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Exploring intersectional inequalities in students' sense of belonging in education across educational pathways and across educational contexts

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Introduction: The study investigated inequalities in the sense of belonging in education among students in primary, secondary and tertiary levels in various European, North American and Oceanian countries. Variation across different educational contexts was explored by examining example countries (Finland, Hungary and Ireland). An intersectional approach to inequalities was adopted; more specifically, an intersection between gender, migration and socioeconomic status was emphasized. The focus of the study was the sense of belonging in education among students representing different intersectional groups in different stages of the educational pathway across educational contexts.

Method: Data from the PIRLS, TIMMS, PISA, and Eurostudent were harmonized and analyzed. In addition, macro-level indicators characterizing educational policies and practices were used to pinpoint different educational contexts. Regression analysis was used to explore inequalities in the sense of belonging.

Findings: Our results demonstrate the extensive complexity of sense of belonging in education on an individual level, and various dynamics across intersectional groups as and educational stages. Across all educational stages native females with high socioeconomic status had the strongest sense of belonging.

Discussion: Our results also show that characteristics of macro-level educational contexts have multifaceted and even contradictory associations with inequalities in students' sense of belonging in education.

KEYWORDS

sense of belonging, educational pathways, inequality, intersectional, educational context

1 Introduction

Inequalities in education and the educational system are central questions in a diverse and globalized world. Not only individual aspects such as gender, migration status and socioeconomic status, but also social, structural and institutional aspects relating to inequalities have been investigated (Ahonen, 2021; Dicks et al., 2019; Passaretta and Skopek, 2021). Recent research in educational inequalities has emphasized the intersectionality of educational inequalities (Codioli McMaster and Cook, 2019; Graham et al., 2022; Gross et al., 2016), meaning that educational inequalities are cumulative

and multidimensional. Previous research has mainly covered separate and binary effects of educational inequalities (Zimmermann and Seiler, 2019), whereas more extensive intersectional research combining several factors is relatively scarce (Graham et al., 2022; Strand, 2014).

Students' sense of belonging in education is critical to their study success and progress, academic achievement, overall educational attainment and well-being (Allen et al., 2021; Graham et al., 2022; Ulmanen et al., 2016; Korpershoek et al., 2020) across educational pathways in primary, secondary and tertiary education. Previous research has emphasized individual factors, showing that students with different socioeconomic, academic and migration backgrounds vary in their sense of belonging in education. The roles of macro-level educational policies and practices, as well as systems and structures related to education, have also been found to be critical (Chiu et al., 2016; Högberg and Lindgren, 2023); however, there has been little research into these aspects. Recently, students' social relations and interactions with teachers and peers, as well as their connectedness to their immediate surroundings, have been found to be essential (Ahn and Davis, 2020; Allen et al., 2021; Chiu et al., 2016; Korhonen et al., 2019).

Thus, previous research clearly shows that individual, but also social and contextual factors come into play in the construction of students' sense of belonging in education in various phases of the educational pathway. Still, there exists surprisingly little empirical research on the complex relations between intersectional inequalities in students and sense of belonging in education, and how they alternate in different phases. The objective of this study was to explore student groups' sense of belonging differs depending on intersectional dimensions of inequality in different phases of the educational pathway. This study explored how student groups, based on intersectional dimensions of inequality, differ in their sense of belonging in the different phases of the educational pathway. Moreover, gaps in the sense of belonging in different educational contexts are investigated using example countries. Thus, this study aimed to explore the sense of belonging in education among students representing different intersectional groups in different stages of the educational pathway and in educational contexts that differ in their essential characteristics.

1.1 Sense of belonging in education

A sense of belonging is one of an individual's basic psychological needs, capturing experiences of acceptance, being connected with others, being supported and being safe (Maslow, 1943; Ryan and Deci, 2000; Wenger, 1998). In an educational context, sense of belonging is linked to students' identity development and engagement with study communities (Korhonen et al., 2019; Allen et al., 2018). Research has differentiated academic and social aspects related to sense of belonging to an educational institution (Ahn and Davis, 2020; Korhonen et al., 2019).

While inequalities in academic achievement have attracted wide scholarly attention, students' perceptions of schools or other educational institutions and their place in them, such as sense of belonging have been studied far less. Yet, in addition to educational achievement, students' sense of identification with

the context in which learning takes place is essential to their overall success in various stages of their educational journey. Increasingly, the literature has demonstrated that students who feel a sense of belonging in an educational institution, such as school or university, are generally doing well academically, socially and emotionally (Ahn and Davis, 2020; Graham et al., 2022; Korhonen et al., 2019; Korpershoek et al., 2020).

It has been found that students' sense of belonging to an educational institution is associated with study progress and success, achievement, overall educational attainment and wellbeing related to studies (Finn and Zimmer, 2012; Graham et al., 2022; Pedler et al., 2022; Ulmanen et al., 2016; Korpershoek et al., 2020). The interrelation between scholastic achievement and students' wellbeing is reciprocal. In other words, stronger achievement boosts students' sense of belonging and likewise, the feeling of being in the right place in education also affects educational outcomes. Current research has found that having a perception of alienation in education may lead to challenges in academic success and wellbeing, and that this vicious circle may continue into subsequent stages of a student's educational pathway (Salmela-Aro et al., 2018). In contrast, positive experiences in education lead to stronger academic achievement and social acceptance and as a result, an increased sense of belonging in education (e.g., Ahn and Davis, 2020; Wentzel, 1998). An important finding from the life course perspective is that those students with a weak sense of belonging in education are the ones who are disinterested in pursuing further education, an association that exists even after controlling for other demographic factors (OECD, 2019, 2017). For these reasons, it is important that educational research focuses not only on academic achievement, but also on the sense of belonging in education.

Previous research has highlighted that the sense of belonging is a complex, fluid and dynamic construct (Graham et al., 2022; Dias-Broens et al., 2024; Allen et al., 2018). Sense of belonging is constructed through various experiences in education and multiple interactions with other students and teachers over a long period of time, so it is regulated by various factors (Korhonen et al., 2019; Allen et al., 2018). The role of students' close, friendly relationships with teachers has been highlighted by Chiu et al. (2016) and Ulmanen et al. (2016). In relatively recent studies, sense of belonging in education has been considered mainly from socio-ecological perspectives, i.e., emphasizing social processes and relations, close relationships and connectedness with immediate surroundings, rather than educational policies or structures of educational systems (Aldridge and McChesney, 2018; Allen et al., 2018; Brown and Shay, 2021; European Commission, 2021; Glazzard, 2019). Factors critical to students' sense of belonging include caring relationships with teachers and functioning relationships with peers, as well as pedagogies that enable active student participation, engagement in meaningful learning activities and collaborative learning with peers (Atkinson et al., 2019; European Commission, 2021; van Gijn-Grosvenor and Huisman, 2020; Weare and Nind, 2011). Both the school and classroom climates have been found to be important. Furthermore, students' surroundings (i.e., the geographical, environmental and cultural contexts of the higher education institution and their living spaces in the local area) and personal spaces (i.e., life satisfaction, attitudes to life and personal interests) are found to be important

factors influencing students' sense of belonging in education (Ahn and Davis, 2020; Allen et al., 2021). Additionally, previous studies have noticed variation in the sense of belonging in education between students with different socio-demographic characteristics (OECD, 2019, 2017; Allen et al., 2021), although the research is far from being systematic or conclusive and there are contradictory findings (see Ahn and Davis, 2023; Korpershoek et al., 2020). Considerable cross-national differences have been detected in sense of belonging (OECD, 2017).

Overall, a magnitude of variables has been found to influence sense of belonging, and all of these factors, associations and differences are influenced by macro-level educational systems and educational policies, but research has yet to explore how such macro-level variables are associated with students' sense of belonging in education.

1.2 Socio-demographic characteristics and intersectionality as a source of educational inequalities

Educational inequalities refer to systematic variation in several aspects of educational attainment between individuals, based on a range of socio-demographic characteristics such as gender, ethnicity, age, disability and socioeconomic background (Codioli McMaster and Cook, 2019; Gross et al., 2016; Nichols and Stahl, 2019). The educational opportunities of different social groups have been shown to be hampered by these educational inequalities (Codioli McMaster and Cook, 2019; Gross et al., 2016; McCall, 2005). Educational inequalities have multiple consequences with regard to access to education, learning processes, educational outcomes and level of education completed (Gross et al., 2016; Jacobs, 1996). Previous research has shown that gender, migration status and family's socioeconomic status are the most prominent dimensions of educational inequalities at various educational levels (Bodovski et al., 2020; Marks, 2015); in the present study, we will also focus on these dimensions. While the majority of research has examined the effects of these dimensions of inequality separately (Zimmermann and Seiler, 2019), it has been found that they intersect, intertwine and cumulate. Such intersectionality leads to an intensification of educational disadvantages in certain groups (Codioli McMaster and Cook, 2019; Gross et al., 2016; McCall, 2005). Therefore, it is not sufficient to focus only on individual dimensions of inequality when it is clear that socio-demographic characteristics operate simultaneously and jointly, accumulating over the course of a life. Consequently, inequalities in education should be viewed from an intersectional perspective, which requires broadening the view from individual dimensions of inequality to a complex and intertwined set of different characteristics and circumstances (Allen et al., 2021; Codioli McMaster and Cook, 2019). Such extensive intersectional research combining several dimensions is relatively scarce (Graham et al., 2022; Strand, 2014). In the present study, we address the challenge of intersectional inequalities by creating intersectional groups that combine three major dimensions of inequality (see full details in Data and method section).

1.3 Sources of educational inequality and the sense of belonging in education

Answering complex questions such as variation in inequalities in sense of belonging in education requires an intersectional approach, recognizing that individuals can belong to multiple social groups and contexts simultaneously (Ahn and Davis, 2020; Graham et al., 2022; Rainey et al., 2018) and the intensity of their belonging to these various groups and contexts can vary (see Allen et al., 2021; Mullen and Yifang, 2024). However, previous research has mostly focused on single dimensions of inequality and individual-level sources of inequality.

Among individual-level sources, gender has been found to be one of the major determinants of sense of belonging in education. Research on primary school students is scarce, but findings indicate that girls feel a stronger sense of belonging in education (Sayer et al., 2013). More research exists on secondary school students, and this shows wide, cross-national variation; namely, that different genders have a stronger sense of belonging in different countries (OECD, 2017). In many European countries, boys tend to report a stronger sense of belonging than girls, for instance in Denmark, Finland, Ireland and Norway (OECD, 2017). In contrast, girls had a stronger sense of belonging in a smaller number of countries, for instance in Austria, the Netherlands, Spain and Turkey (Aliyev and Tunc, 2015; OECD, 2017). In tertiary education, the trend is that females experience a weaker sense of belonging than males (Rainey et al., 2018; Museus and Maramba, 2010). In intersection with ethnicity or race, the effect intensifies: females of color are even more likely to have a weak sense of belonging (Rainey et al., 2018).

A second important socio-demographic determinant of sense of belonging in education is migration status. Sense of belonging is shaped by students' ethnic and migrant background across the educational pathway (Graham et al., 2022). In many European countries, e.g., Austria, Portugal and Switzerland, native students report a stronger sense of belonging in secondary education than students with migrant backgrounds. However, in just as many other countries, e.g., Denmark, Germany and Norway, there are no differences between these groups; and in some, e.g., Australia, the situation is even reversed (OECD, 2017). In tertiary education, migrant students experience a weaker sense of belonging than native students (Stebbleton et al., 2010). A rare finding on the intersection between socioeconomic and migrant status and gender has indicated that migrant boys with low socioeconomic status tend to be disengaged and burned out in education, especially in secondary education (Salmela-Aro et al., 2018). It is noteworthy, that a concept of migrant is ambiguous, and findings vary depending on the status (refugee or asylum seeker) or the generation (newly arrived or children of migrated parents) of the migrant. The influence of migrant status on students' sense of belonging in education may also be related to the fact that students with migrant backgrounds are often a minority in schools or classes. In contrast, a larger representation of students with migrant backgrounds mitigates the effect of migration status on sense of belonging: students with migrant backgrounds do not report a weaker sense of belonging when their ethnic group is relatively well represented in their class or school (Graham et al., 2022; Tellhed et al., 2017). In general, underrepresented groups

(e.g., non-white, non-heterosexual, non-Christian, disabled) report a weaker sense of belonging than students representing the majority (Fan et al., 2021; Kleemola et al., 2025).

A third important socio-demographic determinant of sense of belonging is socioeconomic status. In particular, students with combined high socioeconomic status and high achievement feel a stronger sense of belonging in education than disadvantaged students (OECD, 2017). However, there is also contrary evidence on socioeconomic background having no association with the sense of belonging (Korpershoek et al., 2020). It appears that achievement mediates the effect of socioeconomic status on the sense of belonging, at least in primary and secondary education (Cueto et al., 2010). In a similar vein, in tertiary education, there is strong evidence of students feeling a stronger sense of belonging if they have a higher socioeconomic status, compared with students with low socioeconomic status (Duran et al., 2020; Jury et al., 2019; Ostrove and Long, 2007; Stebleton et al., 2014; Trawalter et al., 2021). A weak sense of belonging is particularly evident in students who are the first in their family to attend tertiary education (Bowman, 2010; Rubin, 2012; Stebleton et al., 2014). Thus, parents' educational level as an indicator of socioeconomic status is important in terms of the association between it and the students' sense of belonging. However, in tertiary education, the selectiveness of student admissions often decreases the diversity of the student population in favor of students from high socioeconomic backgrounds (Kleemola et al., 2022). Such homogenisation likely weakens the sense of belonging in diverse groups (see Fan et al., 2021). Not only the socioeconomic status of students' families is important for their sense of belonging; a similar interaction has been found between students' sense of belonging and the average socioeconomic status of their school's student population. Students in schools with a low average socioeconomic status have a weaker sense of belonging in comparison to their peers in more advantaged schools (OECD, 2019). However, cross-national differences have been detected in this association, with the largest gaps in Europe seen in Bulgaria, Hungary and Luxembourg (OECD, 2019). Consequently, individual-level determinants of inequality exist in their contexts and interact with contextual factors (Mullen and Yifang, 2024).

Taken together, the growing body of literature demonstrates that sense of belonging is a complex, dynamic and multi-dimensional construct that changes across time and contexts (Ahn and Davis, 2020; Graham et al., 2022). On micro-level, there exists a complex interplay between individual and contextual aspects and courses of development of sense of belonging in various time points. However, the findings concerning associations between students' sense of belonging in education and gender, migration status and socioeconomic status seem to vary depending on the educational and cultural context. The reasons behind this variation have not been pinpointed. Associations between individual-level characteristics and sense of belonging have been studied extensively and large cross-national differences have been detected (see OECD, 2019; OECD, 2017; Mullen and Yifang, 2024), but little research exists on contextual macro-level factors that might explain the differences and inequalities in students' sense of belonging. However, macro-level determinants should be considered in research, as they have been found

to influence the sense of belonging in students (Chiu et al., 2016). In studies focusing on achievement—strongly correlated with sense of belonging—it has been found that early tracking in the educational system increases inequalities in achievement (Contini and Cugnata, 2020). In contrast, increased female access to education has been found to boost female achievement in education (Buchmann and DiPrete, 2006). Existing studies on the influence of different policies on students' sense of belonging in education indicate that associations may not be straightforward and intuitive. Contradictory findings show that increasing inclusive policies may both support and decrease the sense of belonging in intended groups (Ham et al., 2017; Högberg and Lindgren, 2023). Counterintuitive is the finding that gender equality in society may actually increase wellbeing gaps to the benefit of males (Guo et al., 2022). As research is so scarce, it is still unclear whether the cross-national variation in students' sense of belonging in schools is somehow related to the institutional characteristics of different countries' education systems; for instance, with regard to the organization of the education system, female access to education and the way in which countries treat their ethnic minority population.

An additional challenge in the existing research on sense of belonging is, as stated previously, the lack of attention given to the intersectionality of inequalities. Thus, missing from the current literature is the use of an intersectional approach to give systematic attention to students' sense of belonging in different stages of the educational pathway.

1.4 Aim of the study

The aim of the present study was to explore inequalities in students' sense of belonging in education across educational levels and contexts using an intersectional approach to inequalities. Example countries representing different educational contexts were used to demonstrate variation in the inequalities. Combining large datasets allowed us to investigate this complex interaction across all educational levels, from primary to secondary and tertiary education.

Our research questions were:

1. What are the differences in students' sense of belonging in education, across educational levels and between groups based on intersectional dimensions of inequality (namely gender, migration status and socioeconomic status)?
2. How are the gaps in sense of belonging different across different educational contexts (examined through depth of tracking, female access to education and inclusiveness toward migrants)?

Based on previous research, we expected to find that male gender (Museus and Maramba, 2010; OECD, 2017; Rainey et al., 2018), non-migrant status (OECD, 2017; Stebleton et al., 2010) and high socioeconomic status (Duran et al., 2020; Jury et al., 2019; OECD, 2017; Ostrove and Long, 2007; Stebleton et al., 2014; Trawalter et al., 2021) were associated with a stronger sense of belonging in education across educational levels. However, as intersectional research on these associations is almost non-existent,

we expected that findings may also be surprising, especially with regard to the intersections of these dimensions.

As there did not exist previous empirical research on the association between macro-level indicators of educational contexts and sense of belonging, we could not base our hypotheses on other studies. We therefore pursue an explorative strategy, investigating in detail example countries that represent different educational contexts. We chose these example countries by using macro-level correlates of the research on general educational inequalities. Accordingly, we expected that countries with favorable policies such as low tracking and high inclusiveness toward migrants would show as smaller inequalities in the sense of belonging. We considered it reasonable to expect to see less inequalities in sense of belonging where women are better represented in higher levels of education.

2 Data and method

2.1 Data sources

Secondary data from large, cross-national assessments were used in the study. Countries in the dataset covered European, North American and Oceanian countries (see Table 1). For the primary level, datasets from Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS) were used (IEA., 2019, 2015; IEA, 2006, 2001; Kelly et al., 2020; Kennedy et al., 2007; Mullis et al., 2016, 2006, 2002). The datasets from TIMSS 2015 and 2019 and PIRLS 2001 and 2006 were used. For the secondary level, datasets from the Programme for International Assessment (PISA; OECD, 2000, 2003, 2006, 2009, 2012, 2015, 2017, 2018) were used. The datasets from 2000, 2003, 2012, 2015, and 2018 were used. For tertiary level education, Eurostudent was used (Cuppen et al., 2021). The dataset from Eurostudent VII (2019) was used. Detailed information about each dataset is available through above references. Some countries were dropped from the final compiled dataset due to lack of relevant information, namely socio-demographic information or the item used for measuring sense of belonging in education. Altogether 39 countries (as well as some of regions in UK) were included in the final dataset (see Table 1). Only seven of these countries had a dataset that covered all educational levels.

Macro-level indicators were used to reflect educational contexts and to pick example countries that represent different contexts. For this, data from UNESCO, the Migrant Integration and Policy Index (MIPEX) and the Educational System Database were used (see detailed description below).

2.2 Measures

2.2.1 Sense of belonging in education

The measure for sense of belonging in education was based on a single item in each of the surveys utilized. One-item measures are common in measuring straightforward experiences such as the sense of belonging (see Allen et al., 2022). In TIMSS, PIRLS and PISA, respondents were asked to evaluate whether they belonged at school using a four-point scale (strongly agree to strongly

TABLE 1 Data availability by country and by educational level.

Country	Primary	Secondary	Tertiary
Australia		x	
Austria	x	x	
Belgium	x	x	
Bulgaria	x	x	
Canada	x	x	
Croatia	x	x	x
Cyprus	x		
Czech Republic	x	x	
Denmark	x	x	x
England		x	
Estonia		x	x
Finland	x	x	x
France	x	x	
Germany	x	x	
Greece		x	
Hungary	x	x	x
Iceland	x	x	
Ireland	x	x	x
Italy	x	x	
Liechtenstein		x	
Latvia	x	x	
Lithuania	x	x	x
Luxembourg		x	x
Malta	x	x	
Netherlands		x	x
New Zealand	x	x	
Northern Ireland		x	
Norway	x	x	
Poland		x	x
Portugal	x	x	
Romania	x	x	
Scotland	x	x	
Slovakia	x	x	
Slovenia	x	x	x
Spain	x	x	
Sweden	x	x	
Switzerland		x	
United States		x	
Wales		x	

disagree). In Eurostudent, respondents were asked to evaluate whether they felt they did not belong in higher education using a five-point scale (strongly agree to strongly disagree). The data were harmonized according to guidelines created in the PIONEERED

project (Kroezen and Alieva, 2022). The four-point scale items were rescaled to range from one to five using linear transformation. Additionally, the Eurostudent scale was reversed in order to reflect the sense of belonging to higher education. After harmonization, sense of belonging was a Likert scale measure in which “5” reflected the strongest sense of belonging in education and “1” the weakest. Cases with a missing value in this variable were excluded from the analyses.

2.2.2 Intersectional groups

Eight groups were created in order to reflect intersectional inequalities. The groups were based on three dimensions of inequality: gender, migration status and socioeconomic status. Gender was defined as a binary variable (female/male) due to limitations in the original data, which largely lacked options for non-binary genders. Migration status was based on place of birth of respondents and their parents. Respondents were considered to have a migrant background if they themselves or one of their parents were not born in the country in which the survey was conducted. More detailed information about their status was not available in the original data. Other respondents were considered natives. Socioeconomic status was based on the highest level of education of respondents' parents. The International Standard Classification of Education (ISCED) was used in differentiating high and low socioeconomic status. Respondents were considered to have high socioeconomic status if the highest education completed by their parent(s) was at upper secondary level (ISCED 3) or above. In contrast, respondents were considered to have low socioeconomic status if the highest education completed by their parent(s) was at lower secondary level (ISCED 2) or below. To reduce missing data in the analysis, some imputation techniques were used. To impute migration status, proxy variables were used; place of birth of respondents was proxied through parental place of birth and language spoken at home. Socioeconomic status and gender were imputed with the school median value if available.

Eight intersectional groups were created, and each group was assigned an abbreviation as follows: gender - male M/female F, socioeconomic status—low L/high H, and migration status—native N/migrant (non-native) NN. Consequently, the created groups were (1) Native males with high socioeconomic status (MHN); (2) Native males with low socioeconomic status (MLN); (3) Migrant males with high socioeconomic status (MHNN); (4) Migrant males with low socioeconomic status (MLNN); (5) Native females with high socioeconomic status (FHN); (6) Native females with low socioeconomic status (FLN); (7) Migrant females with high socioeconomic status (FHNN); and (8) Migrant females with low socioeconomic status (FLNN).

2.2.3 Control variables

Three control variables were used, namely: the language spoken at home, degree of urbanization and survey years. Controlling the language spoken at home (language of the survey or not) allows for differences in respondents with migrant backgrounds, especially when the survey language is also the language spoken at home. However, due to the large proportion of missing values in this variable in the Eurostudent survey, it was used only in

the analyses of the primary and secondary levels. Controlling the degree of urbanization (city, town/suburb or rural area) allows for consideration of differences in educational institutions located in different contexts. The data harmonization guidelines of the PIONEERED project were used to harmonize the information in different datasets (Kroezen and Alieva, 2022). In the TIMSS and PISA data sets, there were more than three categories available. In TIMSS and PISA, rural and small towns were grouped together as rural area. In TIMSS, suburban and large towns were grouped together as town/suburb. In PISA, cities and large cities were grouped together as city. In Eurostudent, only a two-category variable based on the population size of the institution's location was available: <300,000 inhabitants or more than 300,000 inhabitants. The former was classified as town/suburb and the latter as city. Regarding the surveys that had several different years available (TIMSS, PIRLS and PISA), the survey year was controlled as well, to control for temporal variation.

2.2.4 Example countries and macro-level indicators

Three example countries representing different educational contexts were chosen from the data. The educational contexts were explored using three macro-level indicators. These indicators were the Tracking index, UNESCO's Female percentage of the graduation ratio from ISCED 6/7 in tertiary education (hereafter: Proportion of female graduates), and the Migrant Integration and Policy Index, Education (hereafter: MIPEX).

The Tracking index (Bol and van de Werfhorst, 2016) reflects the amount of tracking in a country's educational system. The Tracking index is based on three country-level indicators, namely: the age of first selection, the percentage of the total curriculum that is tracked and the number of tracks that are available for 15-year-old students. A larger value indicates a larger amount of tracking.

The Proportion of female graduates (UNESCO-UIS, OECD and EUROSTAT, 2020) is a simple indicator of the percentage of females that graduate each year in tertiary education. For the purposes of this study, the mean value for each country was calculated based on the proportion of female graduates from the years that corresponded to the survey years of the data of this study.

The MIPEX Education (Solano and Huddleston, 2020) reflects on the responsiveness of an educational system to immigrant children's needs. Several indicators are taken into account in it, e.g., access to compulsory and non-compulsory education, access to tertiary education, educational guidance at all levels, language instruction, measures to address the educational needs of migrant groups, diversity at school, measures to bring migrants into the teacher workforce, teacher training to reflect diversity, etc. The higher the value, the more equal the treatment of immigrants in an educational system is. For the purposes of this study, the mean value for each country was calculated based on the MIPEX from the years that corresponded to the survey years of the data of this study.

The three example countries that were chosen were Finland, Hungary and Ireland. These countries represented different educational contexts in terms of intersectional inequalities, and they had complete datasets from all educational levels. Table 2

TABLE 2 Macro-level indicators in all data on average, and in three example countries.

	All data	Finland	Hungary	Ireland
Tracking index	−0.06	−0.87	1.42	−0.30
Proportion of female graduates	47.45	64.62	45.27	41.92
MIPEX education	48.24	84.85	0	37.59

shows values of the indices in each country in contrast with the entire dataset. Finland is a country with a low tracking index, high proportion of female graduates, and favorable migrant integration in education. Hungary, in contrast, is a country with high tracking index, lower-than-average proportion of female graduates, and critically unfavorable migrant integration in education. Finally, Ireland is a country with lower-than-average tracking index, lower-than-average proportion of female graduates, but slightly favorable migrant integration in education.

2.3 Data analyses

Ordinary least squares (OLS) regression analysis was conducted for each country in each dataset with sense of belonging as a dependent variable and intersectional groups as independent variables, the reference group being “native males with high socioeconomic status” (MHN). Appropriate weighting variables were used in each dataset. Control variables for the language spoken at home, the degree of urbanization and survey years (see above) were used in the analyses when applicable. The resulting b coefficients reflected gaps in the sense of belonging between the reference group and the other seven intersectional groups. Average gaps were used to represent the entire dataset, and country-specific gaps to represent example countries.

3 Results

3.1 Differences in the sense of belonging in education across educational levels in intersectional groups

Gaps in the sense of belonging between intersectional groups and the reference group are presented in [Figure 1](#).

In primary education, all females, regardless of their migration or socioeconomic status, scored higher in their sense of belonging than the reference group of native males with high socioeconomic backgrounds (MHN). However, the difference was significant only in the case of native females with high socioeconomic backgrounds (FHN), who had by far the strongest sense of belonging of all the groups. Migrant females with high and low socioeconomic backgrounds (FHNN and FLNN) score slightly higher than the reference group in their sense of belonging, but the difference was not significant. In contrast, migrant males with high and low socioeconomic status (MHNN and MLNN) experienced the weakest sense of belonging in school, with a significant difference

between them and the reference group. Native males with low socioeconomic status (MLN) were in between the reference group and the migrant males in their sense of belonging. In summary, there was a pattern of females having a stronger sense of belonging than males. Furthermore, having a migrant background was a disadvantage within the groups of females and males. Within the groups of natives, higher socioeconomic status indicated a stronger sense of belonging in education.

This pattern underwent clear changes in secondary and tertiary education. One pattern that remained constant is the top position of native females with high socioeconomic status (FHN) that extended through all stages of the educational pathway. However, in contrast to primary education, high socioeconomic status was the dividing factor in secondary and tertiary education. In secondary education, the group of native females with high socioeconomic status (FHN) was the only intersectional group that has significantly stronger sense of belonging than the reference group (MHN). The gaps between the groups were not very large overall in secondary education. Migrant females with high socioeconomic status (FHNN) were very close to the reference group, as were migrant males with high socioeconomic status (MHNN), but the difference was significant only for the latter group. Considerably larger was the gap between the reference group and migrant and native males with low socioeconomic status (MLNN and MLN) and migrant and native females with low socioeconomic status (FLNN and FLN). However, for female migrants with low socioeconomic status the difference was not significant. In tertiary education, the gaps between the intersectional groups grew notably larger compared with secondary education, particularly between the groups with low socioeconomic status. However, none of the differences were statistically significant. All intersectional groups with high socioeconomic status (MHNN, FHN and FHNN) were above the reference group (MHN) in their sense of belonging. Migrant and native males with low socioeconomic status (MLNN and MLN) were quite far below the reference group in their sense of belonging, but even lower were the respective groups for females (FLNN and FLN). Migrant females with low socioeconomic status (FLNN) had by far the weakest sense of belonging in tertiary education.

3.2 Differences in gaps in sense of belonging across educational contexts

Next, we examined the gaps in sense of belonging in our example countries in detail (see rationale in choosing the countries in chapter 2.2.4). The country-specific gaps are presented in [Table 3](#).

In Finland, the gaps in the sense of belonging were mostly small and/or not significant across the intersectional groups and across educational path. An exception to this was the native females (FHN and FLN) in tertiary education, with a stronger sense of belonging than the reference group (MHN). Compared with the average gaps in entire data, a stronger sense of belonging in female groups in primary education could not be detected in Finland, in fact, the direction of the gaps in female groups was negative, although findings were not significant. Likewise, neither in secondary nor

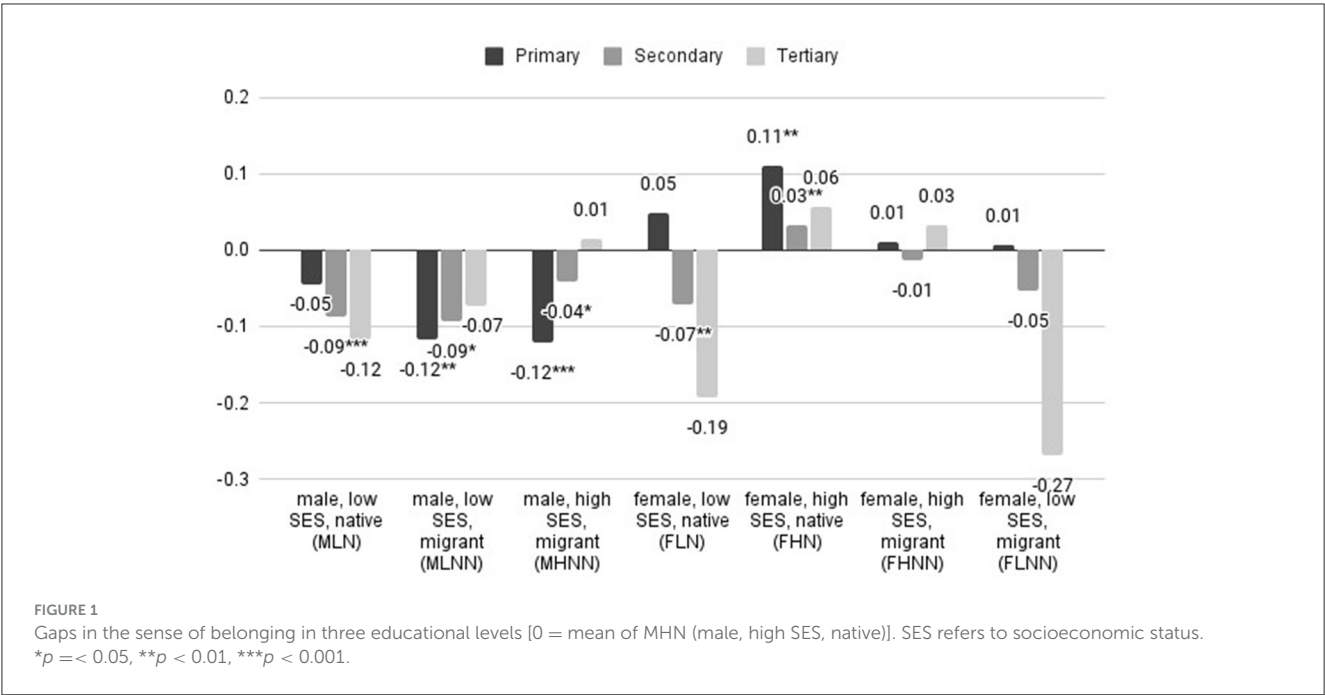


TABLE 3 Gaps in the sense of belonging in three educational levels in three example countries [0 = mean of MHN (male, high SES, native)].

		Male, low SES, native (MLN)	Male, high SES, migrant (MHNN)	Male, low SES, migrant (MLNN)	Female, high SES, native (FHN)	Female, low SES, native (FLN)	Female, high SES, migrant (FHNN)	Female, low SES, migrant (FLNN)
All data	Primary	−0.05	−0.12***	−0.12**	0.11**	0.05	0.01	0.01
	Secondary	−0.09***	−0.04*	−0.09*	0.03**	−0.07**	−.01	−0.05
	Tertiary	−0.12	0.01	−0.07	0.06	−0.19	.03	−0.27
Finland	Primary	−0.10	−0.04	0.15	0.06*	−0.12	−0.14	−0.18
	Secondary	−0.01	−0.06	0.14	−0.08***	−0.08	−0.12	−0.24
	Tertiary	−0.13	0.03	0.17	0.14***	0.28**	0.03	−0.12
Hungary	Primary	0.08	−0.01	−0.01	0.10**	0.13*	0.02	0.02
	Secondary	−0.10	−0.10*	−0.49	0.01	−0.10	−0.03	−0.05
	Tertiary	0.11	0.13	0.33	−0.02	0.17*	0.12	0.68**
Ireland	Primary	−0.19*	−0.22**	−0.33**	0.21***	0.13*	0.14*	0.20
	Secondary	−0.15**	−0.05*	−0.12	0.07***	−0.07	−0.03	0.01
	Tertiary	−0.10	0.18***	−0.03	0.01	−0.01	0.05	0.08

SES refers to socioeconomic status. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

in tertiary education, could a pattern with socioeconomic status be detected that appeared as dividing factor in the entire data. In contrast, the stronger sense of belonging in tertiary education in native females that was evident in the Finnish data, was not detected in the entire data.

In Hungary, too, the gaps in the sense of belonging were mostly small and/or not significant across the intersectional groups and across educational path. An interesting exception to this is the migrant females with low socioeconomic status (FLNN) in tertiary

education with considerably stronger sense of belonging that the reference group. Compared with the average gaps in entire data, the gaps in the sense of belonging in Hungary in primary and secondary education were roughly aligned with the sizes and directions of the gaps in the entire data, although they are smaller and more often not significant. However, interestingly in tertiary education, most intersectional groups reported stronger sense of belonging compared with the reference group although the gaps were in large part not significant.

In Ireland, more significant gaps in the sense of belonging could be detected compared with the first two example countries. This was especially true in the primary education, whereas the gaps faded in secondary and tertiary education. Compared with the average gaps in entire data, the direction of the gaps was aligned. However, in the primary education, the gaps appear larger, with male groups reporting considerably weaker and female groups stronger sense of belonging than the reference group.

4 Discussion

The findings of our study emphasize the complexity of sense of belonging in education as a phenomenon. Our findings show that sense of belonging has different dynamics across educational stages, intersectional groups, and even educational contexts. Using multiple cross-national datasets allowed us to explore sense of belonging not only in different intersectional groups, but also throughout educational path giving a comprehensive overview of sense of belonging in associations with micro-level socio-demographic factors and macro-level contextual factors.

Our first research question was: What differences can be detected in students' sense of belonging in education, across educational levels and between groups based on intersectional dimensions of inequality? We found that a constant across all educational stages was that native females with high socioeconomic status (FHN) had the strongest sense of belonging. This is in contrast with what we had assumed and what was indicated by earlier findings, in which males were highlighted as having a stronger sense of belonging than females, especially in secondary and tertiary education (Aliyev and Tunc, 2015; Museus and Maramba, 2010; OECD, 2017; Rainey et al., 2018). However, previous studies rarely have employed an intersectional approach. Focusing solely on gender as the determinant of sense of belonging may have led to privileged groups, which possess other important socio-demographic determinants influencing sense of belonging, being overlooked. Taking a closer look across educational levels showed interesting variation in the dynamics as students' progress along the educational pathway. Our findings showed that in primary education, all female intersectional groups had a stronger sense of belonging, on average, than males. This is in line with earlier, yet scarce, findings regarding primary school students (Sayer et al., 2013). A very different pattern emerged in the secondary and tertiary levels as socioeconomic status, rather than gender, became a more notable divider of the intersectional groups. In these stages, the intersectional groups with low socioeconomic status had on average a weaker sense of belonging than those with high socioeconomic status. It was in line with our assumptions that low socioeconomic status was found to have this role, and earlier studies have repeatedly shown that it is associated with a weaker sense of belonging in education (Allen et al., 2021; Cueto et al., 2010; Duran et al., 2020; OECD, 2017; Trawalter et al., 2021). However, it is intriguing that this pattern only emerged in secondary education, whereas in primary education, girls with low socioeconomic status seemed to engage very well. This finding also goes against our assumption that the same determinant would be similarly detrimental across all educational levels. One explanation for this change in dynamics is that in secondary education, the

environment becomes more career-oriented than in primary school and students from lower socioeconomic backgrounds may begin to doubt their position in education. At this stage, students with low socioeconomic status may find that the living spaces of their childhood homes have been considerably different to the environmental and cultural contexts of career-oriented educational institutions. It is notable that in secondary education, the gaps in sense of belonging between all the groups were not very large, even for those with low socioeconomic status. Migrant males with low socioeconomic status (MLNN) had the weakest sense of belonging, as previous research has also shown (Salmela-Aro et al., 2018), but with a very close margin. However, in tertiary education, the gaps between the groups appeared to widen substantially compared with earlier levels; but it is important to note that the differences are not statistically significant, so the findings must be taken with caution. Overall, the selectivity of tertiary education needs to be considered, as it probably evens out socio-demographic variation (Kleemola et al., 2022). In tertiary education, all groups with high socioeconomic status remained very close to each other with regard to sense of belonging, but the gap between these groups and those with low socioeconomic status was more substantial, especially with migrant females (FLNN) and native females (FLN). As the intersectional approach would suggest, disadvantages cumulate in these groups and thus, they struggle the most. Previous research focusing on individual dimensions of inequality has suggested that female gender (Museus and Maramba, 2010; Rainey et al., 2018), migrant status (Stebbleton et al., 2010) and low socioeconomic status (Allen et al., 2021; Duran et al., 2020; Jury et al., 2019; Ostrove and Long, 2007; Stebleton et al., 2014; Trawalter et al., 2021) are the most detrimental factors to students' sense of belonging in tertiary education, and our findings align with this.

Our second research question was: How are the gaps in sense of belonging different across different educational contexts? To explore contextual differences, we chose three example countries (see chapter 2.2.4). Exploring our example countries, we expected to see smaller gaps in the sense of belonging in countries that have favorable educational policies and practices. This was precisely true in Finland that was well above average in all three macro-level indices that we considered. However, investigation of the two other example countries confused the picture. Hungary was clearly below average in the three macro-level indices. However, the overview of the gaps in the sense of belonging was very similar to Finland. Adding to the complexity, Ireland showed larger gaps in the sense of belonging especially in primary education. Ireland is relatively close to Finland in tracking, their migrant integration is between Finland and Hungary, and the proportion of female graduates in tertiary education is even below Hungary. Nevertheless, compared with Finland with high proportion of female graduates, the Irish female groups had larger positive gaps in the sense of belonging with the reference group in primary education, which was against our expectations. Likewise, it was surprising that favorable and unfavorable migrant integration in education does not seem to make difference in the direction and size of the gaps in the sense of belonging. Even earlier research has come to similar counterintuitive findings on associations between educational policies and wellbeing indicating an "equality paradox" (e.g., Guo et al., 2022; Ham et al., 2017; Högberg and Lindgren, 2023).

As a practical implication of our study, our findings remind policymakers and practitioners alike that the sense of belonging is a complex phenomenon; our country-specific findings show that it is too simplified to assume that educational context alone can influence students' sense of belonging. It is likely that several individual-level, school-level and even class-level factors are at play behind students' sense of belonging, confusing the effect of larger educational context and policies (see also Chiu et al., 2016). For instance, the proportional composition of students' peers in a classroom or school appears to have the effect of evening out gaps in sense of belonging, whether the peers are of the same gender, same socioeconomic group or same ethnicity (Chiu et al., 2016; Graham et al., 2022; Tellhed et al., 2017). Additionally, more individual-level phenomena than the socio-demographic factors that were examined in this study are likely at play (e.g., Korhonen et al., 2019, 2023). Our findings highlight the complex and dynamic nature of the sense of belonging as a phenomenon (see Ahn and Davis, 2020; Graham et al., 2022). It is not only influenced by individuals' socio-demographic backgrounds or educational policies and practices. Instead, a myriad of circumstances come into play: achievement, peer interactions, teacher interactions and school context, to name but a few (e.g., Chiu et al., 2016; Korhonen et al., 2019; Ulmanen et al., 2016).

Our study also highlighted some methodological challenges for future studies to address. Previous research has shown that various dimensions of inequality are at play in educational systems, creating intersectional inequalities (e.g., Chiu et al., 2016; Codioli McMaster and Cook, 2019; Gross et al., 2016; McCall, 2005). However, addressing the intersectionality of inequality in one academic paper poses a challenge for quantitative research. The present study has attempted to integrate three dimensions of inequality, namely gender, socioeconomic status and migration status. This was conducted by creating eight intersectional groups based on these dimensions and examining their differences in sense of belonging. While this approach offers a unique insight into intersectional inequalities, it struggles to address inequalities that could be explained with fewer dimensions. The use of such intersectional groups gives us only a partial idea of the inequalities that, e.g., all females, regardless of their other background factors, may be facing. Additionally, grouping with dichotomic variables fixes students in extreme ends of each dimension and does not consider complexity within gender, socioeconomic status and migration status. Future research should strive to capture the nature of sense of belonging and its dynamics in educational contexts through ambitious research design. All levels—macro, meso and micro—should be considered in explaining the variation in students' sense of belonging in education (see also Chiu et al., 2016). To understand individual-level determinants in more detail, research should integrate a multidimensional approach, such as used here, with the one-dimensional approach that so many other studies have already employed.

The present research has utilized multiple large datasets in order to gain an overview of the entire educational pathway, from primary education through to secondary and tertiary education. While this holistic approach is a strength of the study, combining different datasets also requires caution, especially

when comparing different educational levels. The data obtained from different levels has been collected in different contexts and data harmonization procedures cannot entirely standardize the data across datasets. Additionally, we used a one-item scale for the sense of belonging, which warrants some caution in interpreting results. However, single-item measures are quite common in measuring straightforward experiences such as the sense of belonging in education, and they can be valid and reliable instruments (Allen et al., 2022). Our approach of using large cross-national datasets also blurs the influence of the educational context on the sense of belonging. Across contexts, intersectional groups have very different opportunities for education. While our example countries give some insights into the matter, future research should consider contextual aspects in more detail.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: PIRLS, TIMMS, PISA and Eurostudent datasets.

Ethics statement

Secondary datasets were used in the study. Ethical approval and informed consent were obtained in the original data collection, more information through original data sources indicated in chapter 2.1.

Author contributions

KK: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. AT: Conceptualization, Funding acquisition, Methodology, Writing – original draft, Writing – review & editing. HH: Conceptualization, Writing – original draft, Writing – review & editing. TT: Conceptualization, Writing – original draft, Writing – review & editing. IKa: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. TK: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. IKo: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. AA: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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