, 2017; Han et al., 2015). However, no significant relation was observed for students with a Turkish immigrant background, even though prior

research provided evidence of the relevance of family socio-economic status for other scholastic-relevant factors in this group (Müller & Stanat, 2006). Conversely, students with a Turkish immigrant background benefitted from attending an academic school track, while students from the former Soviet Union did not. A more academic orientated environment seem to support the development of academic self-efficacy for students with Turkish immigrant background. Different school environments affect students' scholastic characteristics in different ways, which might be related to differential teaching styles (e.g., Korneck et al., 2017) or major differences in the learning environment in different school tracks (Neumann et al., 2007). Our results are also in line with Liem and Elliot's (2018) taxonomy of sociocultural factors and their cross-cultural influences on student motivation and academic achievement. The different significance of socialization contexts and concurrent influence of cross-cultural belief systems needs to be taken into account when investigating cross-cultural differences in social-cognitive factors or student motivation (King et al., 2018).

5.4 Limitations and implications

One limitation of this study is the imbalanced size of the different subgroups. Similar group sizes would strengthen the results and lead to more generalizable statements. Moreover, the sub-sample of students with an immigrant background from the former Soviet Union was relatively small, and one reliability for one sub-scale was not fully sufficient. The sample size does meet the recommended minimum (Muthén & Asparouhov, 2002), but examining larger groups would strengthen the presented findings. Moreover, future studies need to replicate the present findings and extend this research to different age groups and longitudinal settings. Data conduction procedures via paper-and-pencil or computerized surveys, may lead to social desirability bias, therefore our results need to be relativized concerning this issue (Dodou & de Winter, 2014; Gordon, 1987). In addition, future studies should examine which further factors in terms of education-related cultural values, beliefs, habits, and knowledge are relevant for sources of academic self-efficacy. A question that needs to be addressed in future research is why sources stemming from the school context are not enhancing the academic self-efficacy of students with immigrant backgrounds in Germany. As the most important scholastic area in students' lives, this context should promote aspects of students' self-regulated learning. In addition, prior research suggests that peer culture is associated with individual achievement, and the relational and behavioral components peer culture are related to school engagement (e.g., Lynch et al., 2013). If peer group settings influence academic achievement, they may affect and support academic self-efficacy as well. Additional research needs to clarify whether academic self-efficacy can be enhanced in different peer group settings. Furthermore, future research should expand Bandura's (1997) theoretical framework by exploring and identifying factors beyond his theoretically postulated sources which might be relevant for self-efficacy in academic contexts, especially in light of increasing cultural diversity. As suggested by Morris et al. (2017), examining the roots of students' performance beliefs or culturally

diverse perceptions of success could broaden the existing theoretical framework (see also Usher & Weidner, 2018).

5.5 Conclusions

The results of this study are in line with most research based on social cognitive theory. The findings show clear differences in the relationship between academic self-efficacy and its sources in students with diverse immigrant backgrounds (Bandura, 1997; Berry, 2003; Pajares & Usher, 2008). The presented results are linked to previous findings and underscore the importance of parental involvement for their children's educational development and achievement-related constructs (e.g., Grolnick et al., 2013). In addition, our results suggest a need for greater sensitivity when teaching culturally diverse classrooms, since enhancing and supporting students' self-regulated learning processes are an important part of teaching in schools, with teachers having much knowledge about students' cultural background and hold the role of a supportive instructor being aware of students' needs (Tichnor-Wagner et al., 2019). We also found indications that education-related cultural views, beliefs, habits, and knowledge are relevant for enhancing academic self-efficacy across different socialization contexts and among students from diverse immigrant backgrounds. Thus, our study results contribute to the large body of research in the fields of academic self-efficacy research and cross-cultural research. By extending existing research and considering different socialization contexts, we shed light on differential patterns among groups of students from diverse immigrant backgrounds.

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Declarations

Conflict of interest The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval The study was approved by German Federal Ministry of Education and Research and by the Ministries of Education in each federal state the study was conducted in.

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