Investigating cultural openness and empathy among English teacher trainees at a Hungarian university

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Abstract
Multicultural socio-educational contexts require future teachers to foster inclusive teaching practices and demonstrate high openness and empathy toward diverse learner populations. This quantitative study investigates English teacher trainees' (N=62) cultural openness and empathy using the Revised Scale of Ethnocultural Empathy. Criterion sampling was employed to recruit multilingual participants with advanced English proficiency levels at a Hungarian university. Descriptive statistics indicated high levels of cultural openness and empathy, especially among female and older respondents. However, a statistically significant gender difference emerged only in empathy. Spearman correlations examined how cultural openness and empathy correlated with other variables, including awareness of racism, resentment, and anxiety. Finally, two parsimonious linear regression models with negligible variance inflation factors were tested. Standardized beta coefficients indicated that empathy was positively associated with cultural openness, whereas resentment was negatively associated with it. Cultural openness and awareness of racism were both positively associated with empathy.

Keywords: *cultural openness, empathy, ethnocultural empathy, teacher education, inclusive education, intercultural competence, multicultural teacher competence*

Introduction

For decades, higher education institutions worldwide have hosted an ever-increasing body of culturally and linguistically diverse students alongside local students. To use English as a lingua franca (ELF) successfully in multicultural classrooms for learning and intercultural communication (Wagner & Byram, 2017) purposes, mere proficiency in English is insufficient. Successful ELF communication requires intercultural (Deardorff, 2006) and multicultural competencies (Mallinckrodt et al., 2014), including cultural openness and empathy. Therefore, cultural openness and empathy have been widely researched in multicultural contexts.

Multilingualism, however, is a transformative experience not only linguistically but also emotionally, psychologically, and culturally (Kramsch, 2009). Both the neurologist Damasio (1994) and the psychologist Csíkszentmihályi (1993) highlighted that language learning is embodied. Damasio emphasized brain-body interactions that generate emotions associated with language learning, while Csíkszentmihályi described the flow experience, which is integral to intrinsic motivation in second language acquisition (SLA). Combining large-scale survey data with interviews, Pavlenko (2005) scrutinized the relationship between emotions and multilingualism. Qualitative case studies revealed that multilingualism generates powerful emotional responses in learners while serving as an expression of various identities (Fekete, 2020; Fodor & Lugossy, 2025; Kramsch, 2009; Norton, 2013; Williams, 2024). Multilingualism is also linked to higher enjoyment and motivation and slightly lower anxiety in the language classroom (Fekete, 2023; Dewaele et al., 2024). Concerning emotional competence, Koch and his colleagues (2024) confirmed a cyclic

relationship between emotional competence and multilingualism and introduced the concept of 'emotional advantage of multilingualism'.

Studies have revealed contradictory findings regarding the link between empathy and multilingualism. While Dewaele and Li (2012) pointed out that the frequent use of multiple languages is conducive to higher cognitive empathy, Ward and Ragosko (2025) found that multilingual experiences did not lead to increased empathy. However, empathy and emotional intelligence scores were significantly higher when information was processed in the participants' mother tongue (L1). Regarding openness, studies have found a positive association with multilingualism. For example, Wang (2023) shed light on a positive correlation between multilingualism and open-mindedness up to three languages. Another study (Dewaele & Stavans, 2014) confirmed that the frequent and proficient use of multiple languages is linked to both higher cultural openness and empathy. Furthermore, multilingualism has been linked to a higher acceptance of immigrants through intergroup contact (Garcia-Vazquez et al., 2022).

Multicultural competence, empathy, and intercultural communicative competence (ICC), the cornerstones of multicultural teacher competence, are the most frequently researched topics in language education research (Peña Acuña, 2024) because they are strongly linked to inclusive education. Nevertheless, fostering intercultural competence or empathy through a pedagogy of multiliteracies receives less research attention (Fernández-García & Sánchez-Vizcaíno, 2023). In the Hungarian context, cultural openness and empathy, which are key components of multicultural teacher competence, remain under-researched. The few existing studies either investigated the intercultural competencies and intercultural sensitivity of medical students (Lucza et al., 2023; Németh et al., 2022) or involved general populations in cross-cultural investigations (Genkova et al., 2022). In the context of teacher education, research addressed the development of English majors' intercultural communicative competence (Menyhei, 2013; Talbi, 2020), the development of an identity-based model of teaching intercultural communication (Fekete, 2022), or teacher trainees' beliefs about integrating the development of intercultural communicative competence in language teaching (Lázár, 2011). Therefore, the present study is the first investigation into English teacher trainees' cultural openness and empathy in Hungary using the Revised Scale of Ethnocultural Empathy (RSEE) (Finck et al., 2021). Since empathy and cultural openness are integral to inclusive education and teacher competencies, the study examines these two constructs, explores gender differences, and identifies associations between these two and the other variables assessed by RSEE in a moderate sample of Hungarian English teacher trainees. The results are expected to inform teachers, educators, and policymakers about pedagogical practices that may favourably impact English teacher trainees' cultural openness and empathy levels, which, in turn, can help them foster inclusive teaching practices in their local contexts.

Theoretical background

Multilingualism

Bilingualism usually refers to the competent use of two languages, while multilingualism denotes the use of three or more languages. Dewaele and Stavans (2014) developed two measures of multilingualism. The former refers to individuals who speak more languages while functioning in a monolingual and monocultural environment. The latter describes multilingual speakers who use their languages actively in a multicultural and multilingual environment. The participants of the study belong to the first category of multilingual speakers: they learned English (and other foreign languages) in school, use English daily in their university studies, but live and function in a dominantly monolingual and monocultural context in Hungary.

Measuring intercultural competence and ethnocultural empathy

There have been several efforts in the past decades to define and measure intercultural competence (IC). Byram (1997) introduced the theoretical model of intercultural communicative competence, which inspired the development of the intercultural communicative competence questionnaire (Arasaratnam, 2009; Fantini & Tirmizi, 2006), as well as the intercultural sensitivity scale (Chen & Starosta, 2000). In addition to IC, cultural adaptation is a key issue in multicultural settings. The universal-diverse orientation (UDO) instrument (Miville et al., 1999) measures factors impacting cultural attitudes that can facilitate cultural adaptation. UDO consists of three subscales, including diversity of contact, relativistic appreciation, and comfort with differences. Similarly, the multicultural personality questionnaire (Van Oudenhoven & Van der Zee, 2002) was designed to measure which personality traits promote cross-cultural adaptation. The instrument consists of five sub-scales: cultural empathy, open-mindedness, emotional stability, flexibility, and social initiative.

Empathy as a personality trait has also received much research attention. One of the first measures of empathy was the Interpersonal Reactivity Index (IRI) (Davis, 1983), consisting of four subscales, including perspective-taking as the cognitive dimension, as well as empathic concern, personal distress, and fantasy, constituting the affective dimension of the scale. Another conceptualization of empathy was related to emotional intelligence (EQ). Goleman (1995) theorized EQ as a multidimensional intelligence construct consisting of five components, including self-awareness, self-regulation, self-motivation, empathy, and social skills. The first three denote the intrapersonal, and the last two describe the interpersonal dimensions of EQ. However, no validated instrument exists that measures Goleman's five EQ dimensions.

The original ethnocultural empathy scale (EES) (Wang et al., 2003) included four factors: 1) empathic feeling and expression, 2) empathic perspective taking, 3) acceptance of cultural differences, and 4) empathic awareness. When two models of EES were tested through multi-group confirmatory factor analysis, it was pointed out that ethnocultural empathy may be "'a more general' intercultural sensitivity or multicultural competence, i.e., a set of abilities (affective, cognitive, and communicative) needed to perform effectively when interacting with culturally diverse others" (Albiero & Matricardi, 2013: 654).

An adaptation of EES, validated for English speakers, is the Everyday Multicultural Competencies/Revised Scale of Ethnocultural Empathy (EMC/RSEE) (Mallinckrodt et al., 2014), including six subscales: 1) cultural openness and desire to learn; 2) resentment and cultural dominance; 3) anxiety and lack of multicultural self-efficacy; 4) empathic perspective-taking; 5) awareness of contemporary racism and privilege; and 6) empathic feeling and acting as an ally. An adaptation of the EMC/RSEE scale, validated for Spanish-speaking audiences with some modifications, resulted in a five-factor measure called the Revised Scale of Ethnocultural Empathy (RSEE) (Finck et al., 2021). This instrument was employed to collect data for the research.

Cultural openness

Openness is usually examined in relation to the Big Five Personality Model (Costa & McCrae, 1992). A study investigating which personality dimensions predict tolerance to human diversity found that openness, agreeableness in the beliefs dimension, rather than related to speech or acts, as well as dispositional empathy, were predictors of tolerance (Butrus & Witenberg, 2013). However, the emphatic concern dimension of empathy had a stronger impact on tolerance than the other personality factors. Openness to experience was also investigated in relation to UDO (Miville et al., 1999). Openness was linked to UDO in the dimensions of appreciating cultural diversity, such as art and beauty, curiosity about cultural differences, and the flexibility to reevaluate one's cultural beliefs (Han & Pistole, 2017). Another study (Yakunina et al., 2012) examining how the five dimensions of the multicultural personality (Van Oudenhoven & Van der Zee, 2002) impacted international students' openness to diversity and adjustment in the USA found that open-mindedness and flexibility were associated with openness to diversity, which facilitated adjustment. The authors (Yakunina et al., 2012: 538) pointed out that "openness to diversity

may be a multicultural attitude that may be more amenable to development or modification", for example, via education and training. Since cultural engagement is linked to academic success in multicultural educational contexts, cultural openness was found to be a prerequisite for cultural engagement (Rogers & Woznick, 2015). Furthermore, openness and agreeableness as personality traits were associated with more positive attitudes towards immigration (Dinesen et al., 2016). Regarding gender, a Turkish study (Polat, 2018) investigating teacher trainees' multicultural personality traits found that males scored higher on the openness subdimension, while females scored higher on the flexibility subdimension. Having a social media account also contributed to flexibility, and openness was associated with strong materialistic, liberty, generosity, and romantic values.

Empathy

Regarding personality traits, agreeableness is associated with both general and ethnocultural empathy, and empathy is strongly correlated with all UDO components (Han & Pistole, 2017). When cultural empathy was examined as a personality trait in a Turkish study (Polat, 2018), it was associated with social, intellectual, liberty, and generosity values. Research involving Chinese international students in the USA found that students who showed little appreciation for similarities and differences between the home and host environment experienced higher acculturative stress, which negatively impacted their ethnocultural empathy (Liu & Wei, 2020). Another study involving international students confirmed that empathy has a significant effect on attitudes towards other cultures (Nadeem et al., 2020).

A Norwegian study (Solhaug & Osler, 2018) involving 1006 secondary school students investigated the antecedents of ethnocultural empathy using EES (Wang et al., 2003). School activities such as learning about ethnocultural empathy, being motivated to learn, and getting good grades were moderately correlated with ethnocultural empathy. Teacher support, adapting teaching to students' needs, and considering their well-being seemed to have only a limited impact on ethnocultural empathy. Although school activities may be important, other factors had a stronger impact. While school diversity contributed to ethnocultural empathy, students from diverse cultural backgrounds exhibited higher empathy. Regarding family background factors, the language spoken in the family had a strong impact, while other factors, such as parents' educational level, were moderately associated with ethnocultural empathy. As for gender, female students showed higher levels of ethnocultural empathy than male learners.

A Turkish study (Kapıkıran, 2023) examining teacher trainees' ethnocultural empathy found a strong association between ethnocultural empathy and ethnicity, religion, political views, prosocial behavior, threat perception, and positive-negative affection towards outgroups, explaining 92.4% of the variance in scores. The qualitative component of a mixed-methods study (Egitim & Akaliyski, 2024: 7) involving Japanese teachers working with refugee-seeking children put forth that long-term intercultural exposure and regular meaningful interactions "may be needed for majority-group members to develop ethnocultural empathy" towards minority group members, as understanding immigrants' adversities may trigger an empathetic response in them. The follow-up quantitative analysis corroborated the relationship between intercultural experience and ethnocultural empathy and concluded that it is possible to maintain one's own culture while adopting another one. The research explained the key role schools may play in encouraging participation in the cultural practices of diverse student populations.

Developing cultural openness and empathy in teacher education

As the Hungarian educational context becomes more multicultural, cultural openness and empathy have become essential teacher competencies when catering to linguistically and culturally diverse students. Previous research has corroborated that empathy is associated with both teacher competencies and inclusive education. A Chinese study (Lin & Chung, 2024) involving 445 pre-service and in-service kindergarten and pre-school teachers revealed that empathy can transform teachers' beliefs in favour of multiculturalism, promoting their multicultural teacher competence. Similarly, teachers' emotional

efficacy, which denotes teachers' ability to regulate and express negative and positive emotions (Bandura et al., 2003), is linked to empathy and teachers' self-efficacy (Goroshit & Hen, 2014). Furthermore, several studies have confirmed a link between empathy and fostering inclusive education. A quantitative study (Graziano et al., 2024) examining the relationship between teachers' empathy and inclusive education found that higher empathy levels fostered inclusive education, especially in female teachers with higher emotional self-efficacy. Similarly, qualitative studies highlighted the fundamental role of empathy in promoting inclusive education when teachers work with students with disabilities (Klerk & de Klerk, 2018), special needs (Muñoz Martínez et al., 2024), or gifted students (Gómez-Arizaga et al., 2016).

A Hungarian qualitative pre-post-test study (Fekete, 2022) examined multilingual students' stereotypes about and perceptions of each other's cultural backgrounds in a multicultural classroom, using an identity-aware cultural intervention over the course of a semester. The intervention resulted in quantifiable, favourable changes in students' perceptions of cultural diversity, prejudice, and stereotypes. Regarding ethnocultural empathy, a mixed-methods pre-post-test study (Fernández-Corbacho et al., 2024) involving 48 pre-service language teachers in Spain measured the participants' ethnocultural empathy using RSEE before and after an educational intervention. The study found slight improvement in all constructs but cultural openness following the intervention. Statistically significant differences were detected in the two groups' post-intervention results in empathy and anxiety, and female students displayed significantly higher empathy levels than male participants. The findings highlighted that different types of cultural interventions affect ethnocultural empathy in different ways. In the Hungarian context, Fekete (2026) examined 100 English majors' cultural openness and empathy using RSEE and found that the participants showed significantly higher cultural openness than empathy, indicating that the cognitive dimension of ethnocultural empathy is more readily available to students than the affective and action-oriented dimensions. Although cultural openness and empathy were not significantly associated with gender, degree programs, language socialization contexts or English proficiency levels, descriptive statistics showed that female and international students reported higher levels of both cultural openness and empathy than male and Hungarian students and students with lower English proficiency levels exhibited higher empathy than those with higher English proficiency levels. Correlation analyses revealed positive relationships among cultural openness, empathy, and awareness of racism, whereas cultural openness and empathy were negatively associated with resentment and anxiety. The reviewed empirical research underscores the central role of empathy in education and highlights that female teachers generally exhibit higher levels of empathy. This is a noteworthy finding given that female teachers greatly outnumber male teachers at all levels of Hungarian education.

The reviewed literature suggests that cultural openness and empathy can be conceptualized as interrelated components of intercultural competence, mediated and shaped by cognitive, affective and sociocultural factors such as multilingualism (Ávila-López & Vaquero-Ibarra, 2025). Within this framework, multilingualism contributes to the development of emotional and intercultural capacities while empathy and related affective dimensions (e.g., awareness of racism, resentment, and anxiety) represent key mechanisms through which individuals engage with cultural diversity. In the present study, these constructs are examined within a unified model using the RSEE, with a particular focus on the associations between cultural openness, empathy and other ethnocultural empathy dimensions.

Since empathy and openness are integral to both teacher competencies and inclusive education, and both constructs may be developed through educational interventions, the study has three goals: 1) to examine the participants' cultural openness and empathy levels, 2) to explore gender and age-related differences, and 3) to identify which subscales of RSEE (Finck et al., 2021) show strong associations with the two constructs under study. The findings are expected to help educators develop educational practices that are more likely to positively impact teacher trainees' cultural openness and empathy in teacher education.

Methodology

Research aims and context

A total of 62 participants were involved in the study who were English teacher trainees at the University of Pécs (UP). Involving only multilingual teacher trainees in the research is a key aspect of the study, as multilingualism is linked to both empathy and openness, which are integral to inclusive education. Furthermore, cultural norms agreed upon by a speech community are encoded in language (Kramsch, 1998); thus, language and culture are intertwined in SLA and connected at different levels (Risager, 2005). From a socio-educational perspective, teaching culturally diverse learners and promoting empathy and openness in the classroom hinges on teacher education. Finally, another incentive for conducting this study is that teacher trainees' cultural openness and empathy have not been examined in Hungary to date.

Research questions

The research answers the following six research questions (RQs).

RQ1: What are the levels of cultural openness and empathy among the Hungarian English teacher trainees in the study?

RQ2: Are there statistically significant differences in cultural openness and empathy across the three subgroups within the sample?

RQ3: Are there gender-based differences in cultural openness and empathy?

RQ4: How are cultural openness and empathy each correlated with the other four factors of the scale?

RQ5: Which variables (empathy, awareness of racism, resentment, and anxiety) are significantly associated with cultural openness in the regression model?

RQ6: Which variables (cultural openness, awareness of racism, resentment, and anxiety) are significantly associated with empathy in the regression model?

Participants

Hungarian English teacher trainees are in a unique linguistic and academic situation. They have a measured C1 level of English language proficiency because they must pass an internally organized, mandatory C1-level English proficiency exam. However, despite their high language proficiency, they interact with Hungarian classmates and teachers in English, since they study separately from international students. While Hungarian teacher trainees study in a 5-year, undivided MA program in teacher education, international students are enrolled in 3+2-year non-teaching BA and MA degree programs. Therefore, English teacher trainees have little or no contact with international students enrolled in English-taught BA and MA programs at UP.

Criterion sampling was employed to create a homogeneous sample in terms of nationality, English language proficiency, and major. The participants were Hungarian; they were English teacher trainees, and they all had a measured C1 level proficiency in English. Nevertheless, three subgroups were identified within the sample. Some of the data came from a large international sample collected by the *Multiliteracies for Adult At-Risk Learners of Additional Languages (MultiLits)* project using RSEE in 2023. The Hungarian subsample consisted of 52 students from two universities in Hungary. However, to comply with criterion sampling, international students and non-teacher trainees were removed from the sample, resulting in a group of 22 full-time English teacher trainees (FT2023) from UP. Additional data were collected in the spring semester of the academic year 2024/25 in three seminars called *Teaching Culture and Intercultural Communication*, taught by the author to English teacher trainees at UP. Two of the courses were for full-time students, resulting in the second group of 27 full-time English teacher trainees (FT2025), and one course was for working adults enrolled in the one-year part-time teacher training program, resulting in a group of 13 part-time English teacher trainees (PT2025). The average age of this

group was higher because the students were working adults and already in-service teachers of another subject. Table 1 displays demographic information about the participants. The respondents' other majors included Hungarian, History, Communication and Media, PE, Russian, French, German, Ethics, Mathematics, Physics, IT, Biology, Library Studies, and Music. Students in group PT2025 did not major in a second subject.

Table 1: Demographic information about the participants

		Mean	Frequency	Percentage
Age	FT2023:	23.4	-	-
	FT2025:	22.7	-	-
	PT2025:	41.4	-	-
	N62:	26.9	-	-
Gender (N62)*	Female	-	46	74
	Male	-	15	24
Nationality	Hungarian	-	62	100
Mother tongue	Hungarian	-	62	100
English proficiency	C1 level	-	62	100
English teacher trainee	Yes	-	62	100
Major 1	English	-	62	100

*One participant did not indicate their gender.

Instrument

Responses to RSEE (Finck et al., 2021) were based on a 1-6 point Likert scale ranging from 1=strongly disagree, to 6=strongly agree. The scale consists of five subscales: 1) "Cultural Openness and Desire to Learn" (hereinafter "cultural openness"), 2) "Awareness of Contemporary Racism" (hereinafter "awareness of racism"), 3), Empathy (hereinafter "empathy") 4), Resentment and Cultural Dominance (hereinafter "resentment") and 5) "Anxiety and Lack of Multicultural Self-Efficacy" (hereafter "anxiety").

However, for this study, only two subscales, cultural openness and empathy, are examined. Items measuring cultural openness address the importance of being educated about other cultures and developing intercultural competence, showing interest in other countries, cultures and cultural programs on campus, and exhibiting openness to interact with culturally diverse individuals. The items assessing empathy address one's ability to understand, emotionally respond to, and act on the experiences of people from different racial or ethnic backgrounds. The validated items used to assess the two focal constructs are presented in the Appendix.

The internal consistency of the RSEE subscales in the sample was assessed using Cronbach's alpha and McDonald's omega (Table 2).

Table 2: Internal consistency of RSEE subscales

Subscale	Cronbach's α	McDonald's ω
Cultural openness	0.776	0.805
Empathy	0.739	0.748
Awareness of racism	0.800	0.806
Resentment	0.819	0.831
Anxiety	0.567	0.595

Cronbach's alpha values ranged from 0.57 (anxiety) to 0.82 (resentment), and McDonald's omega ranged from 0.60 (anxiety) to 0.83 (resentment). Four subscales demonstrated acceptable-to-good reliability, whereas the anxiety subscale showed lower reliability. As a result, findings involving this subscale should be interpreted with caution. Although anxiety is included in the broader RSEE framework and reported for completeness in correlational analyses, it is not treated as a focal variable in this study, nor is it included in regression models owing to its lower internal consistency and the study's primary focus on cultural openness and empathy.

Data collection

In both data collection phases (2023 and 2025), *Google Forms* were used to collect quantitative data anonymously, composed of two parts: the RSEE items and demographic questions. Demographic questions collected information on respondents' age, gender, nationality, majors, mother tongue, and English language proficiency level. In both phases, students completed the same questionnaire in English, given their measured C1 proficiency level.

Data analysis

The quantitative data gathered via RSEE (Finck et al., 2021) were analysed using RStudio (version 2024.09.0, Build 375), an integrated development environment for R. The following analyses were conducted to answer the research questions (RQ).

RQ1: Descriptive statistics were computed for cultural openness and empathy.

RQ2: A One-Way ANOVA was conducted to compare the means of the three subgroups on both cultural openness and empathy, followed by the calculation of effect sizes (η^2), Cohen's f, and ANOVA's post-hoc power.

RQ3: An Independent-samples t-test was performed to compare mean scores between male and female participants on cultural openness and empathy. After normality was confirmed using the Shapiro–Wilk test, Hedge's g and post-hoc power were computed to identify the t-test's ability to detect small changes in the sample.

RQ4: Since two of the five variables were not normally distributed, Spearman correlation was utilized to examine how cultural openness and empathy each correlated with the other four variables of the scale.

RQ5: Different models were tested to examine which variables were significantly associated with cultural openness; however, due to the limited sample size, a parsimonious linear regression model was retained for presentation in the study. Anxiety was excluded as a predictor in the regression analyses owing to its low internal consistency.

RQ6: From the tested models examining which variables were significantly associated with empathy, a parsimonious linear model was retained for presentation.

Residuals were inspected, and the final cleaned models are reported for both RQ5 and RQ6. Variance inflation factors and standardized beta coefficients were also calculated for both models.

Results

To answer RQ1, descriptive statistics for cultural openness and empathy were computed. After raw scores were calculated, standardized scores (Mean=0) were also computed to enable comparisons with a Spanish pre-post-test study that also examined RSEE among language teacher trainees following an educational intervention. Table 3 presents mean scores, SD, and minimum and maximum scores for the two variables.

Table 3: Descriptive statistics

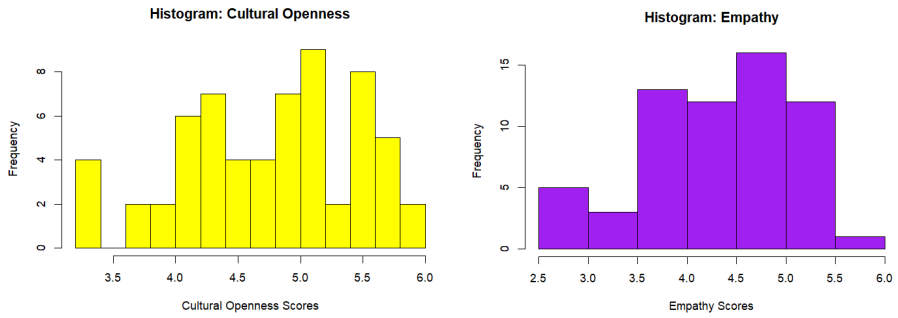
		Cultural openness	Empathy
Raw scores	Mean	4.81	4.32
	Min	3.20	2.73
	Max	5.90	5.91
	SD	0.70	0.73
Standardized scores	Min	-2.290818	-2.169571
	Max	1.559412	2.161587
Standardized scores: pre-test*	Min	−3.71379	−2.64050
	Max	1.09919	1.20254
Standardized scores: post-test*	Min	−2.87672	−2.46930
	Max	1.06808	1.34661

*Scores adopted from Fernández-Corbacho et al., 2024: 9

The obtained raw scores in the Hungarian sample are relatively high for both cultural openness and empathy. This observation is supported by the comparison of standardized scores across the two studies. In particular, the standardized pre-test scores in the Spanish study showed the lowest values for both variables, while the standardized scores in the Hungarian study were the highest. This suggests that participants in the Hungarian sample generally exhibited greater cultural openness and empathy compared to the pre-intervention groups in the Spanish study. Nonetheless, the participants in the Hungarian study showed higher cultural openness than empathy.

Next, a Shapiro-Wilk test, along with a histogram (Figure 1), was used to assess the normality of score distribution for the two variables. Both indicated that the data for cultural openness (W = 0.96, p = .052) and empathy (W = 0.97, p = .209) were normally distributed.

Figure 1: Histogram of cultural openness and empathy



Regarding RQ2, descriptive statistics were calculated for cultural openness and empathy across the three subgroups (Table 4).

Table 4: Descriptive statistics across three groups

Variable	Group	Mean	SD	Median	Min	Max
	FT2023	4.72	0.81	5.00	3.20	5.80

Cultural openness	FT2025	4.78	0.65	4.80	3.20	5.80
	PT2025	5.02	0.60	4.90	4.20	5.90
Empathy	FT2023	4.17	0.69	4.23	2.91	5.18
	FT2025	4.26	0.70	4.36	2.73	5.91
	PT2025	4.70	0.79	4.82	2.73	5.45

While the mean values for both variables in groups FT2023 and FT2025 were similar, the highest values were measured in group PT2025. A One-Way ANOVA was employed to assess whether there were significant differences in cultural openness and empathy scores across the three groups. The results indicated that there were no significant differences in cultural openness ($F(2, 59) = 0.77$, $p = .469$) and empathy ($F(2, 59) = 2.38$, $p = .101$) across the three groups, as the p-values in both cases were higher than 0.05. However, nonsignificant p-values do not necessarily imply the absence of meaningful differences; therefore, effect sizes (η^2), Cohen's f, and post-hoc power analyses were computed. For cultural openness, $\eta^2 = 0.025$, Cohen's f = 0.161 (small effect), with post-hoc power = 0.48, indicated that the study was underpowered to reliably detect small differences. For empathy, $\eta^2 = 0.075$, Cohen's f = 0.284 (medium effect), with post-hoc power = 0.94, suggested that the ANOVA had sufficient power to detect medium-sized differences (Cohen, 2013).

For RQ3, descriptive statistics were computed, using both raw and standardized scores for cultural openness and empathy across genders (Table 5).

Table 5: Descriptive statistics across genders

		Females	**Males**
Cultural openness Raw scores	Mean	4.86	4.57
	Min	3.20	3.20
	Max	5.90	5.70
	SD	0.67	0.75
Empathy Raw scores	Mean	4.47	3.85
	Min	2.91	2.73
	Max	5.91	5.09
	SD	0.66	0.79
Cultural openness Standardized scores	Min	-2,477128348	-1,836443568
	Max	1,549826375	1,506596907
Empathy Standardized scores	Min	-2,358656874	-1,425327709
	Max	2,162102134	1,563262649

Descriptive statistics across genders indicate that females scored higher on both the cultural openness and empathy subscales. Normality was assessed using the Shapiro–Wilk test for both variables across genders. Results showed no significant deviations from normality for cultural openness (males: p = .71; females: p = .12) or empathy (males: p = .44; females: p = .53), supporting the assumption of normal distribution. An independent-samples t-test revealed a statistically significant difference in empathy between males and females: $t(20.83) = 2.74$, $p = .012$, with a 95% confidence interval ranging from 0.15 to 1.09. The standardized mean difference was large (Hedges' g = 0.88, 95% CI [0.27, 1.49]), which is a bias-corrected estimate of Cohen's d suitable for small or unequal sample sizes. Post hoc power analysis indicated that the t-test had sufficient power to detect an effect of this size ($1 - \beta = 0.83$). In the case of cultural openness, no statistically significant difference was detected between males and females:

t(21.84) = 1.33, *p* = .199, 95%. The standardized mean difference was small, Hedges' g = 0.41, 95% CI [–0.18, 1.00], indicating that the true effect could range from a slight male advantage to a large female advantage. Post hoc power analysis revealed that the study was underpowered to detect an effect of this size (1 – β = 0.28); therefore, a small true difference might not be reliably detected with the current sample.

Table 6: Correlation matrix

	Cultural openness	**Empathy**	**Awareness of racism**	**Resentment**	**Anxiety**
Cultural openness	-	0.45	0.39	-0.51	-0.33
Empathy	0.45	-	0.49	-0.39	-0.15

To answer RQ4, a Spearman correlation matrix (Table 6) was used to examine how cultural openness and empathy each correlated with the other four factors of the scale, since normality was violated for two variables (resentment: W= 0.94, p= 0.005; anxiety: W= 0.94, p= 0.004). A moderate positive correlation was found between cultural openness and both empathy (r = .45, p = 0.00026) and awareness of racism (r = .39, p = 0.0015). Cultural openness also showed a strong negative correlation with resentment (r = –.51, p = 0.000025) and a moderate negative correlation with anxiety (r = –.33, p = 0.0086). Similarly, empathy was moderately positively correlated with awareness of racism (r = .49, p = 0.000049) and moderately negatively correlated with resentment (r = –.39, p = 0.0015). A weak negative correlation was observed between empathy and anxiety (r = –.15, p = 0.2316). The p-values indicate that all correlations except between empathy and anxiety are statistically significant.

To address RQ5 and RQ6, several linear regression models were tested to identify the predictors of cultural openness and empathy, informed by the observed moderate and strong correlations. Following each analysis, the residuals were examined for normality, and Cook's distance was calculated to detect outliers. When the outliers (N=3-4) were removed from the data, no significant distortions were introduced, as their number remained below 10% of the sample (N = 62) and the normality of the residuals was confirmed. Therefore, the clean models were retained for presentation. Variance inflation factors and standardized beta coefficients were also calculated to identify the level of multicollinearity and compare the relative importance of different predictor variables in the two models. Given the small sample size, parsimonious models with only two predictors are presented in the study.

To examine the associations between cultural openness and other variables, a model including empathy and resentment as independent variables is presented (Table 7).

Table 7: Predictors of cultural openness: Model 1*

Predictor	**B**	**SE**	**T**	**p (significance)**
Intercept	4.63	0.56	8.33	< .001
Empathy (E)	0.31	0.10	3.21	.002
Resentment (RE)	- 0.49	0.10	-5.11	< .001

***Model statistics: R^2 = .54, Adjusted R^2 = .52, $F(2, 56) = 32.60$, $p < .001$
Residual standard error = 0.47 (df = 56)
Normality of residuals (Shapiro–Wilk test): p = 0.89

In Model 1, both empathy and resentment were statistically significant predictors, with resentment showing a stronger association with cultural openness. The two variables explain 52.1% of the variance in cultural openness scores. Model 1 was statistically significant and found to be a good fit. Variance Inflation Factors (VIF) were calculated for both empathy (VIF = 1.267) and resentment (VIF = 1.267), indicating low multicollinearity. This suggests that the regression coefficients are not distorted by overlapping predictors. Finally, standardized βs were also calculated to show the relative strength of the associations between cultural openness, empathy, and resentment (Table 8).

Table 8: Standardized β for empathy and resentment

Predictor	Estimate (B)	Std. Beta (β)	Std. Error	t	p
Intercept	4.6287	–	0.5555	8.333	< .001
Empathy	0.3109	0.3282	0.0969	3.210	0.0022
Resentment	-0.4877	-0.5223	0.0955	-5.109	0.000004

The p-values and standardized β values indicate that empathy is a significant and resentment is a highly significant predictor of cultural openness. In other words, higher empathy is associated with greater cultural openness, whereas higher resentment is associated with lower cultural openness, with resentment having the stronger effect.

To address RQ6, a parsimonious regression model including cultural openness and awareness of racism as independent variables was tested to examine their associations with empathy (Table 9). The normality of the residuals in the original Model 2 was observed, which is especially important in a small sample. However, after removing the outliers, the residuals in the cleaned model violated normality assumptions (p = 0.006); therefore, robust regression was applied on the cleaned data as supplementary information (Table 10).

Table 9: Predictors of empathy: Original Model 2*

Predictor	B	SE	T	p (significance)
Intercept	0.87	0.62	1.40	.168
Cultural Openness (CO)	0.31	0.12	2.61	.012
Awareness of Racism (RA)	0.41	0.11	3.69	< .001

*Model statistics: R^2 = .35, Adjusted R^2 = .33, F(2, 59) = 16.10, p < .001
Residual standard error = 0.60 (df = 59)
Normality of residuals (Shapiro–Wilk test): p = 0.22

Table 10: Predictors of empathy (Model 2): Robust regression*

Predictor	B	SE	T
Intercept	0.17	0.53	0.31
Cultural Openness	0.50	0.11	4.56
Awareness of Racism	0.36	0.10	3.55

*Model statistics: Residual standard error = 0.54 (df = 55)

In the original Model 2 (Table 9), explaining 33% of the variance in empathy scores, awareness of racism was a more significant predictor of empathy, while in the cleaned robust regression model (Table 10), cultural openness emerged as more significant. In the case of robust regression, no direct R^2 is available. R^2 on cleaned data was 0.48, explaining approximately 48% of the variance. Next, the variance inflation factor was calculated for cultural openness (VIF = 1.269) and awareness of racism (VIF = 1.269) using the original model, because VIF depends on correlations among predictors, not on the outcome or residuals. Low multicollinearity suggests that the regression coefficients are not distorted by overlapping predictors. Since robust regression models do not standardize scores, standardized scores were computed to calculate standardized betas (Table 11).

Table 11: Standardized β for cultural openness and awareness of racism

Predictor	Estimate (β)	Std. Error	t-value
Intercept	0.043	0.092	0.462
Cultural openness	0.479	0.105	4.561
Awareness of racism	0.373	0.105	3.550

*95% CIs for standardised beta coefficients

Results indicated that cultural openness was a significant positive predictor of empathy (β = 0.48, SE = 0.11, t = 4.56, 95% CI [0.27, 0.69]), and awareness of racism was also a significant positive predictor (β = 0.37, SE = 0.10, t = 3.55, 95% CI [0.17, 0.57]). The intercept was near zero (β = 0.04, SE = 0.09, t = 0.46). These results suggest that higher levels of cultural openness and awareness of racism are associated with higher empathy scores.

Discussion

English teacher trainees at UP exhibited higher levels of cultural openness than empathy. A cross-country comparison with a similar sample size indicated higher values for both variables among English teacher trainees in Hungary than among English teacher trainees in Spain (Fernández-Corbacho et al., 2024). This is a surprising finding given that Hungarian English teacher trainees study separately from international students in a different degree program and function in a predominantly monolingual and monocultural context. In contrast, students in the Spanish sample were more culturally diverse and functioned in a multicultural context in Spain outside the university. Therefore, the cultural context does not explain this difference. Hence, other factors might be responsible for the difference. The fact that all Hungarian participants had a measured C1 level of English proficiency, compared with the perceived English proficiency levels of Spanish students, which ranged from B1 to C2, may have had an impact. Higher proficiency in English may result in more frequent and more confident use of the language both in and outside the classroom, which may be responsible for higher empathy and openness scores, as explained by previous research (Dewaele & Stavans, 2014; Dewaele & Wei, 2012; Wang, 2023). However, the impact of English proficiency was not tested due to the homogeneity of the sample. Furthermore, Hungarian English teacher trainees' English studies or perhaps their online and offline interactions, activities, or hobbies may also play a role. However, these factors were not included in the research.

Regarding subgroup differences, although the ANOVA was underpowered to detect small changes, cultural openness and empathy scores were the highest in the PT2025 group. Being in-service teachers, the respondents in this group were significantly older than the students in the other two groups. Their increased life and teaching experience associated with their age may have slightly skewed the scores towards higher values in the combined Hungarian sample.

As for gender differences, the independent-samples t-test had sufficient power to confirm that female students exhibited significantly higher empathy than male participants, which is aligned with the findings of other studies (Fernández-Corbacho et al., 2024; Solhaug & Osler, 2018). While a Turkish study (Polat, 2018) found higher openness scores among male Turkish teacher trainees, the results of this study suggested that female English teacher trainees scored descriptively higher on cultural openness than males. However, this difference was not statistically significant, and the t-test was underpowered to detect small differences.

Spearman correlations indicated moderate positive relationships between cultural openness and both empathy and awareness of racism. Cultural openness also showed a strong negative correlation with resentment and a moderate negative correlation with anxiety. Empathy was moderately positively correlated with awareness of racism and moderately negatively correlated with resentment. A weak negative correlation was found between empathy and anxiety. These associations were also observed in Fekete's (2026) study involving non-teacher trainee English majors but with different strengths.

To identify the predictors of cultural openness (RQ5) and empathy (RQ6), several models were tested using linear regression analysis and drawing on the selected variables of the RSEE, but only two parsimonious models are presented for discussion. Model 1 included empathy and resentment as independent variables. Both were significantly associated with cultural openness, with low multicollinearity, and together explained 52% of the variance in cultural openness scores. Standardized beta coefficients indicate that the absence of resentment has a stronger impact on cultural openness than the presence of empathy in this Hungarian sample. In other words, higher levels of empathy and lower levels of resentment toward culturally diverse individuals were associated with greater openness toward cultural diversity.

To examine the associations between empathy and selected RSEE variables, a parsimonious model (Model 2) including cultural openness and awareness of racism as independent variables was tested. While the original Model 2 only explained 33% of the variance in empathy scores, after removing outliers and applying robust regression, the variance explained increased to approximately 48% with low multicollinearity. The standardized beta coefficients indicated that while awareness of racism is associated with empathy, the presence of cultural openness has a greater impact.

Both Model 1 and Model 2 explained approximately 50% of the variance in cultural openness and empathy scores, indicating a large effect size with negligible multicollinearity. The use of criterion sampling resulted in a homogeneous sample of Hungarian English teacher trainees with advanced (C1-level) English proficiency. As the study targeted a specific educational and linguistic group, it did not intend to produce results generalizable to other student populations or native English-speaking cohorts, which are already widely represented in the literature. In this Hungarian sample, the regression analyses revealed that cultural openness is linked to resentment and empathy, and empathy is associated with awareness of racism and cultural openness. These four variables were closely connected in the sample, both in correlations and in regression analyses, highlighting four key areas that could be addressed in teacher education to enhance teacher trainees' teacher competencies and encourage them to foster inclusive education in their future practice. These results are in line with the findings of pre-post-test studies measuring the impact of educational interventions (Fekete, 2022; Fernández-Corbacho et al., 2024) that tackle issues such as discrimination, racism, cultural preconceptions, and stereotypes (awareness of racism and resentment), learning about the difficulties of culturally diverse individuals (empathy), and learning about, or engaging in interactions with people from different cultural or ethnic backgrounds (cultural openness).

Conclusions

The regression analyses revealed that cultural openness and empathy are closely linked. Additionally, increased awareness of racism and decreased resentment contribute to higher openness and empathy

toward diversity. Openness to diversity can be viewed as a multicultural attitude and empathy as a dispositional trait or a component of EQ, both of which, according to the growth mindset (Dweck, 2006), may be developed through conscious effort. Therefore, educational programs and interventions may play a crucial role in fostering these propensities. Programs that raise awareness of contemporary racism and social inequities can enhance both cognitive and affective empathy, as well as openness to cultural diversity.

Implementing such interventions in tertiary education may strengthen teacher trainees' cultural openness and empathy, enabling them to cultivate these values in their future classrooms. Creating inclusive, safe, and non-judgmental learning environments that respect diverse psychological, learning, and cultural needs is fundamental to promoting social inclusivity. Therefore, context-appropriate educational programs should be designed and implemented to effectively promote openness and empathy toward cultural diversity within the local context. The discussion of the regression analyses can offer insights into topics and practices that can promote English teacher trainees' cultural openness, empathy, and beliefs about multiculturalism. These factors are integral to both teacher competencies and inclusive education.

Limitations and future directions

One limitation of this study is the small sample size. Consequently, larger-scale research is needed to better understand why English teacher trainees exhibited higher cultural openness and empathy despite their monolingual and monocultural context, compared with future language teachers in a culturally diverse Spanish setting. Moreover, a larger sample could help to confirm the relationship between FL proficiency levels and both cultural openness and empathy. While greater age and increased life, professional, and sojourn experience may be associated with higher cultural openness and empathy among language teachers, this finding may not be generalizable to other teaching contexts or broader populations; thus, further investigation is warranted. Additionally, a larger sample might clarify the role of anxiety, considering that this subscale showed low reliability in this sample. Since the two regression models explained approximately 50% of the variance in the key variables, future research should also consider including other potential factors, such as measured proficiency in multiple languages, family/cultural backgrounds, real-life and online social interactions, sojourn experiences, hobbies, leisure activities, and the impact of university studies.

Furthermore, the homogeneity of the sample limits the generalizability of the results. Future research directions might include larger and more diverse samples and the use of structural equation modelling to test reciprocal effects. Finally, the exclusive reliance on self-reports only provides cross-sectional results that preclude strong causal inference; therefore, the inclusion of behavioural or observational measures of intercultural competence could provide a more holistic picture.

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Appendix

Items included the two subscales of the RSEE examined in the study.

Cultural openness

1. I think it is important to be educated about cultures and countries other than my own.
2. I welcome the possibility that getting to know another culture might have a deep positive influence on me.
3. I admire the beauty in other cultures.
4. I would like to work in an organization where I get to work with individuals from diverse backgrounds.
5. I would like to have dinner at someone's house who is from a different culture.
6. I am interested in participating in various cultural activities on campus.
7. Most people in my country would be better off if they knew more about the cultures of other countries.
8. A truly good education requires knowing how to communicate with someone from another culture.
9. I welcome being strongly influenced by my contact with people from other cultures.
10. I believe my country is enhanced by other cultures.

Empathy

1. It is easy for me to understand what it would feel like to be a person of another racial or ethnic background other than my own.
2. It is difficult for me to put myself in the shoes of someone who is racially and/or ethnically different from me.
3. I get disturbed when other people experience misfortunes due to their racial or ethnic background.
4. It is difficult for me to relate to stories in which people talk about racial or ethnic discrimination they experience in their day to day lives.
5. I am touched by movies or books about discrimination issues faced by racial or ethnic groups other than my own.
6. I can relate to the frustration that some people feel about having fewer opportunities due to their racial or ethnic backgrounds.
7. I share the anger of people who are victims of hate crimes (e.g. intentional violence because of race or ethnicity).
8. I rarely think about the impact of a racist or ethnic joke on the feelings of people who are targeted.
9. When I hear people make racist jokes, I tell them I am offended even though they are not referring to my racial or ethnic group.
10. When I see people who come from a different racial or ethnic background succeed in the public arena, I share their pride.
11. When I know my friends are treated unfairly because of their racial or ethnic backgrounds, I speak up for them.

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