Valuing Cultural Diversity at School:

How Schools and Teachers can Promote the Adjustment of Immigrant, Refugee and Non-Immigrant Children

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Francesca Eugenia Ialuna

Erstgutachter: Prof. Dr. Philipp Jugert, Universität Duisburg-Essen

Zweitgutachterin: Prof. Dr. Maja Schachner, Martin-Luther-Universität, Halle-Wittenberg

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Abbreviations

CRT	Culturally Responsive Teaching
CDC	Cultural Diversity Climate
TSR	Teacher-Student Relationship
GPA	Grade Point Average
SES	Socioeconomic Status
NRW	North-Rhine Westphalia
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Square Residual
BCFSPA	Bias Corrected Factor Score Path Analysis

Abstract

Due to the longstanding movements of immigrant and refugee families from different countries, ethnic and cultural diversity in schools and classrooms is, in many countries, common and expectedly increasing. Ethnically diverse children, both with and without an immigrant experience, are the foundation of tomorrow's society. For growingly diverse societies, it is therefore crucial to focus on how the academic and psychosocial adjustment of all children can be supported.

Considering the relevance of social contexts for children's development (Bronfenbrenner, 1979; Lerner et al., 2006), this dissertation focuses on school as a place in which children and teachers of various ethnic, cultural and immigrant backgrounds can interact and influence each other. Particularly, aspects such as teaching practices, classroom climate and school relationships can play a crucial role in hindering or promoting children's adjustment (Suárez-Orozco et al., 2018). Drawing on theories and research on cultural diversity school approaches and attachment and relational models, this work aims to shed light on how culturally responsive teaching, cultural diversity climate and school relationships quality can promote the academic and psychological adjustment of immigrant, refugee and non-immigrant children in Germany.

The introduction chapter provides information on the contextual and theoretical backgrounds of this dissertation. First, I describe the current situation of ethnic and cultural diversity in Europe and Germany, providing an overview on the demographics of immigrant and refugee people in Germany. Second, I delineate the current discourse on migration-related categories and the related issue on terminology in the European context. Third, I introduce the theoretical framework and the main empirical grounds of this dissertation. In particular, I focus on positive youth development (Damon, 2004; Lerner et al., 2005) and resilience (Masten, 2014; Motti-Stefanidi & Masten, 2017) approaches, which stress the importance of

examining how children's adjustment can be promoted and protected from migration-related challenges. I delineate theories explaining how the context may influence children's development (Bronfenbrenner & Morris, 2007; Ford & Lerner, 1992), and specifically account for the role of school in children's academic and psychological adjustment. Accordingly, I define the specific factors that are related to cultural diversity in school, namely culturally responsive teaching (Gay, 2018), classroom cultural diversity climate (Schachner et al., 2016) and school relationships, explaining how these are related to each other and can increase children's positive adjustment and resilience. Specifically, I aim to address the following questions in three empirical studies: What role do culturally responsive teaching practices and cultural diversity classroom climate play in children's adjustment? How is the quality of school relationships for children in culturally diverse classrooms, and especially for immigrant and refugee students? Can school relationships promote children's adjustment despite risks and challenges? Therefore, I outline the main research gaps and aims that the dissertation addresses, and describe the research project, which this dissertation stems from.

The following chapter presents the first empirical study (Study 1), which focused on how teachers' culturally responsive teaching is related to children's academic and psychological adjustment. Additionally, I explored to what extent children-perceived cultural diversity classroom climate might mediate this association, and whether these effects differed between children with and without own immigrant experience. The next chapter introduces a multi-informant study (Study 2), in which I examined teacher-student relationship quality, tackling different aspects of this relationship from the perspectives of both students and their teachers. Building on Study 1, here I investigated to what extent teacher-student relationship could explain the association between culturally responsive teaching and children's adjustment. Next, Study 3 expands the previous study considering not only how teacher-student but also how peer relationship quality is related to children's adjustment. In particular,

in this study I explored to what extent both relationships could protect children's adjustment in the face of the developmental-acculturative challenge of learning the school language.

The discussion chapter offers a summary of the main results of the three empirical studies in view of the research aims. Moreover, this chapter provides a discussion of the main strengths and limitations as well as implications for future theory building, research and practice. Taken together, findings of this dissertation can help schools, teachers and policy makers targeting interventions that aim at enhancing the academic and psychological adjustment of immigrant, refugee and non-immigrant children in Germany.

1. Contextual Background

1.1. Flight and Migration in Europe and Germany

Flight and migration towards and within Europe are an integral part of the history of this continent. For countries such as Germany, movements of immigrant and emigrant people are not new. For example, after the end of World War II some West-European countries hosted a program for *Gastarbeiter*innen* (i.e., guest workers), offering workers from abroad temporary job positions to work in industries (Bauer & Zimmermann, 1996). In former Federal Republic of Germany, the majority of immigrant workers came from Turkey, former Yugoslavia and Italy (Wenning, 1994). Even though the German government did not plan their stay as permanent, many workers and their families remained and settled in Germany (Hunn, 2005). Additionally, refugee people from the Yugoslav War and other countries also moved to Germany (Schneider, 2018). Recently, because of several events such as wars (e.g., in Syria, Afghanistan, Iraq, Ukraine) or political turmoil (e.g., Iran, Turkey), an increasing number of refugee[1] people moved or is moving towards different European countries.

Today, Germany is the third country for receiving the highest number of refugee people (UNHCR, 2023), and the second top destination country for immigrant people (McAuliffe & Khadria, 2019) worldwide. Specifically, since 2015, more than two million people asked for asylum in Germany. Between 2017 and 2019, one third of them were children in preschool age (Bundesamt für Migration und Flüchtlinge, 2017, 2019). In 2023, most asylum seekers in Germany came from Syria, Turkey, Afghanistan, Iraq and Iran (Bundesamt für Migration und Flüchtlinge, 2023). Alongside forcibly displaced people, migration due to reasons other than war are taking place, for example from East and South-East Europe (e.g., Poland, Romania, Bulgaria) since the Eastern enlargements of the European

[1] According to the UN Refugee Agency (UNHCR, n.d.), people are defined as refugees, if they are forced to escape from the country of residence due to war, violence or persecutions, and ask for refuge in another country.

Union in 2004 and 2007 (Elsner & Zimmermann, 2013). As of 2022, 28.7% of people living in Germany have a so-called “immigrant background” (Bundeszentrale für politische Bildung, 2023; Statistisches Bundesamt, 2023b), meaning that they or at least one of their parents were not born with German citizenship (Statistisches Bundesamt, 2023a).

The history of migration as well as the statistics presented show that cultural and ethnic diversity is an inherent constituent of the German society. Accordingly, Germany, as well as other countries with similar demographics, has been called a *superdiverse* country (Schneider, 2018; Titzmann & Jugert, 2020), building on the concept of superdiversity that defines the dynamic and complex interplay of diversity characteristics (e.g., in terms of ethnicity, immigrant status, gender etc.) due to demographic and social changes in one country (Vertovec, 2007). Yet, along increasing diversity, negative attitudes towards groups of people who are perceived as *outgroups*, and toward immigrant people specifically, are also increasing (Ateş et al., 2023; Zick et al., 2023), a phenomenon that tends to be exacerbated by media (Benesch et al., 2019). Such attitudes can manifest in forms of stereotypes, prejudice, ethnic discrimination (e.g., Islamophobia, Antisemitism) and racist violent attacks (e.g., the Hanau shootings; dw, 2020), and more frequently yet less visibly, in ethnic-racial microaggressions, which are subtle and recurring acts of ethnic discrimination (Sue et al., 2007). A typical example of microaggressions is represented by the question ‘Where are you *really* from?’ posed to natives who do not fit the stereotype of ethnic majority members, for example because of their skin color (Juang, Schwarzenthal, et al., 2021). Yet, at the same time political movements of activists (e.g., Black Live Matters) worldwide, including Germany, are taking place, stressing attention to systemic aspects of racism and oppression.

As schools are shaped by values and norms of society (Bronfenbrenner, 1979; Eccles & Roeser, 2015), negative attitudes and behaviors towards outgroups can also be present in this context. Accordingly, a growing body of research is showing that forms of racial-ethnic discrimination by teachers (for a review, see Civitillo et al., 2023) and peers (e.g., Stevens et

al., 2020; Verkuyten & Thijs, 2002) can have detrimental effects for the academic and psychological development of youth. In Germany, current research (Civitillo et al., 2022; Glock, 2016; Glock et al., 2015, 2020; Lorenz et al., 2016) showed that preservice and in-service teachers' ethnic stereotypes and prejudices are likely to predict biased recommendations to secondary schools and more negative judgments of the academic achievement and behavior of ethnic minoritized students.

However, importantly, teachers and peers can also positively contribute to children's adjustment. Institutions (KMK, 2013; OECD, 2018) and scholars (Banks & Banks, 2020; Barrett, 2018; Brown et al., 2022; Civitillo & Juang, 2020; Gay, 2018; Ladson-Billings, 1995) have called for the importance of valuing cultural diversity and fostering equity among students. For societies and schools, it is therefore important to identify what factors can help enhancing the adjustment of all students – both with and without an immigrant experience. This is crucial for countries such as Germany, as these children will be or are already part of their populations, building the basis for tomorrow's society, also economically (Suárez-Orozco et al., 2018). The aim of this dissertation is therefore to examine how schools, teachers and peers can play positive roles for the adjustment of immigrant, refugee and non-immigrant children in elementary schools.

1.2. What's in a Name? A Note on Terminology

As this dissertation examines the adjustment of children with various backgrounds, it is important to find terms that adequately address this diversity without reifying concepts and reproducing othering discourses. In Europe and particularly in Germany, this yields to societal and scientific negotiation processes (Juang, Moffitt, et al., 2021; Jugert et al., 2021). In the next paragraphs, I explain how I define and use key terms, in light of their suitability given the aims, context and timeframe of this work.

Here, *culture* is viewed not as something static and reified, but as "an integrated constellation of practices, symbols, values, and ideals that are constructed and shared by a community, transmitted from one generation to the next, constantly renegotiated and subject to change, and operating at the individual and societal level" (Causadias et al., 2018, p. 244). *Cultural diversity* therefore addresses the simultaneous interplay of various cultural characteristics in one context, that is also linked with the presence of diverse ethnic groups in interaction. In a similar way, I view *ethnicity* not as static, but as a social construction whose interpretation changes across time and place (Jugert et al., 2021), and is here defined as "a characterization of a group of people who see themselves and are seen by others as having a common ancestry, shared history, shared traditions, and shared cultural traits such as language, beliefs, values, music, dress, and food" (Cokley, 2007, p. 225).

While common in contexts such as the US, *race* – here defined also as a social construction without biological basis (Bhopal, 2004) to describe people grouped in view of physical features (Cokley, 2007) – is a taboo term in Europe because of its link with the national-socialist racist ideology (Juang, Moffitt, et al., 2021; Jugert et al., 2021). However, *race* as a social construct impacts people's thinking, behaviors and everyday life (see Syed, 2021). Race and ethnicity tend to be often combined in psychology research on different domains (e.g., ethnic-racial identity; Umaña-Taylor et al., 2014). Therefore, I refer to *racial-ethnic discrimination*, which is here defined as the differential treatment that produces a power hierarchy between groups given one's race or ethnicity (Sidanius & Pratto, 1999). While I view racial-ethnic discrimination occurring at an inter-individual level, I refer to *racism* when I aim to emphasize the structural level of discrimination based on race or ethnicity (Bonilla-Silva, 1997), a term that is used also in German-based research (Ateş et al., 2023; Foroutan et al., 2022). In order to stress the power imbalance between groups, I use the labels *ethnic majority* and *ethnic minority* or *minoritized* children to denote children who

identify or are perceived as members of the racial-ethnic dominant or nondominant group, respectively (APA, 2022).

In race-mute contexts, including Germany, *race* is often replaced by other words (Jugert et al., 2021). For example, it is common to refer to one's *immigrant background*, but its use is critical (Fachkommission Integrationsfähigkeit, 2020; Moffitt & Juang, 2019; Vietze et al., 2023). In the German context especially, it has been critically noted that there is the tendency to separate between people perceived as "Germans" (i.e., white, Christian people) and people perceived as having an "immigrant background" (Moffitt & Juang, 2019; Schneider, 2018), thus denying their belonging to German society. The term *immigrant background* hence mixes different aspects of identity, and is often used as an *othering* term (Moffitt & Juang, 2019; Schneider, 2018), i.e. as a synonym for one's nationality, race or ethnicity, but does not consider people's own self-identification (Juang, Schwarzenthal, et al., 2021; Moffitt & Juang, 2019; Vietze et al., 2023).

Taken together, in the current European and the German context, using terms that can tackle the superdiverse characteristic of society and schools in terms of culture, ethnicity or immigrant experience, is difficult. Given this complexity, but also the need of being precise and sensitive, I decided to use the term *ethnically diverse children* (or students) when referring to children of different ethnic groups, both with and without an immigrant experience. The term *ethnically diverse children* aims to capture, in a comprehensive way, all students within a classroom or school. First, the term includes *ethnic majority* children and acknowledges that they also 'have' a culture (Lewis, 2004). Second, this term aims to highlight the dynamic and flexible nature of cultural and ethnic diversity, as children can identify themselves or be perceived in various ways.

Moreover, this dissertation compares *ethnically diverse children* in light of their own experience of immigration. Because the term *ethnic minoritized* children can refer to both immigrant and non-immigrant children, and the category *immigrant background* conflates

people of different immigrant generations (Moffitt & Juang, 2019), I refer to children's immigrant *experience*. This term stresses children's own acculturative experiences linked to the displacement (e.g., making new friends, learning the school language). Yet, I use the term *ethnic minority or minoritized* children when referring to students, including also immigrant and refugee children, who might be perceived as outgroups and face experiences of exclusion, for example by teachers and peers. In addition, I state participants' specific immigrant *generation*, and describe how it was defined in the empirical studies. Paragraph 3.4. offers a detailed description how I define different groups of participants basing on their (non-) immigrant experience.

Furthermore, the focus of this investigation lies on children's *academic and psychological adjustment,* which I understand as a set of culturally-shaped developmental tasks. Particularly, I consider academic achievement, school belongingness and life satisfaction as indicators of children's adjustment (see section 2.2.2. for a more detailed description). While I mention academic and/or psychological *development* throughout the text, I mostly refer to adjustment rather than development due to the cross-sectional nature of the present investigations.

2. Theoretical Background

In this section, I delineate the theoretical and empirical background of this work. First, I describe the fundamental approaches that I take in this dissertation, namely the positive youth development (Damon, 2004; Lerner et al., 2005) and resilience approaches (Masten, 2014; Motti-Stefanidi & Masten, 2017). Second, I delineate ecological and systemic theories in child development (Bronfenbrenner & Morris, 2007; Ford & Lerner, 1992; Suárez-Orozco et al., 2018), to explain the focus on the school context as a place that can promote positive development and resilience of ethnically diverse children. Thus, I describe how specific school factors that are related to cultural diversity and to attachment-relational aspects can positively contribute to children's adjustment. Specifically, I present the main theories and research on culturally responsive teaching, classroom cultural diversity and school relationship quality. Finally, I explain the main goal of the dissertation, the research gaps and aims, and outline the empirical contribution of this work, providing an overview of the research project and of the studies that address the research aims.

2.1. Positive Youth Development and Resilience

Ethnically diverse children, both with and without an immigrant experience, are and will be an important part of future society. Therefore, superdiverse societies depend on the successful adjustment of all children, and finding ways how to best support them should be of primary concern. Despite increasing interest in researching the adjustment of ethnically diverse children, many studies framed the structural conditions in which children live from a deficit-oriented perspective (Cabrera, 2013). This perspective emphasizes the negative influences of risk factors and the following problems and difficulties in children's development. Yet, this view tends to neglect children's strengths, positive characteristics and outcomes (Damon, 2004). To counterbalance this, researchers sought to adopt a positive

youth development approach (Cabrera & Leyendecker, 2017; Damon, 2004; Lerner et al., 2005). Accordingly, research should aim to examine aspects that can positively contribute to children's adjustment and development, such as supportive relationships with others.

Literature has defined several factors that can be positively or negatively related to children's adjustment. When factors hinder children's adjustment, they are called *risk factors*, while when they play a positive role are defined *promotive factors* (Sameroff, 2000). For example, a conflictual teacher-student relationship can be a risk factor and hamper the adjustment of ethnically diverse children, while a supportive one can be promotive of their adjustment. Hence, *promotive factors* play an overall positive influence on children's adjustment, and are usually viewed as the direct main effects of a predictor on an outcome (Motti-Stefanidi & Masten, 2017).

Even in the presence of risks and challenges, a positive adjustment is possible, Accordingly, the concept of resilience refers to the capacity that enables children to adjust in a successful manner even after the exposure to multiple stressors (Masten, 2001, 2014). This means that children face or have faced certain risks that could undermine their adjustment, such as poverty, forced displacement or dealing with acculturative challenges (e.g., learning the new language). In this case, another type of factors can come into play and protect children's adjustment from these risks (Masten, 2014). These *protective factors* can play a buffering role, mitigating the negative effect of risks on children's adjustment, thereby enhancing it (Motti-Stefanidi & Masten, 2017). For example, the negative effect of a risk factor (e.g., limited knowledge of the school language) on children's academic achievement could be attenuated by higher levels of school relationship quality.

Importantly, risks can be various and occur simultaneously (e.g., poverty conditions, discrimination, climate disasters or exposure to war; Masten, 2001, 2014). For example, it is not uncommon that immigrant and refugee families live in areas with lower levels of socioeconomic status (SES; for Germany, see Helbig & Jähnen, 2019), which might offer

limited economic resources and learning opportunities. Hence, from a positive youth development and resilience perspective, it is pivotal to understand how the adjustment of ethnically diverse children living in low-SES areas can be promoted.

While the negative effect of low SES can impact all children, immigrant and refugee children are likely to face additional challenges, related to their displacement experience. Therefore, it is important to consider these unique challenges that might undermine the adjustment of immigrant and refugee children, beyond SES-related challenges. Accordingly, this work aims to explore the factors that may promote and protect the adjustment of all children, and of immigrant and refugee children in particular.

Resilience among Immigrant and Refugee Children

Forced displacement or migration are experiences related to several stressful events or risk factors, which can occur before or during the journey (e.g., exposure to war, violence, poverty), and also in the resettlement phase (e.g., racial-ethnic discrimination; Fazel et al., 2012; Sirin & Rogers-Sirin, 2015). Moreover, displacement can be associated with a disruption of formal education (Sirin & Rogers-Sirin, 2015), and it is likely that children who are new to the country need to repeat classes, as a measure often employed by school systems for children who are learning the school language. These factors can therefore additionally hamper the academic development of both immigrant and refugee children[2]. For example, one study conducted in Germany (Buchmüller et al., 2020) showed that recently arrived preschool children from both war and non-war-torn countries were equally affected in terms of attention and social behavior by the personal and structural challenges that they faced.

[2] Because of the different reasons of immigration, the adjustment of immigrant and refugee children might vary. In particular, refugee children might have faced war, loss of loved ones or might be unaccompanied minors. Yet, in this dissertation, it was not possible to discern between immigrant and refugee children, therefore I refer to both groups together. More information on this is on section 3.4.

According to a structural-psychological approach to resilience (McLean et al., 2023), it is important to consider that children's adjustment is affected by structures perpetuating power hierarchies. For example, ethnic minoritized children, including immigrant and refugee children, have to adjust in and to a society carrying on racial-ethnic inequality and discrimination. Therefore, research has compared the adjustment between *ethnic majority* and *ethnic minoritized* children (or children with and without an *immigrant background*). However, literature in Europe has often divided participants' in these groups on the basis of their birthplace. This conflates participants with different immigrant experiences in one group (i.e., ethnic minority group), and thus overlooks the role of children's own immigrant experience. Immigrant and refugee children, however, are likely to face unique risk factors and challenges. These challenges might be even more accentuated by the fact that children are new to the country, and might lack important resources than non-immigrant ethnic minority children have (e.g., social network; Stevens et al., 2020). Furthermore, some of these challenges might be exclusively related to their immigrant experience, such as learning the new language. Hence, the adjustment of immigrant and refugee children might be different from that of their non-immigrant counterparts, regardless of the ethnic status.

Due to the worldwide increasing migration and displacement movements, it appears particularly relevant to consider the role played by children's immigrant experience and to understand how their adjustment can be supported. Thus, the present work aims to examine the – until now – less researched role played by children's experience of immigration or forced displacement in their adjustment. Do immigrant and refugee children have similar or different experiences at school as ethnic minoritized and majority children who did not migrate, and do these experiences relate to their adjustment in similar or different ways? This dissertation aims to address this question and to expand our knowledge on those factors and processes that might be particularly beneficial for children who face migration-related challenges.

2.2. Children's Development in Context

The bioecological model of human development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2007) as well as the developmental systems theory (Ford & Lerner, 1992; Lerner et al., 2006) have highlighted the importance of the context for child development. Accordingly, children develop in consequence of mutual interactions with different systems (e.g., teachers and peers; Lerner et al., 2006). Interactions that benefit the systems are defined *adaptive* (e.g., attachment relationships), and represent the foundation of positive development (Lerner et al., 2006) and resilience (Masten, 2014).

Bronfenbrenner (1979; Bronfenbrenner & Morris, 2007) posited that child development is influenced by the proximal and distal systems in which children are embedded. For example, the microsystem entails children's interactions with the proximal contexts (e.g., school), which can directly influence their development. The macrosystem entails socio-cultural values, norms and expectations of the sociopolitical context in which children live, and can exert an indirect influence on their development.

Considering the importance of the context, García Coll et al. (1996) and, more recently, other scholars (McLean et al., 2023; Rogers et al., 2021) underscored how children's development is shaped by contexts perpetuating power hierarchies. Accordingly, immigrant and refugee children may be more negatively impacted than their non-immigrant peers by such power imbalance, which is inherent to children's microcontexts. For example, at school, peers might tend to exclude and victimize immigrant and refugee children more than others (Stevens et al., 2020), or teachers might hold colorevasive beliefs (Civitillo et al., 2019), and overlook children's acculturative challenges.

Taken together, it is worthy to look not only at the individual level, that is focusing on what *children* should do to be resilient and adjust well. Although helpful, if alone, this focus could lead to the idea that is only in children's hands (or their families) to adjust well. Rather,

it is important to examine what the contexts in which children are embedded could or should offer, in order to create a positive and protective environment that can promote the adjustment and future development of all children.

Drawing on Bronfenbrenner's (Bronfenbrenner & Morris, 2007) and García Coll et al.'s (1996) models, and linking them with the risk and resilience perspective (Motti-Stefanidi & Masten, 2017), Suárez-Orozco and colleagues (2018) proposed a model to understand how different systems shape children's adjustment, and also what factors embedded in these systems can protect and promote it. Particularly, this model focuses also on the general adjustment of youth as well as on the specific experiences of immigrant and refugee youth. The authors (Suárez-Orozco et al., 2018) theorized that children's adjustment is influenced by risks and resources present at the individual level (e.g., children's social position), at the microsystems (e.g., supportive relationships at school), at the political and social contexts (e.g., national and state immigration policies) and related to global forces (e.g., economic inequality, war).

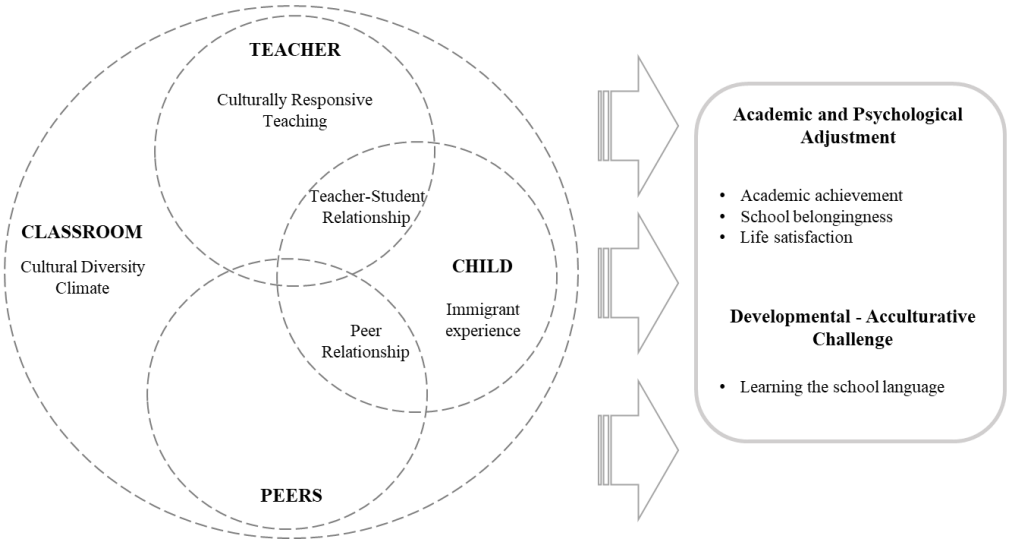
Because microsystems are impacted by such structures (Rogers et al., 2021), therefore conveying related norms and expectations, but they also directly impact on children's lives (Bronfenbrenner & Morris, 2007; Suárez-Orozco et al., 2018), it is important to investigate how factors at this level are related to children's adjustment. In particular, this work focuses on the school, as a context that links cultural values and policies of society with systems that every day interact with children, such as teachers and peers (Eccles & Roeser, 2015).

Readapting the model of Suárez-Orozco et al. (2018), Figure 1 offers an ecological and systemic visualization of the model of this dissertation, considering aspects of children's social positionality (i.e., immigrant experience), promotive and protective factors in the school context related to teachers, peers and the classroom, as well as measures of children's adjustment. In the next sections, I provide the theoretical foundations of the factors examined

in this work, and explain how they can positively contribute to the adjustment of ethnically diverse students.

Figure 1

An Ecological and Systemic Visualization of the Examined Promotive and Protective Factors



2.2.1. School as a Context Fostering Positive Development and Resilience

As a mandatory institution in which children have to spend most of their time, school can play a central role in providing the grounds for a positive development of all children (Eccles & Roeser, 2015), with and without an immigrant experience. School is not only a place where children can expand their academic knowledge and skills. It is also a context in which students can learn to be engaged in civic life and develop social skills, forming relationships with significant others beyond the family. According to the developmental system theory (Ford & Lerner, 1992; Lerner et al., 2006), teachers and peers are systems that daily interact with children and can therefore influence their adjustment.

Teachers and peers might exert both a negative or a promotive and protective influence on children's adjustment. For example, in an ethnically diverse context, conflictual teacher-student relationships, peer victimization and racial-ethnic discrimination at school can undermine children's academic and psychological adjustment (Civitillo et al., 2023; Roorda et

al., 2011, 2017; Stevens et al., 2020). However, teachers can also be particularly sensitive to ethnic and cultural diversity, believing in the academic potential of all children and fostering warm relationships with and between them (Ladson-Billings, 1995). Supportive relationships with peers can also promote children's adjustment by providing them the feeling of being valued and included at school (Suárez-Orozco et al., 2009). Accordingly, research has shown that relationships with teachers (Roorda et al., 2011, 2017) and peers (Rubin et al., 2011) can be particularly beneficial for the academic and psychological adjustment of children in elementary school. Taken together, teaching practices that are attentive to cultural diversity as well as warm and supportive school relationship can be promotive of the adjustment of ethnically diverse children.

Moreover, relationships with teachers and peers are also in interaction with higher-order levels, such as the classroom climate (Pianta et al., 2003a). Classroom climate depicts the level of quality of the school experience, including aspects such as teaching, school relationships or resources, but also norms and values (Wang et al., 2020). All children, both with and without an immigrant experience, can learn about sociocultural habits such as different cultural and religious festivities and traditions, and interact with ethnically diverse children. These are also aspects of a classroom climate that includes norms, values and teaching practices related to cultural diversity, namely the classroom cultural diversity climate (Schachner et al., 2016).

Furthermore, for first-generation immigrant and refugee children as well as for children of ethnic minority, school can also be a context of contact with the culture(s) and societal norms of the new country (Motti-Stefanidi & Masten, 2013; Suárez-Orozco et al., 2018). For example, immigrant and refugee children can develop a common ground of knowledge, also acquiring information about language and history of the country they live in. Taken together, the roles played by the relationships with teachers and peers as well as by the

teaching practices and the resulting classroom climate are central for understanding the academic and psychological adjustment of ethnically diverse children.

2.2.2. Academic and Psychological Adjustment

According to Suárez-Orozco et al. (2018), children's adjustment is seen in light of general developmental tasks that are relevant for all children (e.g., academic progress and life satisfaction). These tasks "reflect the expectations of and standards for behavior and achievement that parents, teachers, and societies set for individuals over the life span at a particular time in history" (Suárez-Orozco et al., 2018, p. 783).

Along with more general developmental tasks, immigrant and refugee children have also to deal with acculturative tasks or challenges, such as learning the language of the new country (Motti-Stefanidi et al., 2012; Suárez-Orozco et al., 2018). Hence, it is crucial to find ways to promote the adjustment especially of immigrant and refugee children who are likely confronted with additional acculturative tasks.

Academic and psychological adjustment, such as academic achievement, feelings of belonging to school and life satisfaction are considered[3] important general tasks in children's development (Motti-Stefanidi et al., 2012; Suárez-Orozco et al., 2018). This suggests that it is important to examine different aspects of adjustment that may be relevant for the development of immigrant, refugee and non-immigrant children. Accordingly, I address three specific dimensions of children's adjustment, namely academic achievement, school belongingness and life satisfaction, for reasons that I now discuss in detail.

[3] This dissertation is set in Germany and tackles dimensions of adjustment shaped by values of Western culture(s), which several models (e.g., Motti-Stefanidi et al., 2012; Suárez-Orozco et al., 2018) considered normative for all children. However, there can be other – also culturally shaped – aspects of adjustment that were not addressed here. I discuss this point in the *Implications* (section 9.1.7.).

2.2.2.1. Academic Achievement

Academic achievement is defined as a 'cumulative process', as later academic skills build on earlier skills (Duncan et al., 2007; La Paro & Pianta, 2000). Therefore, a positive academic achievement in early stages is relevant for children's future academic and occupational trajectories. One way to measure children's academic achievement is by using grades in specific subjects or their grade point average (GPA). In hierarchical educational systems such as in Germany, grades in elementary school play an important role, as they can determine the placement in vocational or academic tracks (Van de Werfhorst, 2019). Hence, academic achievement measured by grades in the early school years can be relevant for future educational qualifications, which are crucial for later occupational opportunities in the job market. Yet, grades might not be accurate measures, as they represents teachers' judgments, which can be biased by various aspects, including racial-ethnic stereotypes (e.g., Glock, 2016). Hence, assessing academic achievement through achievement tests such as reading comprehension or mathematical tests can be also helpful. Studies showed that a combination of grades and achievement tests offers one of the best ways to measure academic achievement in research (Helmke & van Aken, 1995). For this dissertation, I implemented both GPA and achievement tests to obtain an overall measure of children's academic achievement.

For first-generation immigrant and refugee children in particular, the developmental task of performing well academically co-occurs with the acculturative challenge of learning the new language (Suárez-Orozco et al., 2018). Because school language is an important predictor of academic achievement (Volodina et al., 2021b), it is important to account for immigrant and refugee children's challenge of learning the school language, when examining academic achievement among ethnically diverse students. Therefore, in this work, I directly address skills in the school language as a developmental-acculturative challenge.

Academic achievement is not the only aspect of children's academic and psychological adjustment. Socioemotional development, comprising the ability of building

positive relationships (Keller, 2020), and general wellbeing are as well important for children's lives, and can be promoted in school. Hence, it is also important to examine aspects such as school belongingness and life satisfaction.

2.2.2.2. School Belongingness

Goodenow defined school or classroom belongingness as "the extent to which students feel personally accepted, respected, included, and supported by others in the school social environment." (Goodenow, 1993, p. 80). Hence, school belongingness is linked to children's school relationships and feelings toward school (Allen et al., 2018). The sense of belonging to school refers to the basic need of relatedness, and is therefore crucial for children's academic and psychological adjustment and health (Baumeister & Leary, 1995; Osterman, 2000). According to the self-determination theory (Ryan & Deci, 2000), relatedness is fundamental to increase one's intrinsic motivation. Consequently, high levels of belongingness to school can increase children's academic motivation, making them more willing to participate in school activities. Extensive research has shown that schools can promote children's school belongingness, for example by improving teacher-student relationships and teachers' support (for a meta-analysis, see Allen et al., 2018). For immigrant and refugee children specifically, a sense of belonging to a new place can be relevant, as they might benefit from a sense of security and relatedness at school, which might offset migration-related challenges (Juang et al., 2018). Therefore, school belongingness can be an important marker for the adjustment of all ethnically diverse students.

2.2.2.3. Life Satisfaction

Children's perception of their life satisfaction or quality of life is an important indicator of their psychological adjustment, and refers to a cognitive-judgmental dimension of wellbeing (Bender, 1996). Although life satisfaction can be influenced by different variables,

for children especially, school can be one important context for its promotion (Suldo et al., 2006, 2008). Suldo and colleagues (2008) proposed a model showing how school factors are linked to youth's life satisfaction. Particularly, the authors suggested and empirically showed that students' life satisfaction was influenced by school climate (especially teacher-student relationship) and by children's academic beliefs. They also found that perceptions of school climate were positively associated with positive feelings toward school (i.e., attachment to school), which in turn positively impacted on their school and life satisfaction.

Hence, in order to allow all children to adjust and develop well, it is important to find ways how their life satisfaction can be promoted. This is crucial in the case of immigrant and refugee children, whose wellbeing might be at stake due to the exposure to migration-related risks (Pantzer et al., 2006; Sirin & Rogers-Sirin, 2015). Accordingly, studies showed that immigrant and ethnic minoritized youth tend to report lower levels of life satisfaction than their ethnic majority and non-immigrant counterparts, mostly due to racial-ethnic discrimination, limited social support and distress (Pantzer et al., 2006; Safi, 2010).

All in all, theoretical and empirical literature suggests that children's academic and psychological adjustment is not only influenced by personal characteristics of the child. Rather, adjustment is strongly interrelated with the context in which children are embedded. What are the factors that may play a role in children's academic ad psychological adjustment and that are present in the school context? In the next paragraph, I address this question and delineate the main school factors tackled by this dissertation.

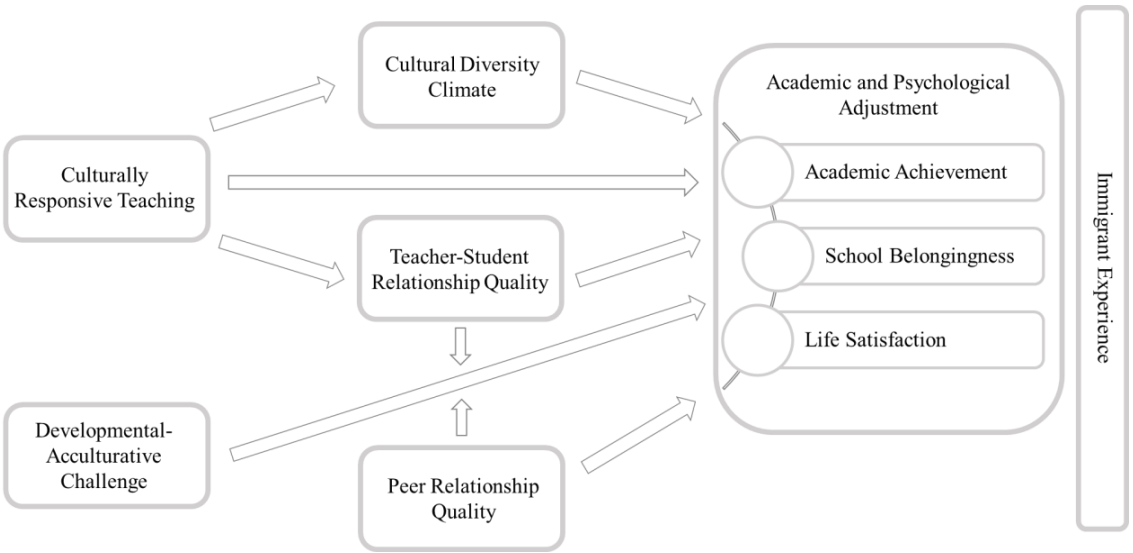
2.3. Promotive and Protective Factors in School

Drawing on the developmental system (Ford & Lerner, 1992; Lerner et al., 2006) and ecological models (Bronfenbrenner & Morris, 2007; Rogers et al., 2021; Suárez-Orozco et al., 2018), this dissertation focuses on the school context and specifically on factors related to teachers, peers and the classroom climate. Particularly, I take a positive youth development

and a resilience approach (Damon, 2004; Lerner et al., 2005; Motti-Stefanidi & Masten, 2017), in order to examine how school factors can promote and protect children's academic and psychological adjustment. Because of the ethnically and culturally diverse context, I investigate factors concerning how cultural diversity is handled at school (i.e., through culturally responsive teaching and classroom cultural diversity climate) and how relationships quality (i.e., with teachers and peers) is perceived among ethnically diverse students. I hypothesize that these factors can be directly or indirectly associated with children's academic and psychological adjustment (see Figure 2). Moreover, this work aims to investigate the role of children's immigrant experience. Therefore, I compare the adjustment between immigrant and refugee and non-immigrant children. The next sections present an overview of the theoretical and empirical foundations of these constructs.

Figure 2

Conceptual Visualization of the Dissertation Model



2.3.1. Culturally Responsive Teaching

With increasing cultural diversity in schools, the need to adapt teaching practices to deal with this diversity increased. Several scholars (Gay, 2002; Ladson-Billings, 1995; Paris,

2012) have contributed to the development of theories on *culturally responsive teaching, culturally relevant pedagogy* and *culturally sustaining education*. Although separate, these theories entail similar aspects. For clarity, I use the term culturally responsive teaching (CRT) as a pedagogical framework that can help understanding how teaching practices can positively address cultural diversity at school and is based primarily on the theories of Geneva Gay.

CRT derives from different pedagogical orientations, such as critical education (Freire, 2012), equity pedagogy and multicultural education (Banks & Banks, 2020), and aims at achieving social justice by valuing diversity and fostering equity among culturally diverse students (Kotluk & Kocakaya, 2018). Particularly, Ladson-Billings (1995) theorized CRT as a pedagogy focusing on promoting the academic success of all students, valuing their own cultural and ethnic identity, and encouraging students' critical consciousness, for example by discussing social inequalities. The author (Ladson-Billings, 2014) also encouraged not to see CRT as static, but rather as dynamic, and to include critical aspects in the discussion in the classroom.

Similarly, Gay (2002, 2018) posited that CRT is based on including the culturally related experiences and views of students in teaching. According to Gay (2002), it is important that teachers acquire information on students' cultural traditions, and create and adapt curricula integrating aspects related to cultural diversity. They should also aim to successfully communicate with all students, and use different strategies that can reach students with different learning styles. An important aspect of CRT is also related to the emotional domain, and concerns teachers' care for students' achievement. Hence, teachers could aim to build trustful and positive relationships with their students (Siwatu, 2007). Relatedly, teachers could support the creation of groups of ethnically diverse students who learn together, thus creating a community of learners (Gay, 2002; Siwatu et al., 2017).

2.3.1.1. Self-Efficacy in CRT

Teaching practices can be examined in different ways. One possibility is to assess teachers' self-efficacy about the own teaching. Bandura defined self-efficacy as "the conviction that one can successfully execute the behavior required to produce the outcomes" (1977 p. 193). In line with social cognitive theory (Bandura, 1993), higher levels of self-efficacy generate expectations of success, while a lower self-efficacy produces uncertainty, thus decreasing the probability of implementing such behavior. Due to the importance of self-efficacy in behavior implementation, scholars have focused on teachers' self-efficacy in their teaching practices. Zee and Komen (2016) reviewed forty years of research and found that teachers' self-efficacy in general teaching practices positively contributes to aspects such as students' academic achievement.

Bandura (2006) posited that self-efficacy should be examined in view of specific domains, in order to avoid ambiguity on a measure's validity. Indeed, teachers' self-efficacy beliefs can vary across different domains, such as self-efficacy in general teaching practices or in CRT (Zee & Koomen, 2016). Accordingly, teachers' implementation of different practices may also vary across these domains. Through teaching observations, Lavigne et al. (2022) found that observers' ratings of CRT practices and general teaching practices were not significantly correlated. Hence, teachers might have been rated as good teachers generally, but with low levels of CRT practices and vice versa. When examining CRT, it is therefore important to specifically consider teachers' self-efficacy in CRT.

Combining theories on teacher self-efficacy (Gibson & Dembo, 1984), and literature on CRT competencies, Siwatu (2007) developed the construct of CRT self-efficacy, which refers to teachers' beliefs on the own ability to implement CRT practices. To assess CRT self-efficacy, teachers answered how confident they feel in implementing practices such as creating "a learning environment that conveys respect for the cultures of all students" (Siwatu et al., 2017, p. 873). According to social cognitive theory (Bandura, 1977), teachers who feel

efficacious in CRT are more likely to implement CRT practices (Siwatu, 2007). In line with this, studies have shown that teachers' CRT self-efficacy was significantly positively associated with their self-report implementation of CRT practices (Comstock et al., 2023; Romijn et al., 2020). Therefore, in this work, I used teachers' CRT self-efficacy as a proxy for CRT implementation.

2.3.1.2. CRT and Children's Adjustment

CRT can positively contribute to students' academic and psychological adjustment. But how does this work? From a theoretical perspective, CRT could foster students' adjustment in several ways, both directly and indirectly. For example, CRT aims to integrate culturally related aspects and students' own experiences and frames of reference. This can make the academic content more motivating for students (Gay, 2002), who therefore might be more prone to perform well. Moreover, when teachers learn about and appreciate students' cultural background and identity, students may perceive the school as a place where they feel valued and included (Ellemers et al., 2002; Heikamp et al., 2020). CRT can therefore promote students' academic achievement, but also school belongingness and general life satisfaction.

Accordingly, scholars have called for empirical evidence on the effects of CRT on students' academic outcomes (Sleeter, 2012). In their literature review, Aronson and Laughter (2016) summarized thirty-eight studies, the majority of them presenting qualitative investigations, followed by mixed methods studies and small scale quantitative studies. Almost all studies were set in the US context. Results from the review showed that different CRT practices were overall positively related to several students' outcomes, such as academic motivation, achievement, engagement, and critical consciousness.

Recently, few studies expanded quantitative literature on CRT with larger samples, suggesting positive associations of CRT with students' outcomes. For example, Byrd (2016) examined the perceptions of several aspects of CRT among ethnically diverse adolescents in

the US. The author found that students' perceptions of CRT practices were positively associated with several academic outcomes, such as school belongingness and grades. Similarly, Bottiani and colleagues (2020) found a positive link between high school students' perceptions of CRT and their academic engagement, attitudes toward teachers and school. This dissertation aims to expand this research, which was mostly set in the US context, and focuses on the association between teachers' CRT and the academic and psychological adjustment of elementary school children in Germany (i.e., Research Aim 1).

Moreover, research investigating possible underlying mechanisms that can explain how CRT relates to students' adjustment is, thus far, rare. In this PhD project, I aim to shed light on this topic, by investigating two possible mediators of the association between CRT and children's adjustment (see Figure 2, p. 23). One way how CRT might relate to students' adjustment is by teachers creating a classroom climate in which cultural diversity is recognized and appreciated, and in which students treat each other equally. It might be also that teachers who implement CRT practices foster positive relationships with their students, which in turn can contribute to a positive academic and psychological adjustment. In the next paragraph, I describe how CRT might be associated to students' adjustment via classroom climate, while in paragraph 2.3.4. I delineate its link to teacher-student relationship quality.

2.3.2. CRT and Classroom Climate

Culturally responsive teachers aim at fostering positive relationships between culturally diverse students, thereby creating a "community of learners", which are groups of students learning together and helping each other (Gay, 2002). By doing this, teachers can shape the classroom climate, which is mostly defined as a multidimensional construct involving aspects such as norms and values, teaching quality, teacher-student relationships and classroom organization (Wang et al., 2020). Specifically, culturally responsive practices can contribute to a classroom climate in which children learn about other cultures, value

cultural diversity and cooperate together, treating each other equally. These aspects involve and impact the classroom as a whole, and are characteristics of a climate specifically concerning cultural diversity (Schachner et al., 2016). This dissertation aims to explore the link between CRT and cultural diversity climate and how cultural diversity climate can mediate the association between CRT and children's adjustment (i.e., Research Aim 1a).

2.3.3. Classroom Cultural Diversity Climate

In a growingly diverse society, it is relevant to address how schools deal with cultural diversity. The construct of classroom cultural diversity climate is based on two approaches how organizations and schools tend to handle cultural diversity (Hachfeld et al., 2011), namely *equality and inclusion* and *cultural pluralism* (Schachner, 2019; Schachner et al., 2016, 2021). The approach promoting *equality and inclusion* aims to foster interactions and cooperation between ethnically diverse students, in a context in which they perceive to be treated equally (Schachner, 2019). According to Allport's theory of intergroup contact (Allport, 1954; Pettigrew & Tropp, 2006), frequent interactions in a context in which individuals perceive to be treated fairly, cooperate and are supported by authorities (e.g., teachers) would reduce racial-ethnic prejudice. Hence, one important aspect of this approach refers to the way immigrant, refugee or ethnic minoritized students perceive to be (*un)equally treated by students* (Schachner et al., 2021).

Cultural pluralism aims to appreciate and value cultural diversity (Schachner, 2019; Schachner et al., 2016). This approach is based on theories of *multiculturalism,* which view cultural diversity as an added value and a resource (Banks & Banks, 2020; Rosenthal & Levy, 2010). One way to promote *cultural pluralism* at school relates concerns the extent to which teachers and students discuss about different cultural traditions or festivities, i.e., enhancing *heritage and intercultural learning* (Schachner, 2019; Schachner et al., 2021). By increasing knowledge and understanding of cultural diversity, theory suggests that teachers and students

would diminish their ethnic prejudices (Park & Judd, 2005). Accordingly one study showed that this climate dimension can increase students' prosocial intentions towards outgroups such as refugee youth (Aral et al., 2022).

In German schools, the focus on *cultural pluralism* is relatively recent (Schachner, 2019), and current evidence suggests that schools tend to endorse *equality and inclusion* more often than *cultural pluralism* (Civitillo et al., 2017; Schachner et al., 2016). This is probably associated with the importance of reducing racial-ethnic discrimination due to Germany's Nazi history (Schachner et al., 2016). Furthermore, *cultural pluralism* tends to be promoted in a superficial way. For example, Civitillo and colleagues (2017) found that schools' promotion of cultural diversity was limited to the organization of events such as multicultural breakfasts. Moreover, some practices were restricted to Western cultures (e.g., promotion of learning English), or endorsed of the ethnic majority culture.

Hence, both approaches are important and should be examined, as they might differently relate to students' experiences at school. For example, in one study (Schwarzenthal et al., 2018), *cultural pluralism* was associated with higher levels of perceived racial-ethnic discrimination, while *equality and inclusion* was linked with lower levels of perceived discrimination. At the same time, *equality and inclusion* can yield negative effects for students' orientation to the own culture, as it might convey a colorevasive message to ethnic minoritized students, who might feel pressured to assimilate (Schachner, 2019; Schachner et al., 2016).

Cultural Diversity Climate and Children's Adjustment

The two approaches of cultural diversity climate (CDC), namely *heritage and intercultural learning* and *equal treatment by students*, can be important for children's adjustment in different ways. Consistent with the self-determination theory (Ryan & Deci, 2000), having positive relationships and feeling to belong to school can fulfill children's need

of relatedness, increasing children's intrinsic academic motivation and engagement, and promoting their academic performance. Hence, fostering a climate of *equality and inclusion* might promote children's feelings of being welcomed and respected at school. Accordingly, one study showed that students' perceptions of *equality and inclusion* were positively associated with their school belongingness, which in turn increased students' academic self-concept, achievement and life satisfaction (Schachner et al., 2019).

In contrast, in a climate of discrimination and exclusion, immigrant, refugee and ethnic minoritized children might increase in social identity threat (Ellemers et al., 2002). Thus, students might feel to be treated unfairly, excluded and not respected at school, undermining their school belongingness (Celeste et al., 2019; Heikamp et al., 2020) and academic achievement (Baysu et al., 2023). Accordingly, Schachner et al. (2021) found that students' perceptions of *un*equal treatment were negatively correlated with academic achievement and life satisfaction, and positively with perceived discrimination and behavioral school disengagement among students with and without an immigrant background.

Relatedly, the appreciation of *cultural pluralism* in general, and the recognition of one's cultural background can be beneficial for the adjustment of ethnically diverse students, for example enhancing the orientation to the own culture (Byrd & Legette, 2022; Schachner et al., 2016). Studies showed positive direct and indirect associations between *cultural pluralism* and ethnically diverse students' school belongingness, academic self-concept, life satisfaction (Schachner et al., 2019, 2021), academic achievement (Chang & Le, 2010; Schachner et al., 2021) and intercultural competence (Schwarzenthal et al., 2020). Likewise among ethnically diverse students in the US, Byrd (2017) found that students' perceptions of promotion of cultural competence were positively correlated with their school grades, academic aspirations, interest, academic self-concept and school belongingness. Examining school cultural diversity policies in the US, Amemiya and Wang (2018) found that support of *cultural pluralism* was particularly important for African American male students, in that their academic coping

strategy of self-encouragement was more strongly positively related with their school achievement when they perceived higher (vs. lower) levels of support for *cultural pluralism*.

Although research on the effects of CDC on adjustment has mostly covered (mid-) adolescents in secondary schools, CDC may already have an effect on the adjustment of children in elementary school. Indeed, several studies addressed how different aspects of school or classroom climate are associated with the academic and psychological adjustment of children in elementary school (Wang et al., 2020; Wang & Degol, 2016). Furthermore, elementary school children have already notion of intergroup relations and prejudice (Raabe & Beelmann, 2011), and can perceive certain behaviors as discriminatory (Spears Brown & Bigler, 2005).

Accordingly, several studies showed that perceptions of ethic discrimination negatively affected psychological adjustment also during childhood (Priest et al., 2013). However, research has not yet addressed how CDC is linked with the adjustment of elementary school students. In this dissertation, I aim to fill this gap in the literature. Additionally, I also seek to expand previous literature, which mostly investigated ethnic minoritized students without an own immigrant experience, by focusing also on first-generation immigrant and refugee as well as non-immigrant students. On the one hand, immigrant and refugee children could also benefit from a climate promoting *equal treatment* and *heritage and intercultural learning,* similar to their non-immigrant ethnic minoritized peers. On the other hand, there might be unique effects for children who migrated themselves that differ from non-immigrant children.

2.3.4. CRT and Teacher-Student Relationship Quality

An important aspect of the teaching and learning experience lies in the relationship between teachers and students. Particularly, one aim of CRT is to build positive relationships with culturally diverse students (Edwards & Edick, 2013; Gay, 2002, 2018). In this view, Gay

wrote: “Teachers have to care so much about ethnically diverse students and their achievement that they accept nothing less than high-level success from them and work diligently to accomplish it” (Gay, 2002, p. 109). Due to the importance of relatedness for human beings (Baumeister & Leary, 1995) and especially for children (Bowlby, 1969; Sroufe, 2005), warm and supportive teacher-student relationships can be strong predictors of students’ academic and psychological adjustment (Roorda et al., 2011, 2017).

Thus, teachers’ teaching practices and relationships with students are strictly intertwined (Gay, 2018). Yet, until now, there has been little attention on how CRT and teacher-student relationships are related. One of the aims of this dissertation is to combine CRT literature with literature on teacher-student relationship, in order to shed light to what extent teachers’ CRT can promote children’s adjustment through enhancing teacher-student relationship quality (i.e., Research Aim 1b). In Paragraph 2.3.4., I delve deeper into the importance of teacher-student relationships for children’s adjustment.

2.3.5. School Relationships Quality

According to the developmental system theory (Lerner et al., 2006), relationships with other systems are fundamental for child development. School offers the possibility to build significant relationships beyond the family context, for example with teachers and peers. One of the most prominent theories of relationships in developmental psychology is the attachment theory (Ainsworth et al., 2015; Bowlby, 1969). Attachment refers to the emotional relationship between a child and their caregiver and is linked to the human need of safety (APA, 2018; Bowlby, 1969), which is fundamental for children’s survival and development. Especially for children who are still fundamentally dependent on others, relationships with adults as a “secure base” are crucial (Bowlby, 1969).

Hence, attachment literature focuses on the emotional relationships between children and their caregivers, namely their parents, but also their teachers (Sroufe, 2005). Establishing

supportive and fulfilling relationships with teachers has the potential to increase children's sense of safety. This may in turn foster their feeling of support and confidence, allowing them to freely explore the school contexts, therefore enhancing their learning experience (Birch & Ladd, 1997; Pianta & Steinberg, 1992).

Self-determination theory (Ryan & Deci, 2000) also explains how social relationships may contribute to children's adjustment. This theory posits that, when children's needs of relatedness are satisfied, they can interiorize extrinsically motivated behaviors, and increase their intrinsic motivation. In the school context, this would mean that children who feel connected and have supportive relationships with teachers and peers, would be more strongly motivated to participate in school activities, thus also performing academically better.

Taken together, warm and supportive relationships with others can be a promotive factor for the academic and psychological adjustment of all children. Due to the importance of teachers and peers as actors present in the school context and in everyday interaction with children, I focus particularly on the promotive role played by teacher-student and on peer relationship quality (i.e., Research Aim 2). In the following sections, I delineate the theoretical and empirical underpinnings explaining how teacher-student and peer relationships can promote the academic and psychological adjustment of ethnically diverse children.

2.3.5.1. Teacher-Student Relationship Quality

As children tend to spend most of their time in school, teachers assume a crucial role as important adult figures in their development. Notably, while the attachment relationship with primary caregivers is fundamental, later relationships, including those with teachers, become also important (Pianta et al., 2003a; Pianta & Steinberg, 1992; Wentzel, 2009). One study showed that teacher-student relationship (TSR) can even protect children from the negative effects of previous less secure attachment with parents (Buyse et al., 2011). Moreover, for children with insecure attachment styles, but also for securely attached children

whose parental support might be undermined due to migration-related stress (Juang et al., 2018), the relationship with other attachment figures, such as teachers, can provide children with care and support (Al-Yagon & Mikulincer, 2006).

Expanding attachment theory beyond children's relationship with their parents (Ainsworth et al., 2015; Bowlby, 1969), TSR has been considered an additional attachment relationship (Pianta & Steinberg, 1992). Accordingly, when children perceive teachers as a secure base, they would feel safe in the school environment, exploring it and engaging in school activities. Teachers can therefore play a central role in the adjustment of younger students, while the importance of TSR tends to diminish during adolescence (Roorda et al., 2011; Zee et al., 2013).

According to attachment theory, there are different dimensions characterizing TSR. Particularly, empirical research showed that TSR is characterized by three factors, namely *closeness*, *conflict* and *dependency* (Pianta, 1994; Pianta & Steinberg, 1992). *Close* TSR are perceived as warm and supportive, *conflictual* TSR are perceived as negative and energy consuming, and *dependent* TSR refer to an extreme reliance of the child on the teacher (Pianta, 2001), and are mostly perceived as negative (Roorda et al., 2021). Most research has focused on the dimensions of *closeness* and *conflict* (Roorda et al., 2021), while some studies showed validity issues related to *dependency* (Doumen et al., 2009), suggesting that this dimension might be more an indicator of adjustment than of TSR (Spilt et al., 2011). For this reason, I focus on the TSR dimensions of *closeness* and *conflict*.

Drawing on developmental systems theory (Ford & Lerner, 1992), Pianta et al. (2003a) posited that TSR is characterized by four components, namely the personal characteristics of teachers and students (e.g., immigrant experience), their perceptions of the relationship (e.g., as *close* or *conflictual*), the process of information exchange (e.g., language), and the influences of other contexts in which TSR are embedded (e.g., classroom climate).

These components are reciprocal and can influence each other. Consequently, it is important to examine different perceptions of a relationship, for example collecting information in a multi-informant way. Accordingly, in this dissertation, I examine perceptions of TSR from teachers' and children's side, and investigate how both are related to children's adjustment (i.e., Research Aim 2a).

Teacher-Student Relationship Quality and the Adjustment of Ethnically Diverse Children

A large body of empirical evidence supported the hypothesis that *closer* and less *conflictual* TSR are positively associated with children's academic achievement and emotional engagement, which is similar to school belongingness (García-Rodríguez et al., 2023; Roorda et al., 2011, 2017). As features of TSR include personal characteristics, such as ethnicity or immigrant experience, as well as the overarching context (Pianta et al., 2003a), such as culturally diverse areas, it seems relevant to consider what role TSR plays for ethnically diverse children.

Some research focused specifically on TSR in the context of cultural diversity. Whereas literature on TSR among immigrant and refugee vs. non-immigrant students is limited, studies have primarily addressed ethnic incongruence in TSR (e.g., Pigott & Cowen, 2000; Saft & Pianta, 2001; Thijs et al., 2012). Generally speaking, ethnic incongruence refers to the mismatch of the ethnic majority/minority status between teachers and students. However, I here refer specifically to the more prevalent case in which teachers belong to the ethnic majority and children (are perceived to) belong to the ethnic minority. In this situation, teachers are likely to be biased due to negative ethnic stereotypes toward children, which in tun can negatively affect TSR (Pigott & Cowen, 2000). Although ethnicity and immigrant or refugee status are distinct aspects linked to different life experiences (see section 1.2.), there can be some similarities. Whereas not all ethnic minoritized children have an own experience of immigration, immigrant and refugee children can be perceived as having an ethnic minority

status. Therefore, literature on ethnically incongruent TSR might be useful to understand possible differences in TSR and its link on the adjustment of immigrant and refugee and non-immigrant children.

As TSR itself is a hierarchical relationship, the difference in ethnic majority vs. minority status adds up to the power imbalance, which could lead to differences in how ethnically diverse students are treated (Civitillo et al., 2023). Ethnically incongruent TSR might be perceived differently for several reasons. For example, teachers might be biased due to ethnic stereotypes and prejudices, which could lead to negative expectations towards ethnic minoritized students (Glock, 2016; Steele & Aronson, 1995).

Moreover, teachers might adopt othering strategies and overemphasize the ethnic background of students, delineating a separation between students perceived as being part of the ethnic majority vs. minority (Borrero et al., 2012; Eksner & Cheema, 2017). Accordingly, a recent review and meta-analysis (Civitillo et al., 2023) showed that teachers' ethnic discrimination was significantly associated with detrimental effects on the academic and psychological adjustment of immigrant and ethnic minoritized students. Moreover, studies showed that ethnic incongruent TSR was perceived less positively by teachers (Pigott & Cowen, 2000; Saft & Pianta, 2001; Thijs & Fleischmann, 2015). For example, Verhulp et al. (2019) found that teachers in the Netherlands reported higher *conflict* in their relationships with Moroccan Dutch than with ethnic Dutch students.

Yet, other findings did not support the negative role of ethnic incongruence in TSR. For instance, Thijs and colleagues (2012) found that teachers' perceptions of TSR depended on the specific ethnicity of the students. Indeed, relationships with Turkish-Dutch students were perceived as *closer*, less *dependent* and *conflictual* than TSR with Moroccan-Dutch students. Moreover, teachers reported even less *conflict* with Turkish-Dutch than ethnic Dutch students. Another study showed that higher teacher *conflict* was related with less class identification among ethnic minoritized students (Thijs et al., 2019). However, authors found

that this result was not related to ethnic incongruence per se, but rather with being part of an underrepresented ethnic group in the classroom.

When examining schools and classrooms with immigrant and refugee children, the question arises to what extent TSR might vary between children with and without an immigrant experience. Until now, empirical research examining the specific role of immigrant experience for perceptions of TSR is rare. Therefore, I aim to fill this gap in the literature by specifically investigating TSR among immigrant, refugee and non-immigrant children (i.e., Research Aims 2a and 3).

2.3.5.2. Peer Relationship Quality and Children's Adjustment

Although adult caregivers are fundamental actors in children's lives, as children grow up, peers become more and more important significant others (Rubin et al., 2011), who can directly influence children's adjustment (Bronfenbrenner & Morris, 2007). School not only offers the possibility of learning and improving academic skills, but is also a context for building social relationships with other peers. Hence, in school, children can learn to navigate social relationships and to deal with the subsequent behaviors of being accepted or rejected. Indeed, according to social learning theory (Bandura & Walters, 1963), peers reciprocally observe each other and set norms on appropriate or inappropriate behaviors. Group socialization theory (Harris, 1995) posits that peers are important because they determine group norms, influence ingroup and outgroup biases and can therefore shape dynamics of inclusion and exclusion. Furthermore, positive dyadic peer relationships such as friendships can offer support and affection (Rubin et al., 2011), also between children of different ethnic groups (Jugert & Feddes, 2017), thus playing an important role in children's psychological adjustment.

Hence, peers might be particularly influential for children's adjustment, as a positive sense of connectedness is related to a feeling of inclusion (Goodenow, 1993), and supportive

peer relationships can promote school belongingness (Allen et al., 2018; Osterman, 2000). Accordingly, several studies (e.g., Juvonen & Knifsend, 2016; Ladd et al., 1997; Osterman, 2000; Rubin et al., 2011; Véronneau et al., 2010) showed that peer victimization or rejection tends to be negatively linked with outcomes such as school liking, academic interest, or academic achievement, while peer acceptance is positively linked with these factors.

As the feeling of inclusion can be particularly beneficial for immigrant and refugee children who are newcomers to the school, positive relationships with their peers can be promotive of their academic and psychological adjustment. According to the model of Juang et al. (2018), relationships with peers might also be powerful in enhancing the adjustment of immigrant and refugee children. So far, literature corroborated the psychological need as well as the adaptive relevance of having positive peer relationships especially for immigrant and refugee children. For example, Suárez-Orozco et al. (2009) found that first-generation immigrant youth in the US particularly benefited from positive relationships with conational (i.e., nationally congruent) peers, as they provided them with practical (e.g., help with homework) as well as with emotional support (e.g., acceptance).

Investigating refugee children in the UK, Samara et al. (2020) found that, although refugee children reported more difficulties (e.g., peer problems) than non-refugee children, friendship quality as well as number of friends played a positive role in their adjustment. In a cross-national study based on data from 26 European countries or regions, Stevens and colleagues (2020) found that first-generation immigrant students reported more bullying victimization than second-generation immigrant and non-immigrant students. This suggests that the own immigrant experience might play a role in students' adjustment, beyond their ethnic minority status. Hence, this work addresses this hypothesis and aims to expand literature on the role of peer relationship in the adjustment of children with and without an immigrant experience (i.e., Research Aim 2).

2.3.5.3. The Importance of Relationships for Immigrant and Refugee Children

Besides the general positive influence of relationships on the adjustment of all children, supportive relationships can be particularly relevant for immigrant and refugee children and play a protective role in their adjustment (Juang et al., 2018). Hamre and Pianta (2001) suggested that children who face different risk factors (e.g., due to racial-ethnic discrimination) are more strongly than others influenced by their social environment and depend on their capacity to adapt to it. According to their hypothesis, school relationships might be particularly influential for the adjustment of those children who are more likely to face discrimination. A review of literature supported this notion, showing that TSR were more strongly related to the adjustment of children with an ethnic minority status (Roorda et al., 2011).

Juang et al. (2018) proposed a theoretical model based on the attachment theory (Bowlby, 1969), aiming to understand the adjustment of immigrant and refugee youth specifically. This model starts from the notion that immigrant and refugee children are likely to be exposed to several stressful factors due to their displacement experience (e.g., acculturative stress, separation from family members). Thus, the sense of safety of children who experience discrimination or who have insecure attachments with primary caregivers might be particularly challenged. To counterbalance this, the authors suggested that relationships in the new context, which can offer immigrant and refugee children a sense of safety and closeness, might play an important role.

Hence, it is relevant to understand how school relationships can promote the adjustment of immigrant and refugee children especially. In addition, I seek to explore the potential protective role of these relationships. Protective factors have the power of mitigate the negative effect of challenges on children's adjustment (Motti-Stefanidi & Masten, 2017). Combining the resilience approach (Motti-Stefanidi & Masten, 2017) with Juang et al.'s

(2018) model, I hypothesize that school relationships might not only positively contribute to children's adjustment, but also protect it from migration-related or acculturative challenges.

Because of the importance of school language skills for students' adjustment, I examine this as a developmental task or challenge for all children (Masten et al., 2015). Moreover, learning the school language is also an acculturative challenge for immigrant and refugee children and for children of later immigrant generations (Motti-Stefanidi et al., 2012; Suárez-Orozco et al., 2018). Yet, positive and supportive school relationships might protect the adjustment of both immigrant and refugee and non-immigrant children from the negative effect of this developmental-acculturative challenge. Thus, one aim of this project is to examine to what extent relationships with teachers and peers can mitigate the negative effect of the developmental-acculturative challenge of learning the school language (i.e., German) on the adjustment of both immigrant and refugee as well as non-immigrant children (i.e., Research Aims 2b and 3).

Taken together, theoretical and empirical work have suggested that the way schools and teachers engage with cultural diversity and foster supportive relationships can offer the foundations for a positive adjustment of ethnically diverse children. With the aim of expanding previous literature, in the next section I describe the research aims and the empirical investigation of this dissertation.

3. The Present Dissertation

3.1. Overarching Goal of this Dissertation

This dissertation takes a positive youth development (Damon, 2004; Lerner et al., 2005) and resilience (Motti-Stefanidi & Masten, 2017) approach with the aim of shedding light on how the academic and psychological adjustment of ethnically diverse children (i.e., immigrant, refugee and non-immigrant children) can be promoted. Due to the relevance of the school context for children's adjustment (Eccles & Roeser, 2015), I addressed how teaching practices (i.e., culturally responsive teaching, Gay, 2018), classroom climate (i.e., cultural diversity climate; Schachner et al., 2016) and relationships quality (i.e., teacher-student and peer relationships) can promote and protect children's academic and psychological adjustment. Specifically, I considered the role played by children's immigrant experience and explored how school factors can promote and protect the adjustment of immigrant and refugee children as compared with non-immigrant children. Figure 3 (p. 46) shows the conceptual model of this dissertation in relation to the specific empirical studies.

3.2. Research Gaps and Aims

In an increasingly diverse context, it is crucial to recognize and address cultural diversity in school, and culturally responsive teaching (CRT) offers a promising framework to integrate cultural aspects in teaching and improve the school experience of students as well as of teachers (Gay, 2018). Therefore, the question arises to what extent CRT is associated with students' adjustment. Despite extensive theoretical work (Gay, 2018; Ladson-Billings, 1995; Paris, 2012; Siwatu, 2007) and qualitative investigations (Aronson & Laughter, 2016), quantitative studies on the association between CRT and children's adjustment are limited and mostly set in the US (e.g., Blazar, 2021; Bottiani et al., 2020), while much less is known about other contexts such as Europe. Thus, in this dissertation I aim to expand current

quantitative work and examine the association between teachers' CRT and the adjustment of ethnically diverse children.

Moreover, it is also relevant to understand how CRT and children's adjustment are related. Hence, I assess which psychological processes can explain the association between teachers' CRT self-efficacy and students' adjustment. According to CRT theories (Gay, 2002), teachers may aim to discuss and value cultural diversity in class and to build groups of ethnically diverse students learning together. Teachers who employ CRT practices might create a classroom cultural diversity climate in which students learn about other cultures and traditions, and treat each other equally (Schachner et al., 2016). Such classroom climate is linked with the academic and psychological adjustment of ethnic minoritized and majority adolescents (Schachner et al., 2019, 2021), and might therefore explain how CRT and students' adjustment are related. Until now, studies that have focused on perceptions of cultural diversity climate among students in elementary school are rare. Therefore, this dissertation aims also to expand previous literature on cultural diversity climate by focusing on the adjustment of elementary school children.

Furthermore, one aspect of teaching consists in building relationships with students, and CRT posits that teachers should care and support their students in their adjustment (Gay, 2002, 2018). Teacher-student relationship is a strong predictor of children's academic and psychological adjustment (Pianta & Steinberg, 1992; Roorda et al., 2017), which might mediate the association between teachers' CRT and children's adjustment. Until now, very little attention has been paid to such underlying mechanisms. In order to fill these gaps in the literature, this dissertation has the following aims:

Research Aim 1: To investigate to what extent teachers' culturally responsive teaching is associated with children's academic and psychological adjustment, via

Research Aim 1a: the cultural diversity climate, and

Research Aim 1b: the teacher-student relationship.

Because of the importance of relationships for children's development (Lerner et al., 2006), and the possibility offered by schools to create relationships and social networks outside the family context (Eccles & Roeser, 2015), the second aim of this dissertation is to examine to what degree the quality of relationships with teachers and peers can positively contribute to the academic and psychological adjustment of ethnically diverse children.

Consistent with extended attachment theory (Bowlby, 1969; Pianta et al., 2003a), teacher-student relationships (TSR) can be attachment relationships and are especially important for the adjustment of younger students. Therefore, I seek to investigate to what extent TSR is related to children's adjustment. While literature mostly focus on a single view of this relationship, either from students or teachers (García-Rodríguez et al., 2023), I examine TSR in a multi-informant way. As relationships with peers are also important for children's adjustment (Rubin et al., 2011), it seems important to consider the potential promotive role of quality of relationships with teachers as well as peers.

Moreover, I aim to examine whether these relationships can be also protective of children's adjustment. Because of the importance of language and communication in school, and of school language skills particularly, I considered German vocabulary as a developmental challenge for all children, but also as an acculturative challenge for immigrant and refugee children. Hence, I combine the attachment and relational model (Juang et al., 2018) with the risk and resilience model (Motti-Stefanidi & Masten, 2017) and examine whether positive teacher-student and peer relationships can play a protective role and mitigate the negative effect of developmental-acculturative challenges (i.e., learning the school language) on children's academic and psychological adjustment. Consequently, I aim:

Research Aim 2: To investigate to what extent school relationships quality is associated with children's academic and psychological adjustment.

Research Aim 2a: To examine how teachers' and students' perceptions of their relationship are linked with students' adjustment.

Research Aim 2b: To explore to what extent teacher-student and peer relationship quality promote children's adjustment and protect it from developmental-acculturative challenges.

To answer these questions, I conducted three empirical studies. In each study, I first examined the whole sample of ethnically diverse students, in order to give a better picture on the student body as a whole. Indeed, the reality of many superdiverse classrooms is that children with different ethnic-cultural backgrounds, immigrant or non-immigrant experiences, study and interact together in one classroom. Hence, considering superdiversity as an intrinsic characteristic of the school context, it seems worthy to investigate the academic and psychological adjustment of all ethnically diverse students.

Particularly, this project focused on children in overall highly ethnically diverse areas with lower socioeconomic status (SES; see section 3.3.). In this context, it is likely that immigrant and refugee children have to face not only barriers linked with SES, but also unique challenges related to migration-related experience (e.g., learning the school language). Thus, the adjustment of these children can differ from that of their non-immigrant peers. For example, valuing cultural diversity and providing a sense of inclusion through CRT, cultural diversity climate or school relationships can play a particular positive role in the adjustment of immigrant and refugee children specifically.

While literature considered the role of children's ethnic status, for example in relation of TSR (e.g., Thijs et al., 2012) and peer relationships (e.g., Jugert & Feddes, 2017), or addressed cultural diversity climate among students of later immigrant generation (e.g., Schachner et al., 2019), I seek to expand previous research by focusing especially on children's immigrant experience:

Research Aim 3: To explore what role children's immigrant experience plays in the above-mentioned associations, i.e., to explore to what extent the above-mentioned associations vary among immigrant and refugee vs. non-immigrant children.

3.3. The Research Project

Data for this dissertation stems from the project "School integration of newly arrived children: An ecological multilevel perspective"[4] (abbr. SIGN), a joint project of the University of Duisburg-Essen (PIs: Prof. Dr. Philipp Jugert, Dr. Sauro Civitillo), the TU Dortmund and the Ruhr University Bochum, that was financially supported by MERCUR (Mercator Research Center Ruhr) of the Mercator educational trust. The overarching aims of the project were: 1) to investigate how family and extracurricular contexts are related to children's educational participation and integration; 2) to examine the quality of social relationships with teachers and peers and their associations with children's learning motivation and academic performance; and 3) to explore determinants of the transitions in secondary school tracks, considering children's potential, competencies and educational aspirations.

The three participating universities collected data cross-sectionally in the Ruhr area of the North-Rhine Westphalia (NRW) State of Germany. With its long history of immigration and the high percentage of immigrant and refugee people, this region offered the chance to study ethnically diverse schools in similar urban areas. Fourth grade classes were chosen as one of the aims was to investigate students' adjustment before the transition between elementary and secondary schools. Elementary school lasts four years, after which children in NRW can attend four different types of secondary school: two academic tracks (i.e., *Gymnasium*, *Gesamtschule*) and two vocational tracks (i.e., *Realschule*, *Hauptschule*). The

[4] Original title in German: Schulische Integration neu zugewanderter Kinder: Eine ökologische Mehrebenen-Perspektive.

transition between elementary and secondary school depends on teachers' recommendations and, in NRW, on parents' decisions. This is therefore a relevant and demanding phase, as it can determine different future academic and occupational trajectories of children. Hence, it is important to focus on the potential factors enhancing the academic and psychological adjustment of children at the end of elementary school.

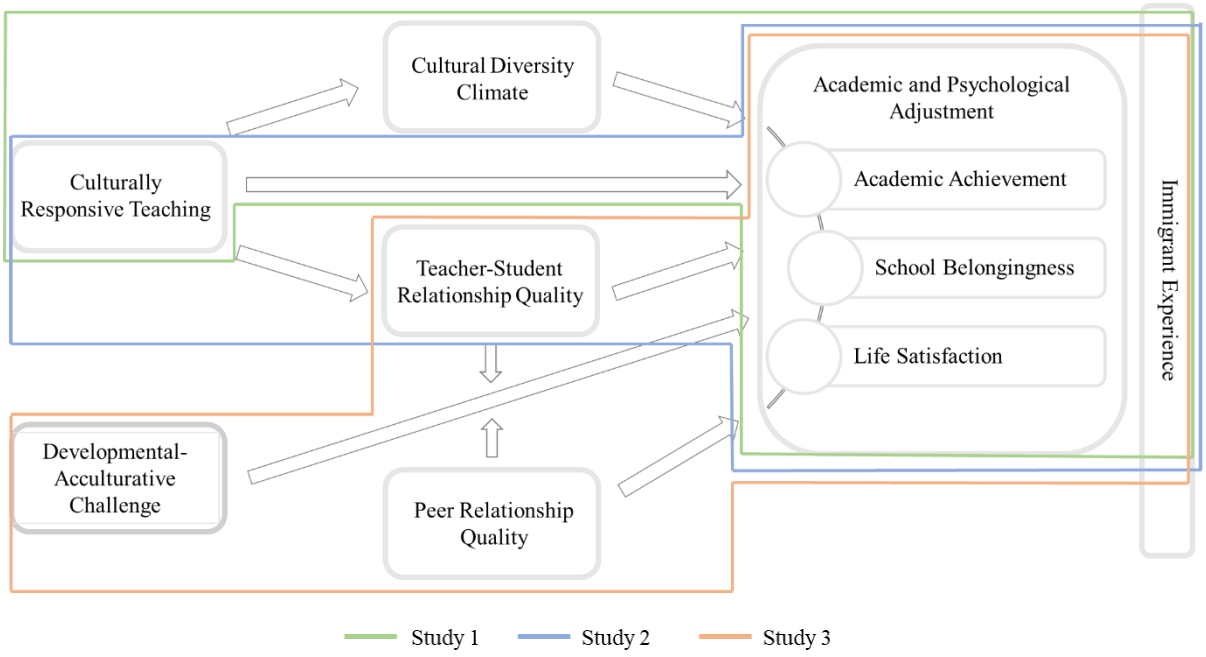
Data collection took place between March and August 2022. During this period, the COVID19 pandemic was still ongoing, but schools were open and lessons took place on site. Inclusion criteria for classes to participate in the study were: a) to be fourth grade in elementary school; b) to have at least three children who were not born in Germany; b) to have age-homogeneous classes (i.e., we excluded classes who grouped children of different grades together). First, we identified elementary schools that could meet the criteria. Then, we contacted the school director and explained the aims and the details of the project. After approval from the school directors, we contacted fourth-grade classroom teachers, who, if they agreed to participate, sent consent forms to children's parents. We collected data only from those children whose parents signed the consent form. Likewise, teachers' and parents' data were collected only if they signed the consent form to participate. The procedure was approved by the ethics committee of the Department of Psychology at the University of Duisburg-Essen.

The final sample comprised $N = 26$ elementary schools and $N = 47$ fourth grade classes. Most of these schools (64%) scored moderate to high on the school social index of NRW (Schräpler & Jeworutzki, 2021). This index is calculated according to four indicators: child and youth poverty (based on family's unemployment benefits rate), percentage of students with another language as German as first language, immigrant students, and students with learning, emotional and social development and language needs. Therefore, the recruited schools are in highly ethnically diverse areas with lower socioeconomic status.

For this dissertation, I analyze data from $N = 278$ children (M_{age}= 10.47, SD_{age} = 0.55, 53.24% female, 0.4% non-binary) and their teachers ($N = 41$, M_{age} = 42.07, SD_{age} = 11.41; 85.36% female). Thirty-seven percent were first-generation immigrant and refugee children, who were born in over twenty different countries, mostly from Syria (36.89 %). Almost forty percent of children were of the second immigrant generation, meaning that they were born in Germany and had at least one parent born abroad. Most of these children's parents were born in Turkey (13.76 % of mothers and 18.3 % of fathers). Non-immigrant children were 22.58% of the sample.

Figure 3

Conceptual Visualization of the Dissertation Model by Study



3.4. Overview of the Empirical Studies

Using the data from the SIGN research project, I conducted three empirical studies to address the research aims of this dissertation (see Figure 3). In Study 1, I examined the extent to which teachers' CRT was related to children's academic and psychological adjustment (i.e., **Research Aim 1**), specifically considering teachers' CRT self-efficacy as a proxy for CRT

and its link with students' academic achievement, school belongingness and life satisfaction. Moreover, I tested the hypothesis that children's perceptions of the classroom cultural diversity climate mediated the association between CRT and their adjustment (i.e., **Research Aim 1a**).

Study 2 investigated teacher-student relationship (TSR) in a multi-informant way, considering teachers' and students' perceptions. The study examined to what extent TSR was related to one important marker of children's adjustment, namely their school belongingness (i.e., **Research Aim 2a**), and could mediate the association between teachers' CRT self-efficacy and children's adjustment (i.e., **Research Aim 1b**). When students perceive to have positive connections at school, school can become a safe and pleasant space, where students feel to be part of. Therefore, in Study 3, I expanded the focus on teacher-student relationship by including also children's relationship quality with their peers. This study specifically aimed to examine to what extent both relationships are related to children's adjustment (**Research Aim 2**) and moreover, it explored the hypothesis that school relationships may act as protective factors against one developmental-acculturative challenge, namely learning the language of instruction (i.e., **Research Aim 2b**).

To answer **Research Aim 3**, in all empirical studies I considered children's immigrant experience as a potential moderator in the associations between CRT, cultural diversity climate, school relationships and adjustment. Specifically, I compared first-generation immigrant and refugee children with children who did not migrate themselves. I defined "(first-generation) immigrant and refugee" children/students as those participants who were born outside Germany and had an own experience of immigration or forced displacement. It should be borne in mind that refugee and immigrant children may have very different experiences due to the causes (e.g., war vs. non-war) and type of journey (e.g., dangerous vs. protected movements) of the displacement.

I merged "immigrant" and "refugee" because of two reasons. First, in the research project, we did not ask children to report their immigrant or refugee status out of ethical reasons. However, because many children came from war-torn countries (e.g., Syria), it is reasonable to assume their refugee status. Second, due to the limited sample size, a division of the sample in additional categories would have led to statistical power issues. Moreover, both immigrant and refugee children have the common experience of being new to the country, facing similar acculturative challenges (e.g., learning the school language). Children without an immigrant experience were "second-generation immigrant" children/students, if they were born in Germany and had at least one parent born elsewhere, and "non-immigrant" children/students, if they and both of their parents were born in Germany.

3.5. Open Science Statement

Open Science "refers to the concepts such as openness, transparency, rigor, reproducibility, replicability in research and accumulation of knowledge, all of which are considered fundamental features of the scientific endeavor" (Crüwell et al., 2019, p. 237). Conforming to these principles, I preregistered the research hypotheses (both confirmatory and exploratory), design, measures and analysis plans (i.e., main and exploratory analyses, robustness checks) of the three studies before performing the analyses. All instruments that were not licensed by third parties are openly available in English and German. These can be found in the preregistration forms of Study 1[5] and 2[6] and in the materials form of Study 3[7]. Study 3 was a registered report, namely a study proposal that has been submitted to a journal prior to data collection (Chambers & Tzavella, 2022).

[5] http://tinyurl.com/PreregCDC
[6] http://tinyurl.com/PreregTSR
[7] https://osf.io/hgz2p

The three following chapters include the empirical studies conducted to answer the Research Aims, as they are currently submitted or accepted by scientific journals. Chapter 7 presents the general discussion of the dissertation, providing a summary and interpretation of the main results, a discussion of the major strengths and limitations as well as implications of the findings for theory, research and practice.

4. STUDY 1

Culturally Responsive Teaching and Cultural Diversity Climate are Positively Associated with the Academic and Psychological Adjustment of Immigrant and Non-Immigrant Students*

Francesca Ialuna[1], Sauro Civitillo[2], Maja J. Schachner[3] & Philipp Jugert[1]

[1] Department of Psychology, University of Duisburg-Essen

[2] Department of Interdisciplinary Social Science, Utrecht University

[3] Educational Psychology – Socialization and Culture, Martin-Luther-Universität, Halle-Wittenberg

*The version of this study has been once peer reviewed and was under review. An earlier version of this study is available as a preprint at: https://osf.io/preprints/psyarxiv/6xcf4

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Abstract

Objectives. This study investigated the associations between teachers' culturally responsive teaching (CRT) self-efficacy, students' perceptions of classroom cultural diversity climate (CDC) and the academic and psychological adjustment of elementary school students in culturally diverse German classrooms.

Methods. The sample included 41 teachers and 234 fourth grade students (M_{age}= 10.48, SD_{age} = .56, 55% female; 38% first immigrant generation). We conducted multilevel analyses to assess the associations between teachers' CRT self-efficacy, student-perceived CDC (i.e., *equal treatment by students* and *heritage and intercultural learning*) and students' school achievement, school belongingness and life satisfaction. We performed mediation analyses to investigate to what extent student-perceived CDC explains the association between CRT self-efficacy and student outcomes. Additionally, we explored the moderating role of students' immigrant generation in the associations.

Results. Teachers' CRT self-efficacy and student-perceived *equal treatment* were positively related to mathematical competence and German vocabulary. Student-perceived *heritage and intercultural learning* was positively associated with school belongingness and life satisfaction, but negatively with reading comprehension. *Equal treatment* and *heritage and intercultural learning* did not mediate the relation between CRT self-efficacy and children's adjustment. Findings did not vary across students' immigrant generation.

Conclusions. Teachers' CRT self-efficacy and CDC positively contribute to students' academic and psychological adjustment, but independently. Both aspects can be beneficial for the adjustment of elementary school children, regardless of their immigrant generation.

Western European countries have been shaped by increasing levels of ethnic and cultural diversity for decades. Since 2015, more than two million people have applied for asylum in Germany, hereof between 20 and 30% each year were children below the age of six (Bundesamt für Migration und Flüchtlinge, 2017, 2019, 2022). Schools are therefore becoming increasingly culturally diverse. Hence, it is crucial that *all* children – regardless of their immigrant background – have the possibility to adjust well at school, and that teachers are prepared to teach in a culturally responsive way. Yet, there has been limited research on how teachers deal with cultural diversity in school and on its implications for the academic and psychological adjustment (i.e., school achievement, belongingness and life satisfaction) of students.

Gay (2002) defined culturally responsive teaching (CRT) as "using the cultural characteristics, experiences, and perspectives of ethnically diverse students as conduits for teaching them more effectively" (p.106). CRT has been associated with increased students' academic engagement, motivation, and achievement (for a review, see Aronson & Laughter, 2016). These findings stem primarily from qualitative investigations, whereas quantitative studies are scarce (for exceptions, see Blazar, 2021; Bottiani et al., 2020; Byrd, 2016). Particularly, we use teachers' self-efficacy in CRT as a proxy for CRT, as it is related with their self-reported CRT implementation (Comstock et al., 2023; Romijn et al., 2020; Siwatu, 2007). Examining perspectives of both teachers and students interdependently, we aim to fill the gap in the literature by quantitatively investigating to what extent teachers' CRT self-efficacy is related to the academic and psychological adjustment among both immigrant and refugee[8] and non-immigrant children.

[8] In this study, we have data from students who migrated from different countries, including war-torn countries (i.e., Syria). Therefore, we refer to first generation immigrant and refugee students. However, data indicating their refugee status are not available, and due to the group size, we do not differ between immigrant and refugee students in the analyses.

Culturally responsive teachers may contribute to a classroom climate in which all students can learn and perform successfully (Gay, 2002). Classroom cultural diversity climate (CDC) refers to the way cultural diversity is considered and handled at school (Schachner et al., 2016). Research showed that CDC is positively associated with the academic and psychological adjustment of adolescents attending secondary schools, mostly belonging to the second and later immigrant generations (Schachner et al., 2016, 2019, 2021; Schwarzenthal et al., 2018). However, evidence on first-generation immigrant and refugee students and on younger age groups is limited. Yet, elementary school is an important phase for children's future academic trajectories, as in early tracking school systems such as in Germany, elementary school grades determine placement in different secondary school tracks (Van de Werfhorst, 2019). Therefore, elementary schools in Germany are highly culturally diverse, whereas secondary schools tend to be more homogeneous. Specifically, first- and second-generation immigrant students are more likely to be represented in vocational than academic tracks (Reiss et al., 2019). Moreover, children at this age are also already aware of intergroup relations, and prejudice is present and develops during childhood (Raabe & Beelmann, 2011). Effects of CRT practices and CDC thus appear to be particularly worthy of investigation for the impact that they can have on the academic and psychological adjustment of children in elementary school. This might be even more important for children of the first and later immigrant generations, for whom teachers' ethnic stereotypes and prejudice can affect grades and recommendations to secondary school tracks (see Civitillo et al., 2022; Glock et al., 2015; Lorenz et al., 2016).

Moreover, research has consistently shown that ethnic discrimination by teachers and peers can have a detrimental impact also on the *psychological* adjustment of immigrant, refugee and ethnic minority students (Benner et al., 2022; Civitillo et al., 2023; Priest et al., 2013). Hence, it is relevant to examine how CRT and CDC are associated with students' psychological adjustment such as school belongingness and life satisfaction, especially among

children in culturally diverse schools where ethnic discrimination and rejection are likely to happen. In this study, we sought to extend the literature on these associations and explored the potential mediating role of CDC in the association between teachers' CRT self-efficacy and students' academic and psychological adjustment.

Because classrooms are culturally diverse and comprise both immigrant and non-immigrant students, we first examined these groups together to obtain a more comprehensive understanding of the roles played by CRT and CDC on the whole student body. Additionally, we investigated these paths by comparing first-generation immigrant students with second-generation immigrant and non-immigrant students, in order to have a better picture of possible unique effects related to students' own immigrant experience. Indeed, previous studies mostly combined students of different immigrant generations in one group, while our goal was to reveal potential differences related to students' immigrant experience. This is relevant, as first-generation immigrant and refugee children, due to several acculturative hassles such as ethnic discrimination and learning the school language (Suárez-Orozco et al., 2018), might particularly benefit from CRT and a climate valuing cultural diversity and promoting equality. This study was conducted among elementary schools in Germany and offers a rare multi-informant perspective on both teachers' and students' views on how cultural diversity is handled at school and how it is connected with students' academic and psychological adjustment.

Teachers' CRT Self-Efficacy

CRT denotes a type of pedagogy specific to cultural diversity contexts (Gay, 2002; Ladson-Billings, 1995; Paris, 2012). Ladson-Billings (1995) suggested that CRT comprises promoting academic success among all students and valuing their own cultural identity. Similarly, Gay (2002) posited that culturally responsive teachers can acquire knowledge related to students' cultures, and support learning communities as well as a classroom climate that fosters positive relationships between students.

A growing body of qualitative and few quantitative investigations showed positive associations between CRT and several school outcomes (Aronson & Laughter, 2016; Bottiani et al., 2020; Byrd, 2016; Matthews & López, 2019). An important aspect of teaching is how efficacious teachers feel in their practices. In line with social cognitive theory (Bandura, 1993), higher levels of self-efficacy would generate expectations of success, which in turn would increase the probability of implementing a certain behavior. Accordingly, a review of forty years of research showed that teachers' general self-efficacy was positively associated with teaching practices implementation, students' school achievement and wellbeing, and with a classroom climate of support and warmth (Zee & Koomen, 2016). Self-efficacy is therefore an important aspect of CRT, as it can determine teachers' implementation of culturally responsive practices in the classroom (Comstock et al., 2023; Romijn et al., 2020; Siwatu, 2007). Hence, we focused on teachers' CRT self-efficacy. Specifically, CRT self-efficacy refers to the extent to which teachers feel capable of, for example, preparing culturally relevant lessons, reducing cultural conflicts, or creating a supportive classroom climate (Siwatu, 2007; Siwatu et al., 2017). While there is evidence on CRT self-efficacy and teachers' outcomes (e.g., Comstock et al., 2023; Ulbricht et al., 2022), limited quantitative research has focused on the association between teachers' CRT self-efficacy and students' academic and psychological adjustment so far.

CRT Self-Efficacy, CDC and Students' Academic and Psychological Adjustment

Schools can deal with cultural diversity through two approaches: One approach emphasizes *equality and inclusion*, while the other highlights *cultural pluralism* (Schachner et al., 2016, 2021). The endorsement of *equality and inclusion* seeks to reduce ethnic discrimination by promoting interactions between students of different ethnic groups in a context where all students are treated fairly (Schachner, 2019). One way to promote *equality and inclusion* is fostering *equal treatment by students*, which refers to classmates' behavior towards or between children of different cultural backgrounds (Schachner et al., 2021).

According to CRT theory, culturally responsive teachers may encourage students to work cooperatively together (Gay, 2002), and to build positive relationships with each other (Siwatu, 2011). Therefore, teachers may contribute to a classroom climate that promotes *equal treatment by students*.

The dimension of *cultural pluralism* draws upon the ideology of multiculturalism, which seeks to acknowledge and value cultural diversity in the classroom (Rosenthal & Levy, 2010). This can be done, for example, by enhancing *heritage and intercultural learning*, which involves discussions on different cultural practices and traditions and learning about students' cultural backgrounds (Schachner, 2019; Schachner et al., 2021). One important aspect of CRT is to recognize and value cultural diversity (Ladson-Billings, 1995). Hence, culturally responsive teachers may promote a classroom climate that fosters *heritage and intercultural learning*.

Although CRT and CDC are theoretically related, empirical research on their association is limited. One study (Choi & Lee, 2020) showed a positive association between teachers' CRT self-efficacy and their perceptions of general school climate (e.g., student-teacher relationship quality) in the US and South Korea. Another study in US high-schools (Byrd, 2017) indicated a positive relation between students' perceptions of CRT and of a climate promoting cultural socialization, akin to *heritage and intercultural learning*. Only two studies specifically investigated the association between CRT self-efficacy and CDC so far. Schwarzenthal et al. (2023) found that teachers' perceptions of a multicultural school climate (e.g., offering multicultural events) was positively associated with teachers' CRT self-efficacy at the school level. Similarly, Ulbricht and colleagues (2022) found that German teachers' perceptions of *equality and inclusion* and *cultural pluralism* climate were positively associated with their CRT self-efficacy.

Concerning students' perceptions of CDC, research has shown that a CDC valuing cultural diversity and equal treatment had positive effects on the academic and psychological

adjustment among ethnic minority students in the US (Byrd, 2017) and immigrant and non-immigrant students in Germany (Schachner et al., 2019, 2021). While prior studies included only teachers' viewpoint, we considered both teachers' and students' perceptions on how cultural diversity is handled.

The Role of Students' Immigrant Generation

Teachers with high levels of CRT self-efficacy tend to acknowledge students' ethnic backgrounds and adapt lessons to culturally diverse classrooms (Civitillo et al., 2016; Comstock et al., 2023). This could be particularly beneficial for immigrant and refugee children because they may feel valued when teachers positively recognize their cultural background (see Heikamp et al., 2020). Learning about their own culture is positively associated with students' ethnic identity (Aronson & Laughter, 2016; Byrd & Legette, 2022), which in turn can improve students' academic and psychological adjustment (Schachner et al., 2016). Although this research has focused on ethnic minority students or students of later immigrant generations, first-generation immigrant and refugee students might particularly benefit from CRT practices. At the same time, culturally responsive teachers seek to support the achievement of *all* students (Gay, 2002; Ladson-Billings, 1995). Accordingly, learning about other cultures is also positively related to ethnic identity and to outgroup orientations (Byrd & Legette, 2022). Thus, it could also be that non-immigrant students equally benefit from CRT practices. In order to gain a better picture, we explored the potential moderating role of children's immigrant generation in the association between teachers' CRT self-efficacy and children's academic and psychological adjustment.

In line with stereotype and social identity theories (Ellemers et al., 2002; Steele et al., 2002), contexts in which the cultural background of students is neglected, or in which ethnic discrimination occurs can threaten the identity of immigrant students. Accordingly, research indicated that a climate promoting equal treatment and respect towards cultures can play a

protective role for ethnic minority[9] students, enhancing their school adjustment (Baysu et al., 2016; Heikamp et al., 2020). However, few studies compared the effects of CDC between ethnic minority and majority students, reporting mixed evidence. Celeste and colleagues (2019) examined cultural diversity school policies based on the analyses of documents such as schools' rules and mission statements (and not on students' perceptions of CDC). The authors found that, in schools with lower levels of *cultural pluralism*, ethnic minority students perceived significantly less school belongingness than ethnic majority students. In a similar vein, Levine et al. (2019) found that policies valuing cultural diversity had a positive impact on the health of students of color, but not of white students. However, one study (Baysu et al., 2021) showed that both ethnic majority and minority students benefited from a climate promoting equality and valuing cultural diversity, as both groups had more positive relationships with their teachers. Schachner et al. (2019) examined students' perceptions of CDC and found no significant interaction of students' immigrant generation in the association between *equality and inclusion, cultural pluralism* and school belongingness, suggesting that all students equally benefited from a positive CDC. Likewise, Baysu and colleagues (2023) found that students' perceptions of a discriminatory climate was linked to lower math and reading skills for both ethnic majority and minority students. Yet, ethnic minority students perceived a more discriminatory climate, which in turn predicted worse academic achievement. Taken together, some studies found that CDC differently affected ethnic majority and minority students, while others did not support this finding.

Moreover, previous studies mostly focused on students of the second immigrant generation or merged students of the first and later immigrant generations. There is, however, much less evidence on the adjustment of first-generation immigrant and refugee students. Yet, comparing these groups might reveal potential differences, which previous studies could not

[9] In this and the following studies, ethnic minority students were students of the first, second and third immigrant generation.

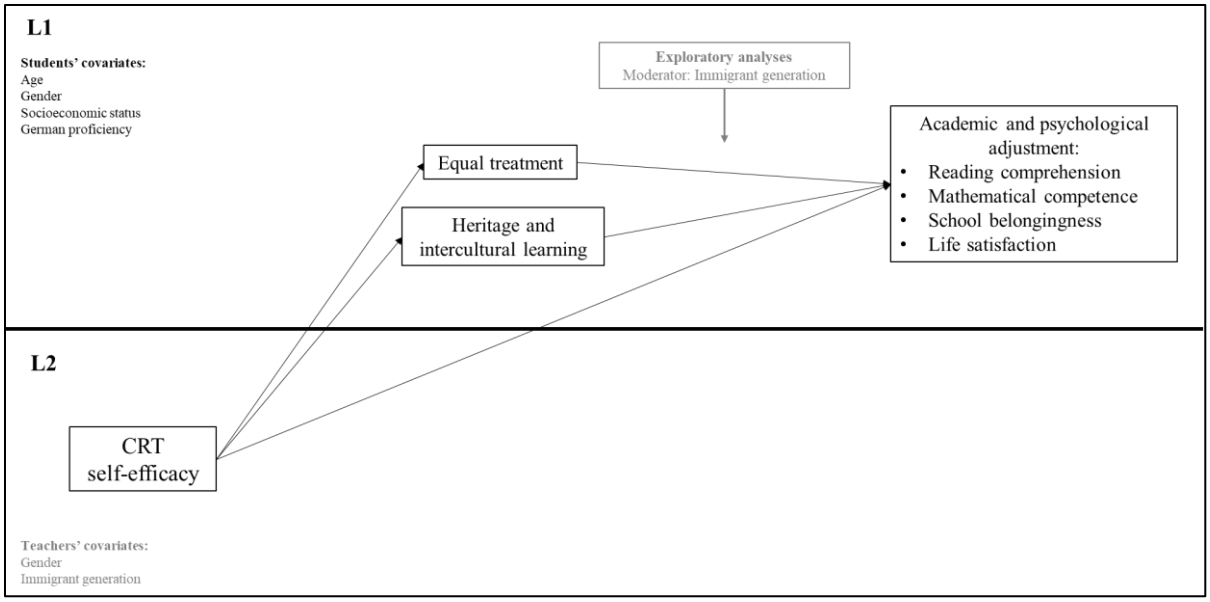
unmask due to the conflation of students of different immigrant generations in one group. Because first-generation immigrant and refugee students are new in the country, they may face specific acculturative tasks (e.g., learning the school language; Suárez-Orozco et al., 2018). A cross-national study showed that first-generation immigrant students in Europe reported more peer victimization (which can be linked to the perception of *unequal treatment by students*) than second-generation immigrant and non-immigrant students (Stevens et al., 2020). The authors suggested that first-generation immigrant students might appear more visibly "different", and might be more likely to become targets of victimization as they could not yet develop social support networks. Consequently, first-generation immigrant and refugee children could perceive less positive classroom climate than other children, which in turn would more strongly negatively relate to their adjustment. Thus, fostering CRT practices and discussions about different cultures might particularly enhance their academic and psychological adjustment. However, it could also be that CDC enhances the academic and psychological adjustment of all students, regardless of their immigrant generation (Schachner et al., 2019). Hence, we examined potential differences between first immigrant generation students compared to second generation immigrant and non-immigrant students in an exploratory fashion. In doing so, we aimed to expand previous literature on the effects of CDC on ethnic majority and minority students, by specifically considering students' immigrant generation.

The Present Study

In this study, we combine the theories of CRT self-efficacy (Gay, 2002; Ladson-Billings, 1995; Siwatu, 2007) and research on CDC (Schachner et al., 2016), and explore the direct association of teachers' CRT self-efficacy with students' academic and psychological adjustment as well as its indirect association through student-perceived CDC (see Figure 4 for the conceptual model).

Figure 4

Conceptual Model of the Study



Hypothesis 1: Teachers' CRT self-efficacy is positively associated with students' academic and psychological adjustment (i.e., school achievement, belongingness, life satisfaction).

Hypothesis 2: Student-perceived CDC (i.e., *equal treatment by students*, *heritage and intercultural learning*) is positively associated with students' academic and psychological adjustment.

Hypothesis 3: Student-perceived CDC (i.e., *equal treatment by students*, *heritage and intercultural learning*) mediates the association between teachers' CRT self-efficacy and students' academic and psychological adjustment.

In an exploratory fashion, we examined to what extent students' immigrant generation moderates the association between teachers' CRT self-efficacy and students' academic and psychological adjustment (**Exploratory Research Question 1**), the association between CDC and students' academic and psychological adjustment (**Exploratory Research Question 2**), and the mediating effect of CDC in the association between teachers' CRT self-efficacy and students' academic and psychological adjustment (**Exploratory Research Question 3**).

In all analyses, we controlled for students' age, gender and socioeconomic status. When predicting students' reading comprehension in German, we controlled for their level of German vocabulary in order to isolate the effects of CRT self-efficacy and CDC from students' linguistic skills.

Material and Methods

Participants and Procedure

Data of this study stem from a project on the school adjustment of immigrant and refugee children, conducted in $n = 47$ fourth-grade classrooms in twenty-five elementary schools[10] in the North-Rhine Westphalia State of Germany. The sample included only classrooms where the respective homeroom teacher[11] participated in the teacher survey and only children whose parents gave active consent to their child's participation in the study. Two teachers completed the questionnaire twice and we retained only their first answers as valid. The final sample comprised $n = 41$ teachers ($M_{age} = 42.07$, $SD_{age} = 11.41$; 85.4% female) and $n = 234$ children ($M_{age} = 10.48$, $SD_{age} = 0.56$; 55% female, 0.4% non-binary).

Almost 38% were first-generation immigrant and refugee children from more than 20 countries, mostly from Syria (41.18%), followed by Turkey (5.88%) and Romania (4.71%), and had lived in Germany on average for 6 years ($M_{years} = 6.03$, $SD_{years} = 2.44$). Children who did not migrate themselves were mainly second-generation immigrant children (43.42%), with one or both parents coming primarily from Turkey (15.63% of mothers, and 19.59% of fathers), and non-immigrant children (18.86%; i.e., they and both of their parents were born in

[10] According to the social index of the North-Rhine Westphalia State of Germany (Schräpler & Jeworutzki, 2021), most of the recruited schools (64%) were moderately to highly "in need for support", meaning that they were schools with higher proportions of students living in poverty, students with another language as German as first language, immigrant students and students with learning, emotional and social development and language needs.
[11] In the German school system, elementary school students have a homeroom teacher who teach most of the subjects and have therefore many contact hours with their students.

Germany). Most of the teachers were born in Germany, while five (12.20%) had migrated mostly from other European countries.

Data collection was cross-sectional and took place between March and August 2022, during the COVID19 pandemic, but after school lockdowns. Children completed paper-and-pencil questionnaires and tests in class, during school time. Teachers' questionnaires were administered online using Qualtrics software (Qualtrics, 2020). The Ethics Board of <faculty/university> gave approval to the study protocol.

Measures

CRT Self-Efficacy. Teachers' CRT self-efficacy was assessed with eight items (e.g., 'I can create a learning environment that conveys respect for the cultures of all students in my classroom' , ω = .78) of the subscale *Adaptation of instruction and relationships* of the Culturally Responsive Classroom Management Self-Efficacy Scale (Civitillo et al., 2016). Teachers responded on a seven-point Likert scale (from 1 = *no confidence at all*, to 7 = *completely confident*). Higher scores indicated higher levels of teachers' CRT self-efficacy.

Classroom Cultural Diversity Climate. We used six items adapted[12] from the Classroom Cultural Diversity Climate Scale of Schachner et al. (2016) to assess children's report of CDC. We assessed *equal treatment by students* with three items, after reversing them (e.g., 'In our class, children from different cultural experiences are often teased by the other children', ω = .77). Three items measured *heritage and intercultural learning* (e.g., 'In class, we often talk about celebrations and traditions from other countries', ω = .70). Children rated the items on a 5-point Likert scale from 1 = *no, that's not right*, to 5 = *yes, that's right.*

Reading Comprehension. We measured reading comprehension in German with the Reading Comprehension Test for Primary School Pupils Version 2 (ELFE II, Lenhard et al., 2018).

[12] We changed the original wording "foreign children" (Schachner et al., 2016) to "children from different cultural backgrounds", which is currently a more appropriate term and it is suitable for classes with a high level of diversity in terms of immigrant generations.

Children answered a total of 26 questions based on German texts (ω = .83). The number of correct answers were summed to yield a total score. Children with higher scores in the ELFE II test had higher levels of reading comprehension.

Mathematical Competence. Mathematical competence was assessed with the DEMAT4 mathematical test for fourth graders (Görlitz et al., 2006). Children answered a total of twelve mathematical exercises with addition, subtraction and multiplication problems (ω = .74). The number of correct answers were summed to yield a total score. Higher scores indicated higher levels of mathematical competence.

School Belongingness. The School Belongingness scale from the German Progress in International Reading Literacy Study (Martin et al., 2016; Wendt et al., 2017) was used to assess children's sense of school belonging. The scale had four items (e.g., 'I like being in school', ω = .78) and scored on a four-point Likert scale (from 1 = *totally disagree*, to 4 = *totally agree*).

Life Satisfaction. The five-items scale on life satisfaction from the German National Educational Panel Study (NEPS, Blossfeld et al., 2011) was used to measure children's overall life satisfaction (e.g., 'How satisfied are you with your life overall?'). Answers were given on a six-point Likert scale (from 1 = *not at all satisfied*, to 6 = *very satisfied*, ω = .68).

Immigrant Generation. We defined first-generation immigrant and refugee children those children who were born outside of Germany. Children without an own immigrant experience included children of the second immigrant generation (i.e., born in Germany with at least one parent born outside of Germany) and non-immigrant children (i.e., they and both their parents were born in Germany). We asked teachers about their own birthplace, without investigating their parents' birthplace. Teachers born outside of Germany were considered immigrant teachers, while teachers born in Germany were considered non-immigrant.

Socioeconomic Status. We asked for children's number of books at home as a measure of their socioeconomic status (Heppt et al., 2022), which is widely used in international

education research (e.g., OECD, 2016). Children answered from 1 = *none or only very few* (0-10 books), to 5 = *enough to fill three or more shelves* (more than 200 books). Higher scores indicated higher socioeconomic status.

German Vocabulary. A German receptive vocabulary test from the German Progress in International Reading Literacy Study 2021 (PIRLS, forthcoming) was used to assess children's vocabulary in German.

Data Analysis

Missing data ranged between 0% for teachers' CRT self-efficacy and 6.8% for children's socioeconomic status (SES). We used the full information maximum likelihood (FIML) in M*plus* 8.6 (Muthén & Muthén, 2017) to handle missing data. Tables 1 and 2 show descriptives and bivariate correlations of study variables at level 1 and 2 respectively. We checked for multicollinearity by examining bivariate correlations between predictors and control variables at level 1 and 2 separately. We found significant but weak correlations between *heritage and intercultural learning* and German vocabulary (r = -.18, p < .01), age and German vocabulary (r = -.29, p < .001), age and SES (r = -.16, p < .05) and SES and German vocabulary (r =.18, p < .01). We then performed Confirmatory Factor Analyses (CFA) on all scales. Analyses revealed overall acceptable model fits for all scales except for the Life Satisfaction Scale, mainly due to one item (see Table A1, supplementary materials). Hence, for this scale we used a four-item solution in all analyses. Intraclass correlation (ICC) coefficients ranged between 7% (*equal treatment*) and 32.6% (*heritage and intercultural learning*), suggesting that a considerable amount of variance was attributable to class grouping (Table 1). Due to limited number of classes, we ran analyses at level 1 only, and reported additional analyses at level 2 in the supplementary materials (Table B4).

To test our hypotheses, we conducted multilevel regression analyses with M*plus* 8.6 (Muthén & Muthén, 2017). We centered all continuous predictors around the grand mean prior to analyses. We used the maximum likelihood estimator with robust standard errors

(MLR) to handle non-normal distribution of the variables. To answer Hypothesis 1, we separately regressed children's outcomes at level 1 on teachers' CRT self-efficacy at level 2, controlling for children's age, gender and SES at level 1[13]. We also controlled for German vocabulary when regressing reading comprehension. To test Hypothesis 2, we performed multilevel regressions with *equal treatment* and *heritage and intercultural learning* as predictors (level 1) on each outcome separately, controlling for children's age, gender and SES, and for German vocabulary when regressing reading comprehension. For Hypothesis 3, we performed a 2-1-1 model (Zhang et al., 2009) for each outcome, with *equal treatment* and *heritage and intercultural learning* (level 1) simultaneously mediating the association between teachers' CRT self-efficacy (level 2) and children's academic and psychological adjustment (level 1). To assess exploratory hypotheses, we added the interaction term between predictors and children's immigrant generation to previous models that showed significant associations.

Study hypotheses, measures and analysis plan were preregistered on the Open Science Framework (link: https://osf.io/5g2hm/?view_only=4c3a4b3aa65d4e2082cc78d7469d8c2f). Due to data protection, the dataset is not publicly available, but can be made privately available for research purposes upon request.

Results

First, we tested for differences in study variables between students of the first immigrant generation versus other students. On average, students who migrated themselves were older, reported a lower number of books at home, lower levels of German vocabulary and reading comprehension, but higher levels of school belongingness and perceptions of *heritage and intercultural learning* than children who did not migrate (see Table B1,

[13] We also performed models with all outcomes simultaneously (Table B5, supplementary materials), but results did not change.

supplementary materials). Tables 3 to 6 show results of the main Hypotheses and Exploratory Research Questions for each outcome.

Results of Hypothesis 1 showed that CRT-self efficacy was significantly and positively related with children's mathematical competence (β = .57, *SE* = .24, *p* =.02). CRT self-efficacy was not significantly related with reading comprehension, school belongingness and life satisfaction. For Hypothesis 2, we found that *equal treatment* was significantly positively associated only with mathematical competence (β = .14, *SE* = .06, *p* = .03). *Heritage and intercultural learning* was significantly and positively associated with school belongingness (β = .38, *SE* = .07, *p* < .001), and life satisfaction (β = .23, *SE* = .07, *p* = .001), but negatively with reading comprehension (β = -.17, *SE* = .05, *p* = .001). Mediation analyses (Hypothesis 3) revealed that confidence intervals of the indirect effects always included zero, therefore none of the dimensions of classroom CDC significantly mediated the association between CRT self-efficacy and the outcomes (specific indirect effects for each outcome are reported in Tables 3-6, Model Hypothesis 3). Concerning exploratory hypotheses, none of the models revealed a significant moderation of immigrant generation in the direct association of CRT self-efficacy and of CDC with students' academic and psychological adjustment. As Hypothesis 3 was not confirmed, we did not conduct moderation analyses to assess *Exploratory Research Question 3.*

As preregistered, we performed sensitivity analyses with and without covariates, without outliers, and with only classes with at least three children per class. Results did not change to a substantive degree (see Appendix A, supplementary materials). We also performed non-preregistered additional analyses (see Appendix B, supplementary materials). As the distributions of some variables were skewed, we performed Tobit models[14], by running

[14] Tobit regression models correct for estimates bias in the presence of floor or ceiling effects, by predicting whether values are under or above the minimum or maximum scale point (i.e., censoring point) based on the predictor variables (McBee, 2010).

regressions after indicating in M*plus* that the skewed variables were censored. These results did not change to a substantive degree from main results (Tables B6.1-3). Moreover, we included German vocabulary as a control variable in the models testing Hypotheses 1 and 2 predicting mathematical competence (Table B7). In these analyses, CRT self-efficacy and mathematical competence were not significantly related. The positive association between *equal treatment* and mathematical competence showed a trend toward significance. Additional analyses showed that CRT self-efficacy and German vocabulary were positively associated (β = .58, *SE* =.21, p = .01). As students' immigrant generation was significantly correlated with some study variables (see Table 1), we conducted analyses by adding this variable as a covariate. Results did not change from the main analyses (Tables B3.1-4).

Moreover, we performed analyses considering first- and second-generation immigrant and refugee children only (Tables B9.1-3). The only result differing from main findings concerned the association between *heritage an intercultural learning* and mathematical competence, which was significant and negative (β = -.16, *SE* = .08, p = .03), whereas in main analyses this association was nonsignificant. However, when controlling for German vocabulary, the association turned not significant (β = -.13, *SE* = .08, p = .08). Further analyses revealed a nonsignificant association between teachers' CRT self-efficacy and students' perceptions of CDC (Table B2). As bootstrapping is not available with multilevel models in M*plus*, we performed mediation analyses using the Bayes estimator (Table B10). Additionally, we tested the association between CDC and students' academic and psychological adjustment at the classroom level, (Table B4).

Discussion

By combining teachers' and students' perspectives, the study provides insights into the associations between teachers' CRT self-efficacy, students' perceptions of CDC and students' academic and psychological adjustment. Furthermore, we examined the extent to which CDC explains the association between CRT self-efficacy and students' academic and psychological

adjustment. We also explored associations comparing first-generation immigrant and refugee children with second-generation immigrant and non-immigrant children.

Associations Between CRT Self-Efficacy and Children's Academic and Psychological Adjustment

This study expands the limited quantitative evidence on CRT and students' academic and psychological adjustment, and it is among the first studies investigating teachers' CRT *self-efficacy* and students' academic and psychological adjustment. Partly in line with Hypothesis 1, we found a positive association between teachers' CRT self-efficacy and children's mathematical competence, but the association was not significant anymore once we controlled for children's German vocabulary. To better understand this relation, we further explored the association between CRT self-efficacy and German vocabulary only, which was significant and positive. This suggests that teachers who feel more confident in their CRT abilities may be more likely to facilitate activities that improve children's skills in the school language. Accordingly, one aspect of CRT is to enhance cooperative learning (Siwatu, 2011), also by promoting learning communities (Gay, 2002). This comprises, for example, activities in which children with different linguistic backgrounds are encouraged to work together, speaking the school language as a common mean for communication. This is important because research has shown that children's skills in the school language are positively related with their school achievement and belongingness (Authors, 2023; Volodina et al., 2021). This aspect is particularly crucial for first-generation children who may not be fluent in the school language yet, and who might particularly benefit from teachers implementing culturally responsive practices.

We did not find significant associations between teachers' CRT self-efficacy and children's school belongingness and life satisfaction. This is in contrast to previous research showing that students' perceptions of CRT practices positively predicted students' school belongingness (Byrd, 2016). However, we measured teachers' and not students' reports on

CRT. It might be that students' perceptions of teachers' implementation of CRT differ from teachers' self-efficacy in CRT practices. Hence, students' perceptions of CRT might be more strongly associated with their adjustment as teachers' own assessment of their CRT. Taken together, findings do not fully support the hypothesis that teachers' CRT self-efficacy is directly related to children's academic and psychological adjustment measured by school achievement, school belongingness and life satisfaction. While literature showed positive associations between CRT and students' academic and psychological adjustment (Aronson & Laughter, 2016; Blazar, 2021; Bottiani et al., 2020; Matthews & López, 2019), these studies addressed aspects of CRT such as the use of alternative teaching methods (Byrd, 2016), whereas we focused on teachers' CRT self-efficacy. This inconsistency may be due to the measure used to assess CRT. On the one hand, teachers' general self-efficacy is linked to their implementation of teaching practices and to students' outcomes (Zee & Koomen, 2016), and CRT self-efficacy is related to teachers' general self-efficacy (Siwatu et al., 2017). On the other hand, for what concerns CRT self-efficacy specifically, this link still needs to be explored. Yet, it is crucial to examine domain-specific aspects of teachers' self-efficacy (Bandura, 2006), as research has shown that different aspects of teachers' practices (i.e., CRT and general teaching) are not always correlated (Lavigne et al., 2022). Hence, it might be that teachers who feel confident in CRT do not actually put CRT into practice, which would explain why we did not find a significant association between CRT and outcomes such as school belongingness, as found in previous studies (e.g., Byrd, 2016). Further research is needed to investigate to what extent teachers' CRT self-efficacy is associated to their own teaching behavior.

CRT Self-Efficacy, Cultural Diversity Climate and Children's Academic and Psychological Adjustment

We were interested in whether classroom CDC explains the relation between CRT self-efficacy and children's academic and psychological adjustment *(Hypothesis 3)*. Results

did not support the mediation hypothesis, suggesting that students' perceptions of CDC do not explain the relation between teachers' CRT self-efficacy and students' academic and psychological adjustment. This could be also due to the different perspectives of teachers and students on CRT self-efficacy and CDC respectively. We found that children's perceptions of *equal treatment by students* and *heritage and intercultural learning* were not linked with teachers' CRT self-efficacy. While teachers might feel efficacious in implementing CRT, this might not translate into a climate favoring *equal treatment by students* or *heritage and intercultural learning* as perceived by students. Accordingly, literature with multi-informant data from teachers and students showed that their perspectives about CDC do not often overlap (Civitillo et al., 2017; Fine-Davis & Faas, 2014). It is also possible that teachers who feel confident in CRT tend to have a color-evasive view, preventing them to see how teaching practices and lessons can be tailored in a culturally responsive way. Yet, teachers in this study reported to be only moderately confident in CRT, and because of the sample size (n = 41) we could not divide teachers in view of their self-efficacy levels. Future studies with larger samples could analyze different groups of teachers in order to examine whether associations with students' adjustment differ across different clusters of teachers' self-efficacy.

Cultural Diversity Climate and Children's Academic and Psychological Adjustment

Our findings expanded previous studies addressing the association between CDC and adolescents' academic and psychological adjustment, by considering elementary school children. In line with previous research among secondary school students (Schachner et al., 2019, 2021), we found that *heritage and intercultural learning* positively predicted students' school belongingness and life satisfaction. This fosters the notion that a climate in which cultural diversity is valued is beneficial for the academic and psychological adjustment of students, expanding this result also to first-generation immigrant and refugee elementary school children.

However, *heritage and intercultural learning* was not significantly related with mathematical achievement, and surprisingly, it was negatively associated with reading comprehension, even after controlling for German vocabulary and for children's immigrant generation. Some previous studies showed that *heritage and intercultural learning* was positively correlated to students' academic achievement (Byrd, 2017; Schachner et al., 2021). However, these studies assessed school achievement through self-reported grades, while we used mathematical and reading comprehension tests, which are less biased by teachers' judgment and own reports. Conversely, our nonsignificant finding for mathematical competence among the whole sample supports other studies, which did not show a direct association between CDC and students' achievement, reporting instead a mediated relation via school belongingness (Schachner et al., 2019) or acculturation orientations (Schachner et al., 2016). More research is needed that expands these findings using different measurements of academic achievement.

One explanation for the negative association with reading comprehension could be that in classrooms where *heritage and intercultural learning* is enhanced, multilingualism plays an important role (Schachner, 2019). Teachers who encourage discussions of different cultures and traditions might therefore also promote children's language spoken at home. Thus, while reading comprehension in the school language might be still limited, there might be a stronger appreciation of children's first language skills. Relatedly, it might be that first-generation immigrant and refugee children in these classrooms do not feel the urge to assimilate, but they can instead navigate between the family's and school's cultures. The emphasis on children's family language is important, as research showed that fostering children's first language can also enhance their school achievement (Edele et al., 2023; Kirss et al., 2021). Moreover, this can indirectly promote German reading comprehension (Edele & Stanat, 2016), but effects may be delayed and not be visible in elementary school yet.

Similarly, *heritage and intercultural learning* was negatively associated with German vocabulary (see Table B7, supplementary materials). Among first- and second-generation immigrant children only, *heritage and intercultural learning* was negatively associated with mathematical competence, but this association turned not significant when controlling for German vocabulary. These negative associations could be attributable to the ethnic composition of the classroom, which might also explain the discrepancy with previous findings. Past studies included mostly students of later immigrant generations (e.g., Schachner et al., 2019) or ethnic minority students (e.g., Byrd, 2017). Classrooms in this study had instead a high proportion of first-generation immigrant and refugee students. Hence, in these classes, levels of vocabulary and reading comprehension in the school language are likely to be lower, but there might be a stronger emphasis on *heritage and intercultural learning* because it is seen as more relevant. Due to lack of information on classroom characteristics reported by teachers, we were not able to measure classroom ethnic composition. Future research could investigate the role played by classroom ethnic composition in this association. Further studies could also examine associations between *heritage and intercultural learning* and German vocabulary longitudinally, as it might be that positive effects on second language acquisition unfold later.

Contrary to our expectations, *equal treatment by students* was not linked with reading comprehension, school belongingness and life satisfaction. While previous studies (Schachner et al., 2019, 2021) focused on these associations among adolescents, this study addressed elementary school children. Future studies with elementary school children could also include students' perceptions of *equal treatment by teachers*, to gain a better understanding of its role for students' academic and psychological adjustment. Yet, *equal treatment by students* was positively associated with mathematical competence, which expands previous results on students' achievement measured by grades (Schachner et al., 2021), by adding evidence on the positive effect of *equal treatment* for this particular type of school achievement.

CRT Self-Efficacy and Cultural Diversity Climate for First-Generation Immigrant and Refugee Children

Children's immigrant generation did not moderate the association of CRT self-efficacy nor of *equal treatment* and *heritage and intercultural learning* with children's academic and psychological adjustment. This is in line with a previous investigation by Schachner et al. (2019), and suggests that both children with and without an own immigrant experience can equally benefit from CRT practices and from a positive CDC. Indeed, the aim of CRT is not to focus on specific ethnic groups, but rather to enhance the learning experience of all students (Gay, 2015). Accordingly, some studies showed positive effects on non-immigrant students' outcomes when relationships between teachers and ethnic minority students are positive (Geerlings et al., 2019), or when teachers implement a multicultural educational approach (Abacioglu et al., 2019).

Strengths, Limitations and Implications for Future Research

This study shed light on the associations of teachers' CRT self-efficacy and CDC with students' academic and psychological adjustment. By including first generation immigrant and refugee children in elementary school, findings expanded previous literature on adolescents of later immigrant generations. Moreover, we used data from teachers and students, offering insights on perspectives from different informants as well as the degree of their correspondence.

Despite these strengths, the study presents some limitations. First, the number of participating classes and the cluster sample size were limited, as some classes comprised only few children. Future studies are needed that replicate these results with more classes and larger samples. Second, we measured teachers' CRT self-efficacy as a proxy for their implementation of CRT. Indeed, there is extensive literature showing that self-efficacy in general teaching practices is positively associated with students' outcomes (Zee & Koomen, 2016). Yet, CRT self-efficacy is a self-report measure and future studies should asses CRT

practices also from students' perspective, or use classroom observations. It could be interesting to assess teachers' perceptions of CDC, in order to explore potential differences between children's and teachers' views. Third, we assessed CDC through two components (i.e., *equal treatment by students* and *heritage and intercultural learning*). Future research could expand our findings by exploring the relation between different facets of CDC and teachers' CRT self-efficacy. For example, perceptions of *equal treatment by teachers* could be related to teachers' CRT self-efficacy and could explain its link with students' adjustment. It could be also interesting for future studies to add measures of students' acculturation and investigate its link with CRT and proficiency in the school language. For example, latent class analyses might reveal groups of children with different acculturation levels based on their immigrant generation, school language levels and perceptions of CRT.

Moreover, we operationalized children's SES with the number-of-books indicator. Due to insufficient parent data we did not have more reliable SES measures. In the case of recently arrived families, this item might not comprehensively cover families' SES, as they are new in the country and might not have had enough time to buy books yet. However, first-generation immigrant and refugee children in this study were living on average for six years in Germany. Moreover, many families might not have the same SES in Germany as they had in the home country, for example because of difficulties in finding a job due to failed or delayed recognition of academic and occupational qualification, or due to language barriers. Finally, due to the cross-sectional nature of this study, it is not possible to determine direction of associations. Future studies should examine these relations longitudinally in order to approximate causal direction of the associations.

Taken together, results indicate that promoting CRT practices and fostering a CDC that values cultural diversity and encourages equal treatment by students can enhance the academic and psychological adjustment of both immigrant and non-immigrant elementary school children. Thus, it is crucial that teachers receive CRT trainings as part of their

preservice education and during their professional development as in-service teachers (Civitillo & Juang, 2019). Moreover, it is important that teachers address and value cultural diversity, for example by integrating notions and discussions about different cultures into their teaching.

Acknowledgements

The study's design and analysis plan have been preregistered and are available on the Open Science Framework (https://osf.io/5g2hm/?view_only=4c3a4b3aa65d4e2082cc78d7469d8c2f).

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Table 1

Correlation and Intraclass Correlation (ICC) Coefficients of Child-level Variables (Level 1)

		Range	M(SD)	Skewness	Kurtosis	ICC	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Equal treatment by students	1-5	3.33(1.18)	-0.25	-0.95	0.07	–										
2.	Heritage and intercultural learning	1-5	3.03(1.00)	-0.15	-0.78	0.33	-.12†	–									
3.	Reading comprehension	0-25	11.23(4.69)	0.03	-0.29	0.13	.04	-.25***	–								
4.	Mathematical competence	0-11	3.33 (2.43)	0.61	-0.27	0.12	.13*	-.11	.32***	–							
5.	School belongingness	1-4	3.33 (0.69)	-1.44	1.65	0.08	.03	.38***	-.18**	.06	–						
6.	Life satisfaction[a]	1.25-6	5.45 (0.66)	-2.39	8.93	0.09	.09	.24***	-.07	.05	.53***	–					
7.	Age	9.42 - 12.58	10.49(0.56)	0.59	-0.03	0.13	-.12*	.07	-.15†	-.12	-.07	-.11†	–				
8.	Gender[b]	0-1	–	–	–	–	-.02	-.08	-.02	.02	-.15*	.03	-.05	–			
9.	SES[c]	1-5	2.34 (1.19)	0.74	-0.26	0.02	.01	.02	.10	-.03	.06	.11	-.16*	.004	–		
10.	German vocabulary	0-17	8.25 (3.47)	0.17	-0.52	0.11	.12*	-.18**	.54***	.25***	-.13*	-.01	-.29***	.05	.18**	–	
11.	Immigrant generation	0-1	–	–	–	–	-.09	.23***	-.24***	.07	.11	.00	.25***	-.01	-.18**	-.28***	–

Note. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

[a] The Life Satisfaction scale refers to the four-item solution; [b] 0 = female, 1 = male; [c] SES = socioeconomic status.

Table 2

Correlation and Intraclass Correlation (ICC) Coefficients of Teacher-level Variables (Level 2)

		Range	M(SD)	Skewness	Kurtosis	1.	2.	3.	4.
1.	CRT self-efficacy	2.50-6.25	4.60(.91)	-0.42	-0.24	–			
2.	Age	26-64	42.73(10.64)	0.32	-1.01	-.07	–		
3.	Gender[a]	0-1	–	–	–	.01	-.16	–	
4.	Immigrant generation[b]	0-1	–	–	–	.02	-.24**	.06	–

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] 0 = female, 1 = male.

[b] 0 = non-immigrant, 1 = immigrant teachers.

Table 3

Unstandardized Regression Coefficients of Multilevel Analyses predicting Reading Comprehension

	Model Hypothesis 1			Model Hypothesis 2			Model Hypothesis 3			Model Exploratory Research Question 2		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
Child level												
Age	0.15	0.58	[-1.00, 1.29]	0.19	0.53	[-0.86, 1.23]	0.13	0.57	[-0.99, 1.25]	0.24	0.52	[-0.78; 1.27]
Gender	-0.58	0.67	[-1.89, 0.74]	-0.66	0.66	[-1.95, 0.63]	-0.67	0.66	[-1.96, 0.61]	-0.64	0.67	[-1.94; 0.67]
SES	-0.06	0.23	[-0.51, 0.38]	-0.04	0.21	[-0.44, 0.37]	-0.04	0.21	[-0.46, 0.38]	-0.03	0.21	[-0.45; 0.39]
German vocabulary	0.68***	0.10	[0.48, 0.87]	0.66***	0.10	[0.48, 0.85]	0.65***	0.09	[0.46, 0.83]	0.62***	0.10	[0.42, 0.82]
Heritage and intercultural learning	–	–	–	-0.75**	0.23	[-1.20, -0.30]	-0.49	0.39	[-1.25; 0.27]	-0.92**	0.32	[-1.55, -0.30]
Equal treatment	–	–	–	-0.26	0.23	[-0.71, 0.18]	-0.30	0.21	[-0.71; 0.11]	–	–	–
Immigrant generation	–	–	–	–	–	–	–	–	–	-0.69	0.54	[-1.75; 0.37]
Equal treatment × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–
Heritage and intercultural learning × immigrant generation[a]	–	–	–	–	–	–	–	–	–	0.61	0.54	[-0.45; 1.68]
Teacher level												
CRT self-efficacy	0.03	0.26	[-0.47; 0.53]	–	–	–	-0.002	0.26	[-0.51; 0.51]	–	–	–
Child x Teacher level												
CRT self-efficacy → Heritage and intercultural learning	–	–	–	–	–	–	-0.01	0.05	[-0.11, 0.10]	–	–	–
CRT self-efficacy → Equal treatment	–	–	–	–	–	–	-0.04	0.03	[-0.11, 0.03]	–	–	–

Note. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

[a] 0 = second generation and non-immigrant children, 1 = first-generation immigrant and refugee children.

Table 4

Unstandardized Regression Coefficients of Multilevel Analyses predicting Mathematical Competence

	Model Hypothesis 1			Model Hypothesis 2			Model Hypothesis 3			Model Exploratory Research Question 1			Model Exploratory Research Question 2		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
Child level															
Age	-0.43	0.41	[-1.23, 0.37]	-0.40	0.42	[-1.22, 0.41]	-0.34	0.39	[-1.10, 0.42]	-0.57	0.40	[-1.34; 0.21]	-0.59	0.40	[-1.36; 0.19]
Gender	0.15	0.28	[-0.39, 0.69]	0.06	0.28	[-0.49, 0.62]	0.11	0.26	[-0.40, 0.62]	0.14	0.32	[-0.48; 0.77]	0.09	0.28	[-0.45; 0.63]
SES	-0.15	0.12	[-0.39, 0.09]	-0.13	0.13	[-0.38, 0.12]	-0.14	0.12	[-0.38, 0.10]	-0.14	0.12	[-0.38: 0.11]	-0.13	0.12	[-0.36; 0.10]
German vocabulary	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Heritage and intercultural learning	–	–	–	-0.18	0.18	[-0.53, 0.18]	-0.35†	0.21	[-0.77; 0.06]	–	–	–	–	–	–
Equal treatment	–	–	–	0.29*	0.13	[0.03, 0.54]	0.31*	0.15	[0.03; 0.60]	–	–	–	0.16	0.21	[-0.24; 0.56]
Immigrant generation	–	–	–	–	–	–	–	–	–	–	–	–	0.55†	0.32	[-0.08; 1.18]
Equal treatment × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–	0.50†	0.28	[-0.06, 1.05]
Heritage and intercultural learning × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Teacher level															
CRT self-efficacy	0.53*	0.22	[0.10, 0.96]	–	–	–	0.54*	0.22	[0.10; 0.97]	0.42†	0.24	[-0.06; 0.90]	–	–	–
Child x Teacher level															
CRT self-efficacy → Heritage and intercultural learning	–	–	–	–	–	–	-0.002	0.04	[-0.08, 0.07]	–	–	–	–	–	–
CRT self-efficacy → Equal treatment	–	–	–	–	–	–	0.04	0.03	[-0.01, 0.10]	–	–	–	–	–	–
CRT self-efficacy × immigrant generation[a]	–	–	–	–	–	–	–	–	–	0.41	0.46	[-0.49; 1.31]	–	–	–

Note. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

[a] 0 = second generation and non-immigrant children, 1 = first-generation immigrant and refugee children.

Table 5

Unstandardized Regression Coefficients of Multilevel Analyses predicting School Belongingness

	Model Hypothesis 1			Model Hypothesis 2			Model Hypothesis 3			Model Exploratory Research Question 2		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
Child level												
Age	-0.04	0.07	[-0.18; 0.10]	-0.08	0.07	[-0.20, 0.05]	-0.07	0.07	[-0.20, 0.05]	-0.10	0.07	[-0.24, 0.03]
Gender	-0.28**	0.11	[-0.48; -0.07]	-0.22*	0.10	[-0.42, -0.03]	-0.23*	0.10	[-0.43, -0.03]	-0.20*	0.10	[-0.40, -0.01]
SES	0.05	0.04	[-0.02; 0.12]	0.04	0.03	[-0.03, 0.10]	0.04	0.03	[-0.03, 0.10]	0.04	0.04	[-0.03, 0.11]
German vocabulary	–	–	–	–	–	–	–	–	–	–	–	–
Heritage and intercultural learning	–	–	–	0.26***	0.05	[0.15, 0.36]	0.26***	0.07	[0.13; 0.39]	0.24***	0.07	[0.11; 0.38]
Equal treatment	–	–	–	0.03	0.04	[-0.05, 0.11]	0.01	0.05	[-0.08; 0.11]	–	–	–
Immigrant generation	–	–	–	–	–	–	–	–	–	0.04	0.10	[-0.15; 0.23]
Equal treatment × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–
Heritage and intercultural learning × immigrant generation[a]	–	–	–	–	–	–	–	–	–	0.03	0.11	[-0.19, 0.24]
Teacher level												
CRT self-efficacy	-0.002	0.05	[-0.11; 0.10]	–	–	–	0.01	0.05	[-0.09; 0.11]	–	–	–
Child x Teacher level												
CRT self-efficacy → Heritage and intercultural learning	–	–	–	–	–	–	0.002	0.03	[-0.05; 0.06]	–	–	–
CRT self-efficacy → Equal treatment	–	–	–	–	–	–	0.002	0.01	[-0.01; 0.02]	–	–	–
CRT self-efficacy × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] 0 = second generation and non-immigrant children, 1 = first-generation immigrant and refugee children.

Table 6

Unstandardized Regression Coefficients of Multilevel Analyses predicting Life Satisfaction

	Model Hypothesis 1			Model Hypothesis 2			Model Hypothesis 3			Model Exploratory Research Question 2		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*	*B*	*SE*	*95% CI*
Child level												
Age	-0.13	0.09	[-0.30; 0.04]	-0.13	0.10	[-0.31; 0.06]	-0.13	0.08	[-0.29, 0.03]	-0.15	0.09	[-0.33, 0.04]
Gender	-0.02	0.09	[-0.20; 0.16]	0.01	0.10	[-0.18; 0.20]	0.01	0.09	[-0.18, 0.19]	0.03	0.10	[-0.16; 0.23]
SES	0.05	0.04	[-0.02; 0.13]	0.05	0.04	[-0.02; 0.12]	0.05	0.04	[-0.02, 0.12]	0.05	0.04	[-0.02; 0.12]
German vocabulary	–	–	–	–	–	–	–	–	–	–	–	–
Heritage and intercultural learning	–	–	–	0.15**	0.05	[0.05; 0.24]	0.19**	0.06	[0.08; 0.30]	0.09†	0.05	[-0.02; 0.19]
Equal treatment	–	–	–	0.05	0.04	[-0.02; 0.12]	0.04	0.04	[-0.04; 0.11]	–	–	–
Immigrant generation	–	–	–	–	–	–	–	–	–	-0.01	0.10	[-0.21; 0.19]
Equal treatment × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–
Heritage and intercultural learning × immigrant generation[a]	–	–	–	–	–	–	–	–	–	0.13	0.14	[-0.15; 0.41]
Teacher level												
CRT self-efficacy	-0.08†	0.04	[-0.16; 0.002]	–	–	–	-0.08†	0.04	[-0.15; .003]	–	–	–
Child x Teacher level												
CRT self-efficacy → Heritage and intercultural learning	–	–	–	–	–	–	0.002	0.02	[-0.04, 0.04]	–	–	–
CRT self-efficacy → Equal treatment	–	–	–	–	–	–	0.01	0.01	[-0.01, 0.02]	–	–	–
CRT self-efficacy × immigrant generation[a]	–	–	–	–	–	–	–	–	–	–	–	–

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

[a] 0 = second generation and non-immigrant children, 1 = first-generation immigrant and refugee children.

5. STUDY 2

Exploring the Link between Culturally Responsive Teaching, Teacher-Student Relationship and School Belongingness: A Multi-Informant Study*

Francesca Ialuna[1], Sauro Civitillo[2] & Philipp Jugert[1]

[1] Department of Psychology, University of Duisburg-Essen

[2] Department of Interdisciplinary Social Science, Utrecht University

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Abstract

This multi-informant study examined how teachers' and students' perceptions of their relationship are linked with students' school belongingness. We also explored to what extent teacher-student relationship mediates the association between teachers' culturally responsive teaching (CRT) self-efficacy and school belongingness. Participants were $N = 134$ elementary school students ($M_{age} = 10.54$, $SD_{age} = .56$, 53.73% female, 44.78% immigrant and refugee) and $N = 30$ teachers ($M_{age} = 41.67$, $SD_{age} = 10.78$, 83.33% female). Teachers' reported *conflict* and students' reported *closeness* were significantly negatively correlated. Bivariate correlations showed that student-reported *closeness* was positively and teacher-reported *conflict* negatively related with school belongingness. However, only student-reported relationship significantly contributed to explain variance in school belongingness. Teacher-student relationship did not mediate the association between CRT and school belongingness. Exploratory analyses examined differences among students with and without an immigrant experience, showing that teacher-reported *conflict* was negatively linked to school belongingness only among non-immigrant students. Teachers who felt more efficacious in CRT reported more *conflict* in the relationship with immigrant and refugee students. Findings corroborate the relevance of teacher-student relationship for students' school belongingness. Furthermore, they suggest that teachers should receive trainings in CRT in order to enhance their relationships especially with immigrant and refugee students.

Introduction

With increasing migration and forced displacement flows, there has been growing attention to the academic adjustment of students from different backgrounds, and on how cultural diversity is handled at school. Teaching practices sensitive to cultural and ethnic diversity are important for the adjustment of ethnically diverse students[15]. According to literature on culturally responsive teaching (CRT; Gay, 2002; Ladson-Billings, 1995), teachers who recognize and appreciate the contribution of different ethnic groups might be particular attentive to foster the academic development of students. Accordingly, one fundamental aspect of CRT is to build positive and supportive teacher-student relationships (Gay, 2018; Ladson-Billings, 1995).

Teacher-student relationships (TSR) can be seen as a form of attachment relationship (Pianta et al., 2003; Wentzel, 2009), serving as an important base for children's sense of safety, which is fundamental to their development (Bowlby, 1969). Through supportive TSR, teachers can give students the feeling to be valued and respected, and to be included at school. School belongingness refers to students' feelings towards school as a place that they like, where they feel respected and included (Goodenow, 1993), and is an important aspect of students' academic and psychological adjustment. Indeed, students' feelings of connectedness at school can increase their motivation and engagement in school activities, therefore enhancing also their school performance (Ryan & Deci, 2000). Hence, the aim of this study was to explore to what extent teachers who feel efficacious in CRT foster positive TSR, which in turn would be positively related to students' school belongingness.

Whereas a number of studies assessed the importance of TSR for students' school belongingness (García-Rodríguez et al., 2023; Roorda et al., 2017), quantitative studies focusing on the link between CRT and students' belongingness are limited (for exceptions,

[15] We use the term *ethnically diverse students* to define all students, including immigrant, refugee and non-immigrant as well as ethnic majority and minority students.

see Byrd, 2016; Authors, 2023a). Moreover, very little attention has been paid to the psychological mechanisms (e.g., TSR) that may explain how CRT is associated with students' outcomes. Hence, this study aimed to fill these gaps in the literature. Specifically, we examined to what extent CRT and TSR are related, and explored the mediating role of TSR in the association between teachers' CRT and students' school belongingness.

So far, most empirical research presented data on TSR from one informant (García-Rodríguez et al., 2023), thus providing a limited picture on how TSR is perceived by teachers as well as students. This study expands previous literature by considering both teacher-reported and student-reported TSR, and their associations with students' school belongingness. Furthermore, research has shown that first- or second-generation immigrant and refugee students tend to show lower school belongingness than non-immigrant students (Dimitrova et al., 2016). Supportive TSR might be especially beneficial for children who have been forcibly displaced or migrated. Juang et al. (2018) posited that, as adults beyond the family can also be attachment figures, they might play an extremely important role for refugee and immigrant children, whose needs of safety and relatedness might be accentuated due to the exposure to migration-related stressful events. Hence, supportive TSR as attachment relationships could be particularly relevant in increasing their sense of belonging in the new context (i.e., the school). Therefore, we explored to what degree the associations between CRT and TSR, and between TSR and school belongingness differed between immigrant and refugee and non-immigrant students.

Culturally Responsive Teaching Self-Efficacy and Teacher-Student Relationship

CRT consists of a pedagogical framework that aims to guide teachers to acknowledge, value and use cultural diversity in their teaching practices such as the preparation of lessons or classroom management (Gay, 2018; Ladson-Billings, 1995). According to CRT, it is important that teachers foster caring TSR with ethnically diverse students, for example by

learning about their cultural backgrounds and by conveying to them high expectations about their academic abilities (Edwards & Edick, 2013; Gay, 2002, 2018; Ladson-Billings, 1995). Theoretical and empirical evidence indicated three main dimensions of TSR: *closeness*, *conflict* and *dependency* (Pianta et al., 1995; Pianta & Nimetz, 1992). According to Pianta (Pianta & Nimetz, 1992), *closeness* is a positive aspect of TSR, as it corresponds to the degree of warmth and support that students and teachers perceive. *Conflict* and *dependency* refer instead to negative dimensions of TSR. The first addresses feelings of anger and struggle in maintaining the relationship, while the latter is related to students' disproportionate reliance on the teacher. Several reviews and meta-analyses (García-Rodríguez et al., 2023; Roorda et al., 2011, 2017, 2021) showed that positive TSRs (i.e., high *closeness*, low *conflict*, low *dependency*) can enhance a number of students' outcomes such as academic achievement, school belongingness or externalizing and internalizing behavior, also over time. Because the measure of *dependency* tends to be more strongly related to behavior than to school engagement or belonginess (Roorda et al., 2021), we focused on *closeness* and *conflict*.

Qualitative studies found that teachers who implement CRT practices seek to build trust in the relationships with their students and families (e.g., Coffey & Farinde-Wu, 2016). A recent quantitative study (Franco et al., 2024) focused on culturally responsive social relations, and showed that teachers' ability in fostering social relations with ethnically diverse students was positively associated with students' perceptions of teachers' care. However, further quantitative investigations on the association between CRT and TSR are, so far, rare. In this study, we sought to expand this research and to explore the association between CTR and TSR. Specifically, we focused on teachers' CRT self-efficacy. Self-efficacy comprises beliefs on the own capacity to execute a behavior, and it is considered fundamental to implement that behavior (Bandura, 1977). Thus, CRT self-efficacy refers to teachers' beliefs that they are capable of implementing CRT practices (Siwatu, 2011). Theories on teachers' general self-efficacy posit that teachers who feel efficacious in their teaching practices tend to

implement behaviors that increase the teaching and learning quality, which in turn can positively impact on students' outcomes (Gibson & Dembo, 1984). Accordingly, Siwatu (2007) found that teachers' CRT self-efficacy was linked to their beliefs that CRT had positive effects on students' outcomes. Other studies showed that teachers' CRT self-efficacy was positively related to their reports of CRT practices (Comstock et al., 2023; Romijn et al., 2020). Moreover, several studies on general teaching self-efficacy showed positive associations with teachers' emotional support for their students, including TSR (Zee & Koomen, 2016).

One study (Choi & Lee, 2020) examined CRT self-efficacy and teacher-reported school climate, which measured also some aspects of TSR, showing a positive association between the two variables for teachers in the US and South Korea. Few studies addressed the links between TSR and teachers' *attitudes* to cultural diversity, which are different yet related aspects to self-efficacy beliefs (Kumar & Hamer, 2013). For example, Thijs and colleagues (2012) examined teachers' multicultural attitudes (i.e., respect towards cultures) and TSR among students of different ethnic groups in the Netherlands. The authors found that teachers with lower levels of multicultural attitudes reported to have less *close* TCR with Moroccan-Dutch students than teachers with stronger multicultural attitudes. Similarly, another study (Thijs et al., 2019) showed that students' perceptions of multicultural teaching were significantly and positively correlated with *closeness* and negatively with *conflict*. Considering theories and findings on CRT self-efficacy, general teaching self-efficacy and teachers' multicultural attitudes, we expected that teachers who feel more efficacious in implementing CRT practices would be also more likely to foster *closer* and less *conflictual* relationships with their students.

Multi-Informant Reports on TSR

Although an expanding body of literature on TSR exists, limited research considered TSR from both teachers' and students' perspectives. In a recent systematic review (García-

Rodríguez et al., 2023), only six studies presented multi-informant data. This might be problematic, because effects can be overestimated (or underestimated) when predictors and outcomes are reported by the same informant (Roorda et al., 2011). Moreover, both teachers' and students' perspectives can reveal important aspects of the relationship, which may differ between informants. Among the few multi-informant studies, it has been found a significant yet small to medium agreement between teachers' and students' reports of TSR (García-Rodríguez et al., 2023). For example, Gregoriadis et al. (2021) found moderate agreement between kindergarten teachers' and students' perceptions of *conflict* in Greece. Other studies in the Netherlands showed that *closeness* reported by teachers and their students in elementary school were moderately intercorrelated (De Jong et al., 2018; Thijs & Fleischmann, 2015). Yet, other investigations (e.g., Brekelmans et al., 2011) showed limited agreement between teachers and students. Given these inconsistent results, we aimed to expand the current knowledge by examining the level of divergent agreement between teacher-reported *conflict* and student-reported *closeness* in elementary school. Wu and colleagues (2010) found both congruent and incongruent perceptions of TSR among teachers, students and peers. Their study also showed a small negative correlation between student-reported warmth and teacher-reported *conflict*. Similarly, Hughes (2011) found a low but significant and negative correlation between teachers' perception of *conflict* and students' perception of *closeness*. Also De Jong and colleagues (2018) found that teachers' reported *conflict* was moderately negatively correlated with students' reported *closeness* among first- and second-generation immigrant students in the Netherlands. Hence, we expected to expand this result in a similar sample of students in Germany.

CRT Self-Efficacy, TSR and School Belongingness

As CRT practices aim to value students' ethnic-cultural background (Gay, 2002), they can play an important role in fostering a sense of belonging to school for ethnically diverse students. Few studies empirically addressed this link. For example, Byrd (2016) found that

some aspects related to CRT (e.g., promotion of cultural competence) positively, while others (e.g., critical consciousness socialization) negatively predicted school belongingness among adolescents in the US. Another study showed positive associations between student-reported CRT and academic engagement, attitudes toward teachers and schools among ethnically diverse ninth-graders in the US (Bottiani et al., 2020). With regard to teachers' self-efficacy, a review of research showed positive effects of self-efficacy in general teaching practices on students' academic outcomes such as school engagement or belongingness (Zee & Koomen, 2016). In a similar way, CRT self-efficacy could be positively associated to students' school belongingness. Using a larger part of the dataset presented in this study, we examined this association and found a nonsignificant association between teachers' CRT self-efficacy and students' school belongingness (Authors, 2023a). Here, we aimed to build on this previous study, seeking to test the hypothesis that aspects related to CRT that are more proximal to students' school belongingness, such as perceptions of TSR, fully mediate this association. Accordingly, one aspect of CRT is to build positive TSR (Gay, 2018; Ladson-Billings, 1995), which in turn can make students feel to belong to school (Goodenow, 1993). Hence, we hypothesized that teachers with higher levels of CRT self-efficacy would seek to build positive relationships with their students, who therefore would report higher levels of school belongingness.

TSR and School Belongingness

A number of empirical studies showed that TSR is positively associated with students' school belongingness or emotional engagement (Roorda et al., 2017). For example, Furrer and Skinner (2003) found that relatedness to teachers positively predicted the emotional engagement of students between 3rd and 6th grades. Baysu et al. (2021) found that perceived teacher support was positively related to the school belongingness of ethnically diverse secondary school students. Similarly, in another study with a larger portion of this dataset, we

(Authors, 2023b) found that student-reported *closeness* was strongly positively associated with the sense of school belonging of both immigrant and non-immigrant students. In this study, we aimed to expand this result by including also teachers' perceptions of TSR. Concerning teacher-reported TSR, Walker and Graham (2021) showed that teachers' perceptions of *conflict* were negatively correlated to elementary school students' school liking (which is a similar construct as school belongingness). Likewise, Portilla and colleagues (2014) found that teacher-reported *conflict* negatively predicted school engagement (operationalized as motivation and school liking) from kindergarten to first grade.

So far, multi-informant studies addressing the link between TSR and students' school belongingness are limited. Wu et al. (2010) considered the effect of TSR reported by students, teachers and peers on teacher-reported behavioral, yet not emotional engagement. The authors found that students who had *close* and less *conflictual* TSR reported consistently across informants, had higher levels of engagement. Even when teachers and peers rated TSR as *close* and less *conflictual* and students reported lower levels of *closeness*, they were perceived as being highly academically engaged. We aimed to expand previous limited findings on the link between both students' and teachers' perceptions of TSR and school belongingness. Specifically, we expected student-reported *closeness* to be positively and teacher-reported *conflict* to be negatively related to students' school belongingness.

The Role Played by Students' Immigrant Experience

Given the high levels of cultural diversity in schools and classrooms, in the past decades there has been a growing interest in researching TSR among ethnically diverse students. Specifically, research addressed differences in TSR among ethnic minority and majority students. Accordingly, teachers might hold ethnic stereotypes and prejudices, which could lead to negative expectations towards ethnic minority students (Glock, 2016; Steele & Aronson, 1995). For example, in Germany, students of the first or second immigrant

generation perceived lower levels of cognitive respect (i.e., fair treatment) by teachers than ethnic majority students (Vieluf & Sauerwein, 2018). Other studies also revealed stereotypes and prejudices of German preservice and in-service teachers toward immigrant and/or ethnic minority students (Civitillo et al., 2022; Glock et al., 2020; Lorenz et al., 2016). Yet, a longitudinal study in the Netherlands (Bosman et al., 2018) showed that both ethnic minority and majority students had similar trajectories of *closeness* and *conflict* from kindergarten until 6th grade. According to a survey with n = 570 teachers in Germany (SVR, 2017), participants reported positive attitudes towards cultural diversity in general. However, other studies showed that teachers also tended to hold more negative expectations for students of the first or second immigrant generation (Lorenz et al., 2016; SVR, 2017).

Taken together, research on students' and teachers' perceptions of TSR among ethnic minority and majority students yielded mixed results. Moreover, most previous studies did not consider students' immigrant experience. Yet, due to different stressors that immigrant and refugee students might have experienced (e.g., exposure to war, poverty, discrimination), immigrant and refugee students might be particularly in need of establishing a secure sense of stability and attachment in the new context (Bowlby, 1969; Juang et al., 2018). Hence, teachers implementing CRT and fostering warm relationships with students might play a particularly beneficial role for immigrant and refugee children. Therefore, it appears relevant to explore how teachers' and students' perceptions of TSR might differ between students with and without an immigrant experience. Some studies in Europe showed that teachers are particularly engaged with immigrant and refugee students (Kaukko et al., 2021), but also that perceptions of TSR may not differ across students' ethnicity (Bosman et al., 2018) and immigrant experience (Authors, 2023b). Due to these mixed results, we aimed to explore to what extent the association between teachers' CRT self-efficacy and student- as well as teacher-reported TSR varied across immigrant and refugee and non-immigrant students.

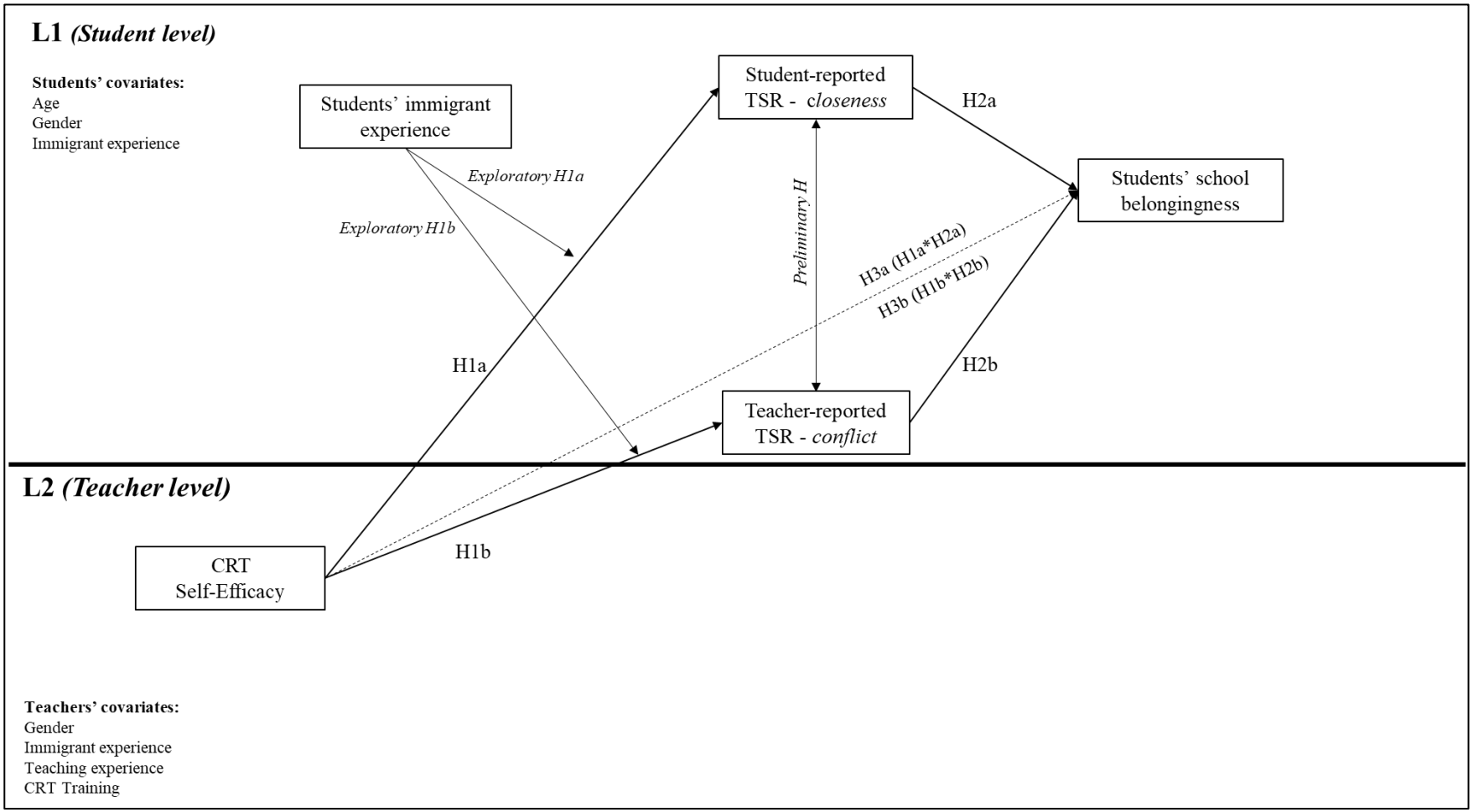
Study Hypotheses

Considering literature on divergent congruence of students' and teachers' perceptions of TSR (e.g., De Jong et al., 2018), we first examined to what extent student-reported *closeness* and teacher-reported *conflict* were negatively associated (*preliminary Hypothesis*). Then, we quantitatively investigated the little studied relation between teachers' CRT self-efficacy and TSR. We hypothesized teachers' CRT self-efficacy to be positively associated with student-reported *closeness* (*Hypothesis 1a*) and negatively associated with teacher-reported *conflict* (*Hypothesis 1b*). Moreover, we expanded previous literature (García-Rodríguez et al., 2023; Roorda et al., 2017), by examining multi-informant perspectives of TSR and one relevant aspect of students' academic adjustment, namely school belongingness. Specifically, we expected student-reported *closeness* (*Hypothesis 2a*) to be positively and teacher-reported *conflict* (*Hypothesis 2b*) to be negatively related to students' school belongingness. Consequently, we explored to what degree teachers' CRT self-efficacy is related with students' school belongingness via students' (*Hypothesis 3a*) and teachers' (*Hypothesis 3b*) perceptions of TSR.

Additionally, we explored whether these associations varied among immigrant and refugee vs non-immigrant students. Particularly, we investigated to what extent the association between teachers' CRT self-efficacy and student-reported TSR (*Exploratory hypothesis 1a*), and between CRT self-efficacy and teacher-reported TSR (*Exploratory hypothesis 1b*) varied across immigrant and refugee and non-immigrant students. Figure 5 presents a visualization of the conceptual model and study hypotheses. We preregistered the study hypotheses, materials and the analysis plan before performing analyses here: https://osf.io/qht96/?view_only=f05c232d6a3443f294fb9345d002663c.

Figure 5

Conceptual Model of the Study



Note. ***L1 = level 1; L2 = level 2; CRT = culturally responsive teaching; TSR = teacher-student relationship.***

Methods

Participants and Procedure

We collected data within a project on the school adjustment of ethnically diverse students in North Rhine Westphalia, Germany, during March and August 2022. For this study, we analyzed a subset comprising dyads of fourth-grader students and their teachers. In Germany, fourth-grade represents the final year of elementary school. We collected students' and teachers' data only for students who were allowed to participate in the study (i.e., whose parents had given written consent). In order to increase teachers' participation and data quality, we asked teachers to rate a maximum of six children per class. Because of the project aims, we asked teachers to give answers primarily on students of the first- or second-immigrant generation, and only then on non-immigrant students. The final sample comprised $N = 134$ student-teacher dyads, with $N = 30$ teachers who rated 1 to 6 students. Teachers were on average 42 years old ($M = 41.67$, $SD = 10.97$), mostly female (83.33%), born in Germany (86.67%), and had been teaching in the participating classroom for an average of three years. Students were on average ten years old ($M = 10.54$, $SD = 0.56$). Almost half reported to be female (53.73%), and one student reported to be non-binary. Almost half of the sample (44.78%) were first-generation immigrant or refugee students born in 18 different countries, the majority of them in Syria (46.67%), followed by Iraq (8.33%). Thirty-eight percent were students born in Germany who had at least one parent born abroad. Only a minority of the sample (15.67%) comprised students who were born in Germany and whose parents were also born in Germany. We collected student data with paper-and-pencil questionnaires during school time, and teacher data through an online survey. All items are reported on the project page: https://osf.io/qht96/?view_only=f05c232d6a3443f294fb9345d002663c.

Measures

CRT self-efficacy

We measured teachers' CRT self-efficacy with the subscale *"Adaptation of instruction and relationships"* from the Culturally responsive Classroom Management Self-Efficacy Scale adapted and validated in Germany (Civitillo et al., 2016). Teachers rated eight items (e.g., 'I can create a learning environment that conveys respect for the cultures of all students in my classroom', ω = .81) on a scale from 1 = *no confidence at all*, to 7 = *completely confident*.

TSR quality

Students reported their perception of *closeness* to their teacher through the German subscale *"Affiliation with Teacher"* (four items; Haenni Hoti et al., 2019; adapted from Murray & Greenberg, 2000). Answers to the items (e.g., 'My teacher understands me', ω = .86) were given on a 4-points Likert scale from 1 = totally disagree, to 4 = totally agree. Higher scores referred to higher levels of perceived *closeness*. Teachers reported their perception of *conflict* with their students, by answering three items (e.g., 'Dealing with this child drains my energy', ω = .89) from the German version of the Student-Teacher Relationship Scale (Milatz et al., 2014). Answers were based on a 5-point Likert scale from 1= *totally disagree* to 5 = *totally agree*. Higher scores corresponded to higher levels of perceived *conflict*.

School belongingness

Students reported their sense of school belonging by answering four items (e.g., 'I like being in school', ω = .81) stemming from the German PIRLS-Progress in International Reading Literacy Study (Wendt et al., 2017). Answers were given on a 4-point Likert scale from 1 = *totally disagree* to 4 = *totally agree*, where higher scores corresponded to higher levels of school belongingness.

Students' background characteristics

We assessed students' age at the time of data collection. Gender was self-reported and coded as follows: 0 = male, 1 = female, 2 = non-binary. We assessed students' immigrant

experience through reports of their and their parents' birthplace. Immigrant experience was coded as follows: 0 = non-immigrant students (i.e., born in Germany); 1 = immigrant and refugee students (i.e., born outside of Germany).

Teachers' background characteristics

Teachers reported their gender, which was coded as follows: 0 = male, 1 = female, 2 = non-binary. Teachers' immigrant experience was based on their birthplace and dummy coded as follows: 0 = non-immigrant teachers (i.e., born in Germany); 1 = immigrant teachers (i.e., born outside of Germany). Length of teaching experience was measured by their years of teaching. Additionally, teachers reported their training in CRT, by answering if and how frequently they participated in workshops or trainings on migration, displacement experience, cultural diversity or intercultural learning. Only eight teachers attended workshops or trainings on CRT topics such as heterogeneity and migration, forced displacement and cultural diversity and intercultural learning. Those who did had mostly attended workshops amounting to less than ten hours.

Data Analysis

As a first step, we analyzed descriptive statistics, skewness, kurtosis, intraclass correlations and bivariate correlations of study variables (Tables 1 and 2). Because students were nested in classrooms, we conducted multilevel regression models in M*plus* 8.6 (Muthén & Muthén, 2017), after centering continuous predictors around the grand mean. Teachers' variables represented level 2 (L2) and students' variables level 1 (L1). Missing values were present only for students' gender (less than 3%) and for students' age and student-reported TSR (less than 1%). We used the robust maximum likelihood (MLR) estimator in M*plus* to account for missing data and non-normal distribution of variables. To assess *Hypotheses 1*, we conducted two multilevel regression models with teachers' CRT self-efficacy (L2) as predictor, and student-reported (L1) and teacher-reported (L1) TSR as outcomes, respectively.

To answer *Hypothesis 2*, we performed a multilevel multiple regression with student-reported (L1) and teacher-reported (L1) TSR predicting students' school belongingness (L1). To answer *Hypothesis 3*, we conducted two 2-1-1 mediation models (Zhang et al., 2009) with teachers' CRT self-efficacy (L2) as predictor and students' school belongingness (L1) as outcome and student-reported TSR (L1) or teacher-reported TSR (L1) as mediators. We explored the moderating role of students' immigrant experience in the association between teachers' CRT self-efficacy and student-reported (*Exploratory Hypothesis 1a*) and teacher-reported TSR (*Exploratory Hypothesis 1b*), by allowing slopes to vary randomly. As a robustness check, we also performed analyses without immigrant teachers ($N = 4$). Moreover, we conducted additional analyses where we added students' and teachers' background variables as covariates.

Results

As displayed in Table 1, students reported relatively high levels of *closeness* to teachers ($M = 3.46$, $SD = 0.64$) and of school belongingness ($M = 3.28$, $SD = 0.74$). Similarly, teachers perceived lower levels of *conflict* in their relationships with students ($M = 1.77$, $SD = 1.00$). Bivariate correlations at the student and teacher level are presented in Table 1 and 2, respectively. Students' age was positively correlated with their immigrant experience ($r = .23$, $p = .01$), indicating that first-generation immigrant and refugee children were significantly older than non-immigrant children. Students' gender was significantly correlated with student-reported *closeness* ($r = -.33$, $p < .001$), teacher-reported *conflict* ($r = .29$, $p < .001$) and school belongingness ($r = -.19$, $p = .04$). Specifically, male students reported less *close* TSR and less school belongingness than females. Likewise, teachers reported higher *conflict* in TSR with males than with females. School belongingness was positively correlated with student-reported *closeness* ($r = .55$, $p < .001$) and negatively with teacher reported *conflict* ($r = -.21$, $p = .02$). Confirming our preliminary hypothesis, teacher-reported *conflict* and

student-reported *closeness* were moderately negatively correlated (r = -.24, p < .01). Intraclass correlations (ICCs) were .10 for student-reported TSR, .14 for teacher-reported TSR and .02 for school belongingness. This means that 10% and 14% of variance in student-reported *closeness* and teacher-reported *conflict* respectively was related to classroom characteristics.

Tables 3-5 show results of main analyses. Teachers' CRT self-efficacy was not significantly associated with student-reported TSR (β = -.06, SE = .30, p = .86) nor with teacher-reported TSR (β = .05, SE = .34, p = .88), disconfirming *Hypothesis 1a* and *1b*. We confirmed (Hypothesis 2a) the positive association between student-reported TSR and school belongingness (β = .53, SE = .08, p < .001), as reported in a previous study (Authors, 2023b). While the zero-order correlation between teachers' perceptions of TSR and students' school belongingness was significant, in the model with student-reported TSR as additional predictor, teacher-reported TSR was no longer significantly related to students' school belongingness (β = -.09, SE = .11, p = .41). Hence, student-reported TSR uniquely contributed to explain variance in school belongingness, while teacher-reported TSR was not significant once controlling for students' reports. The model assessing *Hypotheses 2a* and *2b* could explain 30.50% of the variance in school belongingness. Results of mediation analyses showed that neither student-reported TSR (*Hypotheses 3a*) nor teacher-reported TSR (*Hypotheses 3b*) significantly mediated the association between CRT self-efficacy and school belongingness (Table 5). Furthermore, we examined to what extent the associations between teachers' CRT self-efficacy and student-reported TSR (*Exploratory hypothesis 1a)* and teacher-reported TSR (*Exploratory hypothesis 1b*) differed across students with and without an immigrant experience. We found that this was the case for the association between teachers' CRT self-efficacy and their perceptions of *conflict* (B = .61, SE = .24, p = .01). In particular, teachers with higher levels of CRT self-efficacy rated their TSR with immigrant and refugee students as more *conflictual* (B = -.69, SD = .26, p = .01) than with non-immigrant children (B = -.14, SD = .18, p = .43; see Figure 6).

Robustness Checks

We performed analyses after adding students' age, gender and immigrant experience as well as teachers' gender, immigrant experience, teaching experience and CRT training as controls. Results did not change from main analyses (see Tables 1-4, supplementary materials). Concerning associations between control variables and TSR, we found that male students perceived less *close* TSR than girls (β = -.40, *SE* = .08, $p < .001$). Similarly, teachers reported more *conflictual* TSR with boys than with girls (β = .29, *SE* = .09, p = .001). Examining associations between controls and school belongingness, we found that immigrant and refugee students reported higher levels of school belongingness than students who did not migrate (β = .19, *SE* = .08, p = .02). Other control variables did not significantly contribute to explain variance in TSR nor school belongingness. Moreover, we performed analyses without teachers who were not born in Germany. Results did not change from the analyses with the whole sample (see Tables 5-6, supplementary materials).

Non-Preregistered Additional Analyses

Because both teacher-reported TSR and immigrant experience significantly correlated with school belongingness, we additionally explored to what extent students' immigrant experience moderated the association between teacher-reported TSR and school belongingness, also controlling for student-reported TSR (Table 7). We found a significant interaction (β = .33, *SE* = .11, p = .002). Simple slope analyses revealed that the association was significant and negative only for the group of children who did not migrate (*B* = -.26, *SE* = .10, p = .01). This indicates that teacher-reported *conflict* was negatively linked with school belongingness among children without an immigrant experience, while this association was not significant for immigrant and refugee children. Figure 7 shows the plot of the interaction.

Discussion

Considering both students' and teachers' viewpoints on TSR, this study aimed to shed light on how TSR could explain the association between CRT self-efficacy and students'

school belongingness among a sample of immigrant, refugee and non-immigrant students. Moreover, we also examined how students and their teachers perceived their TSR, and to what extent these perceptions were related to their school belongingness. To the best of our knowledge, this study is among the firsts to examine potential underlying mechanisms in the relation between CRT self-efficacy and students' outcomes.

CRT Self-Efficacy and TSR

Against our hypotheses, teachers' CRT self-efficacy was not significantly related to TSR. Thus, it seems that teachers who felt efficacious in CRT did not necessarily have close and supportive relationships with students. Moreover, we examined whether TSR could mediate the relation between CRT self-efficacy and school belongingness. Although our previous study showed that these variables were not significantly associated (Authors, 2023a), in this study we aimed to test whether TSR could link the two variables and explain how teachers' CRT might act on students' outcomes. Accordingly, TSR is an essential aspect of CRT (Gay, 2018; Ladson-Billings, 1995), and we also found that it was associated with school belongingness. However, our results did not support the mediation hypothesis, meaning that TSR did not significantly explain the association between CRT self-efficacy and school belongingness. These findings can have different explanations. For example, it might be that, although teachers felt to be averagely efficacious in CRT, they may not have a comprehensive knowledge and understanding of CRT practices. Consistent with this hypothesis, the majority of teachers in this study had never attended trainings or workshops on CRT. Therefore, it might be that teachers tend to perceive as practices inherent to CRT primarily those related to the content of the lessons or to classroom management, while they might neglect the importance of building caring and warm relationships with their students.

It might also be that teachers who feel efficacious in CRT do not actually implement CRT practices. Even though there is some evidence for the link between CRT self-efficacy and teachers' reports on the own engagement in CRT practices (Comstock et al., 2023;

Romijn et al., 2020), the association between teachers' CRT self-efficacy and observed CRT implementation warrants further investigations. Therefore, teachers might think to be culturally responsive and to implement CRT practices, but this belief could be linked to a colorevasive view corresponding to limited awareness whether the own teaching practices are perceived as culturally responsive also by ethnically diverse students. This calls for the importance of integrating CRT as part of pre-service teacher education (Civitillo & Juang, 2020), including strategies how to challenge own beliefs and stereotypes on cultural diversity and to reflect on the own teaching practices. Consequently, teachers' and students' perceptions of teachers' implementation of CRT might differ. Accordingly, other studies found divergent perceptions of teachers' and students' views on cultural diversity approaches (Civitillo et al., 2017). Hence, there is a need for further multi-informant studies that focus on teachers' and students' perceptions of CRT practices.

CRT Self-Efficacy and TSR among Immigrant, Refugee and Non-Immigrant Students

Although teachers' CRT self-efficacy and their perceptions of TSR were not significantly related among the whole sample, we found that teachers with higher levels of CRT self-efficacy reported higher *conflict* in the relationships with immigrant and refugee students, but not with non-immigrant students. This result was surprising, as one could have expected either no significant difference between the two groups, or that TSR would be less *conflictual* with immigrant and refugee students as compared with non-immigrant students, when CRT self-efficacy is higher. It might be that teachers who feel more efficacious in CRT perceive TSR with immigrant and refugee students as particularly challenging, because they put more energy in creating lessons that aim to be culturally responsive. If this does not bring about the expected results (e.g., in terms of achievement or behavior) among immigrant and refugee students, teachers might feel frustrated and perceive higher levels of *conflict* in the relationships with these students. Examining teachers' CRT self-efficacy, two studies (Cruz et al., 2020; Siwatu, 2007) showed that participants particularly felt efficacious in building

positive relationship with students. Yet, Siwatu (2007) noted that participants (i.e., pre-service teachers) in his study came from a quite homogeneous background, which could lead teachers to underestimate their behavior in more diverse contexts. Moreover, both studies did not address teachers' CRT self-efficacy related to immigrant and refugee students. Our findings could therefore shed light on the difficulties that teachers may face particularly with these students.

Students' and Teachers' Perceptions of TSR

Confirming previous results (e.g., De Jong et al., 2018), we found that student-reported *closeness* and teacher-reported *conflict* were significantly and negatively intercorrelated. This result expands the limited multi-informant literature on TSR, and supports findings of past studies on the agreement between teachers' and students' perceptions of TSR (García-Rodríguez et al., 2023). Specifically, we considered the divergent correlation of teacher-reported *conflict* and student-reported *closeness*. Our result supports the findings of Hughes (2011) and of De Jong and colleagues (2018), who also showed a low or moderate negative correlation between student-perceived *closeness* and teacher-perceived *conflict*. This indicates that students and teachers had similar perceptions of their relationship, yet with a moderate magnitude of agreement. Perceptions of TSR are personal representations of a hierarchical relationship, which can be filtered by individual feelings, personal characteristics such as teaching experience and immigrant experience (Pianta et al., 2003). In view of this, Hughes (2011) suggested that perceptions of *closeness* or support might be more likely influenced by the personal internal representation of the relationship, which can contribute to a slight different perception of TSR, expressed by a low-moderate size of agreement. Accordingly, studies found divergent perceptions of teachers' and students' perceptions on TSR (Brekelmans et al., 2011). Hence, the size of agreement on TSR between students and teachers might be limited. Yet, it would valuable for research to further examine how teachers' and student's perspectives on their relationship may diverge.

Students' and Teachers' Perceptions on TSR and Associations with School Belongingness

Results showed that the associations between students' and teachers' perceptions of TSR with school belonginess differed. Although school belongingness correlated both with teacher-reported *conflict* and student-reported *closeness*, multiple regression showed that only student-reported *closeness* was significantly and positively related to their school belongingness, as we found in another study with a larger part of the same dataset (Authors, 2023). However, teacher-reported TSR did not significantly explain variance in school belongingness beyond student-reported TSR. This means that both perceptions of TSR can play a role for students' school belongingness, but that students' perceptions of TSR are a stronger predictor than teachers' perceptions. This is not surprising because it is likely that variables reported by the same informant are more strongly intercorrelated (Roorda et al., 2011). Our result is also in line with previous findings showing that student-reported TSR is more likely to be related to students' own report of school belongingness than teacher-reported TSR. For example, one study in elementary schools showed that student-reported TSR was associated with students' outcomes such as school belongingness, beyond teacher-reported TSR (Rey et al., 2007). Similarly, Dong and colleagues (2021) found that both elementary school students' and teachers' perceptions of TSR were correlated with students' social adjustment, but that student-reported TSR was a stronger predictor.

However, we found that teacher-reported *conflict* was negatively linked to students' school belongingness, even when controlling for student-reported TSR, among students who did not migrate. Whereas the negative association between *conflict* and school belongingness is consistent with theoretical and empirical literature (e.g., Portilla et al., 2014; Ryan & Deci, 2000), the nonsignificant result for immigrant and refugee students might reveal the presence of factors protecting their school belongingness, despite *conflictual* TSR. Future studies could examine whether other factors (e.g., peer acceptance) can play a protective role in this

relation. Alternatively, according to the integration paradox hypothesis (El-Mafaalani, 2018), it could be that first-generation immigrant and refugee students do not hold very high expectations on teachers' *closeness*, whereas non-immigrant students would more strongly expect to have positive relationships with teachers. Therefore, when these expectations are not met, non-immigrant students could be particularly disappointed and detach from school. Future studies could assess this hypothesis examining also student-reported *conflict* among students with and without an immigrant experience.

Taken together, our results corroborate ad expand previous findings to immigrant and refugee students, showing that the way teachers and students perceive their relationships may contribute independently and differently to students' school belongingness. This indicates that it is important to examine TSR in a multi-informant way, in order to reveal potential differing paths of TSR on students' outcomes when perceived by different actors.

Students' and Teachers' Characteristics on TSR

There are important individual characteristics of students and teachers that can play a role in the quality and perception of their relationship (Pianta et al., 2003), and our study offered insights on how students' and teachers' features are related with their perceptions of TSR. Particularly, we found that students' gender was significantly related to both students' and teachers' perceptions of TSR. In line with the literature (e.g., Baker, 2006; McFarland et al., 2016), boys reported less *close* TSR than girls, and teachers reported more *conflictual* relationships with boys than with girls. Results were similar across children with and without an immigrant experience (see Table 7, supplementary materials). Interestingly, students' immigrant experience did not play a role in the perceptions of TSR among teachers nor among students. Previous literature found that ethnic minority students were more likely to have negative TSR than ethnic majority students (Pigott & Cowen, 2000; Saft & Pianta, 2001; Thijs et al., 2012). However, this research focused on students' ethnicity, while we addressed students' immigrant experience. While teachers might particularly support and care for

immigrant and refugee students (Kaukko et al., 2021), they can also struggle with these students, for example because of the lack of appropriate strategies and training (Biasutti et al., 2020). Hence, it seemed important to investigate how students' immigrant experience could play a role in perceptions of TSR, beyond their ethnicity. Our study showed that both students with and without an immigrant experience had similar levels of TSR. This finding is important because it suggests that students did not perceive to be treated differently by teachers and therefore, TSR was perceived similarly by all students, regardless of their immigrant experience.

Limitations and Implications

Besides the strength of providing multi-informant data and quantitative evidence on CRT, TSR and students' school belongingness, results of this study need to be interpreted in light of some limitations. First, the sample size is limited, which is relevant particularly if considering the multilevel data structure, as students were clustered in classrooms. It could be that analyses of some models did not reach sufficient power to yield significant results, because of the moderate sample size of teachers (n = 30) at level 2. As a consequence of this, we could not account for the shared variance within and between student-teacher dyads. Future studies should replicate these findings with larger samples, considering also the doubly hierarchical data structure (i.e., students nested in classrooms and students and teachers nested in dyads).

Moreover, the study is cross-sectional and could capture only a snapshot of the analyzed associations. Longitudinal studies could expand these results and shed light on the impacts of CRT self-efficacy on TSR and students' school belongingness over time. Indeed, it can be that CRT self-efficacy has an effect on perceptions of TSR and on students' outcomes, which could appear later. Future research could also expand our results in order to gain a better picture on the role played by CRT on different aspects of TSR, for example by examining also the association between CRT self-efficacy and teacher-reported *closeness*.

Furthermore, teachers' CRT self-efficacy is a self-report measure and future studies could include observational methods and students' perceptions of CRT.

Although we provided multi-informant perspectives of TSR, we focused on student-reported *closeness* and teacher-reported *conflict*. We chose these scales as they are well measurable for the particular informants, i.e., *closeness* for elementary school students (Murray & Greenberg, 2000) and *conflict* for teachers (Pianta & Steinberg, 1992). As the data stem from a larger project, it was not possible to add other dimensions of TSR. Other studies could include convergent reports of TSR dimensions or also focus on *dependency*, which might have differential effects on the adjustment of students from different cultures (Gregoriadis et al., 2021; Roorda et al., 2021). It might also be that the dimension of *closeness* is more related to school belongingness than *conflict*, regardless of the informant. Hence, future research could expand these findings exploring the association between different TSR dimensions across various informants on students' school belongingness. Moreover, it should be noted that students in both the immigrant and refugee and the non-immigrant groups are ethnically heterogeneous, and because of the highly ethnically diverse sample, we could not compare students basing on their ethnicity or their ethnic minority/majority status. Future research could address the relation between CRT, TSR and school belongingness considering both students' ethnicity and immigrant experience.

Conclusions

This study combined theories and research on culturally responsive teaching (CRT) and teacher-student relationships (TSR), and offered new insights into how CRT and TSR are related and associated with students' school belongingness. Moreover, the study provided multi-informant data from ethnically diverse students and their teachers, and extended our knowledge on the relation between CRT, TSR and the school belongingness of immigrant, refugee and non-immigrant students. Results substantiated the important role played by TSR for students' school belongingness and implied that CRT trainings should be integrated in

teachers' education. Furthermore, findings suggested that more research is needed that expands our knowledge on the association between teachers' CRT self-efficacy, their CRT practices in class, and on how they are related to TSR and students' academic outcomes.

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Table 1

Descriptives, intraclass correlations and bivariate correlations of study variables at student level

		Range	M(SD)	Skewness	Kurtosis	ICC	1	2	3	4	5	6
1	Age	9.58-12	10.54(.56)	0.46	-0.79	.16	–					
2	Gender[a]	0-1	–	–	–	–	-.04	–				
3	Immigrant experience[b]	0-1	–	–	–	–	.23**	-.05	–			
4	Student-reported TSR	1-4	3.46(.64)	-1.70	3.17	.10	-.09	-.33***	.04	–		
5	Teacher-reported TSR	1-5	1.77(1.00)	1.35	1.18	.14	.12	.29**	.11	-.24**	–	
6	School belongingness	1-4	3.28(.74)	-1.40	1.30	.02	-.10	-.19*	.18*	.55***	-.21*	–

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. TSR = teacher-student relationship; [a] 0= female, 1 = male (as only one child reported their gender as non-binary, for the variable 'gender' we counted them as missing to facilitate results interpretation); [b] 0 = non-immigrant students, 1 = immigrant and refugee students.

Table 2

Descriptives, intraclass correlations and bivariate correlations of study variables at teacher level

		Range	M(SD)	Skewness	Kurtosis	1	2	3	4	5
1	Age	26-64	41.67(10.78)	0.49	-0.81	–				
2	Gender[a]	0-1	–	–	–	-.15	–			
3	Immigrant experience[b]	0-1	–	–	–	-.20*	.09	–		
4	CRT self-efficacy	1-6.25	4.48(.90)	-0.54	-0.16	-.21	-.003	-.01	–	
5	Teaching experience (years)	3-35	13.73(8.89)	0.65	-0.51	.83***	-.19	-.14	-.29	–
6	CRT training	0-1	–	–	–	-.14	-.07	-.02	.07	-.12

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$; CRT = culturally responsive teaching; [a] 0= female, 1 = male; [b] 0 = non-immigrant teachers; 1 = immigrant teachers.

Table 3

Unstandardized Estimates of Multilevel Regressions Assessing Hypotheses 1a and 1b

	Student-reported TSR			Teacher-reported TSR		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*
CRT self-efficacy	-.01	.06	[-.14; .11]	.02	.14	[-.25; .30]
R^2	.003			.003		

Note. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. CRT = culturally responsive teaching; TSR = teacher-student relationship.

Table 4

Unstandardized Estimates of Multilevel Regressions Assessing Hypotheses 2a and 2b

	School belongingness		
	B	*SE*	*95% CI*
Student-reported TSR	.61***	.09	[.43; .79]
Teacher-reported TSR	-.07	.08	[-.22; .09]
R^2	.31		

Note. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. CRT = culturally responsive teaching; TSR = teacher-student relationship.

Table 5

Unstandardized Estimates of Multilevel Regressions Assessing Hypotheses 3a and 3b

	School belongingness		
	B	*SE*	*95% CI*
Hypothesis 3a			
CRT self-efficacy	-.03	.07	[-.16; .10]
Student-reported TSR	.63***	.09	[.45; .82]
CRT self-efficacy → Student-reported TSR	-.01	.04	[-.08; .07]
R^2	.28		
Hypothesis 3b			
CRT self-efficacy	-.04	.05	[-.15; .06]
Teacher-reported TSR	-.16*	.08	[-.32; -.01]
CRT self-efficacy → Teacher -reported TSR	-.004	.02	[-.05; .04]
R^2	.04		

Note. $^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. CRT = culturally responsive teaching; TSR = teacher-student relationship.

Table 6

Unstandardized Estimates of Multilevel Regressions Assessing Exploratory Hypotheses 1a and 1b

	Student-reported TSR			Teacher-reported TSR		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*
CRT self-efficacy	-.01	.06	[-.11; .09]	-.14	.17	[-.47; .18]
CRT self-efficacy × Students' immigrant experience[a]	.02	.21	[-.40; .44]	.61*	.24	[.14; 1.10]

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. CRT = culturally responsive teaching; TSR = teacher-student relationship; [a] 0 = non-immigrant students, 1 = immigrant and refugee students.

Table 7

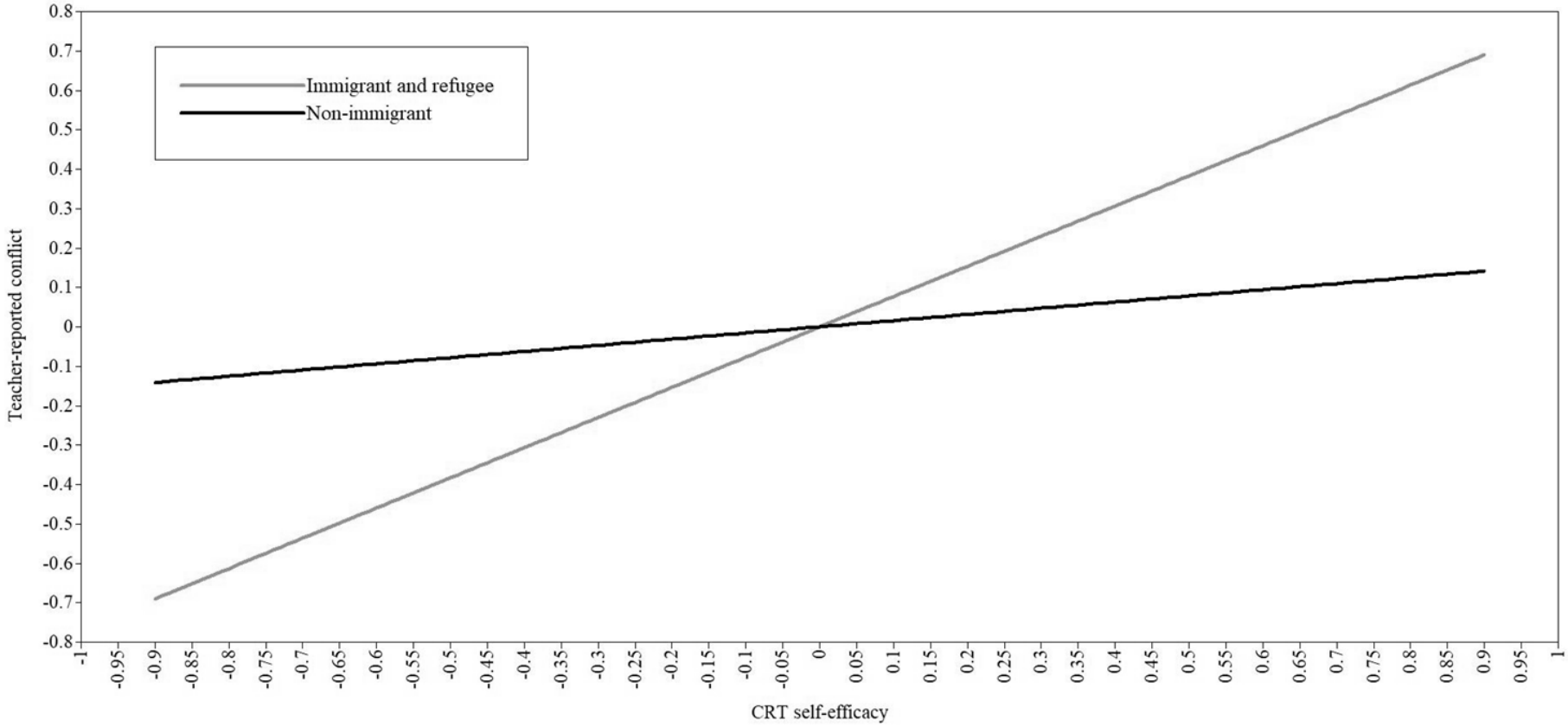
Unstandardized Estimates of Multilevel Regressions Assessing Hypothesis 2b with Students' Immigrant Experience as Moderator

	School belongingness		
	B	*SE*	*95% CI*
Teacher-reported TSR	-.26**	.10	[-.46; -.07]
Student-reported TSR	.61***	.09	[.43; .80]
Students' immigrant experience [a]	.25*	.12	[.03; .48]
Teacher-reported TSR × Students' immigrant experience [a]	.33**	.12	[.10; .56]
Slope immigrant and refugee students	.06	.06	[-.05; .18]
Slope non-immigrant students	-.26**	.10	[-.46; -.07]
R^2	.38		

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. TSR = teacher-student relationship; [a] 0 = non-immigrant students., 1 = immigrant and refugee students.

Figure 6

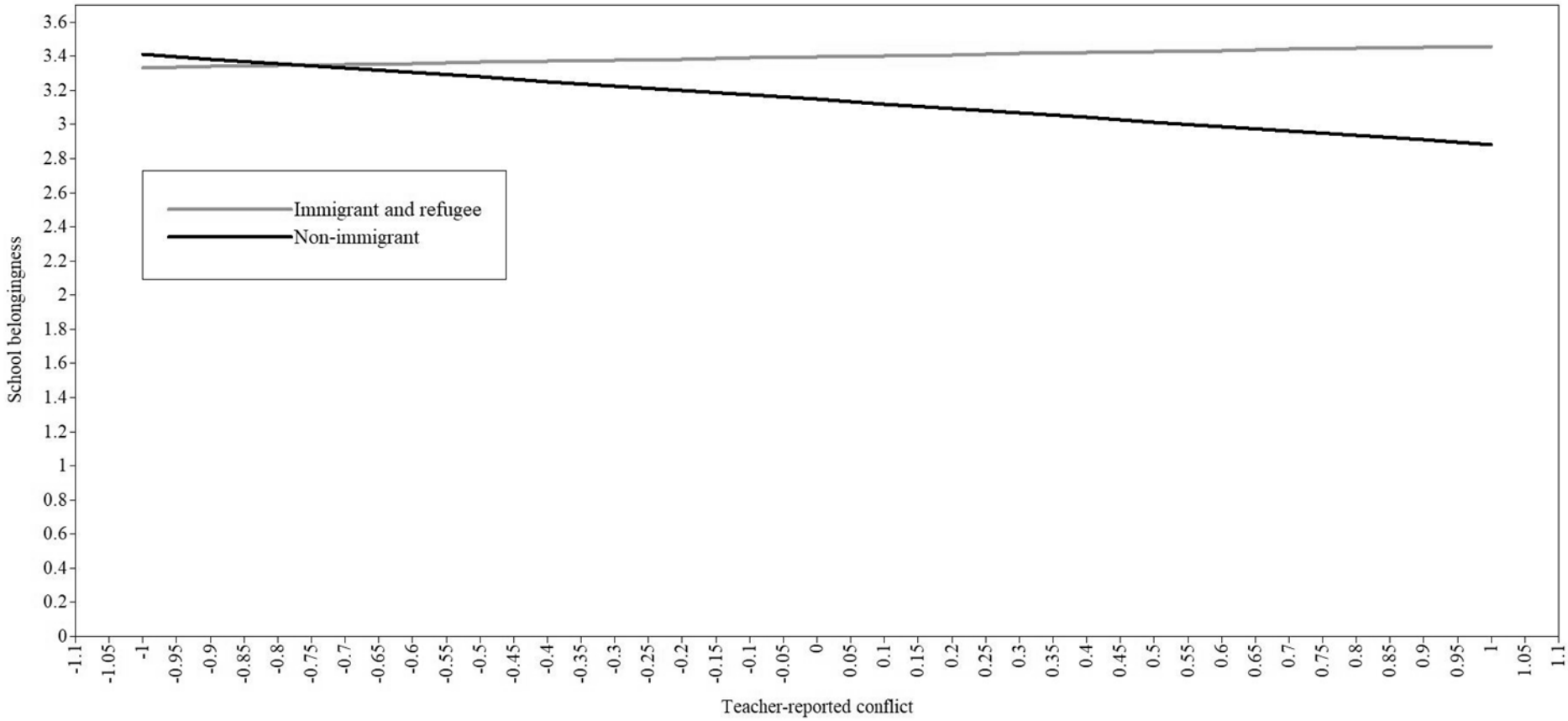
Student' Immigrant Experience Moderates the Association between CRT Self-Efficacy and Teacher-Reported Conflict



Note. L1 = level 1; L2 = level 2; CRT = culturally responsive teaching; TSR = teacher-student relationship.

Figure 7

Student' Immigrant Experience Moderates the Association between Teacher-Reported Conflict and Students' School Belongingness



6. STUDY 3

Resilience in Multicultural Classrooms: Do Positive Relationships Moderate the Language Proficiency-School Adjustment Link?*

Francesca Ialuna[1], Sauro Civitillo[2], Nele McElvany[3], Birgit Leyendecker[4] & Philipp Jugert[1]

[1] Department of Psychology, University of Duisburg-Essen

[2] Department of Interdisciplinary Social Science, Utrecht University

[3] Institute for School Development Research, TU Dortmund University

[4] Center for Child and Family Research, Ruhr University Bochum

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Abstract

Background: According to the risk and resilience model (Motti-Stefanidi & Masten, 2017), protective factors can attenuate the effect of risks and challenges on children's adjustment. For immigrant and refugee children, supportive relationships in the new context can be particularly beneficial. We expected that supportive school relationships play a protective role for the school adjustment of first-generation immigrant and refugee and non-immigrant children, by moderating the effect of one acculturative challenge (i.e., school language proficiency).

Aims: We investigated the moderating roles of teacher-child and peer relationship quality on the association between German language proficiency and school adjustment (i.e., school achievement and belongingness) among first-generation immigrant and refugee and non-immigrant children.

Sample: We recruited n = 278 fourth grade children (Mage= 10.47, SDage = 0.55, 53.24% female; 37% first-generation immigrant and refugee children).

Methods: Questionnaires assessed children's reported teacher-child and peer relationship quality and school belongingness. One test measured children's German proficiency. School achievement was assessed by their grade point average (GPA) and by a reading comprehension test. To investigate our hypotheses, we performed bias corrected factor score path analyses.

Results: School relationship did not moderate most of the associations between German proficiency and school adjustment. However, peer relationship quality buffered the effect of German proficiency on school belongingness among non-immigrant children only. Teacher-child relationship quality exacerbated the positive association between German proficiency and GPA.

Conclusions: Teacher-child and peer relationship quality can be beneficial for the school adjustment of both first-generation immigrant and refugee children and non-immigrant children.

In the last decade, many immigrant and refugee children arrived in Europe and especially Germany (Federal Office for Migration and Refugees, 2017, 2019, 2021). The school adjustment of these children should be therefore of interest to these countries' societies. Although immigrant and refugee[16] children have to deal with several acculturative challenges (e.g., learning a new language), which might undermine their school adjustment, protective factors can attenuate the hardship of these challenges, and even more, enhance children's school adjustment (Motti-Stefanidi & Masten, 2017). Such protective factors are present in microsystems, like the school (Marks & Garcia Coll, 2018; Suárez-Orozco et al., 2018). Supportive relationships with teachers and peers may play a protective role and therefore improve immigrant and refugee children's adjustment, despite acculturative challenges (Juang et al., 2018). However, so far, empirical studies have rarely focused on the buffering role of school relationships on the school adjustment of these children.

This study is set in Germany, which is in absolute numbers the second top destination country for immigrants (with 13.1 million immigrant people in 2019, McAuliffe & Khadria, 2019), and one of the top ten for refugee people in the world[17]. Most immigrant and refugee people came from Turkey, Poland, Syria and Romania (Statistisches Bundesamt, 2022). Drawing on the resilience (Motti-Stefanidi & Masten, 2017; Suárez-Orozco et al., 2018) and the attachment and relational models (Juang et al., 2018), we aimed to investigate to what degree the quality of relationships with teachers and peers mitigate the effect of an important acculturative challenge, namely German language proficiency, on the school adjustment of a culturally diverse group of primary school children. Participants in this study are first-generation, second-generation immigrant and refugee[18] children, and non-immigrant children.

[16] In this paper, we did not consider children as immigrant children, if they were from third or later immigrant generations (Statistisches Bundesamt, 2019, p. 4). The general term "immigrant and refugee" children or youth is used only to the extent to which first-generation children or youth are included.
[17] According to UNCHR (2022), in 2022 Germany hosted 2.2 million refugees.
[18] We expected this group of children to originate mainly from South-East European and Middle-East countries.

Risk and resilience of school adjustment

School adjustment comprises, besides school achievement, also psychosocial variables, such as school belongingness (Makarova & Birman, 2016). School achievement is a measure of current school success, and it is also relevant for students' future academic development, especially in stratified educational systems. School belongingness can be defined as the feeling of being included (Goodenow, 1993) and connected to the school as a place (Allen et al., 2021). It is important for children because it fulfils the need of relatedness (Osterman, 2000), and can be a significant form of attachment for immigrant and refugee children (Juang et al., 2018). However, acculturative challenges such as low proficiency in the language of instruction may represent an obstacle for performing well in school (Paetsch et al., 2016; Volodina et al., 2021) and lessen feelings of belonging to a school community (Morrison et al., 2003).

Learning the language of instruction is an essential requirement for immigrant and refugee children's academic development. Thus, after resettlement, immigrant and refugee children need to learn the new language. At the same time, they have also to deal with developmental tasks, such as making friends and performing well in school (Motti-Stefanidi & Masten, 2017), as well as with other acculturative challenges: finding a balance between the home and the new culture and society, or dealing with ethnic discrimination (Juang et al., 2018; Sirin & Rogers-Sirin, 2015; Suárez-Orozco et al., 2018). Moreover, immigrant and refugee children may have less opportunities to practice the new language (Marx & Stanat, 2012). Different studies have shown a positive association between proficiency in the language of instruction and school achievement among primary school children (Suárez-Orozco et al., 2010; Volodina et al., 2021). Not being proficient in the language of instruction may also undermine feelings of school belonging, as children could tend to avoid activities that require good language proficiency, such as talking (Due et al., 2016). Therefore, low

levels of proficiency in the language of the new country might represent a risk factor for immigrant and refugee children's school adjustment (Hypothesis 1).

Even after exposure to stressful events and despite being at risk for maladjustment, children can adapt well in relation to developmental tasks (e.g., performing well at school), thus showing resilience (Masten, 2001, 2014; Motti-Stefanidi et al., 2021). This is possible through the effect of protective factors, which, interacting with risk factors, can mitigate their effect and enhance positive development (Motti-Stefanidi & Masten, 2013, 2017). Protective factors such as close relationships with teachers and peers could therefore moderate the negative impact of acculturative challenges and promote immigrant and refugee children's school adjustment.

School relationships as moderators for school adjustment

In their model, Juang and colleagues (2018) proposed that relationships with others can help immigrant and refugee children's adaptation. The authors argued that, as displacement is linked with loss of loved ones and changes of familiar environments, relationships formed in the new context are important to improve immigrant and refugee children's positive adjustment. According to attachment theory (Bowlby, 1969, 1973), positive relationships with caregivers can fulfil children's fundamental needs for safety, protection and increase their sense of confidence. In a similar vein, self-determination theory (Ryan & Deci, 2000) addresses relatedness and posits that people tend to internalise extrinsically motivated activities when the need for relatedness is fulfilled. As they grow older, children also build relationships outside the family. Consequently, secure relationships at school that fulfil the need for relatedness may increase children's intrinsic motivation, which in turn can enhance their school engagement and achievement (Ryan & Deci, 2000). Thus, relationships with others, such as teachers and peers, can improve also the school adjustment (e.g., performing well in school, feeling to belong to school) of immigrant and refugee children (Juang et al., 2018).

Teacher-child relationship quality

Literature (Roorda et al., 2011, 2017) showed that the affective aspect of the relationship with teachers – such as *closeness* (Birch & Ladd, 1997; Pianta et al., 1995) or *affiliation* (Murray & Greenberg, 2000) - plays a significant role in students' school adjustment. Particularly, warm and supportive teacher-student relationships among primary school children are associated positively with children's school achievement (J. A. Baker, 2006; Hamre & Pianta, 2001), positive attitudes toward school, perceived academic competence, and prosocial behaviour (Longobardi et al., 2021). Moreover, building warm relationships with teachers can be a first step for establishing school belongingness in students. School belongingness is intertwined with the quality of relationships with others, in which children feel to be respected and supported (Goodenow, 1993). Accordingly, studies have shown that the quality of the teacher-child relationship was a strong predictor of primary school children's school belongingness (Arends & Visser, 2019; Osterman, 2000).

So far, literature has shown that teachers who were culturally sensitive and who fostered supportive and respectful relationships with students of different immigrant generations could strengthen their school achievement and sense of belonging (Makarova et al., 2019; Suárez-Orozco et al., 2009). Hence, with the aim of expanding research on immigrant and refugee primary school children in Europe, in this study we examine to what extent teacher-child relationship quality is associated with the school achievement (Hypothesis 2a) and the school belongingness (Hypothesis 2b) of children of different immigrant generations.

Furthermore, the quality of the teacher-child relationship appeared to have also a protective effect on children and early adolescents' school engagement (Civitillo et al., 2021; Green et al., 2008), which is a similar construct to school belongingness. For example, Civitillo and colleagues (2021) found that teacher-student relationship quality mitigated the effect of another acculturative challenge, namely experiences of ethnic discrimination, on

self-esteem and emotional school engagement of students of different immigrant generations. Nevertheless, studies addressing the potential mitigating effect of the quality of teacher-child relationships on immigrant and refugee children's school outcomes are scarce and mostly limited to qualitative investigations (e.g., Kaukko et al., 2021) or focused on adolescents (Wong & Schweitzer, 2017). However, especially for primary school children, the quality of the relationship with teachers can be even more beneficial than for adolescents (Zee et al., 2013). In Germany, the end of primary school is a demanding phase for pupils, as they need to perform well in order to enter an academic secondary school track (only the academic track is college-bound). Therefore, in this study we explore the mitigating role of teacher-child relationship quality on the relationship between German language proficiency and school achievement and belongingness of children of different immigrant generations (Hypothesis 4).

Peer relationship quality

At the end of childhood, peers become important figures in children's lives, and positive peer relationships are likely to improve children's school adjustment (Ladd et al., 1997). Research among refugee youth showed that the quality of peer relationships was protective of mental health (Fazel et al., 2012; Sierau et al., 2019) and peer problems (Samara et al., 2020). Furthermore, making new friends is one central developmental and acculturative task for immigrant and refugee children (Suárez-Orozco et al., 2018). Having supportive relationships with peers can help immigrant and refugee children feeling to "fit in" in the new school as well as preparing homework (Suárez-Orozco et al., 2009).

For students, socialising with peers makes going to school more enjoyable (Ibrahim & El Zaatari, 2020), and the quality of relationships with peers can play a crucial role in increasing children's school belongingness. Having friends and being accepted by peers might also facilitate children's involvement in learning activities, which in turn may heighten their achievement (Ladd, 1990). Accordingly, several studies showed that positive relationships with and acceptance by peers as well as friends at school contribute to children's school

belongingness (Allen et al., 2018; Hamm & Faircloth, 2005; Osterman, 2000) and achievement (Gallardo et al., 2016; Ladd et al., 1997; Wentzel et al., 2004, 2021).

However, to date, very little is known about the role that peer relationships play on immigrant and refugee children's school adjustment because most literature focused on immigrant and refugee *adolescents*. Nevertheless, this research showed that tangible and emotional support from peers helped immigrant youth to belong to the new context and to perform well academically (Suárez-Orozco et al., 2009). Recently arrived refugee adolescents and early adults reported that making friends was fundamental for their adjustment, increasing their wellbeing (Fazel, 2015) and their sense of belonging (J. R. Baker et al., 2019). One study among ethnically diverse sixth grade students showed that having frequent contacts with same-ethnic and cross-ethnic friends was linked with higher school achievement (Lewis et al., 2018). Similarly, Wölfer et al. (2019) found that having outgroup friends positively predicted the school achievement for both immigrant and non-immigrant students in secondary school.

Hence, we aim to expand this literature to children of different immigrant generations in primary school, and examine to what extent the quality of peer relationships is associated with their school achievement and belonginess (Hypothesis 3). Furthermore, studies on refugee youth suggested that positive and supportive peer relationships could mitigate the effect of challenges related to migration, such as learning the school language, on their school adjustment (Wong & Schweitzer, 2017). Therefore, we expect that the quality of peer relationships moderates the association between immigrant and refugee children's German language proficiency and their school achievement and belongingness (Hypothesis 5).

The present study

The study is part of a larger project aiming to examine the school adjustment of immigrant and refugee children in Germany. Drawing on the ecological model of resilience (Motti-Stefanidi & Masten, 2017; Suárez-Orozco et al., 2018) and on the attachment and relational model (Juang et al., 2018), we aimed to examine to what extent positive

relationships with teachers and peers buffer the association between an acculturative challenge (i.e., German language proficiency) and school adjustment (i.e., achievement and belongingness) of primary school children of different immigrant generations in Germany (see Figure 8). We operationalized school achievement using a standardised and an unstandardised measure. Unstandardised school achievement was assessed with the Grade Point Average (GPA), in order to have information on participants' school achievement in different subjects. Additionally, we administered a standardised test of children's reading comprehension, which is independent from teachers' judgment.

We considered and controlled for variables that may be associated with children's school adjustment: socioeconomic status (SES), cultural capital, age, gender and immigrant generation. SES and cultural capital are likely to be associated with students' academic achievement (Bourdieu, 1986; Sirin, 2005), immigrant students' academic adjustment (Dimitrova et al., 2016) and emotional school engagement (Göbel & Preusche, 2019). Therefore, we added children's SES and cultural capital as control variables in the analyses. Furthermore, we controlled for children's age. Since first-generation immigrant and refugee children may have been enrolled to school later or have had to repeat classes, it is possible that the age of these children in the same grade vary considerably. Additionally, we controlled for gender, as previous literature showed that gender differences are present in school achievement (Voyer & Voyer, 2014) and teacher-child relationship quality (Hamre & Pianta, 2001). Taking in consideration these variables, in this study, we hypothesised the following:

Hypothesis 1: Lower German proficiency is associated with lower levels of GPA, reading comprehension and school belongingness.

Hypothesis 2: Higher quality of relationships with teachers is associated with higher levels of GPA, reading comprehension (Hypothesis 2a) and school belongingness (Hypothesis 2b).

Hypothesis 3: Higher quality of relationships with peers is associated with higher levels of GPA, reading comprehension (Hypothesis 3a) and school belongingness (Hypothesis 3b).

Hypothesis 4: The quality of relationships with teachers moderates the association between children's German proficiency, GPA, reading comprehension and school belongingness. Particularly, we expected that the negative effect of low German proficiency on GPA and reading comprehension (Hypothesis 4a) and on school belongingness (Hypothesis 4b) would be weaker when teacher-child relationship quality is higher (vs. lower).

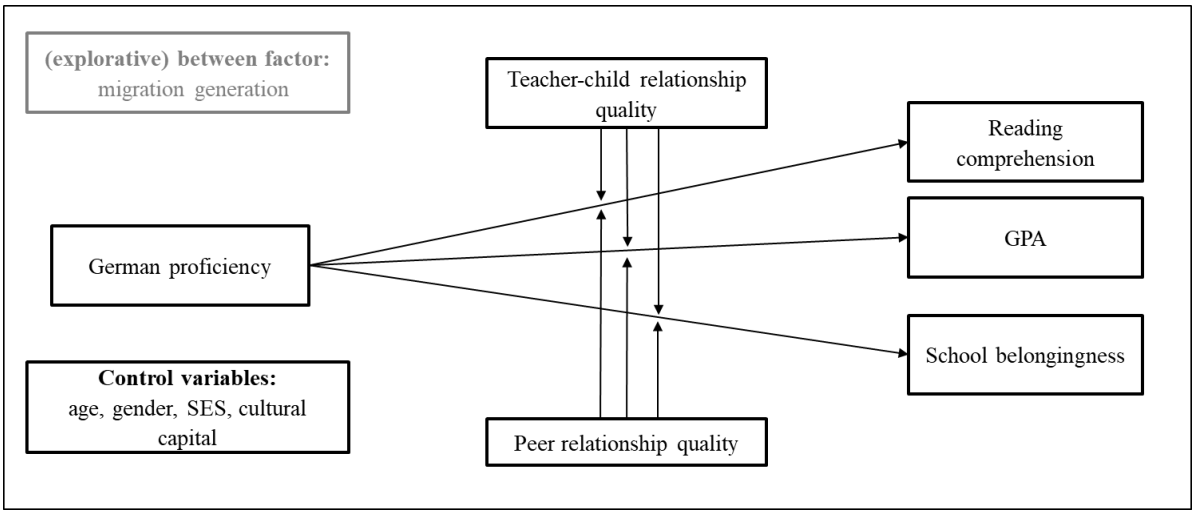
Hypothesis 5: The quality of relationships with peers moderates the association between children's German proficiency GPA, reading comprehension and school belongingness. Particularly, we expected that the negative effect of low German proficiency on GPA and reading comprehension (Hypothesis 5a) and on school belongingness (Hypothesis 5b) would be weaker when quality of peer relationships is higher (vs. lower).

Additionally, we examined potential differences by immigrant generation in an exploratory fashion and explored all hypotheses adding children's immigrant generation as moderator. We expected first-generation children to have lower scores of German language proficiency than second-generation children and non-immigrant children.

A copy of the approved Stage 1 manuscript is available here: https://osf.io/e6c97/?view_only=a1d7cb0fea624460a68ee291cf12ba94

Figure 8

School relationships moderating children's school adjustment



Method

Sample

Primary schools were contacted and asked to participate. Inclusion criteria for a school to participate were: 1) to have at least three children in the 4th grade-class (i.e., in the North Rhine-Westphalia State of Germany, this corresponds to the last class of primary school before transition to secondary schools) who were not born in Germany, and 2) to have grade-homogeneous classes (we will exclude schools with classes that grouped children from different grades). Only children whose parents signed the consent form participated in the study. The sample included $N = 278$ children ($M_{age} = 10.47$, $SD_{age} = 0.55$, 53.24% female, 0.4% non-binary) from $N = 47$ fourth grade classes. Thirty-seven percent were first-generation immigrant and refugee children, coming mostly from Syria (36.89 %), Spain (6.80%), Iraq and Romania (each 5.83%). Second-generation children were 39.21% of the sample, with parents coming mostly from Turkey (13.76 % of mothers and 18.3 % of fathers), and Poland (9.17% of mothers and fathers), while 21.58% were non-immigrant children.

Experimental procedures

This study is part of a larger project. Hence, data collection included tests and questionnaires that are not part of the current study and are not described here. We conducted the study in classrooms during school time. Two to three research assistants were present during data collection. Research assistants will explain the aim of the study and the possibility of withdrawing without giving reasons. Data collection occurred with paper and pencil questionnaires and tests. At the beginning, children familiarised with the type of questions by doing some exercises. The study was approved by the Ethics Committee of the <faculty/university>.

Measures

All scales and tests were previously administered among primary school children in Germany or in German-speaking contexts. Scales and items are available in English and

German on the OSF page:

https://osf.io/v9ehf/?view_only=9f33a87e67504178b7f3e7dfcec9f0c3

German proficiency

German proficiency was assessed using the Vocabulary test of the German PIRLS-Progress in International Reading Literacy Study (PIRLS, forthcoming).

Teacher-child relationship quality

We measured teacher-child relationship quality with four items stemming from the subscale *affiliation with teacher* (e.g., "I trust my class teacher", ω = .86) of the questionnaire Relationship with Teachers (Haenni Hoti et al., 2019, adapted from Murray & Greenberg, 2000). Answers were given on a four-point Likert scale (from 1 = *totally disagree*, to 4 = *totally agree*). Higher scores indicated a positive relationship with the teacher.

Peer relationship quality

Relationship with peers was assessed by the four-item-scale *social integration* of the Questionnaire for the Measurement of Dimensions of Integration of Pupils (e.g., "I have many friends in my class", ω = .82) (FDI 4-6, Venetz et al., 2014). Answers were given on a four-point Likert scale (from 1 = *totally disagree*, to 4 = *totally agree*). Higher scores indicated a positive relationship with classmates.

School belongingness

School belongingness was assessed by four items (e.g., "I like going to school", ω = .82) from the German PIRLS-Progress in International Reading Literacy Study (Martin et al., 2016; Wendt et al., 2017). Answers were given on a four-point Likert scale (from 1 = *totally disagree*, to 4 = *totally agree*). Higher scores indicated a high sense of belongingness.

Grade Point Average

We asked teachers children's grades of the first half of the year in three main subjects (overall German, Math, and science and social studies) and averaged them.

Reading comprehension

Children's reading comprehension was assessed through the Reading Comprehension Test for Primary School Pupils Version 2 (ELFE II, Lenhard et al., 2018).

Socioeconomic status

To assess family socioeconomic status, we used one item concerning the number of books children have at home (from 1 = *none or only very few* (0 to 10 books), to 5 = *enough to fill three or more shelves* (more than 200 books) (Heppt et al., 2022).

Cultural Capital

We measured cultural capital with two items measuring the frequency (from 1= never to 5 = always) in using a computer or tablet and a desk to study at home (adapted from NEPS-National Educational Panel Study, Goßmann, 2018).

Immigrant generation

Participants' immigrant generation was assessed by asking children their and their parents' place of birth. We defined first-generation immigrant and refugee children as those who were born outside of Germany. Children who were born in Germany and had at least one parent born elsewhere were considered second-generation immigrant children. Children whose both parents were born in Germany were considered non-immigrant. Children's reports on their immigrant background have been crosschecked with parents' reports, when available.

Preliminary analysis procedure

Missing data ranged from 0% for school belongingness to 22% for GPA. This high percentage of missing data for GPA is due to limited information received from teachers on children's grades. We used the Full-Information Maximum Likelihood (FIML) to deal with missing data. Participants have been excluded from the analyses in case of missing IDs. We detected outliers of controls (cultural capital, SES), moderators (teacher-child relationship, peer relationship), and outcomes (GPA, reading comprehension, school belongingness) using the median, as it is a more robust indicator in case of outliers in comparison to mean and standard deviation (Leys et al., 2019). We detected univariate outliers with the MAD (median

absolute deviation) method(Leys et al., 2013) with the outliers_mad function in the R package *Routliers* (Leys et al., 2019). Multivariate outliers of the associations between moderators and outcomes have been detected with the MCD (minimum covariance determinant) method (Leys et al., 2018) using the outliers_mcd function (Leys et al., 2019). Due to the limited sample size, we only performed analyses without univariate outliers in order to avoid a loss of power (see Tables A4.1-3 in supplementary materials).

Analysis pipeline

Descriptive statistics, skewness, kurtosis and bivariate correlations of study variables are presented in Table 1. For all scales, we ran a confirmatory factor analysis (CFA) with the *lavaan* package (Rosseel, 2012) in Rstudio 2023 6.1.524 (Posit team, 2023) to assess whether the correlation of the items from the same scale are associated with a common latent factor. We calculated the robust model fit statistics, which we considered acceptable with following cut-offs: comparative fix index (CFI) and Tucker Lewis Index (TLI) ≥ .95 root mean square error of approximation (RMSEA) ≤ .06, and standardised root mean square residual (SRMR) ≤ .08 (Hu & Bentler, 1999). All scales showed an acceptable fit (see Table A1 in Supplementary Materials).

To answer our hypotheses, we used Bias-Corrected Factor Score Path Analysis (Devlieger & Rosseel, 2017; Kelcey, 2019). To the best of our knowledge, it is not possible to run an a priori power analysis with this method yet. However, Bias-Corrected Factor Score Path Analysis (BCFSPA) has been recommended particularly for (multilevel) structural equation modelling with small sample sizes (Devlieger & Rosseel, 2017; Kelcey et al., 2021; Rosseel, 2020). In a simulation study, it has been shown that with complex models and small samples (e.g., n = 100) the models using BCFSPA converged more often and had less biases in the regression coefficients than Structural Equation Models (Devlieger & Rosseel, 2017). Similarly, Kelcey (2019) found that BCFSPA provided less biased coefficients and standard errors and was also more powerful when compared with full information estimation. Authors

recommended this method also for small and medium sample size with multilevel data (Kelcey et al., 2021), and as a good alternative for models with latent interactions, beyond other methods such as maximum likelihood (Cox & Kelcey, 2021). The available sample for the analyses comprises n = 278 fourth-grade children. Based on the previously reported studies, BCFSPA appears to be currently one of the best available methods to test models with latent variables with small to moderate sample sizes. Hence, we followed the procedures for BCFSPA explained by Devlieger and Rosseel (2017) and by Kelcey (2019): First, we calculated the factor scores of each latent variable separately (i.e., teacher-child relationship quality, peer relationship quality, school belongingness). Second, we conducted a linear regression between the factor scores of the latent variables, and we estimated the variance-covariance matrix of the factor scores of the latent and of the observed variables. Third, we corrected the matrix to have an estimate of the true variances and covariances. Fourth, we conducted path analyses with the corrected estimated variances and covariances. Before examining the hypotheses, we analysed the contribution of the covariates (i.e., age, gender, SES, cultural capital, immigrant generation) on the outcomes. For the models testing the hypotheses we only retained those covariates that were significantly associated with the outcomes (Table A2 in supplementary materials contains models with all covariates). Model H1 examined the direct associations between German proficiency, GPA, reading comprehension and school belongingness (hypothesis 1). Models H2 and H3 examined the association between teacher-child relationship quality and peer relationship quality and the outcomes, respectively (hypotheses 2a, 2b, 3a. 3b). In order to examine the moderating role of teacher-child relationship quality (hypotheses 4a, 4b), we added to model H1 the interaction term between German proficiency and teacher-child relationship quality with GPA, reading comprehension and school belongingness as outcomes (Model H4). In order to answer hypothesis 5, we added to model H1 the interaction term between German proficiency and peer relationship quality with GPA, reading comprehension and school belongingness as

outcomes (Model H5). In Models H4 and H5 we double mean centred the interaction terms prior to analyses, according to Lin et al. (2010). We did not calculate fit statistics of the global models as this is not possible with this method yet (Kelcey et al., 2021). However, we performed CFA and tested the model fit of all scales and reported standardized coefficients and R^2 of the models. We conducted follow-up analyses of significant latent interactions by probing and plotting them using the *semTools* package (Jorgensen et al., 2022; Schoemann & Jorgensen, 2021).

Exploratory analyses

Although we did not have *a priori* hypotheses about differences between immigrant generation groups, we explored such differences in order to expand knowledge on the little-researched school adjustment of first-generation immigrant and refugee children. Due to the limited sample size, instead of comparing different results across three immigrant generations, we merged together children of the second generation with non-immigrant children. In this way, we could test differences between children with and without an own immigrant experience. First, we explored differences in German proficiency among first-generation children and the group of second-generation immigrant and non-immigrant children with a one-way independent ANCOVA, controlling for children' SES. Second, we tested all hypotheses (1-5) by adding children's immigrant generation as a moderator.

Outcome-neutral criteria

To detect multicollinearity, we calculated variance inflation factors (VIF) performing OLS regressions of each outcome (GPA, reading comprehension, school belongingness) on predictors (immigrant generation, SES, age, gender, cultural capital, teacher-child relationship, peer relationship, German proficiency). VIF values ranged between 1.00 and 1.28, which are under the threshold of 5, thus we considered them as acceptable (Belsley et al., 2005). We calculated the percentage of participants that had the lowest or the highest score of each variable to check the presence of floor and ceiling effects. The percentage of

highest and lowest scores are presented in the section *Preliminary results*. Because of the skewed distribution of school belongingness, as a robustness check, we censored this variable and performed all analyses with Tobit regressions, which allow to calculate estimates of censored samples more accurately (McBee, 2010; see Table A3 in supplementary materials).

Results

Preliminary Results

Between 24% and 41% of participants reported the highest score for school belongingness, teacher-child relationship, peer relationship and the two items of cultural capital. This means that children in the sample reported overall high levels of school belongingness and school relationships quality, and that most of them had the possibility to have a desk to study and to use a computer or tablet at home. In contrast, 25% showed the lowest score for SES, meaning that a quarter of the sample reported to have less than ten books at home. Among the covariates, only age (β = -.26, p <.001) and immigrant generation (β = -.14, p =.02) were significantly associated with GPA, and only immigrant generation (β = -.12, p =.05) was significantly related to reading comprehension. Concerning school belongingness, age (β = -.14, p =.01), gender (β = -.19, p = .001) and having a desk to study at home (β = .18, p = .002) were significant covariates. Hence, we retained only significant covariates for each outcome in the models.

Main Results

Partly supporting H1, we found that children's German proficiency was significantly and positively associated with their GPA (β = .31, p < .001) and reading comprehension (β = .50, p <.001), but was weakly negatively related to school belongingness (β = -.15, p =.01). The model could explain between 10% and 25% of variance in the outcomes (see Table 2). Both relationship quality with teachers (β = -.15, p = .01) and peers (β = -.16, p = .01) were significantly, but weakly and negatively associated with reading comprehension. Supporting H2b and H3b, relationship with teachers (β = .70, p < .001) and peers (β = .58, p < .001) were

significantly and positively related to school belongingness. In contrast, hypotheses addressing the direct associations between school relationships and school achievement (i.e., H2a, H3a) were not supported. Model H2 could explain between 4% and 55% and model H3 between 4% and 41% of the variance in the outcomes. Tables 2 and 3 present results of the main analyses.

When examining the moderating role of teacher-child relationship quality (H4), results showed that teacher-child relationship quality significantly moderated the association between German proficiency and GPA ($\beta = .12$, $p = .03$). Therefore, we probed and plotted the interaction to understand its direction. Simple slope analyses showed that, in contrast to our expectations, the positive association between German proficiency and GPA was stronger when relationship with teachers was perceived as higher ($B = .11$, $SE = .02$, $p < .001$) as compared to when it was perceived as lower ($B = .03$, $SE = .03$, $p = .23$; see Figure 9). Teacher-child relationship did not moderate the relationship between German proficiency and reading comprehension or school belongingness. Regarding H5, results showed no significant moderation effect of peer relationship quality. Robustness checks comprised Tobit regression after censoring school belongingness, analyses without outliers and with all covariates. Overall, results of these robustness checks mainly confirmed results of main analyses (see supplementary materials).

Exploratory analyses

In order to compare German proficiency across immigrant and non-immigrant children, we ran a robust ANCOVA, controlling for children' SES with the R package WSR2 (Mair & Wilcox, 2020). The test showed that children significantly differed in their German proficiency levels, across all levels of SES. Particularly, first-generation immigrant and refugee children showed significantly lower levels of German proficiency than second-generation and non-immigrant children (see Table A5 in supplementary materials).

To assess the extent to which the examined associations were different between children who did and did not migrate, we added immigrant generation as a moderator to the previous models. Immigrant generation was dummy coded such that 0 = second-generation immigrant and non-immigrant children, and 1 = first generation immigrant and refugee children. Results showed that immigrant generation moderated the association between German proficiency and school belongingness (β = -.15, p = .04). Slopes for the two groups of children were contrary, although not significant, such that the negative association was descriptively stronger for first-generation immigrant and refugee children (B = -.09, SE = .13, p = .46) than second-generation and non-immigrant children (B = -.02, SE = .02, p = .45). In other words, children with lower levels of German proficiency reported higher levels of school belongingness, but only among first-generation immigrant and refugee children (Figure 10).

Concerning the moderation models (H4 and H5), three-way interactions (German proficiency × relationship with teachers or peers ×immigrant generation) were not significant. Additionally, we conducted analyses of H4 and H5 per immigrant generation group separately. For first-generation immigrant and refugee children only, neither teacher-child nor peer relationship quality significantly moderated the effect of German proficiency on the outcomes. Instead, for second generation and non-immigrant children, the interaction between German proficiency and teacher-child relationship quality was significant when predicting GPA (β = .24, p < .001). Simple slope analyses showed that, similar to the results among the whole sample, the effect of German proficiency on GPA was not significant across lower levels of teacher-child relationship (B = .01, SE = .03, p = .66), but it became stronger and positive when teacher-child relationship quality had higher values (B = .15, SE = .02, p < .001). Accordingly, teacher-child relationship quality seemed to exacerbate the effect of children's German proficiency on their grades (Figure 11). Furthermore, in this group, peer relationship quality moderated the relation between German proficiency and school

belongingness (β = .13, p = .04). The negative association between the two variables was stronger when peer relationship quality had lower (B = -.06, SE = .02, p = .01) vs higher (B = .004, SE = .02, p = .87) levels (Figure 12), suggesting that peer relationship quality played a buffering effect in this association. Tables 5 and 6 show results of exploratory analyses.

Discussion

In this study, we examined the associations between German language proficiency and the school adjustment of children of different immigrant generations in primary school. We combined the risk and resilience (Motti-Stefanidi & Masten, 2017) with the attachment and relational model (Juang et al., 2018), and aimed to test the potential mitigating role of teacher-child and peer relationship quality on children's school adjustment, in the face of the challenge of learning the language of instruction (i.e., German). This study is among the first to examine school adjustment among primary school children including first-generation immigrant and refugee children in Europe, and to explore the potential protective role of school relationships for these students.

German Language Proficiency and School Adjustment

In line with H1, we found that German language proficiency was positively related to children's school achievement as measured by grades and by reading comprehension. This is in accordance with previous literature showing the importance of school language proficiency for school performance (e.g., Paetsch et al., 2016; Volodina et al., 2021). In contrast to our expectations, German proficiency was negatively related to school belongingness. However, when adding children's immigrant generation as a moderator in the analysis, we found that the negative association was significant only for first-generation immigrant and refugee children. As these children tended to have lower levels of German proficiency compared to the other groups, the association might indicate that first-generation immigrant and refugee children, despite lower levels of German proficiency, reported high levels of school belongingness. In light of the attachment and relational model (Juang et al., 2018), first-

generation immigrant and refugee children might have a greater need for school belongingness than other children. Indeed, various displacement-related challenges (e.g., exposure to war, discrimination) might undermine their feelings of safety and relatedness. Because they are new to the context, first-generation immigrant and refugee children might have also limited social resources outside the school (e.g., less involvement in extracurricular activities). Hence, perceiving high levels of school belongingness can be particularly important for this group of children. Moreover, this finding would support the resilience framework (Masten, 2014; Motti-Stefanidi & Masten, 2017), suggesting that children may have a good school adjustment despite acculturative challenges (i.e., having lower levels of school language proficiency).

School Relationships Quality and School Adjustment

In line with our expectations and with previous studies (e.g., Allen et al., 2018; Osterman, 2000; Suárez-Orozco et al., 2009), we found that both teacher-child and peer relationship quality were positively associated with school belongingness. This supports the attachment and relational model (Juang et al., 2018), positing that relationships that are perceived as warm and supportive can fulfil the needs of relatedness and safety, making the context more enjoyable and welcoming (Ibrahim & El Zaatari, 2020). A review of research among adolescents (Allen et al., 2018) showed that higher quality of relationships with teachers and peers were related to higher school belongingness. This study expands these findings to primary school children and to first-generation immigrant and refugee students. Moreover, research among immigrant and non-immigrant adolescents showed that having a higher sense of school belonging was particularly important for students' performance (Schachner et al., 2019). Hence, fostering supportive relationships at school can play a crucial role for children's school adjustment.

Concerning H2a and H3a, both teacher-child and peer relationships were not related to children's GPA. This suggests that it is possible that children's perceptions of school

relationships are independent from their grades. Therefore, children might have good relationships despite lower school achievement. As GPA is based on teachers' judgments, the nonsignificant relationship might also have to do with the way we measured relationship quality, which was based on students' perceptions. It is possible that *teachers'* reports of the relationship quality with their students would lead to positive associations with children's GPA, as found by Hamre and Pianta (2001). Moreover, results suggest that teachers' judgments about children's grades seem not to be linked with children's psychosocial adjustment at school, when operationalised by having positive peer-relationships. Contrary to our expectations, teacher-child relationship was negatively related to children's reading comprehension, which is in contrast to previous investigations (e.g., J. A. Baker, 2006). One possible explanation for this finding might be that children who face challenges in reading comprehension receive more support from their teachers and therefore perceive to have a better relationship with them. In this study, classrooms were highly culturally diverse and comprised many children with an immigrant experience or background. Hence, it could be that teachers in these classrooms are particularly supportive towards children with linguistic difficulties, and especially towards immigrant and refugee children (see Kaukko et al., 2021). Accordingly, children on average reported very high levels of relationship quality with their teachers.

Peer relationship quality was also negatively related to reading comprehension. This result differs from previous studies (e.g., Ladd et al., 1997; Wentzel et al., 2004, 2021) on peers and school achievement as they focused on friendship nominations or peer acceptance and victimization and not peer relationship quality. Nevertheless, our finding might have different explanations. For example, it might be attributable to the type of classrooms included in this study. It might be that in these multilinguistic classrooms, school language might not be instrumental to form (inter-ethnic) peer relationships. Accordingly, research showed that primary school children tend to spend more time in activities with peers of the

same linguistic group (Aboud & Sankar, 2007). Moreover, although immigrant generation did not moderate these associations, it might be that other variables (e.g., SES, ethnicity) might play a role (Risi et al., 2003). Yet, it should be noted that the negative associations between both school relationships and reading comprehension were quite weak. Future studies should replicate this finding with larger samples and also longitudinally, in order to assess the direction of this association.

The Protective Role of School Relationships

In line with the risk and resilience model (Motti-Stefanidi & Masten, 2017), we expected that teacher-child and peer relationship quality play a protective role by mitigating the negative effect of having low levels of German proficiency on children's school adjustment. Most results showed nonsignificant interactions of school relationships. Future studies could examine other dimensions of school relationships (e.g., being accepted by peers) as potential protective factors. Only the interaction between German proficiency and teacher-child relationship on GPA was significant. Against our expectations, slope analyses showed that teacher-child relationship seemed to exacerbate the effect of German proficiency on GPA. Specifically, the positive association between the two variables was stronger when children perceived higher (vs lower) levels of relationship quality with their teachers. When examining results among immigrant groups separately, we found a similar result for children of the second-generation and without an immigrant experience. However, the interaction was not significant among first-generation immigrant and refugee children. This finding does not support our hypothesis that teacher-child relationship might reduce the effect of having lower levels of German proficiency on GPA. Rather, it suggests that children's proficiency in school language becomes particularly important for their achievement, as measured by grades, when teacher-child relationship quality is perceived as more positive. This corroborates the importance of teachers' socioemotional support for children's school achievement (Makarova et al., 2019), alongside academic skills.

Additionally, we aimed to explore the moderation of school relationships among children with and without an immigrant experience. While for most of the examined associations there was no difference across immigrant generation groups, we found that, for second generation immigrant and non-immigrant children only, peer relationship quality significantly moderated the association between German proficiency and school belongingness. We hypothesised that German proficiency and school belongingness would be positively related, and that higher levels of peer relationship quality could reduce the effect of German proficiency on the outcome. Although the association German proficiency-school belongingness was unexpectedly negative, this was the case only for lower levels of peer relationship quality. In other words, peer relationship quality seemed to play a buffering role, in that it reduced the negative effect of German proficiency on school belongingness, but only for children without an own immigrant experience. Research showed that first-generation immigrant and refugee youth tend to face more victimization experiences and peer problems than their non-immigrant counterparts (Samara et al., 2020; Stevens et al., 2020). Accordingly, it may be that for first-generation immigrant and refugee children it is more difficult to build positive relationships with peers and therefore, peer relationship quality might not play a protective role for their adjustment.

Limitations and Implications for Future Research

The study presents some limitations that should be considered when interpreting results. One limitation concerns the limited sample size. To face this problem, we conducted BCFSPA, which is currently one of the most recommended approaches to analyse structural models with small-to-medium sample sizes (Devlieger & Rosseel, 2017; Kelcey, 2019; Kelcey et al., 2021). Yet, it might be that, for some models (e.g., moderation models), the power to detect significant associations was not sufficient. Hence, future studies could replicate these analyses with larger samples. Moreover, the study had a cross-sectional design, which does not allow for causal interpretations. It would be interesting to examine our

hypotheses with longitudinal data, in order to verify the direction of associations. One strength of this study is that we used children's proficiency in the school language as a measure for one acculturative challenge, apart from using only the immigrant generation category. Nevertheless, other acculturative challenges at school could be examined (e.g., ethnic discrimination), as they can contribute to differences in school adjustment between immigrant and non-immigrant children. Furthermore, to measure school adjustment, we used not only grades, which are linked with teachers' biases, but also a reading achievement test and a self-report measure on children's school belongingness. Yet, future studies could expand these results and examine immigrant and refugee children's adjustment also in terms of adaptation to pedagogical approaches and teaching styles. Additionally, research might investigate other dimensions of school relationships as potential protective factors, such as peer acceptance and friendships (Hamm & Faircloth, 2005; Ladd et al., 1997). Also *dependency* in teacher-child relationship quality could be an interesting aspect to examine (Pianta et al., 2003). Although research showed that dependency tends to be negatively related to children's school adjustment (Roorda et al., 2021), for first-generation immigrant and refugee children, teachers who are perceived as a secure base could play a positive role for their adjustment. Future studies might also consider a multi-informant approach by examining both teachers' and classmates' perceptions of relationship quality.

Conclusions

Combining the risk and resilience framework (Motti-Stefanidi & Masten, 2017) and the attachment and relational models (Juang et al., 2018), the main goal of the current study was to examine whether school relationships (i.e., teacher-child and peer relationship) quality could protect the school adjustment of immigrant and non-immigrant children from the acculturative challenge of learning the school language. Most results showed that school relationships did not significantly moderate the association as expected. However, peer relationship quality could attenuate the negative effect of German proficiency on school

belongingness among second generation immigrant and non-immigrant children. Moreover, teacher-child relationship quality was positively linked with children's GPA, when they had higher levels of German proficiency. Both types of school relationships were positively related to children's school belongingness. As feeling to belong to school is important for school performance (Schachner et al., 2019), this study corroborates the notion that it is relevant to foster relationship quality at school in order to enhance children's school adjustment. Additionally, we found that most results were similar across immigrant generations, thus expanding evidence on the role played by school relationships to first-generation immigrant and refugee children. This suggests that school relationships play an equally beneficial role for both immigrant, refugee and non-immigrant children. Hence, it is important not only to consider individual abilities (e.g., school language proficiency), but also to identify and enhance contextual factors, which may play a crucial role for children's school adjustment and development. This is relevant because contextual factors can be the focus of school and classroom interventions. For example, teachers could aim to implement pedagogical techniques such as cooperative learning strategies with the aim of fostering relationship quality between classmates (Van Ryzin et al., 2020). Also, coaching interventions for teachers showed promising results in enhancing teacher-child relationship quality in primary schools (Bosman et al., 2021). Specifically in the case of culturally diverse classrooms, teachers could seek to employ culturally responsive teaching practices (Gay, 2002), by discussing and appreciating cultural diversity at school. Moreover, schools and teachers could target cultural diversity policies and interventions fostering a school climate of respect and inclusion of all students.

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Table 1
Descriptives and bivariate correlations of study variables

		Range	M(SD)	Skew-ness	Kurto-sis	1	2	3	4	5	6	7	8	9	10	11	12
1	Age	9.42- 12.58	10.47(0.55)	0.63	-0.04	–											
2	Gender[a]	0-1	–	–	–	-.04	–										
3	German proficiency	0-19	8.40(3.57)	0.24	-0.49	-.31***	.06	–									
4	Teacher-child relationship quality	1-4	3.56(0.59)	-1.95	4.23	-.11	-.21***	-.07	–								
5	Peer relationship quality	1-4	3.44(0.60)	-1.35	1.83	-.13*	.07	.06	.40***	–							
6	GPA	2.67-6	4.37(0.80)	-0.06	-0.77	-.29***	-.05	.40**	.07	.05	–						
7	Reading comprehension	0-25	11.57(4.75)	0.02	-0.34	-.17**	.00	.57**	-.08	.00	.38***	–					
8	School belongingness	1-4	3.37(0.67)	-1.46	1.80	-.07	-.14*	-.09	.58***	.43***	.01	-.13*	–				
9	SES	1-5	2.39(1.17)	0.65	-0.33	-.18**	.02	.20**	.02	.06	.12	.13*	.06	–			
10	Use of computer or tablet	1-5	4.08(1.19)	-1.22	0.58	-.04	.05	-.05	.09	.07	.06	.07	.03	-.07	–		
11	Desk to study at home	1-5	4.42(1.20)	-2.02	2.66	-.03	-.02	.01	.16**	.18**	-.04	-.01	.16**	-.03	.19**	–	
12	Immigrant generation[b]	0-1	–	–	–	.25***	-.05	-.33***	-.01	-.01	-.21**	-.25***	.11	-.20**	-.03	.03	–

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. [a] 0= female, 1 = male. As only one child reported their gender as non-binary, for the variable 'gender' we counted them as missing to facilitate results interpretation. [b] 0 = second generation immigrant and non-immigrant children. 1 = first-generation immigrant children

Table 2

Unstandardized Estimates of Bias Corrected Factor Scores Path Analyses of Hypotheses 1-3.

	GPA		Reading Comprehension		School Belongingness	
	B	*SE*	*B*	*SE*	*B*	*SE*
Hypothesis 1						
German Proficiency	.07***	.01	.65***	.07	-.04*	.02
Age	-.32***	.08	–	–	-.26*	.11
Gender[a]	–	–	–	–	-.34**	.11
Have a desk to study	–	–	–	–	.15**	.05
Immigrant generation[b]	-.12	.09	.11	.48	–	–
R^2	.20		.25		.10	
Hypotheses 2a and 2b						
Teacher-child relationship quality	.07	.05	-.67*	.26	.70***	.04
Age	-.36***	.08	–	–	-.12	.08
Gender[a]	–	–	–	–	-.02	.08
Have a desk to study	–	–	–	–	.09*	.03
Immigrant generation[b]	-.23*	.10	-.96	.53	–	–
R^2	.10		.04		.54	
Hypotheses 3a and 3b						
Peer relationship quality	.05	.05	-.70**	.26	.58***	.05
Age	-.35***	.08	–	–	-.12	.09
Gender[a]	–	–	–	–	-.50***	.09
Have a desk to study	–	–	–	–	.08*	.04
Immigrant generation[b]	-.25*	.10	-.95	.53	–	–
R^2	.10		.04		.41	

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

[a] 0= female, 1 = male. [b] 0 = second generation immigrant and non-immigrant children. 1 = first-generation immigrant children

Table 3

Unstandardized Estimates of Bias Corrected Factor Scores Path Analyses of Hypotheses 4 and 5.

	GPA		Reading Comprehension		School Belongingness	
	B	*SE*	*B*	*SE*	*B*	*SE*
Hypothesis 4						
German proficiency	.07***	.01	.66***	.07	-.03*	.01
Teacher-child relationship quality	.09	.04	-.44	.23	.69***	.04
German proficiency × Teacher-child relationship quality	.04*	.02	-.13	.09	.01	.02
Age	-.31***	.08	–	–	-.14	.08
Gender[a]	–	–	–	–	-.01	.08
Have a desk to study	–	–	–	–	.09*	.03
Immigrant generation[b]	-.11	.09	.11	.48	–	–
R^2	.23		.26		.54	
Hypothesis 5						
German proficiency	.07***	.01	.66***	.07	-.04**	.01
Peer relationship quality	.04	.04	-.79**	.23	.59***	.05
German proficiency × Peer relationship quality	.004	.01	-.01	.07	.02	.01
Age	-.31***	.08	–	–	-.18*	.09
Gender[a]	–	–	–	–	-.48***	.09
Have a desk to study	–	–	–	–	.08*	.04
Immigrant generation[b]	-.12	.09	.18	.48	–	–
R^2	.20		.28		.44	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. [a] 0= female, 1 = male. [b] 0 = second generation immigrant and non-immigrant children. 1 = first-generation immigrant children.

Table 4

Unstandardized Estimates of Bias Corrected Factor Score Path Analyses of Exploratory Hypotheses.

	GPA		Reading Comprehension		School Belongingness	
	B	*SE*	*B*	*SE*	*B*	*SE*
Exploratory Hypothesis H1						
German proficiency	.09***	.02	.65***	.08	-.02	.02
German proficiency × Immigrant generation[b]	-.05	.03	-.03	.15	-.08*	.04
Age	-.33***	.08	–	–	-.29**	.11
Gender[a]	–	–	–	–	-.34**	.11
Have a desk to study	–	–	–	–	.15**	.05
Immigrant generation[b]	-.15	.10	-.02	.50	.10	.12
R^2	.21		.25		.12	
Exploratory Hypothesis H2						
Teacher-child relationship quality	.04	.07	-1.05**	.38	.73***	.06
Teacher-child relationship quality × Immigrant generation[b]	.05	.11	.83	.61	-.07	.10
Age	-.36***	.08	–	–	-.16*	.08
Gender[a]	–	–	–	–	-.01	.08
Have a desk to study	–	–	–	–	.08*	.03
Immigrant generation[b]	-.24*	.10	-1.21*	.53	.22*	.09
R^2	.10		.05		.55	
Exploratory Hypothesis H3						
Peer relationship quality	.05	.06	-.79*	.34	.59***	.06
Peer relationship quality × Immigrant generation[b]	.004	.11	.28	.63	-.04	.11
Age	-.35***	.08	–	–	-.13	.09
Gender[a]	–	–	–	–	-.50***	.09
Have a desk to study	–	–	–	–	.08	.04
Immigrant generation[b]	-.25*	.10	-1.03	.54	.07	.10
R^2	.09		.04		.41	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. [a] 0= female, 1 = male. [b] 0 = second generation immigrant and non-immigrant children. 1 = first-generation immigrant children.

Table 5

Unstandardized Estimates of Bias Corrected Factor Score Path Analyses of Exploratory Hypothesis 4.

	GPA			Reading Comprehension			School Belongingness		
	B	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*
German proficiency	.08***	.01	.34	.64***	.07	.50	-.02	.01	-.07
Teacher-child relationship quality	.09*	.04	.11	-.49*	.23	-.11	.70***	.04	.70
German proficiency × Teacher-child relationship quality × Immigrant generation[b]	-.04	.03	-.07	-.13	.18	-.04	.02	.03	.02
Age	-.30***	.08	-.20	–	–	–	-.17*	.08	-.09
Gender[a]	–	–	–	–	–	–	-.01	.08	-.004
Have a desk to study	–	–	–	–	–	–	.08*	.03	.10
Immigrant generation[b]	-.12	.09	-.08	-.06	.49	-.01	.19*	.09	.09
R^2	.22			.26			.55		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. [a] 0= female, 1 = male. [b] 0 = second generation immigrant and non-immigrant children. 1 = first-generation immigrant children.

Table 6

Unstandardized Estimates of Bias Corrected Factor Score Path Analyses of Exploratory Hypothesis 4.

	GPA			Reading Comprehension			School Belongingness		
	B	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*
German proficiency	.07***	.01	.32	.65***	.07	.50	-.05**	.01	-.16
Peer relationship quality	.04	.05	.05	-.77**	.24	-.17	.60***	.05	.60
German proficiency ×									
Peer relationship quality	-.01	.03	-.01	.04	.16	.01	.04	.03	.07
× Immigrant generation[b]									
Age	-.31***	.08	-.20	–	–	–	-.17	.09	-.09
Gender[a]	–	–	–	–	–	–	-.47***	.09	-.24
Have a desk to study	–	–	–	–	–	–	.08*	.04	.10
Immigrant generation[b]	-.12	.09	-.08	.18	.48	.02	.01	.10	.003
R^2	.20			.28			.43		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. [a] 0= female, 1 = male. [b] 0 = second generation immigrant and non-immigrant children. 1 = first-generation immigrant children.

Table 7

Unstandardized Estimates of Bias Corrected Factor Score Path Analyses of Hypotheses per Immigrant Group.

	First generation immigrant and refugee children						Second generation immigrant and non-immigrant children					
	GPA		Reading Comprehension		School Belongingness		GPA		Reading Comprehension		School Belongingness	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Hypothesis 4												
German proficiency	.05	.03	.63***	.12	-.06**	.02	.08***	.02	.65***	.09	-.01	.02
Teacher-child relationship quality	.16	.09	-.14	.40	.78***	.06	.07	.05	-.77*	.31	.60***	.06
German proficiency × Teacher-child relationship quality	-.03	.04	-.08	.18	.02	.03	.07***	.02	-.10	.11	.01	.02
Age	-.34**	.12	–	–	-.21**	.08	-.29**	.11	–	–	-.19	.13
Gender[a]	–	–	–	–	-.11	.10	–	–	–	–	-.01	.12
Have a desk to study	–	–	–	–	.04	.04	–	–	–	–	.10*	.05
R^2	.14		.23		.75		.27		.27		.44	
Hypothesis 5												
German proficiency	.03	.03	.58***	.12	-.09**	.03	.09***	.02	.68***	.09	-.03	.02
Peer relationship quality	.05	.07	-.51	.33	.57***	.07	.04	.06	-1.04**	.33	.60***	.07
German proficiency × Peer relationship quality	.02	.04	.16	.17	.07	.04	.01	.01	-.03	.08	.03*	.02
Age	-.36**	.12	–	–	-.29*	.11	-.25*	.12	–	–	-.15	.13
Gender[a]	–	–	–	–	-.53***	.13	–	–	–	–	-.46***	.12
Have a desk to study	–	–	–	–	-.02	.06	–	–	–	–	.15**	.05
R^2	.11		.26		.53		.21		.28		.42	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. [a] 0= female, 1 = male.

Figure 9

The Moderating Effect of Teacher-Child Relationship Quality on the Association between German Proficiency and GPA

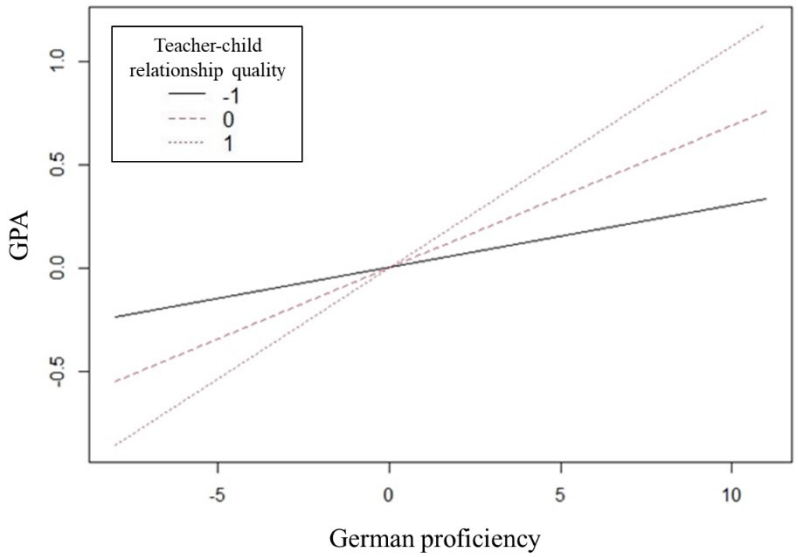
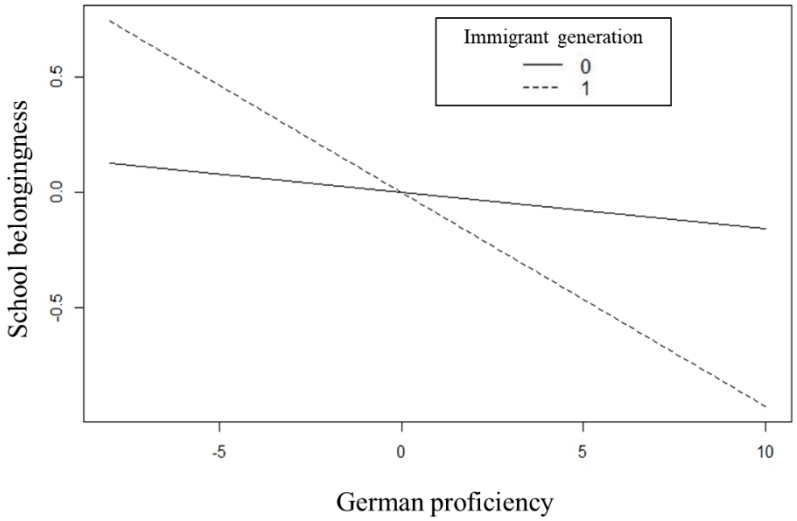


Figure 10

The Moderating Effect of Immigrant Generation on the Association between German Proficiency and School Belongingness



Note. 0 = second-generation immigrant and non-immigrant children; 1 = first-generation immigrant children

Figure 11

The Moderating Effect of Teacher-Child Relationship Quality on the Association between German Proficiency and GPA for Second-Generation and Non-Immigrant Children Only

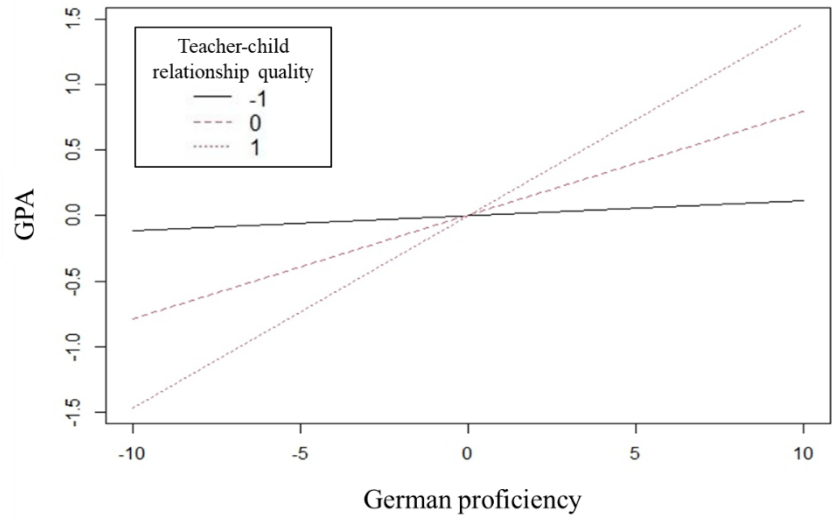
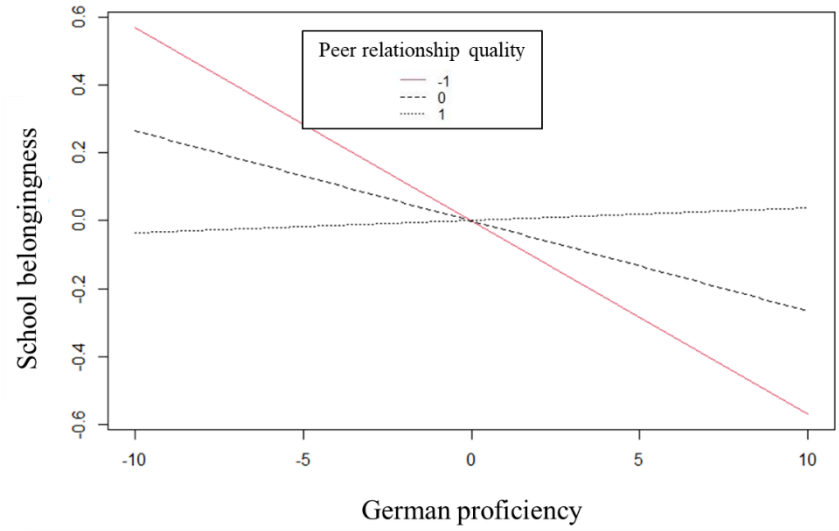


Figure 12

The Moderating Effect of Peer Relationship Quality on the Association between German Proficiency and School Belongingness for Second-Generation and Non-Immigrant Children Only



General Discussion

7. Summary of Results

Taking the positive youth developmental (Damon, 2004; Lerner et al., 2005) and resilience perspectives (Motti-Stefanidi & Masten, 2017), this dissertation aims to examine how the academic and psychological adjustment of ethnically diverse children can be promoted. Children were immigrant, refugee and non-immigrant elementary school students, belonging to different ethnic groups. Combining psychological and educational theories related to cultural diversity at school, I empirically addressed three specific aims with three empirical studies based on data from immigrant, refugee and non-immigrant children and their teachers in German elementary schools (see Figure 13).

The first aim was to quantitatively investigate to what extent teachers' culturally responsive teaching (CRT) self-efficacy was associated with children's academic and psychological adjustment (i.e., Research Aim 1). I also explored two potential underlying mechanisms that may explain this relation. Specifically, in two multi-informant studies, I focused on children's perceptions of cultural diversity climate and on children's and teachers' views of their relationship quality as mediators of the association between teachers' CRT and children's adjustment (i.e., Research Aims 1a and 1b). Addressing these aims, Study 1 and 2 are among the first investigations to examine how teachers' CRT, cultural diversity climate and teacher-student relationship (TSR) are related to each other and to children's adjustment. Considering teacher-student as well as peer relationships quality, the second aim was to explore their potential promotive, but also protective role in children's adjustment, in the face of one developmental-acculturative challenge, namely learning the language of instruction (i.e., Research Aims 2, 2a and 2b).

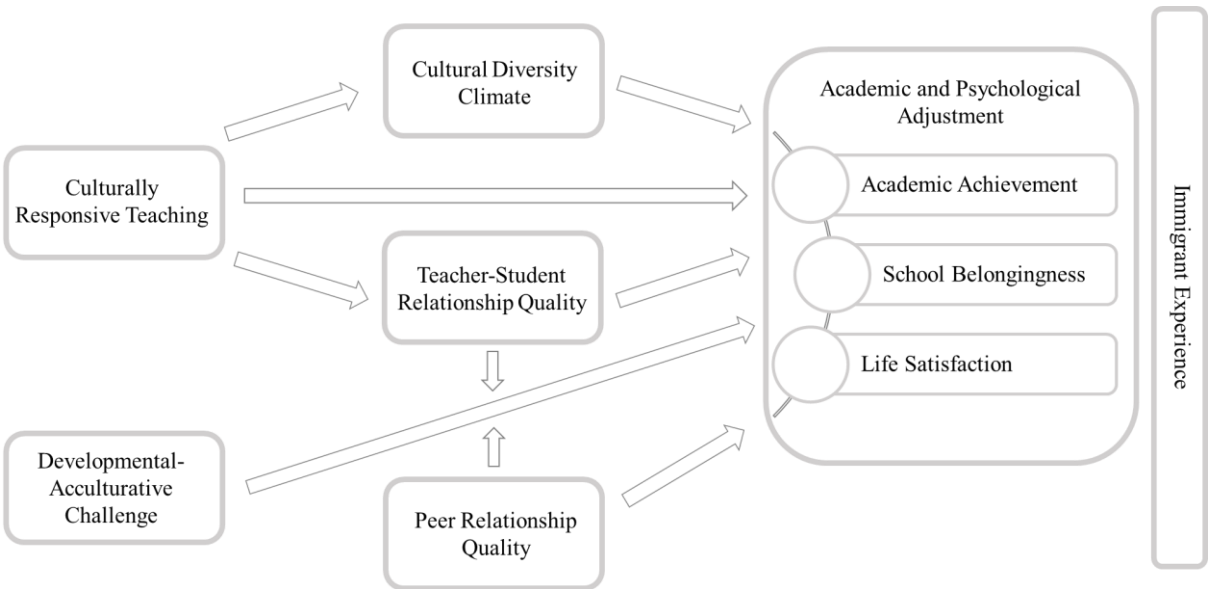
Finally, the studies provided new insights into the school experiences and adjustment of elementary school children, including immigrant and refugee children. Hence, the third aim

was to explore to what extent CRT, cultural diversity climate and school relationships quality differently contributed to the adjustment of children with and without an immigrant experience (i.e., Research Aim 3). All in all, this work expanded past literature that compared the academic and psychological adjustment of ethnic minority vs. majority children by enhancing our knowledge on the role played by children's immigrant experience.

In the next sections, I combine and summarize the results of the studies in view of the research aims of this dissertation, elaborating results interpretations and adding new arguments to the discussions of the single studies. Subsequently, I discuss the main strengths and limitations of this investigation, and suggest implications for theory, research and practice.

Figure 13

Conceptual Visualization of the Dissertation Model



7.1. Research Aim 1: Direct and Indirect Associations between Teachers' CRT and Children's Adjustment

In Study 1, I investigated to what extent teachers' self-efficacy in CRT, used as a proxy for CRT practices, was related to children's academic achievement, school belongingness and life satisfaction, both directly as well as indirectly through students'

perceptions of the classroom cultural diversity climate. Study 2 aimed to examine to what extent teacher-student relationship quality mediated the association between teachers' CRT self-efficacy and one relevant aspect of children's adjustment, namely school belongingness.

Concerning the direct associations, the studies showed that teachers' CRT self-efficacy was positively related with children's mathematical competence and German vocabulary, but not with reading comprehension, school belongingness and life satisfaction. These analyses controlled for children's age, gender and socioeconomic status. Analyses controlling for teachers' age, gender and immigrant generation and without any covariate showed similar results.

Overall, the results are promising. Indeed, there was a positive and moderate association between teachers' CRT self-efficacy and children's proficiency in the school language (i.e., German vocabulary). This is important, as skills in the school language play a crucial role in the academic adjustment of elementary school children (Paetsch et al., 2016), and are particular important for first- and second-generation immigrant and refugee children (Volodina et al., 2021a), who have to deal with this acculturative challenge. Study 1 and Study 3 also showed that German vocabulary was strongly positively related with the academic achievement – as measured by reading comprehension, mathematical competence and GPA – of children with and without an immigrant experience. Consistently, the positive and significant association between teachers' CRT self-efficacy and mathematical competence showed a trend towards significance after adding. This indicates that CRT self-efficacy was positively related to children's German vocabulary, which was in turn positively associated to children's mathematical competence.

These results corroborate the positive link between CRT and children's academic adjustment, expanding past research among ethnically diverse students in the US (Aronson & Laughter, 2016; Blazar, 2021) to the European context. Moreover, findings suggest that teachers who feel efficacious in implementing CRT tend to employ teaching techniques that

particularly address children's vocabulary in the school language. Accordingly, CRT aims also to be responsive towards children's linguistic backgrounds. One item of the CRT self-efficacy scale specifically reported "*I can structure learning routines for German language learners*" (Civitillo et al., 2016; Siwatu et al., 2017). This result could be also explained by the focus on teaching and learning German as second/foreign language in pre-service teachers' education in NRW (i.e., DaZ/DaF; Stiftung Mercator, 2009).

Moreover, it is important to consider that the classrooms examined are also linguistically diverse, and that the majority of the children in the sample were of the first or second immigrant generation. Therefore, in these classrooms, teachers might particularly foster children's school language as they perceive it as particularly needed. Promotion of school language can be helpful particularly for immigrant and refugee children, for whom this represents an important acculturative task that can determine their academic and future occupational trajectories in the country (Suárez-Orozco et al., 2010). I further expand the role of CRT in children's language development in the implications (section 9).

Although German vocabulary and reading comprehension were strongly intercorrelated, the association between teachers' CRT self-efficacy and children's reading comprehension was not significant. One explanation for this finding might be linked to children's overall level of school language proficiency. Reading comprehension is a linguistic domain that requires not only vocabulary knowledge, but also grammar as well as other complex skills (Butterfuss et al., 2020). Due to the high percentage of immigrant and refugee children who might not have mastered the school language yet, the level of German proficiency in the examined classrooms was limited. Accordingly, on average children – with and without an immigrant experience – scored eight on nineteen points in the German vocabulary test (see Study 1 and 3), and first-generation immigrant and refugee children showed significantly lower levels than non-immigrant children. Yet, as German vocabulary is strongly positively related to reading comprehension (in German), it is possible that teachers

through CRT practices are able to first increase children's vocabulary, which then in the long run could improve their reading comprehension. Future studies could assess the longitudinal impact of CRT on different aspects of children's school language development.

Contrary to the expectations, I did not find that teachers' CRT self-efficacy was related to school belongingness and life satisfaction. With respect to school belonginess, past studies among ethnically diverse students in the US showed different results. For example, one study among 6th to 12th graders showed that students' perceptions of CRT, namely teachers' use of diverse teaching practices and cultural engagement, were positively correlated to their school belongingness (Byrd, 2016). Another study reported a positive association between 9th grade-students' perceptions of CRT (i.e., teachers' interest in students' culture and heritage learning) and their attitudes toward school (Bottiani et al., 2020). Yet, differently from previous research, I addressed younger students in the 4th grade, and used teachers' and not students' perceptions of CRT. In the discussions of Study 1 and 2, I have noted that teachers and students might have different perceptions of teaching practices. This might be particularly the case for younger children, due to limited capacity of abstraction. A hypothetical mismatch on CRT perceptions might therefore explain some nonsignificant associations between teachers' reports of CRT and students' adjustment.

According to Dunning et al.'s (2003) hypothesis, an alternative explanation could be that teachers' confidence stems from an overestimation of their skills, linked with a limited reflection on the own practices. This might especially be the case in the field of cultural diversity and CRT. In light of a structural approach that emphasizes the influence of power hierarchy in microcontexts (McLean et al., 2023; Rogers et al., 2021), it is likely that teachers hold colorevasive beliefs and expect students to assimilate to the ethnic majority culture. In the case of Germany, one study showed that teachers do not tend to ignore differences, but they tend to stress similarities between ethnic groups (Civitillo et al., 2021). Accordingly, fostering *equality and inclusion* and *endorsing the ethnic majority culture* are common

approaches in German schools (Civitillo et al., 2017; Schachner, 2019). This might, however, have the downside of conveying colorevasive messages to ethnic minority students (Civitillo et al., 2017; Schachner, 2019; Schachner et al., 2016). Gay (2018) also posited that most teachers might not openly discriminate against ethnically diverse students, but they might be "culturally hegemonists" and therefore expect that all children comply to perceived normal standards. Thus, teachers might feel to be efficacious in implementing CRT, but they might lack awareness and reflections on the own culturally responsive behavior and on what putting CRT into practice means. Teachers' attempts to implement CRT might therefore not be perceived as such by students.

Furthermore, the way CRT was operationalized is different in literature (see also the reviews of Aronson & Laughter, 2016; Franco et al., 2023), which could imply that some CRT aspects rather than others are more linked with students' adjustment. Further research is needed that can establish how various dimensions of CRT are related to students' adjustment, and that combines both teachers' and students' perceptions of CRT.

For what concerns the link with life satisfaction, I hypothesized that ethnically diverse students might feel valued by teachers' implementing CRT, increasing their sense of inclusion and reducing ethnic stereotype threat (Ellemers et al., 2002; Heikamp et al., 2020, see section 2.3.1.2.), and therefore enhancing also their life satisfaction. In line with Suldo's model (2008, see section 2.2.2.), students' perceptions of school factors such as teachers' competence and relational ability was linked to their life satisfaction. Yet, in this study CRT self-efficacy did not play a role for children's life satisfaction. This might lie on teachers' implementation of CRT, which might not translate in closeness to their students. Accordingly, Study 2 showed that teachers' CRT was not related with their relationship with students. Further research is needed to fully understand if and how CRT can be related to children's life satisfaction.

In order to better assess the relation between CRT and children's adjustment, I further aimed to investigate two possible underlying mechanisms that could explain this relation. In the next paragraph, I summarize the findings of the two studies examining the mediating roles of cultural diversity climate and teacher-student relationship quality.

7.1.1. Research Aim 1a: Cultural Diversity Climate as Mediator?

Because CRT practices involve discussing about cultural traditions, addressing social inequality and encouraging students to work together (Gay, 2002, 2018), teachers implementing CRT could shape a classroom cultural diversity climate *promoting cultural pluralism* and *equality and inclusion*. Specifically, I hypothesized that children's perceptions of *heritage and intercultural learning* (i.e., learning about traditions of other countries) and *equal treatment by students* (i.e., ethnically diverse children are treated equally by classmates) in their classrooms are linked to their adjustment (see section 7.1.1.1.), and may explain the association between CRT and adjustment (see section 7.1.1.2.).

7.1.1.1.Cultural Diversity Climate and Children's Adjustment

Similar to previous research in Germany and the US (Byrd, 2017; Schachner et al., 2016, 2019, 2021), I found that both climate dimensions were positively related to children's academic and psychological adjustment, but in different ways. Specifically, children's perceptions of a classroom climate fostering *heritage and intercultural learning* were positively associated with their school belongingness and life satisfaction. This result is in line and expands prior research among ethnically diverse adolescents (Byrd, 2017; Schachner et al., 2019, 2021) to elementary school children. This implies that promoting *heritage and intercultural learning* is important for students' psychological adjustment already at earlier stages of school.

However, this climate dimension did not play or even played a reverse role in children's academic achievement: *heritage and intercultural learning* was not associated with mathematical competence, and it was negatively related to reading comprehension. The nonsignificant association with mathematical competence is in line with other studies that did not show a direct link between cultural diversity climate and academic achievement, but rather an indirect link via acculturation orientations (Schachner et al., 2016) or school belongingness (Schachner et al., 2019).

A possible explanation for the negative association with reading comprehension might be that promoting *heritage and intercultural learning* corresponds to promoting multilingualism (Schachner, 2019) and, for ethnic minority children, the own ethnic identity and orientation (Schachner et al., 2016). Hence, children in these classrooms might feel less pressure to assimilate to the mainstream culture. This might, at first, decrease language skills in the school language. However, in the long run, fostering multilingualism or children's first language can enhance the development of the school language (Edele & Stanat, 2016). Future studies might clarify these findings by longitudinally examining the link between cultural diversity climate and children's school language development. It might also be interesting to examine the effect of cultural diversity climate on children's development of the first/home language, as it could be that a climate valuing cultural diversity positively influence children's home language development.

Another explanation could be that those classrooms in which *heritage and intercultural learning* is particularly emphasized are also classrooms with a higher percentage of immigrant and refugee children with lower levels of school language. This might also explain the negative link between *heritage and intercultural learning* and children's German vocabulary. Due to lacking information on the classroom composition, however, it was not possible to investigate this possibility in these studies.

Regarding the climate dimension of *equal treatment by students*, I found that it was positively linked with children's mathematical competence. This finding is in line with past studies that showed a positive link with children's academic achievement measured by grades (Byrd, 2017; Schachner et al., 2021), by expanding it to achievement measured by a mathematical test. Contrary to the expectations, *equal treatment by students* was not significantly linked with other aspects of children's adjustment, i.e., reading comprehension, school belongingness and life satisfaction. Peers are important for children's academic and psychological adjustment (Rubin et al., 2011), and positive relationships with classmates contribute to higher levels of school belongingness among all children (see Study 3). Yet, the result suggests that perceptions of equal treatment by students do not play a role in the examined adjustment outcomes in elementary school yet. Perhaps equal treatment by *teachers* might be more strongly related to children's adjustment at this developmental stage. Future studies could examine different aspects of the cultural diversity climate among elementary and secondary school students to expand these findings.

7.1.1.2.The Link between CRT Self-Efficacy, Cultural Diversity Climate and Children's Adjustment

Findings did not support the hypothesis that CRT self-efficacy is related to cultural diversity climate and that cultural diversity climate mediated the association between CRT self-efficacy and children's adjustment. To the best of my knowledge, this was the first study investigating this hypothesis. Examining this hypothesis was important, as until now we had little evidence on the extent to which teachers' perceptions of the own CRT practices translated into students' perceptions of a classroom climate supporting cultural diversity.

Previous studies addressing CRT and climate used one single informant. These reported positive associations between perceptions of CRT and general school climate among teachers (Choi & Lee, 2020) and between perceptions of CRT and cultural diversity climate

among students (Byrd, 2017). Two studies specifically examined teachers' CRT *self-efficacy* and their perceptions of the school cultural diversity climate. In a cross-national investigation involving 46 countries and over 90,000 teachers, Schwarzenthal et al. (2023) showed that teachers' perceptions of a multicultural school climate (e.g., addressing ethnic discrimination in class, offering multicultural events) was positively associated with teachers' CRT self-efficacy at the school level. Similarly among German teachers, Ulbricht and colleagues (2022) found that teachers' perceptions of a school climate promoting cultural pluralism and equality and inclusion were positively related to their CRT self-efficacy.

While these studies included only teachers' viewpoint on both climate and CRT self-efficacy, this project expanded previous findings by considering both teachers' and students' perceptions on how cultural diversity is handled at school through CRT practices and classroom climate. Hence, Study 1 expanded previous work that treated climate as a predictor and teachers' CRT self-efficacy as an outcome, by addressing the opposite direction. Accordingly, I argued that through CRT (self-efficacy), teachers could shape a classroom climate promoting learning about other cultures and equal treatment between students, which could be perceived by students. Yet, as Study 1 showed, this was not the case. The nonsignificant results might be linked to a discrepancy between teachers' and students' perceptions, which is not new in similar multi-informant research (e.g., Brekelmans et al., 2011; Civitillo et al., 2017). Still, this mismatch is important to be addressed in practice, as it could help teachers find ways how to create a classroom climate through CRT practices that is perceived similarly also by students. Future research could expand this study and examine whether other dimensions of the cultural diversity climate are related with CRT self-efficacy, such as perceptions of *color-evasion* or *equal treatment by teachers* (for a description of these dimensions see Schachner et al., 2021).

Beyond classroom climate, other dimensions of the teaching-learning experience could be influenced by CRT self-efficacy and play a role in children's adjustment. In particular,

CRT involves building caring relationships with all students (Gay, 2018). Hence, with the intention of expanding the findings related to Research Aim 1a, I aimed to investigate whether CRT self-efficacy was associated with TSR quality and to what extent TSR explained the relation between CRT and children's adjustment.

7.1.2. Research Aim 1b: Teacher-Student Relationship as Mediator?

In order to address Research Aim 1b, I investigated TSR in a multi-informant way to better understand the mediating role played by both perceptions of TSR in the link between CRT and children's school belongingness. Findings from Study 2 did not support this hypothesis, as neither teachers' nor students' views of TSR were linked with teachers' CRT self-efficacy and did not mediate its association with children's school belongingness. These results suggest that teachers' CRT self-efficacy does not play a role in their relationships with students, at least when measured by students' *closeness* and teachers' *conflict*. One explanation could be that teachers are more focused in preparing culturally responsive lessons, and pay less attention to the relational aspects of teaching. Relatedly, teachers' CRT self-efficacy might manifest in some practices, such as cultural content integration, but not translate in TSR quality. Accordingly, Gay (2018) stated: "Caring is one of those things that most educators agree is important in working effectively with students, but they are hard-pressed to characterize it in actual practice" (p. 58).

These findings can be an important starting point for future research. For example, future studies could test these cross-sectional associations with longitudinal data, and expand the study by examining also students' perceptions or classroom observations of CRT and different dimensions of TSR. Moreover, the nonsignificant link between CTR self-efficacy and TSR calls for the importance of offering CRT trainings that aim at building supportive relationships with the students. In culturally diverse classrooms, it is important that teachers strive to bond and to be culturally sensitive with all children (Edwards & Edick, 2013). A

fundamental aim of CRT concerns indeed the relational aspect of teachers with their students (Edwards & Edick, 2013; Gay, 2002, 2018; Siwatu, 2007). Specifically, Gay stated that it is important that teachers demonstrate culturally responsive caring, which "is a moral imperative, a social responsibility, and a pedagogical necessity" (Gay, 2002, p. 109).

In line with this, one recent study (Franco et al., 2024) specifically addressed culturally responsive social relations, showing that teachers' engagement in culturally responsive relations was positively associated with classroom discipline and with students' perceptions of teachers' care. Therefore, these findings imply that it is crucial that teachers who feel efficacious in CRT also strive to build warm and supportive TSR with their students, as it can make a difference for students' learning experience and ultimately for their adjustment. Hence, it is pivotal that teachers receive trainings in CRT, that they critically reflect upon the own teaching practices and are sensitive to students' characteristics and needs, thus developing positive, supporting relationships with their students (Edwards & Edick, 2013).

In summary, the key findings related to Research Aim 1 indicated that teachers' CRT was positively related to children' academic achievement, but not with children's perceptions of classroom cultural diversity climate nor with children's and teachers' reports of their relationships. Whereas *heritage and intercultural learning* and *equal treatment by students* were positively related to some aspects of children's adjustment, they could not explain how teachers' CRT is related to children's adjustment. Similarly, teacher-student relationship quality was not a significant mediator in this association. Together, these findings provide important insights into the positive role played by CRT and by cultural diversity climate for children's adjustment. They suggest that responsively addressing and valuing cultural diversity at school is important, but that more needs to be done in order to improve teachers' CRT implementation.

7.2.Research Aim 2: The Power of School Relationships

The second aim of this dissertation was to examine the role played by school relationships for children's academic and psychological adjustment. Relationships with others are a crucial aspect related to child development, and at school, children can build important relationships outside the family. One of the most important school relationships is TSR. In Study 2, I investigated, in a multi-informant way, how teachers' and children's perceptions of TSR were related to one key aspect of children's adjustment, namely school belongingness. In Study 3, I further examined TSR, but addressed also peer relationship quality, investigating how both are related to children's academic achievement and school belongingness.

In line with the expectations and with previous literature, findings of these studies showed that both relationships had positive links with children's adjustment. Particularly, I found that students' perceptions of TSR and peer relationships quality were positively and strongly related with their school belongingness. This is in accordance with the theory positing that feeling of school belonging is closely connected with the feeling of being included and of having warm and supportive relationships in that context (Allen et al., 2018; Goodenow, 1993).

Contrary to the expectations, students' perceptions of both relationships were not significantly related to their GPA, and surprisingly, they were negatively associated with their reading comprehension. For what concerns the nonsignificant association with GPA, it might be that, in this sample, grades depend more on other factors such as children's proficiency in the school language, as found in Study 3, or more 'tangible' aspects of the relationship quality (e.g., helping with homework; Suárez-Orozco et al., 2009). Indeed, I focused on emotional dimensions of TSR (i.e., *closeness*) and peer relationship quality, which, according to previous research (Roorda et al., 2011, 2017; Wentzel et al., 2021) are important for children's academic achievement. However, the classroom examined have a high proportion of children of the first and second immigrant generation, with quite low levels of German

vocabulary. Hence, especially in this context, it might be that tangible support from teachers and peers, for example through help with schoolwork, play a greater role in children's academic achievement. Accordingly, studies showed that emotional and tangible support by teachers (Federici & Skaalvik, 2013) and also by peers (Suárez-Orozco et al., 2009) are two distinct dimensions. Moreover, grades are a measure of achievement that depends on teachers' decisions. Although teachers' and children's perceptions of their relationship were significantly correlated (see Study 2), it might be that teachers' perceptions of TSR are more strongly linked with children's GPA (e.g., as in Hamre & Pianta, 2001) than children's perceptions. Moreover, children's developmental stage could play a role, as one meta-analysis (Roorda et al., 2011) showed that TSR becomes more influential for students' grades in secondary rather than primary school.

The finding that TSR and peer relationship quality are negatively associated with children's reading comprehension might be interpreted in the opposite direction. That is, children with lower levels of reading comprehension might receive more emotional support by teachers and peers, therefore perceiving these relationships as particularly positive. It should also be noted that, on average, children in these studies reported high levels of school relationship quality. Hence, this result is encouraging, and suggests that, despite lower levels of school language, the emotional climate expressed by school relationships quality can still be high in certain classrooms. Future longitudinal studies could empirically investigate the direction of the association between school relationships and reading comprehension.

Overall, the studies showed that fostering positive relationships with teachers and peers is fundamental in enhancing children's sense of school belonging. Yet, it seems that the examined close and supportive relationships do not directly foster the academic achievement of ethnically diverse children, who might better benefit from more practical support in terms of help with learning tasks. The next sections delineate the main findings related to both

teachers' and students' views on TSR quality and to the protective roles played by TSR and peer relationship quality for children's adjustment.

7.2.1. Research Aim 2a: Teachers' and Students' Perceptions of TSR and Children's Adjustment

With the aim of getting a better insight on TSR in ethnically diverse classrooms, Study 2 specifically addressed how TSR is perceived by teachers and children and to what extent both perceptions on TSR are related with children's school belongingness. First, I found that teacher-reported *conflict* was significantly and negatively related to students-reported *closeness*, meaning that teachers and children perceived their relationship in a similar way. While several studies showed that teachers' and children's views tend to match (De Jong et al., 2018; García-Rodríguez et al., 2023), others did not support this result (Brekelmans et al., 2011). Perceptions of TSR are individual representations of the relationships, filtered by personal features such as self-perceptions, personality or developmental history (Pianta et al., 2003b). Therefore, TSR might be perceived differently by the actors and can differently contribute to students' adjustment. Hence, the study could corroborate previous limited multi-informant research on TSR and add to the mixed evidence on the level of agreement of teachers' and students' perceptions of TSR.

Second, I found that both perceptions of TSR were significantly related to children's school belongingness. Consistent with the expectations, student-perceived *closeness* was positively, while teacher-perceived *conflict* negatively related with school belongingness. However, the significant bivariate association between *conflict* and school belongingness disappeared when controlling for student-reported TSR. This is in line with previous studies (e.g., Dong et al., 2021; Rey et al., 2007), and suggests that students' perceptions of TSR are more predictive of their school belongingness as teachers' views. However, among non-immigrant children only, *conflict* was negatively related with school belongingness even

when controlling for students' reports. One explanation for this finding could be that non-immigrant children especially expect to have positive relationships with their teachers, while immigrant and refugee children might not hold this expectations. Therefore, in case of *conflictual* TSR, non-immigrant children might feel more frustrated and perceive lower feelings of school belongingness. Overall, the study showed that both perceptions of TSR might play a role for children's sense of school belonging, but in different magnitude. This suggests that it is important to examine TSR in a multi-informant way.

7.2.2. Research Aim 2b: The Protective Roles of Teacher-Student and Peer Relationship

Furthermore, I aimed to expand the hypothesis of school relationships as promotive factors for children's adjustment, and sought to explore whether school relationships could play a protective role. In Study 3, I attempted to examine to what extent TSR and peer relationship quality could moderate the negative effect of one developmental-acculturative challenge, namely learning the school language (i.e., German), on children's adjustment.

First, I found that children's German vocabulary was positively related with their GPA and reading comprehension. This is in line with previous literature (Duncan et al., 2007; Volodina et al., 2021a), and corroborates the importance of children's school language skills for their academic achievement. Second, German vocabulary was negatively related to school belongingness, but in additional analyses, I found that this was the case only for first generation immigrant and refugee children (see section 7.3.). Yet, I found that peer relationship quality moderated the negative association between German vocabulary and school belongingness, among children without an own immigrant experience. Particularly, for these children, the association between German vocabulary and school belongingness was only negative when peer relationship quality was lower. With increasing levels of peer relationship, the association turned nonsignificant. This is in line with the hypothesis that peer relationship quality can be a protective factor (i.e., Research Aim 2b; Juang et al., 2018), as it

reduced the negative effect of higher levels of German proficiency on school belongingness, but only among second-generation and non-immigrant children.

Third, most of the results did not support the hypothesis that school relationship quality could moderate the association between German vocabulary and children's adjustment. Only one interaction was significant among the whole sample, as TSR moderated the association between German vocabulary and GPA. However, slope analyses showed that the role played by TSR was contrary to the expectations: with increasing levels of TSR, the positive association between German vocabulary and GPA became stronger and not weaker, as hypothesized. This means that instead of mitigating, TSR exacerbated the effect of German vocabulary on children's grades. Further analyses showed that this was the case only for children without an own immigrant experience (i.e., second generation immigrant and non-immigrant children), while the intensifying effect of TSR in this association was not present among immigrant and refugee children. Hence, for children without an immigrant experience, skills in the school language played a more important role for their grades, as they perceive more positive (i.e., *closer*) TSR. This corroborates the important role played by teachers' emotional support as perceived by *closer* TSR, which, combined with higher levels of school language, had a stronger positive effect on children's achievement.

All in all, this work could expand the literature on TSR and peer relationship quality in culturally diverse classrooms, showing that both TSR and peer relationship quality positively contributed to children's school belongingness. Moreover, skills in the school language are important for children's academic achievement, beyond school relationship quality. Although findings did not support the hypothesis that school relationships can play a protective role, children without an immigrant experience and with higher levels of school language vocabulary could particularly benefit in terms of grades from *closer* TSR, and in terms of school belongingness from higher peer relationship quality.

7.3.Research Aim 3: Unique Effects for Immigrant and Refugee Children?

The third aim of the dissertation was to examine the role played by children's immigrant experience, and therefore, to investigate the potential unique effects related to the experience of displacement. For this reason, I explored all research aims also comparing first-generation immigrant and refugee children which children of the second immigrant generation and non-immigrant children. This represents one of the novelties of this research, as previous studies mostly focused on ethnic minority and majority students without considering the role played by immigrant experience itself.

Particularly, I aimed to answer the questions how the academic and psychological adjustment of immigrant and refugee children can be promoted, and to what extent it varies from the adjustment of children who did not migrate. Addressing these questions, my dissertation could add to prior research, as it specifically investigated the role played by children's immigrant experience in their adjustment. Overall, most results were similar across immigrant and refugee and non-immigrant children, but there were some exceptions. In this section, I summarize the main differences related to children's immigrant experience, but also the similarities that I found in the three studies.

7.3.1. Culturally Responsive Teaching and Cultural Diversity Climate are Important for All Children

Results showed that the associations between teachers' CRT self-efficacy and also between children's perceptions of cultural diversity climate and children's adjustment were similar for both immigrant and refugee and non-immigrant children. This is an important finding, as it shows that valuing and dealing with cultural diversity in a responsive way at school can positively contribute to the academic and psychological adjustment of *all* children.

While research on CRT tended to investigate ethnically diverse students together (Byrd, 2016; Chang & Le, 2010), research on cultural diversity climate could provide insights

about potential differences between students. Specifically, some studies (e.g., Baysu et al., 2023; Mattison & Aber, 2007) showed that ethnic minority students or students of the first and second immigrant generation tended to perceive the cultural diversity climate more negatively, which was related to more negative academic and psychological outcomes than ethnic majority students or students without an immigrant background.

Conversely, Schachner et al. (2019) showed similar effects of a climate promoting *cultural pluralism* (which included *heritage and intercultural learning*) and *equality and inclusion* (including *equal treatment by students*) on the academic and psychological adjustment across these two groups. Another study (Schachner et al., 2021) showed that *heritage and intercultural learning* and *equal treatment* (including *equal treatment by students*) were positively related to the grades of both groups, although *heritage and intercultural learning* was positively linked with life satisfaction only among students without an immigrant background.

Hence, research until now provided mixed evidence on the associations between cultural diversity climate among students with different ethnic or immigrant backgrounds. This work could add to this research, by isolating the role played by immigrant experience. Taken together, results from this dissertation indicate that perceptions of cultural diversity climate do not differ between children with and without an immigrant experience. This suggest that potential differences might be rather linked to the ethnic status or to characteristics other than children's immigrant experience. Future studies could however expand these findings by adding different dimensions of the classroom climate (e.g., *equal treatment by teachers* or *polyculturalism*) and by replicating results among students in secondary school.

7.3.2. School Relationships are Equally Relevant for Immigrant, Refugee and Non-Immigrant Children

Literature on school relationships in culturally diverse contexts has also mostly addressed children's ethnic minority or majority status. Therefore, the question arises to what extent findings on children's immigrant experience relate to prior research. That is: Do immigrant and refugee children differ from non-immigrant children? Importantly, I found no difference of students' perceptions of peer relationship quality and of teachers' and students' perceptions of TSR between immigrant and refugee and non-immigrant children. This suggests that children with and without an immigrant experience perceived similar, and – in this project – on average high levels of school relationships quality. This result is promising, as it implies that in the examined classrooms, there are small differences between immigrant and refugee children and their non-immigrant counterparts. Past research mostly showed that ethnic minoritized children had more negative peer relationships than ethnic majority children, for example in terms of victimization (Verkuyten, 2002). Future studies could also address the role played by ethnic victimization by peers, which is likely to be more pronounced towards ethnic minoritized and especially toward immigrant and refugee children (Stevens et al., 2020).

Moreover, this finding implies that both students and their teachers perceived similar TSR, regardless of students' immigrant experience. Some prior studies comparing TSR among ethnic minority and majority students showed more negative TSR for ethnic minority students (Saft & Pianta, 2001; Thijs et al., 2012), or no difference across the groups (Bosman et al., 2018). Results of this study indicated that children's immigrant experience could not explain potential differences in perceptions of TSR, which might therefore lie on the specific ethnic group (see Thijs et al., 2012) or on more or less discriminatory contexts.

Interestingly, however, I found that teachers with higher levels of CRT self-efficacy reported more *conflict* in their relationships with immigrant and refugee children and not with

non-immigrant children (Study 2). This result might at first seem contradictory, as self-efficacy in CRT should be related with positive culturally responsive relationships with students. However, this can reveal that teachers perceive their relationships with immigrant and refugee children as particularly challenging, despite feeling confident in CRT. It might be that teachers who feel more efficacious in CRT strive more than others in supporting immigrant and refugee children. This could, however, backfire if teachers do not perceive improvements in children's behavior or achievement, making teachers feel particularly frustrated. According to the argument expressed in section 7.1.1., it is also possible that teachers, despite feeling efficacious in CRT, might not implement CRT practices in a way that is perceived by children as culturally responsive. This aspect needs to be further examined with multi-informant studies, but implies the need of addressing TSR as part of CRT trainings. Moreover, it suggests the importance of reflecting upon the own teaching practices and how they might be viewed by students.

Combining results from Study 2 and 3, I found that children's immigrant experience did not moderate the association between student-reported *closeness* in TSR and school belongingness, but it moderated the association between teacher-reported *conflict* and this outcome. As expected, teachers' *conflict* was negatively related with students' school belongingness, but this was the case only for non-immigrant children (see section 7.2.1.). The nonsignificant finding for immigrant and refugee children is promising, as it implies that their school belongingness remains untouched by *conflictual* TSR. Future research could elucidate this result by exploring whether some other factors come into play, which may protect immigrant and refugee children's school belongingness from *conflictual* TSR and also enhance *closer* TSR.

7.3.3. The Acculturative Challenge of Learning the School Language

In Study 3, I first found that German vocabulary was weakly negatively linked with school belongingness of all children, but further analyses revealed that this was the case for immigrant and refugee children only. This result might suggest that, as immigrant and refugee children improve their language skills, they might have more contact with their non-immigrant peers and they might also better understand verbal communication. This could imply that these children are more aware of discrimination by peers, which in elementary school occurs mostly verbally (Aboud & Miller, 2007). This might in turn negatively reflect on their school belonginess. Accordingly, studies showed that, in some cases, more interethnic contact leads to more discrimination experienced by ethnic minoritized children (Aboud & Brown, 2012). Future studies need to address these hypotheses, for example by including dimensions of peer ethnic victimization or interethnic friendship.

As for the whole sample, also among immigrant and refugee children, TSR and peer relationship quality did not protect the adjustment from the acculturative challenge of learning the school language. Future research could also assess other challenges that ethnically diverse children, and especially immigrant and refugee children are likely to face, for instance peer ethnic victimization or teacher-based racial-ethnic discrimination (Civitillo et al., 2023; Samara et al., 2020; Stevens et al., 2020).

Interestingly, I found that only among children without an immigrant experience, TSR intensified the positive effect of German vocabulary on children's grades (see section 7.2.2.), while the finding was not present for the group of immigrant and refugee children alone. This suggests that for immigrant and refugee children, skills in the school language are uniquely relevant for their grades, while perceptions of TSR do not play a role (yet). It might be that, for immigrant and refugee children specifically, the school language is still a strong determinant for their academic achievement in elementary school. This might change as children grow up and have more time to develop the school language. Hence, while emotional

aspects of TSR are important for their school belongingness (Study 2 and 3; Suárez-Orozco et al., 2009), future studies could assess to what extent more tangible (e.g., help with schoolwork) rather than emotional support by teachers could significantly contribute to the academic achievement of immigrant and refugee children, and protect it from acculturative challenges.

Key findings

- Teachers' CRT self-efficacy and a classroom climate promoting *equal treatment by students* are positively associated with children's German vocabulary and mathematical competence.
- Fostering *heritage and intercultural learning* is positively linked with children's school belongingness and life satisfaction.
- Teachers' CRT self-efficacy is not significantly related with student-reported cultural diversity climate nor with student- and teacher-reported teacher-student relationship quality.
- Teacher-student and peer relationships quality are positively linked with children's school belongingness, but not with their academic achievement.
- Most results are similar between immigrant and refugee and non-immigrant children; however, children's immigrant experience can explain some associations.

8. Strengths and Limitations

By investigating the way cultural diversity is handled at school, how school relationships are perceived, and how these aspects are related to children's adjustment, this work contributes to existing knowledge on the role played by different school factors in the adjustment of ethnically diverse children. With this investigation, I identified promotive and

protective school factors at an early stage of students' development. This is important because positive school experiences in elementary school can be influential for students' future academic and psychological development. Particularly in school systems such as the German one, the transition between elementary and secondary school is a relevant phase, as it can determine different school and occupational trajectories of children (Van de Werfhorst, 2019). Moreover, ethnic-racial prejudice is already present during childhood (Aboud, 2007; Raabe & Beelmann, 2011; Verkuyten, 2002), and might hamper students' adjustment already in elementary school. Therefore, it is crucial to detect and empirically examine what factors can early on promote cultural diversity and equal treatment among ethnically diverse children.

Furthermore, this work offered new insights into the association between teachers' CRT and children's adjustment. So far, quantitative studies on the effects of CRT were limited, and mostly did not focus on the European context (for a review, see Aronson & Laughter, 2016). Hence, this investigation represents one of the novelties of this work. Moreover, this dissertation is among the first research works to explore underlying psychological mechanisms that could explain how CRT can be related to children's adjustment. Particularly, it provided first evidence on the roles played by cultural diversity climate and TSR in the association between CRT and adjustment.

Yet, the research project has a cross-sectional nature, and further studies should longitudinally tackle the examined hypotheses to assess the direction of associations, and test the mediation hypotheses using data at different time points. Moreover, the recruitment was challenged by the COVID19 pandemic, which led to a more limited sample size as planned. Although I performed analyses that are suitable for models with medium sample sizes (i.e., bias corrected factor score path analysis, Devlieger & Rosseel, 2017; Kelcey et al., 2021; and multilevel path analyses, McNeish, 2017), some complex analyses might be underpowered. Future studies with larger sample sizes could therefore replicate these studies.

Another strength of this dissertation is that it presented multi-informant data from both teachers and children. First, findings shed light on their perceptions of how cultural diversity is addressed at school, in terms of teaching practices and classroom climate. Second, the studied provided a deeper insight into the level of agreement on their relationship quality. Furthermore, findings explored the potential unique experiences of immigrant and refugee children, and contributed to previous research on the adjustment of ethnic minoritized children or children of later immigrant generations. In light of the increasing movements of immigrant and refugee children, and of the migration-related barriers that they might face (e.g., racism), this investigation could help understanding what factors can positively contribute to their adjustment.

Hence, I could isolate the effect of children's immigrant experience from that of being (perceived as) an ethnic minority member, and explore whether potential differences in the adjustment were related to children's own experience of immigration or forced displacement. However, I could not disentangle the roles played by both immigrant experience as well as ethnic status in children's adjustment. This was due to the difficulty of explaining the term ethnicity or ethnic identification to fourth graders living in a race/ethnicity-mute context (see Jugert et al., 2021). It could be valuable for future studies to investigate both immigrant and ethnic statuses together, in order to have a better picture how these intertwined aspects are separately linked with children's school experiences (see also the *Implications* section 9.1.6.).

Nevertheless, I also conducted analyses by considering children of the first, second immigrant generation and non-immigrant children separately (Study 3), and children of the first and second immigrant generation alone (Study 1). These findings therefore offered one of the first examinations of the roles played by CRT, cultural diversity climate and school relationships for immigrant and refugee children alone, thus expanding previous studies that grouped students of different immigrant generations together (e.g., Baysu et al., 2023; Celeste et al., 2019; Schachner et al., 2016).

Moreover, by focusing on how school and teachers can promote the adjustment of ethnically diverse children, this work sought to shift the victim-blaming focus on the individual, calling into question the role and responsibility of children's contexts in promoting their adjustment. Moreover, I directly investigated one challenge related to the immigration experience, that is the acculturative challenge of learning the school language (Study 3). Future research could examine migration-related experiences and structural barriers (e.g., racism, social inequality), and explore how factors can support children's adjustment despite their negative effects. Relatedly, it is important to note that the recruited schools were mostly in low-SES areas. As neighborhood SES (e.g., poverty and unemployment rate) plays a role in children's educational outcomes (Nieuwenhuis & Hooimeijer, 2016), future studies could expand these findings by collecting data also from high-SES areas (see section 9.1.6.2. for the related implications).

9. Going Above and Beyond: Implications for Theory, Research and Practice

Findings of this dissertation can be helpful for theory building and future empirical research. Given the results and limitations, in the following sections, I discuss what lessons could be learnt and what new questions arise from this research.

9.1.Perspectives and Open Questions for Theory and Future Research

While some suggestions resulting from the findings are already noted in section 7, here I focus on main implications for theory and research. Furthermore, I delineate the challenges and shortcomings of using categories related to participants' immigrant and ethnic status, pointing out the implications of considering children's immigrant experience as I did in this project. Hence, I 'open up' the question: Who do we mean by immigrant, refugee and ethnic minority children? Consequently, I highlight the importance of the way we define children's adjustment in research, and call attention to the risk of neglecting contextual and

structural aspects that may be crucial to better understand the adjustment of ethnically diverse students. This leads to my second open question: How do we define children's adjustment in a superdiverse context?

9.1.1. Teachers' CRT Self-Efficacy and Implementation

One important implication of this work, but also an area that needs further investigation, concerns the measurement of CRT. CRT is operationalized in very different ways (see Aronson & Laughter, 2016; Franco et al., 2023). In this work, I used teachers' CRT self-efficacy, which has been often employed in previous research (e.g., Choi & Lee, 2020; Schwarzenthal et al., 2023; Siwatu et al., 2017; Ulbricht et al., 2022), and is associated with teachers' implementation of CRT (Comstock et al., 2023; Romijn et al., 2020). Yet, this is a self-report measure, which might not relate to perceptions by others. Future research could expand these results by examining teachers' CRT self-efficacy together with students' perceptions and classroom observations of CRT practices. Consequently, research with multi-informant data might clarify the nonsignificant association between CRT self-efficacy and students' perceptions of cultural diversity climate (Study 1). This future investigation could provide valuable information on the level of (dis)agreement between teachers and students perception of teachers' CRT.

Hence, different levels of agreement might be related to teachers' professional CRT skills and beliefs toward cultural diversity. For example, it might be that teachers, due to limited knowledge on how to responsively reflect on the own practices, tend to believe that they implement CRT, which therefore translates into CRT self-efficacy. Future studies with larger teacher samples could therefore investigate to what extent variation in teachers' levels of CRT training and CRT self-efficacy are linked with CRT implementation. Limited CRT training might also contribute to a color-evasive view of teachers' practices, letting them believe to employ culturally responsive practices. This perception might, however, be

contrary to students' perceptions. It could be thus interesting to examine teachers' beliefs towards cultural diversity (see Civitillo et al., 2019, 2021), linking them with different clusters of teachers grouped in view of their self-efficacy levels.

9.1.2. CRT and School Relationships

In Study 2, CRT self-efficacy was not significantly related to teachers' nor students' view of TSR. However, previous studies (Cruz et al., 2020; Siwatu, 2007) showed that pre-service and in-service teachers felt the most confident in the CRT aspect of developing relationships and building trust with their students, in comparison to other aspects. Additional research should expand this finding, for example by considering other aspects of TSR, such as teachers' perceptions of *closeness*. Moreover, while TSR literature mostly focused on *closeness* and *conflict*, a recent meta-analysis on *dependency* (i.e., children overreliance on the teacher; Pianta & Nimetz, 1992) showed that this aspect might also be relevant for the adjustment of children at the end of elementary school (Roorda et al., 2021). Considering that immigrant and refugee children might particularly rely on their teachers as a secondary attachment figure (Juang et al., 2018), it could be interesting to investigate to what extent this aspect plays a role in TSR with immigrant and refugee children particularly.

Future studies could also aim to elucidate why teachers' CRT self-efficacy was positively associated with their perceptions of *conflict* with immigrant and refugee children (Study 2). For example, qualitative interviews with teachers could shed light on the specific challenges perceived in classrooms with ethnically diverse children, and especially with immigrant and refugee children. Such investigation could therefore explore how teachers view and interpret CRT, also in light of the result that teachers' CRT self-efficacy was not significantly related to TSR.

Hence, further studies could help developing theory of CRT, providing new insights into in-service teachers' understanding of CRT, their CRT self-efficacy and implementation,

specifically in highly diverse classrooms. Moreover, studies with a more ethnically diverse teacher sample could also expand previous literature on ethnic incongruent TSR (see section 2.3.4.1), and examine how teachers' immigrant experience might be related to TSR with immigrant and refugee children. Although I did not find differences in the quality of TSR between children with and without an immigrant experience (Study 2), it might be that teachers who themselves have an immigrant experience understand more the difficulties faced by immigrant and refugee children, and provide more support for these children.

Additionally, further projects could also include parent data and examine, in a multi-informant way, how the relationships between teachers, parents and the child are viewed by all actors, and to what extent these are perceived as being culturally responsive. Accordingly, CRT self-efficacy also includes the ability to communicate with parents who do not speak the school language (Civitillo et al., 2016; Siwatu et al., 2017). This is important, as parental involvement in school, a strong predictor of students' academic achievement (Boonk et al., 2018; Castro et al., 2015), can be promoted by a good parent-teacher communication (Antony-Newman, 2019).

9.1.3. Cultural Diversity and Development in School and Home Language

In Study 1, I found a positive association between CRT and children's German vocabulary, which is a central skill to succeed in the German school system and job market. On the one hand, this might be due to teachers' expertise in developing lessons for school language learners. In line with CRT theory, it is important that teachers develop linguistically sensitive lessons that are targeted also for school language learners, and encourage students' connection to the own ethnic identity, also by fostering their first language (Siwatu, 2007). On the other hand, this result might also reveal teachers' desire that children conform to the ethnic majority culture, by improving the school language. Accordingly, CRT implementation and teachers' cultural diversity beliefs can be related (Civitillo et al., 2019). Hence, future

studies could develop this theoretical hypothesis, and investigate to what extent teachers' beliefs towards cultural diversity (e.g., assimilationism or multiculturalism) are related to CRT and German vocabulary development. Moreover, to better understand this relation, studies could also examine the association between CRT and both children's school and home languages.

Furthermore, findings showed that CRT was positively linked with German vocabulary, but it was not significantly related to reading comprehension. Yet, German vocabulary and reading comprehension are strongly positively correlated. This could imply that the positive link between CRT and German vocabulary would, with time, positively influence children's reading comprehension. Longitudinal studies could add to the theoretical understanding on the role played by CRT on specific domains of school language proficiency.

Moreover, I found a negative association between a classroom climate fostering *heritage and intercultural learning* and children's German vocabulary and reading comprehension. This might suggest that, in these classrooms, multilingualism was favored. Yet, children's first and second languages are correlated, and children with better skills in the first (family/home) language are more likely to have better skills in the second (country/school) language (Edele et al., 2023; Edele & Stanat, 2016). Accordingly, it is possible that *heritage and intercultural learning* will also have an effect on school language on the long run. Longitudinal studies might shed light on classroom cultural diversity climate and children's linguistic development in both languages.

Interestingly, CRT and *heritage and intercultural learning* were not correlated, and their associations with German vocabulary went in opposite directions. This finding might imply that those aspects of teachers' CRT which positively relate to German vocabulary are not linked with appreciation of cultural diversity in terms of *heritage and intercultural learning*. Thus, the question arises in which classes teachers tend to promote the school language and in which they tend to promote multilingualism (as perceived by students). More

research should try to explain this aspect, for example by adding information on classroom's ethnic composition, and by collecting teachers' and students' reports of both CRT and cultural diversity climate.

9.1.4. Further Implications of the Studies

This work provided first insights into the relation between CRT and TSR, and between CRT and adjustment aspects such as school belongingness and life satisfaction. Although these associations yielded nonsignificant results, future studies with larger samples could further analyze these findings, also by examining variables at the classroom level (level 2). Similarly, future studies could expand the nonsignificant interaction of school relationships quality in the association between learning German and children's adjustment (Study 3). For example, other types of developmental-acculturative challenges for ethnically diverse students could be explored, such as family stress (e.g., insecure attachment or language brokering) or racial-ethnic discrimination (Juang et al., 2018). Moreover, other domains of school relationships, such as peer acceptance, friendships or teachers' tangible support, might play a protective role, especially in the adjustment of immigrant and refugee children.

9.1.5. The Relevance of Children's Immigrant Experience

So far, most research in Europe uses categories such as *ethnic minority* and *majority* children or students with and without an *immigrant background* (see section 1.1.; Jugert et al., 2021; Moffitt & Juang, 2019). Some children in the ethnic minority or 'with an immigrant background' group might have similar experiences of racial-ethnic discrimination. Yet, both children in the ethnic majority and minority groups can be heterogeneous in terms of ethnic belongingness, religion, language(s) spoken at home, and be differently perceived by others (Vietze et al., 2023). This grouping would thus ignore the diverse migration-related experiences that immigrant and refugee children face in comparison to non-immigrant ethnic

minority children. As Moffitt and Juang's review (2019) showed, the category *immigrant background* across different studies combines people of different immigrant generations and ethnic backgrounds and with different experiences of racialization.

This heterogeneity might, therefore, mask important factors and challenges in the adjustment of children with different backgrounds. For example, first-generation immigrant and refugee children have to learn the language of the country or make new friends, while children who were born in the country (either with or without an ethnic minority status) have to face these challenges or tasks to a lesser extent. Moreover, first-generation immigrant youth experience more bullying victimization by peers than their second-generation immigrant and non-immigrant counterparts (Stevens et al., 2020).

Findings from the present research clearly isolated the role played by children's immigrant experience, and could shed light on the unique experiences of children with and without an own immigrant experience. Indeed, some results varied between children with and without an immigrant experience (see section 7.3.). For example, teachers with higher levels of CRT self-efficacy reported more *conflict* only with immigrant and refugee children, and not with non-immigrant children. Furthermore, only among immigrant and refugee children German vocabulary was negatively related with school belongingness. These are important findings that could shed light on the specific challenges perceived by teachers in their TSR with immigrant and refugee children specifically, and on the differential link of school factors for the adjustment of children with vs. without an immigrant experience. Thus, for research interested in comparing the adjustment of ethnically diverse children, it is relevant to define the groups also in view of their own immigrant experience.

9.1.6. Who Do We Mean by Immigrant, Refugee and Ethnic Minority Children?

Based on my findings related to children's own immigrant experience, in this section, I suggest that future research, especially in the European context, should be more careful in

using categories to refer to participants in view of their race-ethnicity status and immigrant experience.

9.1.6.1.Disentangling the Intertwined Roles of Ethnic and Immigrant Statuses

This work provided new insights into the role played by immigrant experience alone. Yet, in view of the role of structures of power hierarchy (e.g., racism), children's ethnic status is a relevant variable that can explain differences in the adjustment. It might therefore be important to collect data about children's self-identification, but also on own experiences of discrimination, which might provide information on external identification. While in Europe it is difficult to ask participants about the own ethnicity, future studies could ask about children's 'cultural background' with an open question, and add an explanation of the term with some examples[19]. The challenge still remains how to define such categories without reproducing othering discourses or forcing participants to give only one closed answer.

Moreover, it should be noted that in highly diverse contexts such as schools and classrooms, a division in *ethnic majority/minority* children is, although meaningful, not always feasible, due to the bulk of ethnic-cultural groups, which would yield to underpowered comparisons. For example, the sample of this project consisted of children coming from over 18 different countries. While it could have been possible to combine them in one group (e.g., 'ethnic minority') due to the power imbalance and the following structural barriers faced, children in this group can be heterogeneous not only in terms of ethnicity and cultural aspects, but also in terms of othering perceptions (e.g., some ethnic minority groups might be less racialized than others, or their status can change, see Gjerde, 2014).

Therefore, grouping participants in ethnic status groups when defined in terms of birthplace might still cover within-group variability in terms of power imbalance due to ethnic

[19] In this project, I used the following introduction of the cultural diversity climate scale: "Cultural background refers for example to the language the one speaks and to the traditions, way of living, or religion that one has."

minority status. Accordingly, children defined as being of *ethnic majority* or *without an immigrant background* on the base of their birthplace, can be children who are perceived as ethnic minority members. This can be the case, for example, for non-immigrant children read as nonwhite[20] (e.g., People of Color) and/or belonging to nationally recognized ethnic minority groups (e.g., Roma and Sinti). Taken together, dividing *a priori* between *ethnic majority* and *minority* children (or children with and without an *immigrant background*) would lead to a non-recognition of the within-group variability also in terms of ethnic status, thus ignoring potential differences between participants' self-identification and perceptions from others.

Nevertheless, it could be valuable for future studies to investigate both immigrant and ethnic statuses together, in order to have a better picture how these intertwined aspects are separately linked with children's school experiences. For example, previous studies on perceptions of cultural diversity climate showed mixed results regarding its link on the adjustment of children of ethnic minority/majority or with and without an immigrant background (e.g., Baysu et al., 2023; Schachner et al., 2021), probably because of the conflation of students with different experiences in one group. I aimed to address this inconsistency, but found no difference between children's immigrant experience (Study 1). Similarly, prior research showed inconsistent results in perceptions of TSR among ethnic minority students (e.g., Bosman et al., 2021; Thijs et al., 2012), and I did not find differences related to the immigrant experience in TSR reports (Study 2 and 3). Therefore, these findings imply that potential differences between ethnic majority and minoritized students found in the literature might be more linked with children's experiences of power imbalance due to the ethnic status, beyond migration-related experiences.

[20] I use "white" as a synonym for "ethnic majority" to emphasize power imbalance.

Taken together, I suggest that future research collects data on children's immigrant experience and also on their own ethnic identification. Having both these variables would help to disentangle the influence played by migration-related barriers from those linked to power imbalance (e.g., racism). Moreover, research could expand results of this project by comparing refugee vs. immigrant children, as their experiences of displacement might be different. Refugee children might have been exposed to war or the absence of caregivers, and their families might be under stress due to the insecure legal status in the resettlement country. Therefore, these challenges might more strongly undermine the adjustment of refugee than immigrant children. At the same time, refugee children might particularly benefit from secondary attachment figures such as teachers (Juang et al., 2018). Investigating the different experiences of immigrant and refugee children can be also helpful for teachers and schools, in order to target interventions that are specific to the potentially different needs of refugee, immigrant and non-immigrant ethnic minority students.

9.1.6.2.Adding One More Layer: Considering Socioeconomic Status at the Micro and Macro Context

Beyond children's immigrant and ethnic statuses, one relevant aspect related to children's academic and psychological adjustment that this dissertation partly addressed is the socioeconomic status (SES). Indeed, in the studies, I assessed and controlled for children's SES. Children's SES was operationalized by the number of books that children had at home, and also by the frequency children could use a computer or table and a desk to study at home. Not surprisingly, I found that the more books children reported to have at home, the higher levels of German vocabulary and reading comprehension they showed (Study 3). Moreover, immigrant and refugee children had significantly lower levels of SES and lower levels of German vocabulary, also controlling after SES, in comparison to non-immigrant children. These findings clearly indicate that studies should address children's SES and immigrant

experience, as they both can represent barriers to acculturative academic tasks, such as learning the school language. Moreover, different levels of family SES might also explain variance in the adjustment within the group of immigrant and refugee children. While this analysis was not possible here due to statistical power limitations, future studies with larger samples could address the interplay of children's SES and immigrant experience.

It should be noted that the schools recruited in this project were in low-medium SES areas. This is due to the structural circumstances at the German macro-context (i.e., housing vacancy rate and the city tax revenues), which leads to an overlap between the proportion of immigrant and refugee people and of people with a low-SES in specific areas or neighborhoods (Helbig & Jähnen, 2019). Because the project's aim was to explicitly recruit schools with high levels of diversity, it is therefore not surprising that the majority of them were moderately to highly "in need", as measured by the social index of the North-Rhine Westphalia State of Germany (Schräpler & Jeworutzki, 2021). This index is calculated according to the proportion of youth living in poverty, students with another language as German as first language, immigrant or refugee students, and students with learning, emotional and social development and language needs. Hence, it might be interesting to expand the present research to similar diverse areas but with higher SES, in order to examine to what extent neighborhood SES plays a role not only in the adjustment of ethnically diverse children, but also in the general teaching and learning experience of teachers, children and their families.

9.1.6.3.The Role of Developmental and Time-Related Aspects in Migration and Resettlement

One important aspect to keep in mind is that immigrant and refugee children are children in development, which means that general developmental processes are intertwined with acculturation processes (Motti-Stefanidi et al., 2012). Future studies could therefore expand these cross-sectional results by addressing developmental aspects that might impact

how children deal with migration-related challenges, and by examining children's acculturative trajectories at different time points. For example, youth's developmental age and the age of migration can be important positive or negative determinants of their adjustment (Titzmann & Lee, 2022). This is due to specific developmental tasks that youth have to face at different stages (e.g., identity development), which might add to acculturative tasks and therefore differently challenge youth's adjustment at different ages (Juang et al., 2018).

Moreover, the length of stay in the new country is strictly connected with acculturation processes. For example, immigrant adolescents tend to increase their skills in the new language through the years (e.g., Michel et al., 2012; Titzmann et al., 2011). Hence, results of this project related to children's proficiency in the school language or academic achievement could be expanded with longitudinal studies. Similarly, other acculturative hassles (e.g., discrimination experiences) are lower among immigrant youth who stayed longer in the resettlement country as compared with newly arrived immigrant youth (Titzmann et al., 2011).

Therefore, future longitudinal studies with a larger sample size of first-generation immigrant and refugee youth could examine the length of stay in the resettlement country to explain variability in the adjustment of this group of children. This might also clarify some results of this work. On the one hand, immigrant and refugee children reported lower levels of German vocabulary than other peers. Yet, their skills are likely to improve with increasing length of stay in Germany. On the other hand, immigrant and refugee children with higher levels of German vocabulary reported lower levels of school belongingness, which might be due to more awareness and perception of discrimination. This raises the question how this negative association will develop with children's longer stay in Germany. Future studies could expand this result longitudinally. This investigation could also help to identify school factors that are relevant at different developmental stages and can be target of interventions.

9.1.6.4. Going Beyond Categories: Examining Migration-Related Challenges Directly, Without Taking Them for Granted

Literature often uses categories of immigrant backgrounds as a proxy for migration-related experiences or challenges, as I also do in this work, when comparing across immigrant experiences or generations. However, the adjustment of immigrant and refugee children is not always hampered by such experiences (Masten, 2014; Motti-Stefanidi & Masten, 2017). By categorizing children as immigrant or non-immigrant, we attach specific assumptions to these categories (e.g., dealing with acculturative challenges), without directly examining them. Hence, I argue that it is also relevant to directly examine how children perceive or deal with migration-related experiences or acculturative challenges.

In this project, I directly examined one challenge related to the immigration experience, that is the acculturative challenge of learning the school language (see Study 3). Hence, I assessed to what extent levels of German vocabulary corresponded to children's immigrant generations, finding that levels of German vocabulary significantly differed between first generation vs. second generation vs. non-immigrant children (see Study 3). These results hence showed that learning the school language is an acculturative challenge for immigrant and refugee children in elementary school. Hence, it might be used as a proxy for migration-related challenges in the school context, going beyond the use of the 'immigrant experience' category alone.

Importantly, with time, proficiency in the school language will likely improve and immigrant and refugee children will have similar levels as native children. While also people who live longer in the country of resettlement might face acculturative challenges such as dealing with racial-ethnic discrimination, participants' length of stay in the country could be one way to overcome the use of immigration-related categories, as it might better depict their acculturative stage.

Moreover, findings of this project also showed variance across immigrant generations. This suggests that it is important to collect data on migration-related challenges, as combining children in one group only in view of their immigrant generation can ignore within-group variability. In light of the resilience approach (Masten, 2014), considering migration-related challenges would therefore reveal important factors that can promote resilience among children who, despite being new to the country, speak the language well. At the same time, this would disclose other types of challenges. For example, I found that immigrant and refugee children with higher levels of German vocabulary reported to feel less school belonging (Study 3). Adding German vocabulary as an acculturative challenge could therefore reveal a potentially relevant result, which could imply the presence of other factors (e.g., peer victimization) that might hinder the feeling of school belonging among this group of children. Future studies could replicate this study and explore which factors might explain this finding. Further work could also consider acculturative challenges (e.g., learning the school language, dealing with discrimination) as outcomes, and examine what promotive and protective factors can help children dealing with these challenges.

Consequently, research should seek to include measures of migration-related challenges, and particularly investigate structural aspects that reproduce racial-ethnic prejudice and discrimination. This would help to reorient resilience research from a more individualistic perspective to the study of structural barriers that can impact on the adjustment of immigrant and refugee (but also ethnic minority) children (see McLean et al., 2023).

9.1.7. How Do we Define Children's Adjustment in a Superdiverse Context?

In this section, I argue that it is important to find ways how to understand and measure the adjustment of ethnically diverse children according to several perspectives, and not only in view of milestones that are shaped by the ethnic majority. In previous sections (i.e., 2.2.2 and 8), I stated that the definition and measurement of adjustment used here reflect the

cultural expectations of the ethnic majority in the context of the project. On the one side, some adjustment aspects such as school belongingness can be seen as relevant for all children, and especially for immigrant and refugee children, as it refers to the feeling of being included, valued and respected (Goodenow, 1993). On the other side, when considering academic achievement and proficiency in the language of the new country, important questions arise. For example, what do these developmental or adjustment tasks mean for ethnic minoritized vs. ethnic majority children or families? How is the pathway to 'achieve' these tasks among ethnically minoritized children? What barriers come into play and should be considered when comparing between *ethnic minority/majority* children? I see these as open questions that emerged from this dissertation, and that in my view, are important to address in future research.

9.1.7.1.Problems in the Assessment of Children's Adjustment

The way research defines adjustment is crucial, because it refers to the benchmark under which children are expected to adjust more or less positively. It is important to take into consideration that the definition of children's depend on the sociocultural context in which children live (Masten, 2001), and may therefore vary across cultural-ethnic groups. Accordingly, scholars have criticized the white-centric ways how adjustment is interpreted, and I agree that this is an important aspect that future research should tackle. For example, Ladson-Billings stated that, in many studies:

> student "success" is represented in achievement within the current social structures extant in schools. Thus, the goal of education becomes how to "fit" students constructed as "other" by virtue of their race/ ethnicity, language, or social class into a hierarchical structure that is defined as a *meritocracy.* However, it is unclear how these conceptions do more than reproduce the current inequities (Ladson-Billings, 1995, p. 467).

Similarly, Aronson and Laughter (2016) noted that finding a good way to evaluate the outcomes of CRT on students' adjustment is difficult, shifting between the use of test scores, which might be useful for policy makers, and of life-long learning, which might be more appreciated by educators. Accordingly, they noted that: "proponents of CRE [culturally relevant education] may see the simplistic nature of standardized testing as an oppressive system based on "Whitestream" curricula and acknowledge the dangers equating students only with numbers" (Aronson & Laughter, 2016, p. 196).

These are relevant points when examining the adjustment of ethnically diverse children. For the case of ethnic minoritized children in particular, it is even more important to question the relevance of considering adjustment only in terms of expectations shaped by the white/ethnic majority, who have more privileges. While these are relevant tasks for children to deal with in the ethnic majority society, it is also relevant to consider what McLean et al. (2023), relating to the US context, asked: "what does it mean for a Native American adolescent to "successfully" graduate from a school where they learned white-centric histories and values while their own histories were misrepresented or erased?" (p. 9). Borrowing the same question and relating it to the context of this dissertation, I also ask: "What does it mean for immigrant, refugee or ethnic minoritized students to "successfully" finish elementary school in a context where they learned German / European histories and values while their own histories were not recognized and addressed or likely misrepresented?". This calls for the importance to consider and investigate other aspects as markers of positive adjustment of ethnic minority and immigrant or refugee children, and to consider the structural level, or macro-context (see Rogers et al., 2021), in these investigations.

Moreover, the relevance attached to different adjustment outcomes might vary according to aspects such as immigrant optimism (Cebolla-Boado et al., 2021; Kao & Tienda, 1995) and structural barriers (e.g., access to resources, racism) linked with the intersection of socioeconomic and ethnic minoritized status (as I found among Roma immigrant mothers in

Germany, Ialuna & Leyendecker, n.d.). While an extended discussion of this point would be beyond the scope of this work, it can be worthy to explore how different developmental tasks are considered among ethnically diverse families, teachers, schools and researchers as well.

9.1.7.2.Possible Solutions: Considering Children's Adjustment as Adjustment to the System

In light of the findings of this dissertation, I aim to give some suggestions how future studies could concretely expand the definition of adjustment. In particular, I advise future work addressing the academic adjustment of immigrant and non-immigrant students to additionally examine children's family/home language as a measure of academic achievement. While this project assessed the level of school language proficiency (i.e., German vocabulary and reading comprehension) as well as grades (as interpreted within the German school system) and mathematical competence (taught and examined in German), it could be worthy of investigation to examine how school approaches that aim at valuing cultural diversity, such as CRT or a climate promoting cultural pluralism, are related also to children's family/home language (see section 9.1.3.).

Moreover, I suggest that the adjustment of immigrant and refugee children specifically should be also viewed in terms of adaptation to new systems, teaching and learning experiences. It could be therefore interesting to investigate how these children adjust to the new teaching styles or school management approaches. It could be also particularly important to investigate these types of adaptation among older children or adolescents who recently moved to the new country, as they bring along the teaching-learning experience of the country of origin and might therefore be more challenged by new educational systems.

Furthermore, this work moved beyond the individualistic approach according to which resilience is only linked with characteristics of the child or their parents, and rather focused on what factors in school are important to promote children's adjustment. However, future studies should also consider further structural aspects, which are embedded in the school

context. Centering structural barriers in research on adjustment is important, as it draws the attention not on children's social position, but on structures of discrimination and oppression present in society, and in the more proximal children's contexts, such as the school.

Hence, one relevant aspect is to consider and address the role that structures play in the academic and psychological adjustment, especially of immigrant and refugee (or ethnic minority) students. For example, cultural diversity policies at school can reflect different orientations that can value or reject cultural diversity, such as multiculturalism or assimilationism (Civitillo et al., 2017; Fine-Davis & Faas, 2014), which might hinder the adjustment of ethnic minority children (Celeste et al., 2019). Students' perceptions of a discriminatory climate might also hamper the academic achievement of ethnic minority and majority students (Baysu et al., 2023). Teachers' ethnic stereotypes and prejudice can negatively impact future academic trajectories of children (Civitillo et al., 2022; Glock, 2016; Lorenz et al., 2016), and peers might bully and victimize immigrant and refugee children more than others (Samara et al., 2020; Stevens et al., 2020).

Hence, future studies could include measures of racial-ethnic discrimination at school as a risk factor, and view resilience as children's capacity to adequately react to this and related types of discrimination (McLean et al., 2023). For example, future research could expand Study 3 by examining how school relationship quality can moderate the effect of racial-ethnic discrimination on children's adjustment. Moreover, research could address the call of Rogers et al.'s (2021) to emphasize the m(ai)cro level and expand the present work, by focusing on how systems reproducing privilege hierarchies transform children's social position characteristics (i.e., immigrant experience, ethnic status, and SES) into barriers to their adjustment. For example, it might be interesting to address different education and immigration policies between the States of Germany (e.g., educational curricula, KMK, 2023) or between different countries (e.g., MIPEX- Migrant Integration Policy Index, 2020), which might provide different contexts of inclusion or exclusion that can affect also children's

microcontexts. Therefore, adjustment of ethnically diverse children could be viewed as an adaptation to a system built on power and privilege hierarchy (Rogers & Way, 2021).

In summary, I suggest that future projects with immigrant, refugee and ethnic minority children do not exclusively examine children's academic achievement based on the school language proficiency, but also include measures in children's home language. Additionally, further research is needed that expands findings on different aspects of CRT and classroom cultural diversity climate already in elementary schools. Moreover, while this work showed that it is important to consider children's immigrant experience, future studies should also examine children's own ethnic identification and different levels of family and neighborhood SES, in order to better understand the interplay of participants' immigrant, ethnic and socioeconomic statuses. Consequently, future research could strive to examine the adjustment of immigrant, refugee and ethnic minority children in terms of adaptation to a system that perpetuates power hierarchies. This would give credit to the different and multilayered barriers that especially immigrant, refugee and ethnic minority children have to face, and would provide a more thoughtful way to frame and interpret differences in the adjustment of immigrant and refugee and non-immigrant children.

9.2.Practical Implications: How Can School and Teachers Promote the Adjustment of Immigrant, Refugee and Non-Immigrant Children?

The European Commission (2017) and OECD (2019) have called for more initial teacher education and professional development programs on practices that positively and effectively address cultural diversity. Similarly, scholars have stressed the need for integrating CRT trainings in teachers' education (e.g., Brown et al., 2022; Civitillo & Juang, 2020; Gay, 2010). I join this appeal, as this project showed that handling cultural diversity in a responsive way, fostering aspects of *cultural pluralism* and of *equality* between students, and favoring

supportive relationships with teachers and peers can promote the academic and psychological adjustment of ethnically diverse students. Importantly, findings revealed that these practices and aspects can benefit both immigrant and refugee as well as non-immigrant children. In this section, I delineate the main practical implications of the findings, which aim to help teachers and schools, but also universities and policy makers.

9.2.1. When Self-Efficacy is not Enough: The Need for Self-Reflection and CRT Trainings in Teachers' Professional Development

Teachers in this project reported average levels of CRT self-efficacy. Yet, only very few attended trainings and workshops on CRT-related topics such as migration, cultural diversity and intercultural learning. The findings showed that teachers' CRT self-efficacy was not linked with a more positive (or negative) TSR, and that it did not translate into a classroom climate promoting cultural diversity as perceived by students. Moreover, teachers' CRT self-efficacy was not related with children's sense of school belonging and life satisfaction. Whereas these results need to be expanded by future research, they suggest that teachers' CRT self-efficacy does not relate to different aspects that are, however, important characteristics of CRT.

As cultural diversity is an inherent part of society and schools, it is therefore imperative that policy makers and higher educational institutions offer CRT trainings as professional development for in-service teachers, and integrate aspects of CRT in initial teacher education. CRT trainings would likely increase teachers' CRT self-efficacy, which is a relevant aspect linked with higher levels of children's vocabulary in the school language and mathematical achievement (Study 1). However, CRT trainings should include strategies and reflections how to relate with immigrant and refugee students specifically, as teachers with higher CRT self-efficacy levels reported more *conflictual* relationships with these students (Study 2).

Therefore, CRT self-efficacy alone does not necessarily imply that CRT practices are thoroughly implemented or perceived as such by students. This indicates that believing to be efficacious in CRT is not enough. Indeed, teachers' confidence in CRT might not be related to students' perceptions of the related practices. Moreover, it might be also unrelated to an in-depth knowledge of what CRT implies, probably due to a limited participation in CRT trainings. To address these points, I here delineate some suggestions for teachers.

First, it is critical to recognize that the own view on teaching practices might be different for students, especially when they have different backgrounds (e.g., in terms of immigrant or ethnic status). Accordingly, Gay and Kirkland (2003) stated that: "to make teaching more relevant to diverse students, teachers need to have a thorough understanding of their own cultures and the cultures of different ethnic groups, as well as how this affects teaching and learning behaviors." (p. 182).

One way that could help teachers to engage in reflections on culture is to reflect upon the own ethnic identity. For example, the Identity Project (Juang et al., 2023; Umaña-Taylor & Douglass, 2017) offers the possibility to critically discuss issues of cultural diversity by promoting the exploration of one's own ethnic identity. While the project was originally developed for adolescents, it is currently implemented among pre-service teachers with the aim of promoting their intercultural learning and critical reflection (for Germany, see Pevec et al., 2023; Ulbricht et al., 2023). First results showed that pre-service teachers who attended the project reported more confidence in interacting with diverse students and engaging in conversations on ethnicity and culture than teachers in the control group (Pevec et al., 2023). Hence, this could be one possible intervention that can be integrated into initial teacher education, but also as part of teachers' professional development.

Second, it is crucial that teachers are offered possibilities and strategies how to reflect upon structures of power and racism (Aronson, 2017; Gay & Kirkland, 2003). To do this, it might be helpful to adopt a structural perspective (Gorski, 2016a, 2016b), and consider how

systems of racial-ethnic discrimination or classism might be reflected in teaching practices as well as in school policies or educational activities. Indeed, these structures can differently impact students' adjustment, and might not be considered culturally responsive by them.

Third and relatedly, teachers could engage in reflections on how own racial-ethnic stereotypes and prejudice might play a role in their expectations towards ethnic minority students. This is important, because they can translate into a differential judgment of students' academic achievement (Civitillo et al., 2022; Glock et al., 2015; Lorenz et al., 2016). Openly addressing topics such as stereotypes and racial-ethnic discrimination might also help teachers reducing their fear of appearing racist. Indeed, one study in Germany showed that teachers' fear to appear racist tended to be related to lower CRT self-efficacy, more cultural diversity related stress and less support for students' competence through relatedness (Hölscher et al., 2024).

Moreover, it could be helpful for teachers to have the possibility to engage in reflections on the own beliefs towards cultural diversity. Accordingly, teachers' cultural diversity beliefs, such as multiculturalism and color-evasiveness are linked to teachers' disposition to employ CRT (Hachfeld et al., 2015) and to their teaching practices (Civitillo et al., 2019). Therefore, reflections on how teachers view cultural diversity are important as they can improve the level of responsiveness in their teaching practices. This could lead to a match between teachers' and students' perceptions of how cultural diversity is handled in the classroom. Different tools that can promote teachers' self-reflections such as writing journals, or discussing about classroom observations (for a review, see Farrell, 2016). Such tools could be expanded to address and reflect on cultural diversity beliefs (see Civitillo et al., 2019).

All in all, this calls for the importance of offering regular CRT trainings and opportunities to engage in self-reflections related to cultural diversity. This is relevant because CRT is not static, like a skill that once acquired remains, but it is rather a process subject to cultural and societal changes (Ladson-Billings, 2014). The sociodemographic situation of

classrooms and schools are likely to change, that is the proportion of students with an own immigrant experience, of students learning the school language as second language or the variability and specificity of the ethnic (minoritized) groups present in the classroom. Similarly, the way cultural diversity is understood, handled and discussed in public discourse is likely to change with historic events, political and economic measures, and societal change. Therefore, teachers' own teaching practices, especially concerning cultural diversity, need to be constantly renewed, pondered and renegotiated. While teachers need to continuously keep up with new teaching methods and materials (e.g., use of interactive boards), the same should happen for the handling of cultural diversity in the classroom.

9.2.2. Both School Language and Heritage Culture are Important

This project showed that the level of German vocabulary among first-generation immigrant and refugee children was lower than second-generation immigrant children, who in turn scored lower than non-immigrant children. This highlights that learning the school language can be a challenge for immigrant, refugee and ethnic minority children. Therefore, fostering CRT in teachers' education and professional development might be helpful for teachers, in order to target lessons that are sensitive to school language learners.

Findings showed that teachers' CRT self-efficacy was positively associated with children's school language skills. It should be noted that this project was based in North-Rhine Westphalia (Germany), in which pre-service teachers attend specific courses on German as second/foreign language (i.e., DaZ / DaF; Stiftung Mercator, 2009). Hence, it could be that due to their educational training, teachers developed a focus on fostering students' language skills in multilinguistic classrooms.

While focusing on school language is important, this should however not outshine the importance of cultural *diversity*. Indeed, CRT and practices promoting *cultural pluralism* also aim at valuing the linguistic background of students (Schachner, 2019; Siwatu, 2007). For

example, Matthews and López (2019) found that, when teachers implemented CRT by integrating students' heritage language (i.e., Spanish) into their teaching, this was significantly associated with students' mathematic achievement. Yet, especially in highly culturally diverse classrooms, it might be difficult to integrate different languages in teaching, and can have the side effect of excluding other children (Rotter & Timpe, 2016; Ticheloven et al., 2021). However, a general appreciation of the cultural and linguistic diversity of students can be beneficial for all children. Accordingly, in qualitative interviews from the study of Matthews and López (2019), teachers reported how including cultural aspects and appreciate students' heritage language was important to enhance students' interest, engagement and sense of inclusion. Study 1 also showed that children's perceptions of a classroom climate fostering *heritage and intercultural learning* was positively related to the school belongingness and life satisfaction of children with and without an immigrant experience. Together, these findings imply that promoting the school language but also aspects of children's cultural background are both relevant for different areas of children's adjustment.

9.2.3. Elementary School as a Context to Value Cultural Diversity

Findings showed that handling cultural diversity can be important for the academic and psychological adjustment of students already in elementary school. Specifically, when teachers felt confident in CRT, and when students perceived a classroom climate that fostered *cultural pluralism* and *equal treatment by students*, students benefited in their academic and psychological adjustment (Study 1). Yet, CRT self-efficacy was not related to TSR (Study 2). However, findings corroborated the importance of TSR and peer relationships quality for the feeling of school belonging among immigrant and refugee as well as non-immigrant children (Study 2 and 3). This means that different ways of engaging with cultural diversity are already relevant among children in elementary school, calling for the importance of fostering also emotional-relational aspects with and between students.

This is relevant from a practical perspective for different reasons. First, in Germany and other countries with similar school systems, elementary schools are likely to be more diverse than secondary schools, because secondary schools are divided in tracks, which mirror also a segregation in ethnic composition (i.e., ethnic minority students are more likely to be represented in vocational vs. academic tracks). Second, although elementary school children are in a developmental age in which their capacity of abstraction and understanding of political issues are limited, there is evidence that already younger children can hold racial-ethnic prejudice (Raabe & Beelmann, 2011), and ethnic victimization by peers can take place during childhood (Verkuyten, 2002). Similarly, also teachers can hold racial-ethnic stereotypes and prejudices and show discriminatory behaviors towards ethnic minoritized students (Civitillo et al., 2023; Glock, 2016; Glock et al., 2020). Hence, appreciating cultural diversity already in elementary school, and fostering a climate in which students treat each other equally, can be important for students' future development, and might offer the foundation for all children to feel well and to be successful in school. It is therefore fundamental that policy makers and schools offer trainings and interventions addressing cultural diversity also for elementary school teachers.

In summary, findings showed that it is crucial that teachers aim to implement practices that value cultural diversity and build positive relationships with and between ethnically diverse students. How can this be done in elementary schools? In the previous sections, I suggested that engaging in self-reflection and promoting the school language as well as heritage learning are important factors that can be targets of teaching strategies and interventions. Here, I provide some other practical suggestions, related to findings of this dissertation.

For example, Study 2 and 3 showed that enhancing the quality of relationships with teachers and peers can promote the school belongingness of all students, regardless of their immigrant experience. To this end, cooperative learning strategies that foster intercultural

friendships between ethnically diverse students can be implemented in elementary school (Barrett, 2018). Also, coaching interventions that target teachers' mental representations of their TSR showed promising results in enhancing *closeness* and reducing *conflict* in TSR at elementary school (Bosman et al., 2021)

Moreover, for non-immigrant children, supportive TSR intensified the positive effect of German vocabulary on their grades, whereas for immigrant and refugee TSR did not play a role in this association (Study 3). This suggests that for immigrant and refugee children, at least in the elementary school, German vocabulary is a more relevant aspect for their grades than having *close* TSR. Hence, it is important that teachers are aware of the different needs of children with and without an immigrant experience. Consequently, this might also indicate that teachers could aim to support immigrant and refugee children in more concrete ways. For example, offering tangible support such as helping with schoolwork (Suárez-Orozco et al., 2009), or creating groups of students who help each other (Gay, 2002), could increase their academic achievement**.**

Taken together, these findings indicated that universities and policy makers should integrate CRT trainings for teachers, both during their pre-service training and as part of their professional development. Therefore, it is important that teachers engage in continuous critical reflections on the own cultural diversity beliefs, racial-ethnic stereotypes, teaching practices and ethnic identity. Moreover, improving TSR and peer relationship quality among ethnically diverse students is a key aspect for the adjustment of all children.

10. Conclusions

In a superdiverse society, where movements of immigrant and refugee people are common and different characteristics of people's identity intersect together, it is important to recognize and address cultural diversity in main institutions, such as in school. Research focusing on school factors that can promote and protect the adjustment of ethnically diverse children, and of immigrant and refugee children specifically, is therefore needed in order to deepen our understanding on their positive adaptation processes. This dissertation makes a contribution to the current status of research on the adjustment of ethnically diverse students, and of immigrant and refugee children particularly, and can advise schools and policy makers for future interventions.

This work expanded prior research on the handling of cultural diversity in school, by empirically investigating its link with the adjustment of children in elementary school. Particularly, it showed that teachers' culturally responsive teaching practices can be valuable for children's skills in the school language, which were related to higher academic achievement. Furthermore, students' perceptions of a classroom climate that values cultural pluralism was positively related to their sense of school belonging and life satisfaction. Fostering equal treatment among ethnically diverse students was important for their academic achievement. This research also substantiated the powerful role of school relationship quality for children's school belongingness. Importantly, results were similar for immigrant and refugee as well as non-immigrant children. This suggests that engaging with cultural diversity through teaching practices that appreciate cultural diversity and through warm relationships can benefit all students, regardless of their immigrant experience.

New questions and implications for research and practice can be drawn from these findings. For example, we need to better understand how both teachers and students view culturally responsive practices in the classroom. Future studies could employ different and multi-informant ways to assess culturally responsive teaching practices and cultural diversity

classroom climate. Research might also expand these results by considering different aspects of children's adjustment, such as their development in the home language. Children's experiences related to migration as well as to ethnic status should be included in future studies that aim to understand the adjustment of ethnically diverse students.

Moreover, schools and teachers should strive to acknowledge and value cultural diversity, in order to promote the adjustment of all students – with and without an immigrant experience. Higher education institutions and policy makers should provide culturally responsive trainings for pre-service and in-service teachers. Particularly, there is a need for structured and regular trainings that offer teachers the chance to reflect on the own beliefs and practices related to cultural diversity, and to develop strategies that promote warm school relationships. In sum, findings from this dissertation provided evidence that the way schools and teachers address cultural diversity and promote supportive relationships can make a difference in the adjustment of ethnically diverse children. Valuing cultural diversity at school can be crucial for children's future, and be a first step for building a more equitable and inclusive society.

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Appendix

Preregistration Forms

The preregistrations of the studies are on the Open Science Framework (OSF) project pages:

Study 1: https://osf.io/5g2hm?view_only=4c3a4b3aa65d4e2082cc78d7469d8c2f

Study 2: https://osf.io/qht96?view_only=f05c232d6a3443f294fb9345d002663c

Study 3 is a registered report.

Supplementary Materials

The supplementary materials of the studies are on the Open Science Framework (OSF) project pages:

Study 1: https://osf.io/5z3v9/

Study 2: http://tinyurl.com/SupplmatTSR

Original URL: https://osf.io/t492e/?view_only=5e9e5975e02a47ea8684b90f4295166f

Study 3: http://tinyurl.com/SupplmatResilience

Original URL: https://osf.io/wyp8d/?view_only=23c2716b297d4d48a4b9be752499cf7c

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