Parental Influences on Immigrant Students' Achievement-related Motivation and Achievement: A Meta-Analysis

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Abstract

This meta-analysis of 14 studies investigated the overall effects of parental influence indicators (i.e., parental psychological engagement, behavioral involvement, and socioeconomic status (SES)/educational level) on the achievement-related motivation of 5453 immigrant students. The meta-analysis further examined immigrant students’ motivation as a mediator of the relationship between parental influences and student achievement. Potential moderators of the effects were also considered. The findings showed that parental influence indicators (i.e., psychological engagement, $r = .22 \ CI[.16, .27]$, behavioral involvement, $r = .23 \ CI[.14, .32]$, and SES/educational level, $r = .07 \ CI[.02, .11]$) had the overall small effect on immigrant students’ achievement-related motivation. School level had a small moderation effect on the relationship between parental psychological engagement and achievement-related motivation. Immigrant students’ achievement-related motivation had a small mediation effect in the relationship between parental influences and student achievement ($r = .10 \ CI[.06, .14]$). Parents’ psychological engagement and behavioral involvement exerted a stronger effect than parental SES/education level, highlighting the importance of proximal parental influences on immigrant children’s achievement-related motivation and achievement.

Keywords: immigrant students; achievement-related motivation; parental psychological engagement; parental involvement; meta-analysis
1. Introduction

As immigration has become a global phenomenon, the number of immigrant students in school systems around the world are increasing (Hernandez, Denton, Macartney, & Blanchard, 2012). Immigrant students achieved significantly lower scores than native students on the Program for International Student Assessment (PISA) in many participating countries (e.g., Entorf & Minoiu, 2005). From Bronfenbrenner’s (2009) ecological systems perspective, parents play a pivotal role in children’s education, as one of many socio-cultural influences such as school and community in various contexts (García Coll et al., 1996). Immigrant parents’ aspirations for their children’s upward social mobility through education are often driven by their own experience of discrimination and low social status in the host country (Kao & Tienda, 1995). The concept of immigrant optimism (Kao & Tienda, 1995), referring to immigrant students’ strong aspirations for success and education to improve the family’s SES, can add to immigrant students’ academic motivation. On the other hand, the blocked opportunities approach focuses on how immigrant parents’ perception of social barriers motivates them to overcome the situation through their children’s education (Kao & Tienda, 1995; Salikutluk, 2016). Such immigrant optimism (Kao & Tienda, 1995) exemplifies how immigrant parents’ experience of migration impacts their approach to their children’s education. Studies have substantiated that immigrant parents pass on their academic expectations or aspirations, and this influences children’s educational motivation (e.g., Kao & Tienda, 1995; Verkuyten, Thijs, & Canatan, 2001) and achievement-related motivation (e.g., Eccles & Wigfield, 2002). Further, parental involvement in students’ academic work and emotional support can positively affect students’ achievement (Boonk, Gijselaers, Ritzen, & Brand-Gruwel, 2018). The current meta-analysis investigates overall effects for parental influence indicators (i.e., parental psychological engagement, behavioral...
involvement, and socioeconomic status/educational level) on the achievement-related motivation of immigrant students, and the mediation effect of achievement-related motivation in the relationship between parental influence indicators and immigrant students’ achievement. The review further addresses potential moderators.

1.1. Theoretical frame: Parental influence on the educational development of children from an ecological systems theory perspective

Over the past decades, researchers have used Bronfenbrenner’s ecological systems theory (2009) to investigate how socialization within and between children’s social and cultural environments affects their cognitive and affective development. Drawing from social cognitive mediational models of parental behavior and influence (Bronfenbrenner & Morris, 1998; Grolnick & Slowiaczek, 1994), we focus on socialization processes within the family, in which parents influence their children’s academic achievement through their influence on children’s achievement-related motivation (Eccles, 2007). The reciprocal interaction between parent and child is a primary socialization for educational development (Johnson, 2008; Taylor & Ali, 2017). From a holistic view, parent-child interaction happens in various social contexts, including proximal (e.g., parents, peers, teachers) and distal (e.g., culture, economic system) environments (Bronfenbrenner, 2009; Woolley & Grogan-Kaylor, 2006). As parental, social, and environmental influences are interconnected (Bronfenbrenner, 1979), it is difficult to disentangle their relative educational influences on children. However, examining these parental processes from an analytic perspective provides insights into which direct and indirect factors of different social systems affect immigrant familial behavior and values for children’s educational development (Bronfenbrenner, 1986).

Bronfenbrenner’s (2009) analysis of social systems classifies parental influences accordingly (Figure 1): The microsystem refers to children’s direct interaction with parents,
peers, and school. The proximal interaction between parent and child provides the opportunity for a direct influence of parental beliefs and practices on children’s developing achievement-related motivation and educational performance (Bronfenbrenner & Morris, 1998; Nash, 1990). The mesosystem refers to the social interaction between the agents (e.g., parents-teachers) in different settings that influence each microsystem with a child (Neal & Neal, 2013). Within the mesosystem, the parents’ social network as well as the educational support they provide for their children influence their educational motivation (Eccles, 2007; Morrow, 1999). The exosystem reflects educational policy implemented by politicians or school principals that influences the educational experience of parents and children (Neal & Neal, 2013). The macrosystem refers to the parents’ socioeconomic status and cultural influences on the child’s other social systems. Parents’ financial resources, education, and occupation could affect children’s achievement-related motivation indirectly through their association with parental beliefs, educational practices, and expectations for their children (Eccles, 2007). From Bourdieu’s (1986) perspective, for instance, parents’ economic capital facilitates their social networks (Nash, 1990) and attitudes towards school, which further influence their involvement in their children’s schooling (Reay, 1998). Lastly, the chronosystem is the change of time and situation in the social systems. When facing economic hardship, for instance, parents interact differently with children than in times of economic stability (Bronfenbrenner, 2009). The distal environments of children, including the mesosystem, exosystem, macrosystem, and chronicle system, influence the proximal setting of interaction between parent and children in the microsystem (Bronfenbrenner, 1979). Thus, the direct parental influence on immigrant children is connected to indirect social and cultural influences in the immigration context that jointly foster educational development (Bronfenbrenner, 1986; Neal & Neal, 2013).
1.2.1 Immigrants in the U.S. and Europe

How immigrant status is defined differs in the literature (for reviews, see Warikoo & Carter, 2009; Heath, Rothon, & Kilpi, 2008). We decided to follow the widely-used OECD (2016) definition, which classifies an individual as an immigrant if the child and/or parents were born abroad. The OECD considers first- and second-generation students as immigrants; if the child and one parent is born in the host country, the child is classified as non-immigrant. In the U.S., 70 million children in 2016 had at least one immigrant parent, which is more than one quarter of the child population (Zhou & Gonzales, 2019). The largest group of immigrants in the U.S. are Latino and Asian immigrants (Zhou & Gonzales, 2019). In Europe, 22.3 million immigrants in 2018 were living in a European country, representing 4.4% of the European population (Eurostat, 2019). Immigration is an important topic in the U.S and in many European countries with regard to education because the numbers of (second-generation) immigrant students is growing (OECD, 2016; Portes & MacLeod, 1999). The host country has a distal impact on immigrant children’s academic achievement through the cultural habits and beliefs of the host society (Froehlich, Mok, Martiny, & Deaux, 2018; Hannover et al., 2013; Zhou & Gonzales, 2019).

1.2.2 Influence of parental socioeconomic status and education on students’ achievement

Socioeconomic status and parenting behavior. Social background variables such as socioeconomic status (SES) and educational level set different basic conditions of life that influence parents’ values and parenting style (Heath et al., 2008; Kohn, 1963; Phinney, Horenczyk, Liebkind, & Vedder, 2001). From a sociological perspective, parenting styles and behavior depend on parental social class (i.e., occupation and educational attainment level). For instance, parenting behaviors are associated with parental values of teaching children
with self-direction (for middle class parents) and conformity (for working class parents), influenced by parents’ occupation type and educational attainment level (Weininger & Lareau, 2009). Similarly, positive associations have been found between socio-economic status, as measured by parents’ occupation or level of education, and parental involvement (Avvisati, Besbas, & Guyon, 2010). Empirical studies have also found that the relationship between parents’ SES or educational level and children’s academic achievement is mediated by parental beliefs and behavior (Davis-Kean, 2005; Lareau, 1987; Sun, McHale, & Updegraff, 2017). From a psychological perspective, SES contributes to children’s internalization of parental values, such as their perception of the parent as a role model (Bandura, 1986; Lawrence, 2016; Okagaki, Frensch, & Gordon, 1995). These findings suggest that the distal influence of parents’ SES on education (e.g., through parents’ beliefs and perceptions of their children) affects the quality of the relationship between parents and children in line with Bronfenbrenner’s ecological systems perspective.

**Parental SES and its effects on immigrant students’ achievement.** Various studies have reported an achievement gap between non-immigrant and immigrant students and have highlighted the poor academic performance of different immigrant students (Heath & Brinbaum, 2007; Jonsson & Rudolphi, 2011; Mok, Martiny, Gleibs, Keller, & Froehlich, 2016). Most studies revealed that ethnic group differences in performance were related to SES differences. For instance, underperformance compared to native peers was found among Turkish and Caribbean immigrant students with relatively low SES in European countries (Gillborn, 1997; Mok et al., 2016), but overperformance was revealed for Asian immigrant students with relatively high SES in the U.S. (Crosnoe & Turley, 2011). Based on these inconclusive findings, the present analysis explores whether SES and the educational level of parents affect immigrant students’ achievement.
1.2.3 Differentiation of parental involvement on students’ achievement: Parental psychological engagement and behavioral involvement

*Parental involvement* is often used to denote the influence of parents on children’s achievement, but studies have presented diverse conceptualizations of this term (e.g., parental aspirations, engagement in school activities; for a review, see Boonk et al., 2018; for a meta-analysis, see Fan & Chen, 2001). Recent research has raised concerns about this broad conceptualization (Boonk et al., 2018; Goodall & Montgomery, 2014) and has suggested a differentiation between parental involvement (i.e., parents’ activities) and parental engagement (i.e., parents’ support of children’s learning). Parental engagement in this sense exceeds behavioral involvement by including parents’ emotional involvement and commitment to education (Epstein, 1995; Schneider & Arnot, 2018). We followed this differentiation between parental involvement as activities-based parental influence and parental affective engagement which we defined as parents’ communication about school, values, expectations, aspirations, and emotional support (i.e., psychological engagement).

Studies further distinguish between parents’ school-based involvement and home-based involvement (Boonk et al., 2018). Parents’ school-based involvement refers to activities related to school, such as attending school events, whereas parents’ home-based involvement indicates what parents do at home to support their children’s learning (e.g., monitoring school progress or helping with homework; Boonk et al., 2018; Grolnick, Benjet, Kurowski, & Apostoleris, 1997; Grolnick, Kurowski, Dunlap, & Hevey, 2000).

*Effects of parental involvement on students’ achievement.* Previous meta-analyses have reported that parental involvement, broadly defined, has a positive influence on students’ achievement, although the overall mean effect sizes have ranged from small to medium (e.g., Castro, Expósito-Casas, López-Martín, Lizasoain, Navarro-Asencio, & Gaviria, 2015; Fan &
Chen, 2001; Jeynes, 2003, 2007). Some studies, however, have found negative or no relationships between parental involvement and achievement (Fan & Chen, 2001; Patall, Cooper, & Robinson, 2008). Investigating ethnic minority students in the U.S., previous meta-analyses confirmed that parental involvement has a significant positive effect on academic achievement among different ethnic groups in the U.S. (Jeynes, 2003, 2007).

In sum, findings regarding the effect of parental involvement and psychological engagement on students’ achievement have been mixed and no meta-analysis has been conducted for immigrant students’ achievement-related motivation and school performance. The present meta-analysis is therefore concentrated on parents’ behavioral involvement and psychological engagement on immigrant students’ motivation and achievement-related motivational processes that affect achievement.

1.3 Parenting and its impact on immigrant students’ motivation in achievement contexts

Following ecological systems theory (Bronfenbrenner, 2009), studies on immigrant families have explored how one’s migration experience is related to parenting, education, and students’ motivation in school. Educational motivation is conceptualized with various constructs including goal orientation (e.g., performance goals), motivation, interest, and self-schema (e.g., self-concept; Dweck, 1986; Eccles & Wigfield, 2002; Murphy & Alexander, 2000; Nicholls, 1984; Robbins et al., 2004). Investigating motivational constructs is important, as motivation predicts the academic success of students controlling for intelligence (Steinmayr & Spinath, 2009).

Concerning the interplay between situational and individual goal orientation (Murphy & Alexander, 2000), immigrant students’ individual achievement-related motivation is linked to cultural orientation and, therefore, family-oriented values on education (e.g., Mok, Martiny,
Driven by their own education and migration experience, many immigrant parents expect students to strive for high academic achievement; others have low aspirations. On the one hand, immigrant parents’ education-related migration motivation in the US (Hagelskamp, Suárez-Orozco, & Hughes, 2010) and their social upward mobility orientation in the European context (Andriessen, Phalet, & Lens, 2006; Phalet & Schönpflug, 2001; Veen, 2003) positively contribute to their children’s academic motivation and educational success. Despite such positive aspirations, language barriers and cultural differences can limit immigrant parents’ school-based involvement in education (Delgado-Gaitan, 1991; García Coll et al., 2002; Hernandez et al., 2012; Lee, & Bowen, 2006; Lopez, Sanchez, & Hamilton, 2000).

Immigrant families’ low SES further prevent children from their pursuit of higher education due to financial reasons (OECD, 2015; Pong & Landale, 2012). Family economic hardship might increase pressure for students to financially support the family early (Fuligni et al., 1999), which can negatively affect aspirations. Parents’ pre-migration education, an indicator of SES, was a strong predictor of children’s academic achievement (Pong & Landale, 2012).

Overall, these diverse parenting experiences in the immigration context illustrate why immigrant parents in different countries exhibit both high and low-educational aspirations for their children (Fuligni, 1997; Gill & Reynolds, 1999; Li, 2001; Phillipson & Phillipson, 2007; Yamamoto, & Holloway, 2010). In sum, immigrant parents’ education, SES, and cultural differences affect their educational expectations and aspirations, which impact their children’s education.

1.3.1 Parental influence on immigrant students’ achievement-related motivation
Parental influence on students’ motivation and educational goals. In general, motivation theories emphasize the joint influence of the family’s cultural and demographic characteristics and the interaction between the child and parents on achievement-related motivation such as intrinsic motivation (Deci & Ryan, 2000; Ryan & Deci, 2000; Grolnick, Ryan, & Deci, 1991), self-concept of ability, and subjective task values (Eccles & Wigfield, 2002). Accordingly, several studies have examined the indirect relations between parents’ SES and children’s academic adjustment and motivation through specific parenting practices (e.g., Avvisati et al., 2010) and beliefs (e.g., Weininger & Lareau, 2009). However, few studies have analyzed different types of parental beliefs and practices in the same study (Eccles, 2007). Therefore, the current meta-analysis addresses this research gap by analyzing the effect of parents’ psychological engagement, involvement, and SES on children’s achievement-related motivation.

The mediational role of achievement-related motivational variables in educational achievement. The motivation mediation model based on SDT focuses on which type of motivation (i.e., controlled and autonomous regulation) leads to positive educational outcomes, taking into account the social-contextual influences that affect the motivation types (Ryan & Deci, 2000). In other words, it highlights the mediational role of achievement-related motivational variables in the relationship between sociocultural factors (e.g., influence of family) and achievement outcomes (Weiser & Riggio, 2010; Yıldırım, 2012).

Although studies have found that perceived parental influence is associated with immigrant students’ achievement-related motivation (Fuligni, Tseng, & Lam, 1999) and motivation can positively affect the achievement of students (Steinmayr & Spinath, 2009), studies have also suggested that high engagement or motivation driven by parents might not be related to actual achievement (i.e., the engagement-achievement paradox; Shernoff &
Schmidt, 2008). Studies examining the extent to which achievement-related motivational variables mediate the relationship between parental influence and immigrant students’ achievement are rare. The present meta-analysis addresses this research gap.

1.4 Potential moderators

As distal influences (e.g., parental SES and education level, education system, and culture; Bronfenbrenner, 1979) are hypothesized to impact proximal influences, examining potential moderators of the effects of parental influences on immigrant students’ motivation and achievement are essential. Given the inconsistent previous findings and the variability of effect sizes for parental influence indicators’ effect on children’s achievement (e.g., Heath & Brinbaum, 2007; Patall et al., 2008; Wilder, 2014), we identify five potential moderators which can explain these mixed findings.

No previous meta-analyses have examined the effect of parental influences on immigrant students’ achievement-related motivation. However, research has shown a positive relation between parental influences and academic motivation and achievement for students independent from their immigrant status (for a meta-analysis, see Cerasoli, Nicklin, & Ford, 2014; Steinmayr & Spinath, 2009). The motivation mediation literature has also documented an effect of parental influence on achievement (Eccles, 2007; Ryan & Deci, 2000). We therefore predicted that similar moderators will affect achievement-related-motivation. Five study characteristics, including students’ host context, school level, sample size, sampling strategy, and whether parental SES/education was included as covariate(s), were examined as potential moderators of the averaged mean effects of parental influence indicators on achievement-related motivation. We also examined if the potential moderators effect the overall mediation effect of motivational variables in the relationship between parental influence indicators and immigrant students’ achievement.
We hypothesize distal influences of the host context (i.e., the U.S. and European context) moderates the overall effect of parental influences on immigrant student’s achievement-motivation achievement. Additionally, we assume distal influence of parental education level/SES upon the overall effect of the two types of parental influence (i.e., engagement and involvement) on immigrant students’ achievement-related motivation, given that economic hardships within families can have a negative influence on immigrant students’ motivational variables such as aspirations (Fuligni et al., 1999; Pong & Landale, 2012). Previous meta-analyses on parental involvement effects found that the inclusion of covariates such as parental SES/educational level additionally affected the overall effect on achievement (e.g., Jeynes, 2007). Moreover, parents’ SES plays a crucial role for immigrant students’ achievement (for a review, see Health et al., 2008; Kristen & Granato, 2007; Zhou & Gonzales, 2019). Hence, we analyze whether or not parental SES/educational level were included as covariates in the original studies which can moderate the overall effect of parental psychological engagement and behavior involvement on immigrant students’ motivation and achievement. Focusing on the proximal context of the parent-child interaction (Neal & Neal, 2013), we consider the school level (elementary vs. secondary school level) a relevant moderator based on previous findings of differential effects of parental involvement on students’ achievement depending on the school level (Avvisati et al., 2010; Castro et al., 2015; Jeynes, 2003; 2007). As other studies showed a consistent effect of parental involvement on academic achievement regardless of grade level and ethnic group (Wilder, 2014), we test if the association between different types of parental influences and immigrant children’s achievement-related motivation differ by school level. Lastly, we consider study quality indicators such as sample sizes (small vs. large sample size) and sampling strategy (Cheung & Slavin, 2016) as potential moderators of the effect sizes.
1.5 Aims of the study and research questions

This meta-analysis has three aims: First, we examine the existing literature on the relationship between parental influences and a comprehensive range of indicators of immigrant students’ achievement motivation. Because various types of parental influences have been examined, we organized the studies based on Bronfenbrenner’s analysis of social systems (2009). Second, we examine the strength of the overall effects of parental influence indicators on immigrant students’ achievement-related motivation and the strength of the mediation effect of achievement-related motivational variables in the relationship between parental influence indicators and immigrant students’ achievement. Third, we investigate five potential moderators. Following these aims, we focus on the following research questions:

RQ 1a) How strong is the averaged overall effect of parental psychological engagement on immigrant students’ achievement-related motivation?

RQ 1b) Do the host context, school level, sample size, sampling strategy, and inclusion of SES/educational level covariate(s) in the original studies moderate the overall effect of parental psychological engagement on achievement-related motivation?

RQ 2a) How strong is the averaged overall effect of parental behavioral involvement on immigrant students’ achievement-related motivation?

RQ 2b) Do the host context, school level, sample size, sampling strategy, and inclusion of SES/educational level covariate(s) in the original studies moderate the overall effect of parental behavioral involvement on achievement-related motivation?

3a) How strong is the averaged overall effect of parents’ socio-educational backgrounds on immigrant students’ achievement-related motivation?
RQ 3b) Do the host context, school level, sample size, and sampling strategy moderate the overall effect of parents’ socio-educational backgrounds on achievement-related motivation?

RQ 4a) How strong is the averaged overall mediation effect of immigrant students’ achievement-related motivation in the relationship between parental influence indicators and immigrant students’ achievement?

RQ 4b) Do the host context, school level, sample size, sampling strategy, and inclusion of SES/educational level covariate(s) in the original studies moderate the overall mediation effect of immigrant students’ achievement-related motivation in the relationship between parental influence indicators and immigrant students’ achievement?

2. Method

2.1 Literature search

Four databases were systematically searched to collect relevant studies. These included PsycINFO, Educational Resources Information Center (ERIC), and Web of Science. The search terms comprised different conceptualizations of (a) parental influences, (b) student motivation and performance, and (c) immigrant/ethnic minority students. The search terms for parental influence included “parental influence”, “parental involvement”, “parental engagement”, “socioeconomic status”, “education”, “family obligations”, “expectations”, and “aspirations”. To obtain a better fit of relevant articles the terms “socioeconomic status” or “education” was combined with “parents.” The search terms for student motivation included “motivation”, “engagement”, and “effort.” The search terms for student performance consisted of “performance”, “achievement”, “success”, and “grade”. The search terms for the target sample included “migrant”, “immigrant”, “minority”, and “ethnic minority” combined with “students”. The search terms “ethnic minority” were also included because European
studies often use the terms ethnic minority and immigrant interchangeably (e.g., Salikutluk, 2016). For the convenience of the search, the search limits were set for abstract, language as English, and publication type as peer-reviewed article. At the first search trial, we linked parental influence variables with immigrant children’s motivational variables and we further added achievement-related variables for an inclusive collection. We initially identified 105 publications.

In addition, a hand-search for missing papers from the search criteria was conducted. The list of educational and developmental psychology journals as well as migration-related journals in our manual search included British Journal of Educational Psychology, Journal of Educational Psychology, Social Psychology of Education, Journal of Youth and Adolescence, International Migration Review, and Race-Ethnicity and Education. These journals were selected based on a review of the reference lists of the relevant studies from the first literature search. We further checked the cross-references of earlier reviews and meta-analyses on the impact of parental involvement on children’s achievement (Boonk et al., 2018; Fan & Chen, 2001; Jeynes, 2003; 2007). From this step, we found an additional 37 studies. The combined search from the databases and hand-search resulted in 142 studies.

2.2 Inclusion and exclusion criteria

Inclusion and exclusion criteria were created for the meta-analysis. Our inclusion criteria for the first inclusion step were: 1) studies have to investigate immigrant students (who are determined as first- and second-generation immigrants by OECD definition (2016), cf. Chapter 1.2.1) or ethnic groups of immigrant students, and 2) explore the relationships between parental influence variables and a) students’ achievement-related motivation or b) both achievement-related motivation and achievement. Our exclusion criteria were based on the screening of full-texts. Studies were excluded if they 1) did not report enough quantitative
data for our research questions, 2) investigated only the effect of parental influence on student achievement (without students’ motivation as a mediator of the relationship between parental influence and student achievement; cf. RQ 4a), 3) measured the motivational variables in the mediation effect from the parents’ perspective, 4) investigated more than one achievement-related motivational variable simultaneously in their analysis, 5) included ethnic minorities (e.g., African Americans in the U.S.) without indicating their immigrant status, or 6) investigated mainly third-generation immigrant students.

2.2.1 Study selection and coding

Based on the determined inclusion and exclusion criteria, the first author scanned each article’s abstract, as well as keywords, to determine the eligibility of the initial 142 studies. One third of the abstracts were additionally screened by the second author and the interrater reliability was good (Cohen’s Kappa $\kappa = .82$). After this screening, 28 studies remained that either fit based on the inclusion criteria or possibly fit based on the research topic but did not provide sufficient information about methods in the abstract (10 studies). The first and second author examined the full articles of the 28 selected studies and reached a very good interrater agreement (Cohen’s Kappa $\kappa = .93$). Reasons for disagreement were discussed and a final determination of inclusion was reached. Studies were excluded mainly because the research was limited to the relationship between parental influence and student achievement. Ultimately, $N = 14$ studies were included in the meta-analysis.

2.2.2 Coding of study characteristics, study quality criteria, and moderators

Study characteristics. Study characteristics such as country, study design, and the parental influence indicators (parental psychological engagement, parental behavioral involvement, and parental SES/educational level; $\kappa = .76$) of each study were coded following the PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009, Table 1). All study
characteristics were coded by the first author. Study characteristics displayed in Table 1 were double-checked by the second author.

**Study quality criteria.** Two study quality criteria were also coded to examine potential differences associated with the methodological quality of included studies. The first study quality criterion was whether the studies used a sampling or randomization strategy to attain a representative sample. All studies were graded from 0 (no strategy) and 1 (partly or fully randomized strategy). The second study quality criterion was if SES or parent education level was included as a covariate in the final models (0 = not included, 1 = included). This second quality criterion is pivotal as an earlier meta-analysis by Jeynes (2007) on the effects of parental involvement on the achievement of ethnically diverse students in the U.S. context noticed that the inclusion of SES as a covariate mattered: the pooled parental involvement effects on achievement measures were smaller in studies with control variables than in studies without control variables.

**Moderators.** As rationalized in chapter 1.4, we included five potential moderators including students’ host context, school level, sample size, sampling strategy, and whether parental SES/education was included as covariate(s). With regards to our research questions 1b, 2b, 3b and 4b), we investigated if the test of heterogeneity indicated a substantial variability of true effect sizes between studies as a statistical precondition of moderator analysis for a meta-analysis (Higgins & Thompson, 2002). The inclusion of parental SES/education level as covariate(s) was omitted for RQ 3b as SES/educational level served as predictor variable in the analysis. All moderators were dummy-coded (host context: European vs. U.S.; school level: elementary vs. middle/ high school; sample size: less than 500 vs. greater than or equal to 500; sampling strategy: no strategy vs. strategy; and parental SES /educational level as covariate(s): not included vs. included). For the sample size coding,
we differentiated small \((n < 500)\) from large \((n \geq 500)\), as one third of the studies had samples with less than 500 participants. All moderator variables were coded by the first and the second author. Interrater reliability of all moderators ranged from \(\kappa = .86\) to 1.0. Disagreements were resolved by discussions.

### 2.2.4 Calculation of effect sizes and meta-analytic procedures

The effect size calculations and meta-analytic procedures were conducted in R (R Team, 2015) with the R-package metaphor (Viechtbauer, 2010). To pool the effect sizes for parental psychological engagement, parental behavioral involvement, and parents’ SES/education level on the achievement-related motivation of immigrant students and for the mediation effect, it was necessary to convert the reported effects size statistics in the original studies \((\text{Beta}, B, \text{or odds ratio})\) into the same metric (Bring, 1994; Borenstein, Hedges, Higgins, & Rothstein, 2009; Lispey & Wilson, 2001; Lüdecke, 2019; Peterson & Brown, 2005). All effect sizes were therefore transformed into Pearson’s \(r\) correlation coefficients to calculate averaged Fischer’s \(z\) scores before transformed back into Pearson’s \(r\) correlation coefficients in R (Borenstein et al., 2009; Lispey & Wilson, 2001). A random effects model was used to calculate the overall effects as no true effect can be assumed in the primary studies within each subsample (RQ 1a, 2a, 3a, and RQ 4a). With regard to research question 1a, 2a, and 3a, if studies had multiple effect sizes for one parental influence indicator or similar achievement-related motivational variables as dependent variables within one study, effect sizes were pooled. If studies, however, examined the effect of a parental influence indicator for two independent subsamples (e.g., middle school students vs. high school students; two different ethnic groups), two effect sizes were included in the meta-analysis. As we are also interested in whether achievement-related motivational variables mediate the relationship between parental influence indicators and immigrant students’ achievement (RQ 4a), we
extracted the effects of all relevant motivational mediators within studies. We additionally conducted a sensitivity analysis using the “leave-one-out”-method to detect potential outliers of the pooled overall effects (Viechtbauer, 2010). If the effect sizes varied substantially within a subsample (i.e., the Q-statistic was significant, Borenstein et al., 2009; Higgins & Thompson, 2002), a moderator analysis with five potential moderators (host context, school level, sample size, sampling strategy, and inclusion of SES/education level as covariate(s) in the original model) was calculated (see RQ 1b, 2b, 3b, 4b in Figure 2).

3. Results

3.1 Descriptive statistics

Overall, findings from 14 primary studies reporting 27 effect sizes for 5453 immigrant students were extracted for the meta-analyses. The effect of parental influence indicators on immigrant students' motivation (RQ 1a, 2a, and 3a) included parental psychological engagement ($k = 11$), parental behavioral involvement ($k = 9$), and SES/educational level ($k = 7$; for a detailed overview of parental variables and effects, see Table A-C). Eight effect sizes were included for the examined mediation effect of motivational variables (e.g., academic engagement, utility value with regard to the host country’s language) in the relationship between parental influence variables and immigrant students’ achievement (RQ 4a, Table D). All study characteristics are reported in Table 1. The majority of studies investigated immigrant students at the secondary school level including middle and high schools ($n = 11$). Most studies were conducted in the U.S. ($n = 9$). Latino students were the most studied in the U.S. context ($n = 9$), whereas Turkish immigrant students were the most studied in the European context ($n = 3$). With regard to sample size, four studies reached a sample size over 500 participants. Only three studies utilized a randomized sampling strategy (Elffers & Oort, 2013; Salikutluk, 2016; Suizzo et al., 2012). Four studies ($k = 5$ effects)
investigated the direct effect of parental psychological engagement on students’ motivational variables controlling for SES or educational level of parents (RQ 1a), four studies examined the effect of behavioral involvement (RQ 2a), whereas only one study that investigated the mediation effect of achievement-related motivational variables used SES or educational level of parents as covariates (RQ 4a; Plunkett et al. 2009).

3.2 Meta-analytic results

The overall effect of parental influence indicators on immigrant students’ motivation, and the mediated effect on achievement were significant. However, the effect sizes ranged from very small to small based on Cohen’s (1988) classification.

3.2.1 Parental psychological engagement effects on students’ achievement-related motivation

**Overall effect.** The pooled overall effect for parental psychological engagement on achievement-related motivation was small in size, according to Cohen’s (1988) classification of effect sizes ($r = .22, SE = .03, z = 7.48, p < .001, CI [.16, .27], k = 11; $RQ 1a; Figure 3). As displayed in Figure 3, the pooled overall effect consisted of eight effects showing a smaller confidence interval range (e.g., CIs varied from [.11, .27], [.20, .29] to [.30, .45]), three effects having a very broad confidence interval range (CIs varied from [.05, .39] to [.06, .43]). It seems that the broad confidence intervals resulted from studies with smaller sample size (e.g., El-Khechen et al., 2016). One effect of one study (Villiger et al., 2014) showed a confidence interval that included zero indicating a non-significant effect. The majority effects were small.

The test of heterogeneity was significant, indicating that there was a substantial variability between the studies ($Q = 30.80, df = 10, p < .001, I^2 = 73.49$). Before testing the moderators,
a sensitivity analysis was conducted (Viechtbauer, 2010). The results showed that if one study was left out, the overall effect would not change substantially (all $r$ values of the sensitivity analysis ranged from .21 to .24; all $I^2 > 48$).

**Moderators.** We tested the five moderators (host context, school level, sample size, sampling strategy, and whether SES/educational level was included as a covariate) of the parental engagement effect on immigrant students’ achievement-related motivation (RQ 1b) to explore if the heterogeneity could be explained by the moderators. The Q-statistic for host context, sample size, sampling strategy, and whether SES/educational level was included as a covariate were not significant ($Q = 0.19$, $df = 1$, $p = .663$, $I^2 = 74.35$; $Q = 0.02$, $df = 1$, $p = .875$, $I^2 = 76.16$; $Q = 0.77$, $df = 1$, $p = .38$, $I^2 = 73.43$; $Q = 0.11$, $df = 1$, $p = .74$, $I^2 = 75.98$) but the school level was ($Q = 3.96$, $df = 1$, $p = .047$, $I^2 = 63.30$; for details, see Table 2). Studies investigating middle and high school immigrant students reported a larger relationship between parental psychological engagement and immigrant students’ achievement-related motivation ($r = .24$, $SE = .03$, $z = 9.01$, $p < .001$, $CI [.19, .29]$) than studies exploring the relationship for elementary school students ($r = .10$, $SE = .07$, $z = 1.15$, $p = .148$, $CI[-.03, .23]$).

### 3.2.2 Parental behavioral involvement effects on students’ achievement-related motivation

**Overall effect.** The pooled overall effect for parental behavioral engagement was small ($r = .23$, $SE = .05$, $z = 4.83$, $p > .001$, $CI [.14, .32]$, $k = 9$; RQ 2a; Figure 4). As displayed in Figure 4, the pooled overall effect consisted of seven effects showing a smaller confidence interval range ($CIs$ varied from [.16, .30] to [.30, .53]) and two effects having a very broad confidence interval range ($CIs$ varied from [.06, .39] to [.10, .42]). One effect of one study
showed a confidence interval that included zero indicating a non-significant effect. Most
effects were small, only two were medium-sized.

The test of heterogeneity was significant, indicating a substantial variability of effect sizes
between the primary studies ($Q = 37.39, df = 8, p < .001, I^2 = 84.11$). The results of the
sensitivity analysis revealed that the overall effect was not strongly affected by outliers: all $r$
values ranged from .20 to .26 and the $I^2$ would only decrease slightly (all $I^2 > 75$). Thus,
moderator analyses were conducted with all seven studies.

**Moderators.** The results of the moderator analyses showed that four out of five
moderators (school level, sample size, sampling strategy, and the inclusion of SES/
educational level as a covariate) had no significant influence on the relationship between
parental behavioral involvement and immigrant students’ achievement-related motivation ($Q$
$= 0.79, df = 1, p = .374, I^2 = 84.75; Q = 0.11, df = 1, p = .735, I^2 = 85.29; Q = 2.15, df = 1, p =$
$.142, I^2 = 81.75; Q = 0.49, df = 1, p = .483, I^2 = 85.04$). The host context moderator was not
significant, but the $p$-value was below .10 ($Q = 3.01, df = 1, p = .083, I^2 = 79.01$; *Table 3*),
which suggests a potential moderator of the parental involvement effect on immigrant
students’ motivation (RQ 2b). Descriptively, studies conducted in the U.S. (but not those
conducted in Europe, $p = .26$) showed a significant effect of parental behavioral involvement
on immigrant students’ achievement-related motivation ($r = .28, SE = .05, z = 5.51, p < .001,$
$CI[.18, 38]$). However, this difference should be interpreted as a trend as the moderator was
only marginally significant.

### 3.2.3 Parental SES/education and students’ achievement related motivation

**Overall effect.** Seven studies explored the relationship between parental SES/educational
attainment and immigrant students’ achievement-related motivational variables. The initial
pooled overall effect was very small and not significant ($r = .04, SE = .03, z = 1.10, p = .267,$
CI[-.03, .10], $k = 7$; $Q = 21.59, df = 6, p < .001, I^2 = 77.96$; RQ 3a). However, the results of the sensitivity analysis revealed that if the study by Witkow et al. (2015) was left out for the overall effect calculation, the $r$ coefficient increased to .07 and, more importantly, the $I^2$-value was reduced substantially from 77.96 to 37.91%. Calculating a final overall effect for SES/education without the Witkow et al. (2015) outlier revealed a very small overall effect of $r = .07$ ($SE = .02, z = 3.12, p = .002, CI[.02, .11], k = 6$; Figure 5). As displayed in Figure 5, the pooled overall effect consisted only six effects. Four effects showing a smaller confidence interval range ($CIs$ varied from [-.01, .09] to [.02, .18]), two effects having a very broad confidence interval range ($CIs$ varied from [-.27, .07] to [.01, .24]). Three effects showed a confidence interval that included zero indicating a non-significant effect, two out of the three effects were negative. Half of the effects were small. As the number of effects was limited and the confidence interval of three effects included zero, the overall effect needs to be interpreted with caution.

The final heterogeneity test was not significant ($Q = 9.54, df = 5, p = .09, I^2 = 37.91$). As a consequence, no additional moderator analyses were conducted (RQ 3b).

3.2.4 Mediation effect of achievement-related motivational variables in the relationship between parental influence indicators and students’ achievement-related motivation

**Overall effect.** Five studies investigated achievement-related motivational variables as potential mediators of the relationship between parental influence and immigrant students’ achievement. Within the studies, ten effect sizes within different subsamples in the studies were identified for the overall mediation effect. The pooled mediation effect was small ($r = .10, SE = .02, z = 4.68, p < .001, CI[.06, .14], k = 10, I^2 = 38.46$; RQ 4a; Figure 6). As displayed in Figure 6, the pooled overall mediation effect consisted of five effects showing a
smaller confidence interval range (CIs varied from [.10, .24] to [.11, .25]), and five effects having a very broad confidence interval range (CIs varied from [-.10, .24] to [-.07, .19]).

Seven out of ten effects showed a confidence interval that included zero indicating a non-significant effect. However, six out of these seven effects resulted from small sample sizes which might affect broader confidence intervals. The three effects are small and seven effects are very small or close to zero.

The test of heterogeneity was not significant ($Q = 13.15, df = 9, p = .16$). The findings of the sensitivity analysis showed that the overall effect would not change substantially if one study was left out (all $r$ values ranged from .09 to .12). Based on the lack of heterogeneous effect sizes across studies ($Q = 1.84, df = 6, p = .93$), no further moderator analyses were conducted (RQ 4b).

4. Discussion

In the last two decades, various meta-analyses and reviews have explored the effects of parental involvement on students’ achievement (e.g., Boonk et al., 2018; Castro et al., 2015; Fan & Chen, 2001; Jeynes, 2007; Wilder, 2014). However, this meta-analysis is the first to investigate the effects of parental influence indicators (i.e., psychological engagement, behavioral involvement, and SES/educational level) on immigrant students’ achievement-related motivation. Studies included in this meta-analysis investigated the extent to which parental influence indicators affect immigrant students’ achievement-related motivation across various social systems based on Bronfenbrenner’s ecological systems theory (2009).

Concerning the interconnected influence of parental, social, and environmental processes (Bronfenbrenner, 1979), we further analyzed potential moderators of the effect of parental influences on immigrant children’s achievement-related motivation. Beyond the simple relationships between parental influence and immigrant students’ achievement-related
motivation, this meta-analysis additionally explored achievement-related motivational variables as mediators of the relationship between parental influence indicators and student achievement (for an overview, see Figure 7). The findings showed the overall significant effect of parental influences indicators on immigrant student’s motivation and achievement. However, the effects ranged from very small to small.

4.1 The effects of parental psychological engagement on immigrant students’ motivation

We showed a small effect of parents’ psychological engagement on immigrant students’ achievement-related motivation ($r = .22$). This finding is in line with research showing immigrant parents’ strong educational aspirations for their children predicts educational success in the host country (Kao & Tienda, 1995), although studies have also low SES and education in immigrants predict negative parenting practices and poor academic performance of children (e.g., Kwak, 2003; Pong & Landale, 2012). The finding of our meta-analysis emphasizes the important role of parents’ psychological engagement in immigrant students’ achievement-related motivation regardless of the parents’ SES.

Even if parents’ communication about school, values, expectations, aspirations, and emotional support are beneficial for immigrant children’s educational motivation (see Table A), the strength of these psychological engagement effects on children might depend on surrounding macro-level influences, economic hardship (Hernandez et al., 2012) and host context (Bronfenbrenner, 1979). Hence, the effects of parental psychological engagement on immigrant children might depend on interplay of distal and proximal influence factors, which were considered in moderator analyses within our meta-analysis. We, therefore, analyzed the distal influences (i.e., host context, whether or not SES/educational level of parents are included as the covariates in the original study), child characteristics of school-level, and
research quality differences (i.e., differential sample sizes, sampling strategies) as potential moderators of the parental effects on immigrant children.

School level was the only significant moderator of the effect of parental psychological engagement on immigrant students’ motivation. Parental psychological engagement had a medium-sized effect on secondary school students, and a very small (and non-significant) effect for those in elementary schools. This research suggests immigrant students in secondary schools with greater future time perspective are able to anticipate the consequences of their current educational work. Seeing the relevance of their work for their future goals, such as career prospects, motivates them (Andriessen, Phalet, & Lens, 2006; Husman & Lens, 1999). Thus, immigrant students at the secondary level might be motivated in school because they can anticipate the outcomes of their educational attainments. Our findings also provide interesting insight into the importance of immigrant children’s age and school level regarding their internalization of parental psychological engagement for developing their motivation (Eccles, 2007; Ryan & Deci, 2000). Immigrant parental psychological engagement, such as their aspirations for their children’s educational success (Kao & Tienda, 1995), might be more beneficial for children’s motivation when it is communicated to immigrant children in secondary schools than the younger ones in elementary schools. If the immigrant parents’ aspiration centers on overcoming economic hardships through education (Kao & Tienda, 1995), communicating about this might not inspire younger children due to their undeveloped awareness of social-prestigious aspirations (Auger, Blackhurst, & Wahl, 2005). This might be one reason that motivational variables measured at the elementary school level in our studies (i.e., utility value, reading motivation) were not affected by parents’ psychological engagement.

4.2 Effects of parental behavioral involvement on immigrant students’ motivation
We found an overall small effect of parents’ behavioral involvement on immigrant students’ achievement-related motivation ($r = .23$). The overall parental behavioral involvement effect was mainly driven by parents’ help with homework (*Table B*), suggesting that if parents, for example, actively help with homework, immigrant students’ achievement-related motivation was positively affected. This positive relationship is important, as inconsistent findings on the effectiveness of parents’ help with homework for students’ achievement have been observed in previous meta-analyses (Hill & Tyson, 2009; Jeynes, 2005, Patall et al., 2008; Wilder, 2014).

From Bronfenbrenner’s (1979, 1986) ecological systems theory perspective, parents’ behavioral involvement, such as assisting children with homework and participating in school activities, are part of the combined influence of parents and school in the mesosystem (Neal & Neal, 2013). Previous sociological explanations highlight the important role of parents’ social networks in children’s education (Neal & Neal, 2013; Portes & MacLeod, 1999), which can negatively affect immigrant families’ parenting as compared to native parents, due to their limited social networks in the host country (Verkuyten et al., 2001). In our meta-analysis, immigrant parents’ behavioral involvement at home and in school showed a positive effect on immigrant children’s achievement-related motivation, in line with Bronfenbrenner’s (1979, 1986) ecological systems theory perspective. As the larger socio-cultural influences of the immigration context can impact parents’ involvement and children’s motivation (Portes & MacLeod, 1999), we further tested the studies’ host context as moderator. The effect of parents’ behavioral involvement on immigrant children’s achievement-related motivation differed by host context, yet the difference was only marginally significant: parents’ behavioral involvement had a medium-sized effect for immigrant children in the U.S., but not for those in the European context. Because of immigrant parents’ language barriers and
cultural differences in the host context (García Coll et al., 2002; Lee & Bowen, 2006), immigrant parents often experience an insufficient understanding or mistrust of school-related feedback, and low self-efficacy in supporting children’s homework (Yamamoto & Holloway, 2010). This could partially account for the differences between the studies in the two host contexts. In addition, the policy and structural context needs to be considered, as these determine possible disadvantages for immigrant families, which can further impact children’s educational outcomes (Portes & McLeod, 1999). For example, a relevant structural context could be one in which it is expected that parents show engagement and effort in school-related social networks, which put immigrant families at disadvantage if they have less opportunities to build up and engage in those networks (Turney & Kao, 2009). However, as a limited number of studies in Europe ($k = 2$) were analyzed for our meta-analysis, one should interpret these differences in host context with caution. We suggest it cannot be concluded with certainty that there is no true effect of behavioral involvement on immigrant students’ achievement-related motivation in Europe. Therefore, we urge researchers to investigate how language or cultural differences in Europe can create disadvantages for immigrant families in the educational system (Portes & MacLeod, 1999; Zhou, 1997).

4.3 Effects of parents’ SES/educational level on immigrant students’ motivation

Focusing on the broader macrosystem level of influences (Bronfenbrenner, 1986), our meta-analyses showed that immigrant parents’ socioeconomic and educational level had a very small influence on immigrant children’s achievement-related motivation. In comparison to proximal parent-child interactions such as psychological engagement and behavioral involvement in the micro- and mesosystem (Bronfenbrenner, 1979), the distal influence of SES and parental education on immigrant children’s achievement-related motivation appears to be relatively less influential. However, immigrant parents’ generally low income and
education level (Fuligni et al., 1999; Pong & Landale, 2012) might result in a smaller effect for immigrant children’s achievement-related motivation (Elffers & Oorts, 2013). The overall effects of immigrant parents’ SES and education level on immigrant students’ achievement-related motivation were consistent regardless of the host context, school level, sample size, and sampling strategy, in line with a sociological approach (Zhou, 1997).

### 4.4 Mediation effect of achievement-related motivation

Overall, motivational variables had an averaged mediation effect in the relationship between two type of parental influences (i.e., psychological engagement and behavioral involvement) and immigrant children’s achievement. Students’ academic engagement was the predominant mediator in the included studies (Table D). The mediation effect was small ($r = .10$) but robust, remaining positive and significant across different host contexts, school levels, sample sizes, sampling strategies, and whether parents’ SES and education levels were included in the original studies. Our mediation effect highlights the importance of both parental psychological engagement and behavioral involvement for immigrant children’s achievement motivation, which in turn influences their achievement, as hypothesized by the motivation mediation model of parental influence based on self-determination theory (Grolnick et al., 1991) and expectancy-value theory (Eccles, 2007). Our averaged mediation effect for immigrant students is consistent with findings from a recent qualitative review (Boonk et al., 2018) showing that the positive association between parental involvement and students' achievement was mediated by students’ motivational variables such as cognitive ability beliefs and actual academic competencies.

The small effect of the mediation in our result, however, points to the previous finding that the high motivation of immigrant students driven by parents might not be related to their actual achievement (Shernoff & Schmidt, 2008). Such small parental effect might imply
immigrant parents’ obstacles in educating children in the host context (Pong & Landale, 2012), which requires future studies to address on which could limit parental influences in the immigrant family for educational success. Nevertheless, the small effect still has an importance as it affect many immigrant students in the reality and many studies reach a r value of .2 in psychology field (Gignac, & Szodorai, 2016).

Immigrant students’ low academic performance in comparison to non-immigrant students (Kuperminc et al., 2008), together with our finding of a small mediation effect of achievement-related motivation, draw attention to other direct and indirect influences on parenting such as parents’ self-efficacy and parental beliefs (Yamamoto & Holloway, 2010) and the quality of parenting (Fleischmann & de Haas, 2016; Lee & Bowen, 2006), which also affect immigrant children’s achievement. In addition, most of our studies used academic engagement as a mediator, and none explored children’s ability beliefs or competencies, which could limit the interpretation of our finding. Therefore, future studies should consider these aspects when investigating immigrant parents’ effect on children’s motivation and achievement.

4.5 Limitations

It should be mentioned that the overall effects we reported were only based on the studies with correlational data. Therefore, we could not have the chance to test the causal relationship between immigrant parent influences and children’s achievement-related motivation. With regard to the study quality criteria, some improvements should be considered in future research. For one, most of the studies did not use a randomized sampling strategy for recruiting participants, so the samples were not representative. Furthermore, the limited number of studies might also have been responsible for the lack of significance of many of the moderator analyses. Some studies in our sample had a rather smaller sample size resulting
in a broad confidence interval of the effects. Broader confidence intervals might increase the probability that the true effect varies between the range of the interval. Hence, we recommend further research to ensure an appropriate sample size to generate more precise effect estimates and smaller confidence intervals. Moreover, the number of studies was especially limited for immigrant families in non-U.S. countries, which otherwise could have increased robustness and generalizability of our result. Thus, more studies on the effects of parental influence indicators are needed to investigate our and new potential moderators to explain the heterogeneity of effect sizes between studies.

4.6 Conclusions

The present meta-analysis of 14 studies showed small overall effects of three parental influence indicators on immigrant students’ achievement-related motivation. Proximal parental influences (i.e., psychological engagement and behavioral involvement in school and at home) had relatively stronger effects (small to medium) on immigrant children’s achievement-related motivation than the distal influence of parents’ SES and education level (very small; Bronfenbrenner, 1979; 1986). Thus, our findings highlight the important role of proximal parental influences in immigrant children’s achievement-related motivation. In line with motivation theories (Eccles, 2007; Grolnick et al., 1991), the included studies also showed a small mediation effect of motivation variables in the relationship between parental influence and immigrant children’s educational achievement. Thus, we urge future studies to carefully consider this potential small mediation effect of motivational variable in the relationship between immigrant parent’s influence and achievement.

Considering the interconnected social-, cultural- and parental influences (Neal & Neal, 2013; Portes & MacLeod, 1999), we found two relevant moderators: the effect of parents’ psychological engagement significantly differed by school level, while the effect of parental
involvement showed only a marginally significant difference depending on the host context. These findings illustrate the complex process whereby parental influences are internalized to affect achievement motivation, depending on distal influences. Given that parental influences are theoretically and empirically regarded as important, the finding of overall small effect of the immigrant’s parenting on education rather highlight the importance of additional research on which aspect of immigrant parenting could be improved.
References


References marked with an asterix (*) are included in the current meta-analysis.
Figures

Figure 1. Adapted Bronfenbrenner model
Figure 2. Hypothesized model to display our research questions.

Note. RQ 1a, 2a, 3a refer the overall effects of the three parental influence indicators (psychological engagement, behavioral involvement, and SES/educational level; see black arrows). RQ 1b, 2b, 3b refer to the moderator analyses with regard to the overall effects (see grew arrows). RQ 4a indicates the mediation effect von students’ achievement-related motivational variables on the relationship between parental influence indicators and immigrant students’ achievement (see black arrows with dashed lines). RQ 4b focuses on the moderator analyses of the mediation effects (see grew arrow). ¹SES/ Educational level was not a moderator for RQ 3a.
Figure 3. Forest plot for the pooled effect of parental psychological engagement on immigrant students’ achievement-related motivation (RQ 1a)
Figure 4. Forest plot for the pooled effect of parental behavioral involvement on immigrant students’ achievement-related motivation (RQ 2a)
**Forest plot for the pooled effect of parental SES/educational level on immigrant students’ achievement-related motivation (excluding outlier Witkow et al., 2015; RQ 3a)**

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<tr>
<td>1) Elffers &amp; Oort, 2013</td>
<td>0.04 [-0.01, 0.09]</td>
</tr>
<tr>
<td>2) Ibáñez et al., 2004</td>
<td>-0.10 [-0.27, 0.07]</td>
</tr>
<tr>
<td>3) Plunkett &amp; Bámaca–Gómez, 2003</td>
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<tr>
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<td>5) Plunkett et al., 2009b</td>
<td>0.10 [0.02, 0.18]</td>
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<td>6) Salikutluk, 2016</td>
<td>0.11 [0.05, 0.17]</td>
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<tr>
<td>RE Model</td>
<td>0.07 [0.02, 0.11]</td>
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Mediation effect of motivational variables on achievement

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<td>10) Henry et al., 2008_PE</td>
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**Figure 6.** Forest plot for the pooled mediation effect of achievement-related motivational variables on the relationship between parental influence and immigrant students’ achievement (RQ 4a)
Figure 7. Overview of all significant overall effects and moderators integrated in the hypothesized model.
<table>
<thead>
<tr>
<th>Authors</th>
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<th>Study design</th>
<th>Analysis</th>
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<th>Student group</th>
<th>Sample size</th>
<th>SES/ educational level covariates</th>
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<td>Secondary school</td>
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<td>Senior vocational school</td>
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<td>Cross-sectional</td>
<td>Path analysis</td>
<td>Psychological engagement, SES</td>
<td>Primary school</td>
<td>118 immigrants (Turkish: 5.8%, Turkish/German: 94.2%); small sample size</td>
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<td>USA/ U.S. context</td>
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<td>Multiple regression</td>
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<td>High school</td>
<td>502 immigrants (Latino; foreign born: 38%); large sample size</td>
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<td>(Mexico 66%, Central America 16%, Caribbean 10%, South American 6%); small sample size</td>
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<tr>
<td>Salikutluk (2016)</td>
<td>Germany/European context</td>
<td>Cross-sectional</td>
<td>Multiple regression</td>
<td>Psychological engagement, SES</td>
<td>Secondary school</td>
<td>681 immigrants (Turkish, former Soviet Union)</td>
<td>Parents’ educational level, SES</td>
</tr>
<tr>
<td>Suizzo et al., (2012)</td>
<td>USA/U.S. context</td>
<td>Cross-sectional</td>
<td>Multiple regression</td>
<td>Psychological engagement</td>
<td>Middle school</td>
<td>216 immigrants (Mexican); small sample size</td>
<td>-</td>
</tr>
<tr>
<td>Villiger et al. (2014)</td>
<td>Switzerland/European context</td>
<td>Cross-sectional</td>
<td>Structural equation modeling</td>
<td>Psychological engagement, Behavioral involvement</td>
<td>Primary school</td>
<td>290 immigrants (Southwestern, -eastern-European5: 10.5 %, Others: 3.6 %); small sample size</td>
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<tr>
<td>Witkow et al. (2015)</td>
<td>USA/U.S. context</td>
<td>Longitudinal</td>
<td>Multiple regression</td>
<td>SES</td>
<td>High school, 2 - 4 years after high school</td>
<td>408 immigrants (Latino: n= 125, Asian: n= 202, European: n=81); small sample size</td>
<td>SES</td>
</tr>
</tbody>
</table>

Note. If studies included parents’ socioeconomic status or educational level in the regression models that were relevant to our research questions, we reported the socioeconomic status or educational level covariates; SES = socioeconomic status.
Table 2. Moderator effects for RQ 1b (parental psychological engagement)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SE</th>
<th>p</th>
<th>z</th>
<th>CI. lb</th>
<th>CI. ub</th>
<th>Q</th>
<th>$\tau^2$ / $\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Host context</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>European context</td>
<td>.663</td>
<td></td>
<td>.019</td>
<td>74.35%</td>
<td>.007</td>
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<tr>
<td>U.S. context</td>
<td>.23</td>
<td>.04</td>
<td>&lt;</td>
<td>5.41</td>
<td>.15</td>
<td>.32</td>
<td></td>
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<tr>
<td>School level</td>
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<tr>
<td>Elementary</td>
<td>.047</td>
<td>.06</td>
<td>.15</td>
<td>1.44</td>
<td>.03</td>
<td>.23</td>
<td>3.96</td>
<td>63.30%</td>
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<tr>
<td>Middle or high</td>
<td>.24</td>
<td>.03</td>
<td>.001</td>
<td>9.01</td>
<td>.19</td>
<td>.29</td>
<td></td>
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<tr>
<td><strong>Sample size</strong></td>
<td>.875</td>
<td>0.02</td>
<td>76.16%</td>
<td>0.007</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N &lt; 500$ ***</td>
<td>0.22</td>
<td>.04</td>
<td>&lt; 5.06</td>
<td>.13</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Sampling strategy</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>No strategy ***</td>
<td>0.24</td>
<td>.04</td>
<td>&lt; 6.11</td>
<td>.17</td>
<td></td>
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</tr>
<tr>
<td>Strategy ***</td>
<td>0.19</td>
<td>.05</td>
<td>&lt; 4.03</td>
<td>.10</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>SES/ Education Covariate(s)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.737</td>
<td>0.11</td>
<td>75.98%</td>
<td>0.007</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
No  .23  .05  <  5.00  .14  .32
Covariate(s)  .001
***
covariate(s)  .21  .04  <  5.07  .13  .29
***  .001

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < .10$

<p>| Table 3. Moderator effects for RQ 2b (parental behavioral involvement) |
|---------------------------------|-----------------|---|---|---|---|---|---|
| <strong>Mean</strong> | <strong>SE</strong> | <strong>p</strong> | <strong>z</strong> | <strong>Cl.lb</strong> | <strong>Cl.ub</strong> | <strong>Q</strong> | <strong>I$^2$/ $\tau^2$</strong> |
| Host context † | .083 | | 3.01 | | | | 79.01%/ .013 |
| European context | .10 | .09 | .258 | 1.13 | -.07 | .28 |
| U.S. context*** | .28 | .05 | &lt; 5.51 | .18 | .38 |
| context | .001 |</p>
<table>
<thead>
<tr>
<th>Sample level</th>
<th>School level</th>
<th>.374</th>
<th>0.79</th>
<th>84.75%/ .018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>.15</td>
<td>.11</td>
<td>.16</td>
<td>1.40</td>
</tr>
<tr>
<td>Middle or high</td>
<td>.26</td>
<td>.06</td>
<td>&lt;</td>
<td>4.64</td>
</tr>
</tbody>
</table>

***

<table>
<thead>
<tr>
<th>Sample size</th>
<th>Sample size</th>
<th>.735</th>
<th>0.11</th>
<th>85.29%/.021</th>
</tr>
</thead>
<tbody>
<tr>
<td>N &lt; 500 ***</td>
<td>.25</td>
<td>.06</td>
<td>&lt;</td>
<td>4.07</td>
</tr>
</tbody>
</table>

***

| N ≥ 500 †    | .21          | .11  | .051 | 1.95        | -.001| .42 |

<table>
<thead>
<tr>
<th>Sampling strategy</th>
<th>Sampling strategy</th>
<th>.14</th>
<th>2.15</th>
<th>81.75%/ .015</th>
</tr>
</thead>
<tbody>
<tr>
<td>No strategy</td>
<td>.26</td>
<td>.05</td>
<td>&lt;</td>
<td>5.33</td>
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</tbody>
</table>

***

<table>
<thead>
<tr>
<th>NCI</th>
<th>&quot;CI&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>.001</td>
<td>.001</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>&quot;P&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>.015</td>
</tr>
<tr>
<td>Strategy</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>SES/ Education</td>
</tr>
<tr>
<td>Covariate(s)</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Covariate(s)</td>
</tr>
<tr>
<td>***</td>
</tr>
<tr>
<td>Covariate(s) **</td>
</tr>
</tbody>
</table>

Note. *** p < 0.001, ** p < 0.01, * p < 0.05, † p < .10