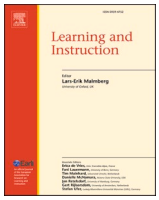
Learning and Instruction 91 (2024) 101879

Contents lists available at ScienceDirect

Learning and Instruction

journal homepage: www.elsevier.com/locate/learninstruc



# Do intercultural education and attitudes promote student wellbeing and social outcomes? An examination across PISA countries

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ARTICLE INFO

*Keywords:*
PISA
Intercultural education
Wellbeing
School belonging
Victimization

STRUCTURED ABSTRACT

*Background:* Recent research indicates a rise in classroom diversity and declines in students' psychosocial outcomes, particularly for those from diverse backgrounds. These trends necessitate a concerted effort by schools to uphold social cohesion and ensure the wellbeing of all students.
*Aims:* We examine the associations of intercultural education practices and teachers' intercultural attitudes with students' psychosocial outcomes (eudaimonia, life satisfaction, positive affect, school belonging, and victimization).
*Sample:* We use data from Programme for International Student Assessment (PISA) 2018 ($N = 451{,}846$ students, 58 countries).
*Methods:* We utilize a series of multilevel linear regressions (L1 = students, L2 = schools, L3 = countries) to examine associations between intercultural factors and students' psychosocial outcomes.
*Results:* Student-reported intercultural education practies positively predicted their eudaimonia, life satisfaction, positive affect, and school belonging. Student-reported teacher intercultural attitudes positively predicted students' belonging and negatively predicted their frequency of victimization. Principal- and teacher-reported predictors showed negligible effects. Results were largely similar across student immigrant status and generalized across the countries examined.
*Conclusions:* Our findings emphasize students' subjective experiences of intercultural factors at school, which may benefit students' psychosocial outcomes regardless of their cultural backgrounds.

## 1. Introduction

As the world becomes increasingly interconnected and globalized, 'diversity' and 'super diversity' are becoming the new normal for school populations (Gamble et al., 2021). The percentage of students with an immigrant background in schools in Organisation for Economic Co-operation and Development (OECD) countries increased from 9.4% in 2006 to 13% in 2018 (OECD, 2016; 2019a). The increasing proportions of immigrant students may pose new challenges to maintaining school cohesion, as students must learn how to successfully interact with peers from diverse cultural backgrounds. Indeed, many supranational agencies have tasked schools with equipping students with the intercultural knowledge and ability to build inclusive and cohesive multicultural societies in their adulthood (UNESCO, 2006).

Despite extensive research on educational equity, studies demonstrate the declining levels of student wellbeing, coupled with worse social outcomes such as reduced school belonging and increased victimization (OECD, 2017, 2019b; Rowan, 2021). Though these negative trends in wellbeing and social outcomes have been noticed for students in general, students from diverse cultural backgrounds are at greater risk (OECD, 2019b).

In the present paper, we examine students' wellbeing and social

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https://doi.org/10.1016/j.learninstruc.2024.101879
Received 3 May 2023; Received in revised form 8 December 2023; Accepted 18 January 2024
Available online 26 January 2024

outcomes, and examine differences in these outcomes based on students' cultural backgrounds (operationalized through native, first-generation, and second-generation immigrant status; with supplementary sensitivity analyses using language spoken at home). We apply Bronfenbrenner's (1979, 1994) socio-ecological systems model of human development to posit that intercultural education practices at school and teachers' pro-intercultural attitudes will positively predict students' wellbeing in terms of their eudaimonia, life satisfaction, and positive affect. Furthermore, we posit these intercultural factors to be linked with students' social outcomes, by positively predicting belonging and negatively predicting the frequency of victimization (see Fig. 1 for an overview of models tested).

### 1.1. Wellbeing and social outcomes

#### 1.1.1. Wellbeing

Wellbeing is a multifaceted concept that encompasses an individual's subjective experience of feeling good and their ability to function effectively (Huppert, 2009). Historically, it has been broadly classified into two broad components – hedonia and eudaimonia. Hedonic wellbeing is grounded in the experience of pleasure and the avoidance of displeasure. It includes life satisfaction (an individual's self-evaluation of their overall quality of life) and positive affect (the extent to which an individual feels positive emotions such as happiness and joy; Diener & Lucas, 1999). Eudaimonic wellbeing reflects the congruence of an individual's life with their core values (Ryan & Deci, 2001), which can manifest as a sense of purpose or meaning in life. Scholars suggest that both hedonic and eudaimonic wellbeing are needed for a fulfilling life (Huppert, 2009).

Improving students' wellbeing is an emerging global priority (e.g., United Nations Sustainable Development Goal to ensure healthy lives and promote wellbeing for all at all ages). This increased focus is not only because the components of wellbeing are important outcomes in their own right, but also because wellbeing fosters positive educational outcomes. Life satisfaction, positive affect, and eudaimonia all predict greater achievement (Kaya & Erdem, 2021; Suldo et al., 2011). Furthermore, life satisfaction predicts academic retention (Frisch et al., 2005), positive affect predicts mastery goals (Kleinkorres et al., 2020), and eudaimonia is positively associated with self-efficacy (DeWitz, Woolsey, & Walsh, 2009).

Despite being a global priority, student wellbeing has been steadily declining across the world (OECD, 2019b), with students from immigrant backgrounds demonstrating even lower wellbeing compared to students without immigrant backgrounds (Liebkind & Jasinskaja-Lahti, 2000). These findings have been demonstrated largely for hedonic indicators of wellbeing such as life satisfaction (Marquez & Long, 2021) and positive affect (OECD, 2019b), though some evidence exists for similar trends with eudaimonic wellbeing (OECD, 2019b).

#### 1.1.2. Social outcomes

A similar pattern of worsening outcomes has been noticed for two crucial school-related social outcomes: students' sense of belonging and the frequency of victimization. School belonging is the extent to which students feel personally "accepted, respected, included, and supported by others in the school social environment" (Goodenow, 1993, p. 80). A strong sense of school belonging is linked with positive outcomes such as academic motivation (Allen et al., 2018; Arslan & Allen, 2021), staying in education and employment (Parker et al., 2022), and completing university (OECD, 2019c). Multiple forms of evidence highlight the many personal, social, and economic costs of *not* belonging, such as lowered educational engagement, physical and mental health, and long-term attainment (Allen et al., 2018; Allen, Slaten, et al., 2021; Arslan & Allen, 2021).

Victimization is the level or frequency with which a student experiences being bullied by others. School victimization has serious long-term mental-health consequences (including depression symptoms, self-harm, and even suicide), that are not only felt by the victims (recipients of bullying), but also by bullies (perpetrators of bullying) and whole school communities (Marsh et al., 2023; Olweus, 1991, 2013). Victimization is a worldwide crisis, experienced by 30% of adolescents globally (Marsh et al., 2022), with immigrant students reporting more frequent victimization likely because of differences in language, culture, ethnicity, and appearance (Peguero, 2008). Both school belonging and victimization are individual and relational factors; while they are something that an individual might feel or experience, they are also something that other individuals (e.g., peers and teachers) and institutions (e.g., schools) can make better or worse through both deliberate and unconscious decisions (Rowan, 2021).

#### 1.1.3. Summary

Young people spend most of their day at school in a unique classroom social environment, and schools are often the first institutions within which they interact with individuals from diverse backgrounds. Thus, experiences in school play a significant role in determining students'

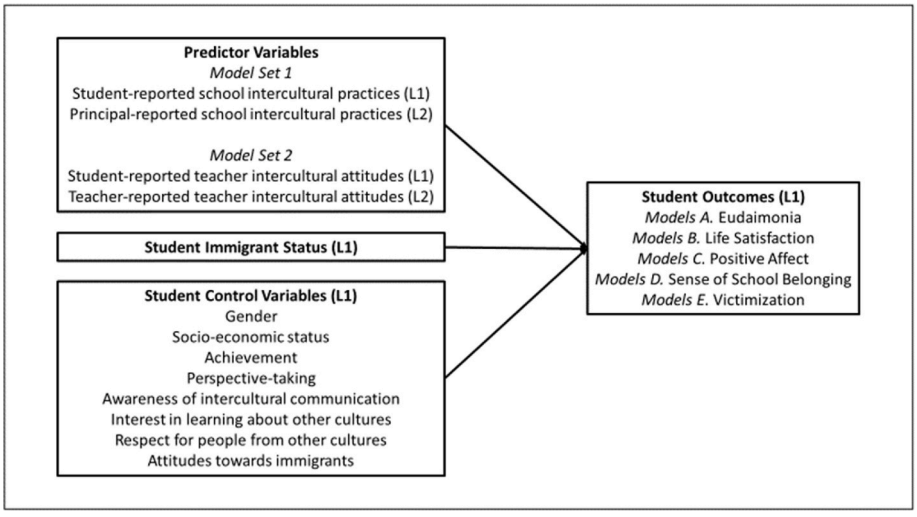


**Fig. 1.** Diagrammatic Representation of Models 1A-E and 2A-E.
*Note*. Predictor variables were included in the models in sets. Set 1 included the intercultural practices, while Set 2 included the intercultural attitudes. Each set was included in 5 models - one each for Models A to E. Student immigrant status and the student control variables were included in all models. L1 = student-level variables; L2 = school level variables.

levels of wellbeing (Aldridge et al., 2016), belonging (Allen et al., 2018), and victimization (OECD, 2016; Strohmeier & Spiel, 2003). Creating an environment where all students, regardless of their cultural background, experience psychological wellbeing, feel a sense of belonging, and do not experience discrimination, is critical. Bronfenbrenner's socio-ecological systems theory (1979, 1994) is a valuable framework for understanding how teachers and schools can impact student wellbeing (Aldridge & McChesney, 2018), belonging (Allen et al., 2016, 2021), and victimization (Hong & Espelage, 2012).

### 1.2. Socio-ecological systems theory

According to Bronfenbrenner's socio-ecological systems theory (1979, 1994), an individual is shaped by a complex system of interacting influences that extends beyond the individual and into their environment: "The ecology of human development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger contexts in which the settings are embedded" (Definition 1: Bronfenbrenner, 1979, p. 21). An individual's context is organized into nested layers or systems. The individual is at the center of the system and the external factors become progressively more distal from the individual, though each can interact and impact the individual. The first circle of influence external to the individual is their microsystem, which for a student, may comprise of their peers, teachers, and parents. The next is the mesosystem, which comprises the links between two or more microsystems that include the student. The exosystem comprises links between different settings that indirectly influence the student, such as school practices and policies. The macrosystem level comprises broader cultural and societal factors (e.g., governmental education policies concerning immigrant students; Turner & Mangual Figueroa, 2019), while the chronosystem is formed by changes that take place over time.

In this study, we consider individual factors and those situated within the students' microsystem and exosystem levels. At the individual level, we investigate the associations of student-reported intercultural education practices and student-reported teachers' intercultural attitudes with pivotal student psychosocial outcomes such as wellbeing, school belonging, and victimization. At the microsystem level, we examine teachers' self-reports of their intercultural attitudes and at the exosystem level we consider principal-reported intercultural practices at school. We focus on these layers specifically because they are generally considered more amenable to change through targeted educational interventions (e.g., Allen, Kern, et al., 2016), unlike macrosystem and chronosystem-level factors that are harder to examine, slower to evolve, and may require extensive governmental intervention and broader societal shifts in attitudes and behaviors (Kirschman & Karazsia, 2014; Swick & Williams, 2006). A socioecological lens directly informs our multi-level modeling approach, allowing us to isolate the associations of individual factors (student reports) from those at the microsystem (teacher reports) and exosystem (principal reports) levels. We expand on intercultural practices and attitudes in the next section.

### 1.3. Intercultural factors predicting student outcomes

Although multiple factors at the individual (e.g., student motivation), microsystem (e.g., parents' emotional support), and exosystem levels (e.g., disciplinary climate) have been shown to be related to student wellbeing, school belonging, and victimization (Aldridge & McChesney, 2018; Allen et al., 2018; Hong & Espelage, 2012), research exploring the associations of intercultural factors with these psychosocial outcomes remains limited.

However, in light of the growing diversity in classrooms and the accompanying complex challenges in maintaining school cohesion, it is important to gain a deeper understanding of the association between intercultural factors at school and the wellbeing and social outcomes of immigrant as well as native students. Students from non-immigrant backgrounds may be likely to have fewer intercultural experiences outside of school, implying that the ways in which schools approach cultural diversity is crucial in determining their intergroup attitudes and level of comfort in intercultural interactions. Without intercultural education, the growing proportions of diversity in classrooms could induce feelings of threat for native born students (Schmid et al., 2014). Therefore, investigating these connections between intercultural factors and the psychosocial outcomes of all students can bring us one step closer to identifying effective interventions, informing inclusive policies, and fostering a supportive educational environment that benefits all students.

#### 1.3.1. Intercultural education practices

Past research shows positive intercultural contact is crucial for students' experiences at school and helps reduce intercultural conflict (Brown, 2019; Pettigrew & Tropp, 2005). Intergroup contact theory (Allport, 1954) posits that contact between groups under optimal conditions could effectively reduce intergroup prejudice and improve intergroup relations. In particular, Allport stated that four features of the contact situation—equal status between the groups in the situation, common goals, intergroup cooperation, and the support of authorities, law, or custom—are required to form optimal conditions.

In line with these features in the context of schools, intercultural education practices may provide such structured contact situations. These practices refer to the deliberate efforts by schools to incorporate cultural diversity into their curriculum, policies, and practices, with the aim of going beyond passive coexistence and promoting active intercultural understanding, mutual respect, shared cultural expression, and communication among students from different backgrounds (UNESCO, 2006). For the current study, intercultural education practices are operationalized through student reports of what intercultural education they learn about (e.g., learning how to communicate with people from different backgrounds) and principal reports of the intercultural education practices in that school (e.g., whether the school organizes multicultural events; all items making up the scales used in the present study are provided in Supplementary Materials Section 1).

Indeed, research shows that positive contact may not simply occur through increased opportunities for intergroup contact, but needs to be nurtured through explicit education (Farmer et al., 2019). Meta-analytic evidence has supported Allport's theory (Pettigrew & Tropp, 2005). Specifically, samples who experienced carefully structured contact situations designed to meet Allport's optimal conditions displayed lower levels of discrimination than samples who did not experience these conditions. Particularly the 'support of authorities', which in the case of the present study is operationalized through the intercultural education practices at school (and teachers' intercultural attitudes mentioned below), seems a decisive feature.

While this theory has direct implications for the frequency of victimization experienced by students, aligned with Allport's other features for positive intergroup contact, research also shows that participating in a cohesive, caring group that has a shared purpose (i.e., when schools function as whole communities that value and promote understanding of and respect for others, and are inclusive and open) can help schools foster a more inclusive and supportive learning environment that meets the wellbeing and belonging of students (Aldridge et al., 2016; Battistich et al., 1997).

A limited amount of research on intercultural education has focused on its impact on the wellbeing and belonging of students, though these are limited to students from specific ethnic groups within single country samples. These groups may be similar to—or even overlapped with—immigrant students to the extent that both groups are marginalized, thereby providing preliminary insight into how intercultural education may impact immigrant students. One study found that African American youth who perceived their school to incorporate elements of

intercultural education, experienced an enhanced sense of school belonging in the following school year (Smith et al., 2020). A study on Italian, Portuguese, and Albanian students in Switzerland found that the extent of multicultural education in school was positively related to the life satisfaction of adolescents with a migration background (Haenni Hoti et al., 2017). While these studies present a promising start, this area lacks rigorous large-scale research especially in relation to migration background—a gap the present study aims to fill.

#### 1.3.2. Teachers' intercultural attitudes

The attitudes and behaviors of teachers towards immigrant students may impact on student outcomes because students learn from significant others about what behaviors are and are not acceptable (Akerlof & Kranton, 2010). That is, besides simply learning how to be good citizens of the world, this behavior must also be modeled. This is in line with Allport's (1954) intergroup contact theory mentioned above. Students taught by teachers with positive intercultural attitudes—the extent to which teachers believe that students from different cultural backgrounds should be treated equally and have the same opportunities—would have the 'support of authorities' in holding similar beliefs. In doing so, teachers' positive intercultural attitudes can help promote a more inclusive and supportive learning environment (DeCuir-Gunby & Bindra, 2022), which in turn may foster students' psychosocial outcomes (Alesech & Nayar, 2021; Lulic et al., 2023).

A handful of studies have shown the importance of teachers' intercultural attitudes on the outcomes of minority group students. For instance, the more respected and appreciated minority students feel by their teachers, and the less discriminated against by their teachers they feel, the greater their wellbeing (Haenni Hoti et al., 2017). In contrast, students from ethnic minorities who are discriminated against by their teachers have worse outcomes. A study with Latinx students showed that those who felt discriminated against by teachers and tended to have more negative attitudes about school and lower achievement (Stone & Han, 2005). Hope et al. (2015) noted that African American youth who reported being the victims of frequent racial stereotyping and discrimination by teachers had worse relationships with adults in the school, which impacts on their sense of belonging (Booker, 2006). Thus, while a few studies demonstrate the importance of teachers' positive attitudes towards individuals from different backgrounds, evidence on the impact of such attitudes on students' wellbeing and social outcomes using large-scale data is lacking. Furthermore, these past studies have been conducted with specific minority groups whose outcomes might be different to those of immigrant and non-immigrant students.

Immigrant students often face unique circumstances related to acculturation, language acquisition, and cultural adaptation that may impact their educational trajectories. While the results of the studies mentioned here may give us preliminary insights into the pattern of results for students from marginalized groups, not all of them have immigrant backgrounds (i.e., first- or second-generation immigrant). As mentioned before, students from immigrant backgrounds report more frequent victimization (Peguero, 2008) and demonstrate lower wellbeing compared to students without immigrant backgrounds (Liebkind & Jasinskaja-Lahti, 2000). Thus, research focusing specifically on students' migration status is needed. The current study aims to fill these gaps by examining the associations of teachers' intercultural attitudes, in addition to those of intercultural education practices, with immigrant and non-immigrant students' wellbeing and social outcomes.

## 2. Present study

In this study, we examine the associations of student and principal-reported intercultural education practices, and student- and teacher-reported teacher intercultural attitudes, with students' eudaimonia, life satisfaction, positive affect, sense of school belonging, and frequency of victimization (see Fig. 1). We use nationally-representative, cross-national data from the Programme of International Student Assessment (PISA) 2018 which assesses how well 15-year-olds are prepared to use their skills and knowledge to fulfill real-world opportunities and problems across 80 countries. PISA assesses students' academic abilities, family background, and psychosocial factors. Importantly, for the first time in 2018, the survey included questions about students' preparedness to live and thrive in an interconnected world, with responses from students, teachers, and principals. Utilizing this PISA data provides us with a unique opportunity to examine—through a multi-informant perspective—the associations of intercultural education practices and teachers' intercultural attitudes with student wellbeing and social outcomes.

Furthermore, given that participants respond to the same items across countries, utilizing PISA data also provides an opportunity to examine the extent to which these associations generalize across countries. The literature in the field of psychology is undergoing a replication crisis, with many salient findings not being confirmed in subsequent studies. In addition, the majority of educational psychology research has been conducted in samples from rich, developed countries. Thus, testing the generalizability of findings across multiple, diverse countries can help us to draw firm conclusions from our results.

Based on Bronfenbrenner's (1979) socio-ecological systems theory and intergroup contact theory (Allport, 1954), research demonstrating stronger associations for individual-level factors compared to microsystem and exosystem factors with student outcomes (e.g. Allen, Kern et al., 2016), and that students from immigrant backgrounds report lower wellbeing and belonging, and higher victimization compared to students without immigrant backgrounds (Liebling & Jasinskaja-Lahti, 2000; Peguero, 2008), we hypothesize that:

**Hypothesis 1A**. Student-reported intercultural education practices at school will positively predict student wellbeing, school belonging, and negatively predict victimization.

**Hypotheses 1B**. Principal-reported intercultural education practices at school will positively predict student wellbeing and belonging, and negatively predict victimization, but to a lesser extent than the student-reported predictors.

**Hypothesis 2A**. Student-reported teachers' intercultural attitudes at school will positively predict student wellbeing, school belonging, and negatively predict victimization.

**Hypotheses 2B**. Teachers' own intercultural attitudes will positively predict student wellbeing and belonging, and negatively predict victimization, but to a lesser extent than the student-reported predictors.

**Hypothesis 3**. The associations of intercultural education practices and attitudes with student wellbeing and social outcomes will be in the same direction for immigrant and non-immigrant students, but will be larger for immigrant students.

We also conduct sensitivity analyses using students' language spoken at home and age of arrival instead of immigrant status, to examine whether our results would be limited to a specific operationalization of students' cultural backgrounds. In addition, we will examine the extent to which the above results will generalize across the PISA countries. As cross-national research on this topic has previously not been conducted, we do not make specific hypotheses about the generalizability of our results.

## 3. Methods

### 3.1. Participants

We used the publicly-available, nationally-representative cross-national PISA2018 dataset (oecd.org/pisa/pisaproducts/). The raw data consists of responses from 612,004 15-year-old students from 21,903 schools in 80 countries/economic regions. For the present study, we removed data from countries for any of the predictor variables or all

outcome variables where PISA did not provide scale scores. This was either because these questions were not administered in those countries (as every country is not required to ask all questions to participants in that country) or the resulting scale scores were shown to have poor internal consistency. We removed data from these countries because data would not have been missing at random for students in these countries. We then used multiple imputations to deal with the remaining amount of missing data (see Analyses section; missingness reported in Supplementary Materials Section 2). Given that some countries had 100% missing data on some (but not all) of the outcomes—and therefore data would not be missing at random for those outcomes—we removed those countries prior to analyses pertaining to those outcomes.

Thus, our models with different outcomes represent varying sample sizes. Final sample size for analyses ranged from 412,801 (14,694 schools, 54 countries, 49.9% female; 373,579 native, 20,880 second-generation, 18,342 first-generation immigrant students) to 451,846 students (16,370 schools, 58 countries, 49.8% female; 405,952 native, 24,051 second-generation, 21,843 first-generation immigrant students). The process was repeated for the subset of countries in which teacher-reported information was collected, for our analyses pertaining to teachers' intercultural attitudes. These analyses had a sample size ranging from 128,291 (4,499 schools, 14 countries, 49.8% female; 113,809 native, 7,525 second-generation, and 6,957 first-generation immigrant students) to 135,105 students (4,678 schools, 15 countries, 49.7% female; 120,516 native, 7,581 second-generation, and 7,008 first-generation immigrant students). On average, there were 27.51 students ($SD = 17.32$) in each school. We also report the total number of students and the number of students by immigrant group in each country in Supplementary Materials Section 2. The lead author's university does not require ethics approval for secondary data analyses of publicly available data such as PISA.

### 3.2. Measures

#### 3.2.1. Dependent variables

We used the PISA-provided scale scores for each of our dependent variables. These scale scores represent constructed variables that result from the aggregation of multiple items. Historically, scale scores were calculated by simply summing or averaging the individual item scores, but this approach has notable limitations. PISA addresses this using Warm (WLE) estimates (Warm, 1989) from Item Response Theory (IRT) analysis. Like related latent-variable models (e.g., factor analysis), IRT models connections between latent traits and item responses. Advantages include assessing scaling properties, score comparability across samples, and effective handling of missing data (See PISA Technical Report for more detail). Past research has also shown that PISA achievement results are robust to different scaling methods (Jerrim et al., 2018). Given the large sample size of PISA data, this is likely also true for the background questionnaire responses.

PISA ensured scalar measurement invariance of scale scores for reflective measures across countries and languages within countries (OECD, 2019c, 2020). They provide country-by-country alpha values for variables in the Chapter 16 Tables of the PISA 2018 technical report (https://www.oecd.org/pisa/data/pisa2018technicalreport/). Tables 16.42 and 16.43 present the alpha values for eudaimonia and positive affect (note that life satisfaction was measured using a single item), while Tables 16.58 and 16.59 present alpha values for belonging and victimization. Tables 16.46–16.47 and Tables 16.113–16.114 present alpha values for student-reported teacher's intercultural attitudes and teacher's own attitudes, respectively. Note, PISA did not provide alpha values for the intercultural education practices used in our study and internal consistency is not an appropriate criterion for formative measures (Diamantopoulos & Winklhofer, 2001). We include a list of all items that make up the key scales utilized in our study in the Supplementary Materials (Section 1).

**Wellbeing.** This was measured at the student level in three ways. First, *eudaimonia* assessed the extent to which students felt purpose and meaning in life (3 items; e.g., "My life has a clear meaning of purpose"; $\alpha = 0.85$). Each item was to be rated on a 4-point likert scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Second, *life satisfaction* was measured through the item "Overall, how satisfied are you with your life as a whole these days?". This item was to be rated on an 11-point slider scale from 0 (*not at all satisfied*) to 10 (*completely satisfied*). Third, *positive affect* was assessed through the frequency with which students felt happy, joyful, and cheerful ($\alpha = 0.81$). Each item was to be rated on a scale from 1 (*never*) to 4 (*always*).

**Social Outcomes.** Students' sense of *school belonging* was assessed through six items (e.g., "I feel like I belong at school") with a 4-point likert scale rating of 1 (*strongly agree*) to 4 (*strongly disagree*). Higher scores on the PISA-calculated scale score for school belonging are indicative of greater levels of belonging ($\alpha = 0.80$). *Victimization* was measured as the frequency with which the student reported experiencing being bullied in the past 12 months ($\alpha = 0.78$). This was assessed through three items (e.g., "Other students made fun of me") with a 4-point rating scale of 1 (*never or almost never*) to 4 (*once a week or more*).

#### 3.2.2. Independent variables

**Intercultural education practices.** This assessed how many things students learned in school related to interculturality. *Student-reported intercultural education practices* were measured through the subset of 5 other-focused and intercultural items included in the global competence activities at school measure (e.g., "I learn about different cultures"). We utilize the individual student-level (Level 1) scores for this measure to represent individual differences in the responses to these items.

*Principal-reported intercultural education practices* were assessed through all ten items (e.g., "In our school, we celebrate festivities from other cultures") of the multicultural/intercultural education practices at school scale. This measure was a school-level (Level 2) variable by design. Both the student- and principal-reported measures were count variables (items were yes or no responses), and total scores on each represented the number of intercultural practices done in the school.

**Teacher intercultural attitudes.** *Student-reported teacher intercultural attitudes* assessed how many teachers in the school endorsed positive attitudes about people from different cultural backgrounds (4 items; e.g., "Teachers in my school say negative things about people of some cultural groups"; reversed; $\alpha = 0.88$). Each item was rated on a scale of 1 (*applies to none or almost none of them*) to 4 (*applies to all or almost all of them*). We reverse-scored this measure such that higher scores were indicative of fewer teachers with negative attitudes, to draw a parallel with the valence of the teacher-report measure.

*Teacher intercultural attitudes* assessed teachers' positive attitudes towards immigrants (4 items; e.g., "Immigrants should have all the same rights that everyone else in the country has"; $\alpha = 0.81$). Each item was rated on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*), with higher scores indicative of more positive attitudes. On average, there were 19.33 teachers ($SD = 8.80$) in each school. Thus, we calculated the average responses of the teachers in each school to create a school-level variable (Level 2).

**Students' immigrant background.** Our main models account for students' immigrant status, using the PISA-provided categorizations for these groups: Native students (those with at least one parent born in the country of assessment) were coded as 0 (the intercept in our models), second-generation students (those born in the country of assessment with parents who were born in another country) were coded as 1, and first-generation students (those born outside the country of assessment with parents were also born in another country) were coded as 2.

We also controlled for a range of individual-student variables: students' own perspectives towards immigrants, gender, socio-economic status, and achievement (see Supplementary Materials Section 3 for more information).

### 3.3. Analyses

Analyses were conducted in R (Version 4.2.2; R Core Team, 2022). The code is available through the Open Science Framework (https://osf.io/6dpg5/). Final data underwent multiple imputations using the Amelia II package (Honaker et al., 2011), retaining all variables mentioned above and using school as the cluster variable to create 10 imputations. Each imputed dataset was analyzed separately, with results being combined using Rubin's (1974) rules.

We conducted multilevel models (L1 = student; L2 = school; L3 = country) using *Ime4* (Bates et al., 2015). The 10 main models we examine are diagrammatically represented in Fig. 1. These involved two models each for each of the five outcomes. For each of the five outcomes, we included the predictor variables in sets. Set 1 included the intercultural practices, while Set 2 included the intercultural attitudes. Student immigrant status and the student control variables were included in all models. To control for the clustering of students within schools, and schools within countries, we included random intercepts for school and country. We weighted all multilevel models using the PISA-provided final survey weight, normalized for each country (i.e., sum of weights for each country equaled that country's sample size). We interpret the size of the fixed effects based on recommendations by Funder and Ozer (2019) who state that effects of 0.05, 0.10, 0.20, and 0.30, can be considered as very small, small, medium, and large effect sizes, respectively.

We also graphed forest plots displaying the size of associations between the main independent variables and the wellbeing and social outcomes in each country, to explore generalizability across countries. These beta estimates were extracted from two-level models (clustered at the school level) run independently in each country and including all covariates.

## 4. Results

### 4.1. Descriptives and correlations

Descriptive information and zero-order correlations for all study variables are presented in Supplementary Materials Section 2 for the whole sample, as well as independently for each immigrant status group. Native, second-generation, and first-generation immigrant students reported that their schools had intercultural practices and that their teachers had positive intercultural attitudes to a similar extent.

To inspect the multilevel nature of our data, we report the variance components at Level 2 (school) and Level 3 (country), as well as the intra-class correlations (ICCs; Davis & Scott, 1995) at both levels, from unconditional models without independent variables (Supplementary Materials Section 2). Briefly, the ICCs for the outcomes ranged from 0.025 to 0.037 at Level 2 and 0.040-0.055 at Level 3. These ICCs represent the proportion of variance at the school and country level, respectively, for the outcome variables. The Supplementary Materials (Section 2) also contain ICCs for the school level from a series of two-level models run in each country, paralleling the analysis for results presented in the forest plots.

### 4.2. Intercultural education practices

Table 1 presents the results of student-reported and principal-reported intercultural activities at school predicting the wellbeing and social outcomes, while controlling for all covariates (estimates for the covariates are presented in Supplementary Materials Section 3). Student-reported intercultural education practices had small significant positive associations with all three student-level wellbeing indicators (β range = 0.11 to 0.12), a very small positive association with school belonging (β = 0.07), and a significantly negative but trivial association with victimization (β = −0.02). The estimates for principal-reported practices in all models were either non-significant or close to zero (β range = −0.01 to 0.00).

These results largely confirmed Hypothesis 1A, except for the outcome of victimization. However, our findings did not confirm Hypothesis 1B, as the effect sizes for principal-reported intercultural practices were mostly trivial. Findings demonstrate that the individual level factors of when a student perceives their school to include more intercultural education practices, students tended to report higher levels of wellbeing and belonging. However, the exosystem factor of principal-reported intercultural education practices was unrelated to student outcomes.

### 4.3. Teachers' intercultural attitudes

Table 2 presents the results of student- and teacher-reported teachers' intercultural attitudes on the outcomes, while controlling for all covariates (estimates for covariates are presented in Supplementary Materials Section 3). Estimates for student-reported teachers' intercultural attitudes predicting wellbeing were largely trivial (β range = −0.04 to 0.04). Student-reported teacher intercultural attitudes had a very small positive association with sense of school belonging (β = 0.08), and a medium negative association with victimization (β = −0.21). Teachers' self-reported intercultural attitudes had no meaningful associations with the outcomes (β range = −0.01 to 0.02).

These results confirmed Hypothesis 2A only for our social outcomes, and again, did not confirm Hypothesis 2B. They imply that the individual level factor of students' positive perceptions of their teachers' intercultural attitudes was associated with greater levels of belonging and fewer instances of being victimized. However, as with the principal report, the microsystem factor of teachers' own intercultural attitudes were unrelated to student outcomes.

**Table 1**
Student- and principal-reported intercultural education practices predicting wellbeing and social outcomes.

| | Eudaimonia | | Life Satisfaction | | Positive Affect | | Belonging | | Victimization | |
|---|---|---|---|---|---|---|---|---|---|---|
| | β | 95% CI | β | 95% CI | β | 95% CI | β | 95% CI | β | 95% CI |
| Fixed Effects | | | | | | | | | | |
| Intercept (Native Student) | .01 | [-.04, .05] | .00 | [-.06, .06] | −.01 | [-.06, .04] | −.02 | [-.06, .03] | .01 | [-.04, .05] |
| Student-Reported Intercultural Practices | .12* | [.11, .12] | .11* | [.10, .11] | .11* | [.11, .11] | .07* | [.06, .07] | −.02* | [-.02, −.01] |
| Principal-Reported of Intercultural Practices | −.01* | [-.01, .00] | .00 | [-.01, .00] | .00 | [.00, .01] | .00 | [-.01, .00] | .00 | [.00, .01] |
| 2nd Gen Immigrant student | −.02* | [-.03, .00] | −.07* | [-.09, −.06] | −.05* | [-.06, −.03] | −.04* | [-.05, −.02] | .01 | [-.01, .02] |
| 1st Gen Immigrant student | −.03* | [-.04, −.01] | −.10* | [-.12, −.08] | −.09* | [-.10, −.07] | −.12* | [-.13, −.10] | .03* | [.01, .05] |
| Random Effects *(SDs)* | | | | | | | | | | |
| Intercept \| School | .14 | | .16 | | .15 | | .14 | | .15 | |
| Intercept \| Country | .16 | | .23 | | .19 | | .18 | | .19 | |
| Residual | .93 | | .95 | | .95 | | .93 | | .95 | |

*Note.* Beta estimates with confidence intervals that do not cross zero are significant at $p < .05$, and are marked with an asterisk (*). Models control for covariates.

**Table 2**
Student- and teacher-reported teachers' intercultural attitudes predicting wellbeing and social outcomes.

| | Eudaimonia | | Life Satisfaction | | Positive Affect | | Belonging | | Victimization | |
|---|---|---|---|---|---|---|---|---|---|---|
| | β | 95% CI | β | 95% CI | β | 95% CI | β | 95% CI | β | 95% CI |
| Fixed Effects | | | | | | | | | | |
| Intercept (Native Student) | .02 | [-.07, .12] | .00 | [-.11, .12] | .00 | [-.08, .08] | −.06 | [-.16, .03] | .02 | [-.05, .10] |
| Student Report of Teacher Attitudes | −.04* | [-.05, −.03] | .04* | [.03, .05] | .02* | [.01, .03] | .08* | [.07, .09] | −.21* | [-.22, −.20] |
| Teacher Report of Intercultural Attitudes | −.01 | [-.02, .01] | .01 | [.00, .02] | .01 | [.00, .02] | .02* | [.01, .03] | .01 | [.00, .02] |
| 2nd Generation Immigrant Student | −.03* | [-.06, .00] | −.09* | [-.12, −.06] | −.04* | [-.07, −.02] | −.05* | [-.08, −.02] | .02 | [-.02, .05] |
| 1st Generation Immigrant Student | −.02* | [-.04, .01] | −.11* | [-.13, −.08] | −.07* | [-.10, −.04] | −.14* | [-.17, −.11] | .03* | [.01, .06] |
| Random Effects (*SD*s) | | | | | | | | | | |
| Intercept \| School | .13 | | .15 | | .13 | | .13 | | .13 | |
| Intercept \| Country | .18 | | .23 | | .16 | | .18 | | .15 | |
| Residual | .94 | | .96 | | .96 | | .91 | | .94 | |

*Note.* Beta estimates with confidence intervals that do not cross zero are significant at $p < .05$, and are marked with an asterisk (*). Models control for covariates.

### 4.4. Student cultural background

#### 4.4.1. Immigrant status

As the native students category was the reference group in our models, the estimates for second-generation students and first-generation students in our models represent how much higher (for positive beta estimates) or lower (for negative beta estimates) the intercept for that group was compared to the intercept for native students (i.e., the model intercept). After controlling for our covariates, second-generation and first-generation students tended to have slightly lower levels of life satisfaction and positive affect as compared to native students, with the differences being trivial for eudaimonia (Tables 1–2). First-generation immigrant students also reported lower levels of belonging compared to native students , with second-generation immigrant students reporting trivially lower levels compared to native students. The differences for victimization were negligible.

To examine whether the strength of the associations between student-reported intercultural factors and the outcomes differed based on immigrant status (Hypothesis 3), we included interaction terms between these factors and the outcomes (Supplementary Materials Section 4). The links between intercultural factors and psychosocial outcomes were similar for native and immigrant students with interactions being non-significant or trivial. Thus, the associations of intercultural practices and attitudes with the outcomes seemed to be similar for students with different immigrant statuses, thereby not confirming Hypothesis 3.

#### 4.4.2. Sensitivity analyses

To further investigate differences in associations based on students' cultural backgrounds, we replaced immigrant status first with language spoken at home (students who spoke the same language at home as the

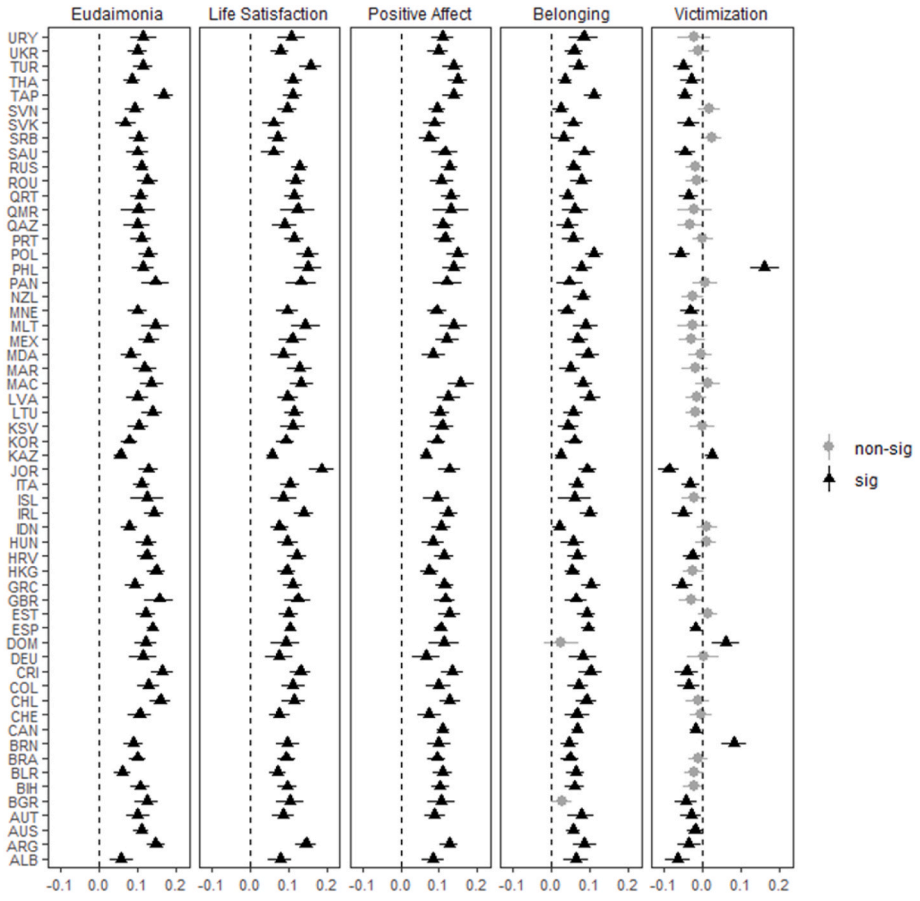


**Fig. 2.** Country-by-country estimates for student-reported intercultural education practices on wellbeing and social outcomes.

test language versus those who did not) and then with age of arrival (lower scores indicating arrival in the host country at a younger age). Again, the links between intercultural factors and wellbeing, belonging, and victimization largely did not vary as a function of student cultural background (Supplementary Materials Section 5).

### 4.5. Country-to-country generalizability

Figs. 2 and 3 present the country-by-country estimates for student-reported intercultural practices and intercultural attitudes in predicting the outcomes, respectively. These figures show that the country-by-country results reflected our pooled estimates from the three-level multilevel models, and were largely generalizable across the countries examined (numerical results presented in Supplementary Materials Section 6). Specifically, the links between student-reported intercultural education and eudaimonia, life satisfaction, positive affect, and belonging were generally positive, while the estimates for victimization were generally negative (though several were non-significant). The estimates for student-reported teacher intercultural attitudes in predicting wellbeing were largely non-significant or trivial, while they were positive and significant for belonging, and negative and significant for victimization. Again, as with our main models, the estimates for principal- and teacher-reported variables were largely non-significant or trivial. We present these figures, as well as further detail about all country-by-country results, in the Supplementary Materials (Section 6).

## 5. Discussion

Our study provides robust, large-scale evidence for the associations between student-reported intercultural factors and students' wellbeing (eudaimonia, life satisfaction, positive affect) and social outcomes (school belonging and victimization). Students' perceptions of intercultural education practices, but not principals' reports of these practices, positively and meaningfully predicted student wellbeing and school belonging. Similarly, students' perceptions of teachers' intercultural attitudes, but not teachers' reports of their own attitudes, predicted greater levels of school belonging and less frequent victimization. Results were similar for immigrant and non-immigrant students and were largely generalizable across the more than 50 PISA countries examined.

### 5.1. The importance of student-perceived intercultural factors

#### 5.1.1. Student-reported intercultural education practices

When students perceive learning about interculturality and engaging in intercultural events, students may feel more connected with their peers and experience a stronger school climate. Indeed, past research shows that when positive contact between students from different cultures is supported, students tend to display more intercultural friendships (Schachner et al., 2015) and less prejudice (Molina & Wittig, 2006). Furthermore, learning about diversity is related to positive intergroup attitudes (Schwarzenthal et al., 2018). These intercultural practices can, therefore, be beneficial in fostering peer connectedness and a positive school climate, which have been associated with greater student life satisfaction (Aldridge et al., 2016) and social outcomes (Brown, 2019). Intercultural education practices may also suggest to students from culturally diverse backgrounds that their school is congruent with their cultural values and beliefs, which may help them feel acknowledged and see themselves as a part of the school (Gray et al., 2018). Our results add to the literature by showing that students' perception of these intercultural education practices at school are important for their wellbeing and sense of school belonging.

#### 5.1.2. Student-reported teachers' intercultural attitudes

Past research shows that teachers who demonstrate cultural congruence (i.e., the extent to which their beliefs, values, behaviors, and expectations of individuals and groups are consistent and aligned with the cultural norms and values of the student and their family or culture) and create a supportive and inclusive classroom environment can positively impact on students' social outcomes (Alesech & Nayar, 2021; Lulic et al., 2023). This is demonstrated in the present study by the positive association between student-perceived teacher attitudes and school belonging, and the negative link with victimization. While school belonging and victimization are experiences of individuals, they are also relational variables in that other individuals such as teachers, can make the individual student's experiences of these variables better or worse

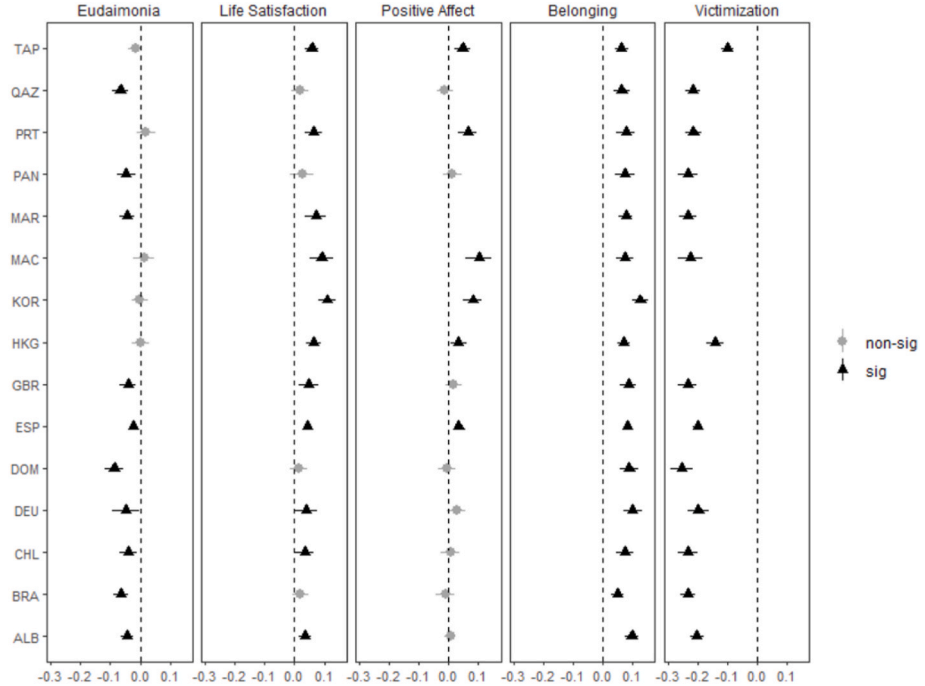


**Fig. 3.** Country-by-country estimates for student-reported teachers' intercultural attitudes on wellbeing and social outcomes.

(Rowan, 2021). It is possible that when students are taught by teachers with positive intercultural attitudes, it creates a climate where students feel safe and bullying behaviors are discouraged.

Existing research also identifies positive and supportive relationships with teachers as amongst the most powerful predictors of school belonging (Allen et al., 2018). It is possible that when students perceive their teachers to have positive views towards students from diverse backgrounds, students feel more comfortable interacting with the teachers and have favorable interactions with them, which in turn may lead students to feel like they belong at school. While focusing on students from a specific ethnic background, Stone and Han (2005) demonstrated that Latinx students who perceived their teachers to have negative intercultural attitudes tended to have more negative attitudes about school. Thus, it is important that students are taught by teachers who are perceived to hold positive intercultural attitudes. In addition to benefiting students from immigrant backgrounds, teachers with positive intercultural attitudes are likely to create a positive school climate that also benefits native students. This is aligned with Allport's (1954) intercultural contact theory that outlines the importance of authority-figures supporting positive intercultural contact and that such contact can benefit all involved (i.e., not just the minority group). Indeed, fostering a more inclusive and supportive learning environment can meet the wellbeing and social needs of all students (Aldridge et al., 2016; Battistich et al., 1997).

#### 5.1.3. Magnitude of estimates

We do note here that the majority of the estimates uncovered through our examination were generally small in magnitude (ranging from $|\beta| = 0.02$ to 0.21). However, it is important to mention that we examined naturally occurring variations between students, schools, and countries rather than examining the effects of a deliberate intervention that focused on intercultural factors. For instance, past research shows that naturally occurring differences in teachers' autonomy support significantly affects student wellbeing, but that interventions focused on increasing teachers' autonomy support led to even higher levels of student wellbeing (Cheon et al., 2023; Reeve & Cheon, 2021). Thus, the effects of naturally occurring differences can be greatly magnified by effective interventions.

### 5.2. Student-reported versus teacher- or principal-reported intercultural factors

Bronfenbrenner's theory emphasizes the importance of the interconnectedness between individuals and their environments. Our results show that students' perceptions of their environment, in terms of their subjective experiences of the intercultural education practices at school and their teachers' intercultural attitudes, are related to students' wellbeing and social outcomes. Yet, the microsystem factor of teacher-reported intercultural attitudes and the exosystem factor of principal-reported intercultural education practices were not related to student outcomes. Thus, it may not be enough to simply integrate intercultural practices and employ teachers with positive attitudes, without also making sure that these factors are reflected in students' subjective experiences. Often, applications of ecological and systems perspectives and theoretical positions overlook the significance of the individual within the system, even though the individual is inherently a part of the system. While systemic influences on the individual are often cited as impacting the individual's outcomes, it is essential to remember that the individual is a part of the system and should be empowered and equipped to experience and interact with and within these systems. This approach promotes a more comprehensive understanding of the interplay between individuals and their environments, ultimately leading to more effective interventions and positive outcomes.

It is possible that the differences we see between student- and principal- or teacher-reports may be because student reports might be more indicative of successful or more effective inclusion of such practices, as opposed to the directive to include such practices in schools. It is also possible that students' perceptions of these factors are less affected by social-desirability bias (i.e., answering questions in a manner that will be viewed favorably by others, either with or without conscious knowledge; Paulhus, 1991), as compared to principals' responses about the intercultural practices in their schools or teachers' responses about their own intercultural attitudes. The influence of social desirability may be particularly relevant here because inclusive education is considered to be politically correct (Avramidis & Norwich, 2002).

Teachers may also not be accurate judges of their own intercultural attitudes. Past research shows that in the absence of knowledge about students, teachers may fill this void with stereotypes (Noguera, 1995) and biased actions, though often unconsciously. For example, teachers tend to give less affirmation to children from ethnic minorities (Buriel, 1983). Evidence also suggests that teachers report having more favorable perceptions of school climate variables compared to students (Fisher & Fraser, 1983), such as the quality of teacher-student interactions (Raviv et al., 1990) and classroom instruction (Brok et al., 2006). Thus, especially in relation to student outcomes, it seems important to consider students' own subjective experiences in school.

### 5.3. Student immigrant status

The majority of research on classroom diversity has primarily focused on mainstream language acquisition, school adjustment, and educational outcomes of immigrant students (Bryan & Atwater, 2002; Richards et al., 2007), rather than on the psychosocial outcomes of all students. While past research has shown intercultural factors to benefit immigrant students (e.g., life satisfaction; Haenni Hoti et al., 2017), to our knowledge, this is the first study that has considered differential associations of these factors with student wellbeing and social outcomes, based on student immigrant background.

Interestingly, the associations between student-reported predictors and student outcomes were mostly similar in magnitude for native and immigrant students (both first- and second-generation). These results suggest that, in general, integrating intercultural practices in schools and being taught by teachers with positive intercultural attitudes such that these are reflected in students' reports about these factors, can be beneficial for the wellbeing and social outcomes for all students regardless of their cultural backgrounds. Schools that actively promote intercultural understanding and provide opportunities for students to learn about different cultures and perspectives can help create a more positive climate, thereby promoting student outcomes (Schachner et al., 2016; Smith et al., 2020). Thus, it is possible that non-immigrant students also benefit from intercultural education and being taught by teachers with positive intercultural attitudes because of the inclusive climates such factors create.

### 5.4. Generalizability of results across countries

The country-by-country effects presented in Figs. 2 and 3, along with the results presented in Supplementary Materials (Section 6) demonstrate the pervasiveness of the positive association between student-reported intercultural education practices on students' wellbeing and belonging across the 54–58 countries examined. Similarly, the positive association of student-reported teachers' intercultural attitudes with students' sense of belonging and the negative association with students' level of victimization were generalizable across the 14–15 countries tested. While the direction of these effects was largely consistent across countries, the sizes of these effects showed some variation. Such variation may suggest that the underlying mechanisms driving these associations could be universally applicable for students from diverse countries, but the magnitude of their influence could be contextually contingent. Overall, the patterns observed across a vast range of countries strengthen our confidence in the direction and robustness of these associations.

### 5.5. Theoretical and practical implications

#### 5.5.1. Contributions to theory

The study's findings have direct implications for current conceptual and empirical socio-ecological models of wellbeing and school belonging, particularly in terms of contributing new knowledge about the weight and impact of different ecological layers (e.g., Aldridge & McChesney, 2018; Allen et al., 2016, 2021, 2022). For example, our findings related to student-reported intercultural education practices and perceptions of teachers' intercultural attitudes affirm the role of individual-level factors in wellbeing and school belonging. Teacher and principal self-reports, which could be considered parts of the microsystem and exosystem, respectively, had limited or negligible effects. This provides evidence for ecological models, supporting the growing understanding that these levels may not be as influential as traditionally thought (Allen et al., 2022). The study also introduces other individual attributes, like immigrant status, which could contribute to future ecological models. Such models require ongoing pragmatic re-evaluation, and new information like that which this study provides, contributes to the ongoing evolution of these models, which are popularized in many educational contexts and policies.

#### 5.5.2. Contributions to practice

In relation to the differences between the results of students' and others' reports, a key implication of our findings is for schools to be more intentional in their efforts to promote intercultural education practices and foster positive intercultural attitudes among teachers, such that these practices and attitudes translate into the subjective experiences of students. One way of doing this might be to involve students in the process of creating and implementing intercultural practices. Existing programs in schools aimed at supporting the cultural identity of diverse learners, such as translanguaging and culturally sensitive programs (de Jong et al., 2023; DeNicolo, 2019), could be extended to include opportunities for students to share their cultural traditions and values with their classmates. This might help promote a sense of shared identity and an inclusive environment, thereby supporting students' wellbeing and social outcomes (Aldridge et al., 2016; Battistich et al., 1997).

It is also important to ensure that teachers or staff delivering intercultural education are adept at doing so. Past research has unfortunately shown that many teachers find the realities of teaching in diverse classrooms complex and challenging (Rowan et al., 2017). Although teacher education programs may attempt to develop teachers for diverse classrooms, these programs may not do enough to make teachers aware of their own beliefs and prejudices or provide knowledge about the lives and communities of certain students, and teachers may leave the programs lacking the skills needed to instruct effectively in diverse classrooms (Zeichner & Hoeft, 1995). However, the key lies not in *'how much'* knowledge is imparted to already stretched teachers, but in how teachers identify, analyze, understand, and apply knowledge relevant to their classrooms. Rowan et al. (2021) suggest that while knowing about diversity (teachers' ability to recognize and have knowledge about a student's background) and catering to diversity (modifying practices to facilitate participation of individuals from particular groups) are important, teachers' ability to best support diverse learners is directly influenced by the ways they interact with and flexibly apply various knowledge bases to unique classroom environments. This includes knowledge bases that relate to claims about what diversity is, how diversity is constructed, and how schools may propagate norms regarding the 'typical' or 'mainstream' learner (Lunn Brownlee et al., 2022).

Based on the findings of our study, investing in training programs that provide teachers with these skills and improve their intercultural sensitivity, might not only be useful for students from diverse backgrounds, but for all students. Further, by teaching for diversity, students from all backgrounds can be exposed to a range of cultural and social groups with culturally-sensitive support from teachers and schools, enabling them to become better citizens in their local and global communities.

We note here that the variance in student responses that can be attributed to differences between schools, as demonstrated through ICCs, were low. This may raise the question whether schools and teachers would actually be able to promote a positive intercultural climate if it is students' idiosyncratic perceptions that are associated with better outcomes.

There may be a few reasons for why the ICCs were low in this study. First, PISA utilizes sampling at the school level rather than the class level. That is, students in a school are likely from different classes within that school. Thus, it is possible that the target of students' responses were different within the same school. For instance, the intercultural practices may not have been applied equally across classes within the school (e.g., one teacher might stress upon learning how to communicate with students from other cultures while another might not), and students may think about different teachers when responding about teachers' attitudes towards immigrant students. It is possible that there was greater agreement between students within the same class. Second, the questions about intercultural education practices asked about what that student learned, rather than the practices of the school as a whole. Past research on school climate has shown that when students are asked to make judgments about individual factors in relation to the climate (e.g., "I participate in events celebrating cultural diversity throughout the school year"), as opposed to the climate itself (e.g., does the school organize events celebrating cultural diversity throughout the school year), the agreement between students is lower (Marsh, Lüdtke, et al., 2012). Thus, it is possible that using samples drawn from intact classrooms and using measures that explicitly stated the targets in question and focused on the climate, would have resulted in greater agreement between students.

Even if the ICCs remain low in these improved conditions, there is some evidence from intervention studies to suggest that ICCs can increase from pre- to post-test (e.g., Cheon et al., 2023). This suggests that actively attempting to improve a climate variable through class or school-level interventions, can not only lead to mean level increases on students' perceptions of that variable, but can also increase the agreement between students within the same group. Thus, despite the low ICCs found in this study, it is possible that attempts to improve intercultural education and teachers' attitudes would have positive implications in practice.

### 5.6. Limitations and directions for future research

PISA data provides numerous benefits such as the use of nationally representative samples from multiple countries with different cultural backgrounds. However, these data are limited to the extent that they are cross-sectional in nature. Owing to the cross-sectional nature of the PISA data, we treat wellbeing and social factors as independent outcomes. However, past research has shown that these are related to each other. For instance, reduced victimization and a greater sense of belonging both longitudinally predict greater wellbeing (Arslan & Allen, 2021). Using longitudinal data, future research can not only examine the causal pathways between intercultural practices and teachers' intercultural attitudes with these outcomes independently, but also evaluate whether belonging and victimization mediate their effects on wellbeing. It is also possible that the effects of intercultural practices and attitudes on the outcomes occur through the students' own intercultural attitudes and beliefs. While we control for these variables in our models, longitudinal and experimental intervention research is required to correctly evaluate this proposed mediation.

The use of secondary data (i.e., data that were not collected by the authors) also poses some limitations. For instance, as mentioned in the Participants section (3.1), there were some countries where data for our key variables were not available. This was because the PISA dataset does not include scale scores for countries where the scale displayed poor internal consistency. Thus, these data were not missing at random and

had to be removed from our dataset. Future research is required in these countries (e.g., Argentina, Denmark, Norway) to examine whether our findings generalize to these settings.

Our student- and principal-reported measures of intercultural attitudes at school assessed the number of such practices present in the school. While we showed that the quantity of student-reported intercultural practices is positively associated with better student outcomes, it is likely that the quality or frequency of these practices are also important. Furthermore, the quantity of intercultural practices does not guarantee that schools with such practices necessarily embrace different cultures. Measures of the quality and frequency of practices should be used in future research to present a holistic understanding of the extent to which different cultures are genuinely embraced and appreciated in schools.

We note here that the items used for the student and principal reports (as well as the student and teacher reports of teachers' intercultural attitudes) were not one-to-one matches. For instance, principals were asked, "In our school, we celebrate festivities from other cultures", while students were asked "I participate in events celebrating cultural diversity throughout the school year". Future research could use the same question stems for student- and other-reports to assess the extent to which quantity, quality, and frequency of intercultural practices impact on students' wellbeing and social outcomes. We also note that the sampling of teachers by PISA included all teachers who were eligible for teaching the modal grade of students who would be sampled. Teachers who responded to the teacher questionnaire could be those who taught the modal grade at that time, had done so in the past, or will/could do so in the future. Although it is likely that the teachers who responded to the PISA survey were the same as—or at least had substantial overlap with—those the students were responding about when asked about their teachers in the school, they were not necessarily the same. These factors may have contributed to the low correlations between student-reported and teacher/principal-reported measures. Future research is required to confirm our findings using a one-to-one match of the teachers who respond about their own intercultural attitudes and the teachers who the students respond about.

## 6. Conclusion

Our findings highlight the importance of intercultural education practices and teachers' positive intercultural attitudes for students' eudaimonia, life satisfaction, positive affect, school belonging, and reduced victimization, regardless of students' cultural backgrounds and across more than 50 countries. However, it may not be enough to simply integrate intercultural practices and employ teachers with positive attitudes. Ensuring that students' attributions of intercultural practices and their teachers' attitudes are positive may be more important. These findings call for the incorporation of effective intercultural activities at school and for intercultural sensitivity training for teachers.

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## CRediT authorship contribution statement

**Geetanjali Basarkod:** Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft, Visualization. **Theresa Dicke:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Kelly-Ann Allen:** Conceptualization, Writing – original draft, Writing – review & editing. **Philip D. Parker:** Conceptualization, Methodology, Writing – review & editing. **Mary Ryan:** Writing – original draft, Writing – review & editing. **Herbert W. Marsh:** Methodology, Writing – original draft, Writing – review & editing. **Zoe T. Carrick:** Visualization, Writing – review & editing. **Jiesi Guo:** Methodology, Writing – review & editing.

## Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used ChatGPT in order to help make writing more concise and fix errors in R code. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

## Declaration of competing interest

None.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.learninstruc.2024.101879.

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