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Intercultural competence among international students: A mixed-method study in Hungarian higher education

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ABSTRACT

While international student enrollment in English-medium programs continues to grow, students often struggle to adapt to unfamiliar academic and social environments. Using a mixed-method design informed by Deardorff's (2006) process model of IC and Kim's (2001) cross-cultural adaptation theory, this study aimed to explore how international students in Hungarian higher education perceive IC, manage cross-cultural adaptation, and evaluate institutional support. Survey and interview data were collected from 95 international students across several Hungarian universities. The findings revealed generally positive perceptions of IC and relatively high levels of competence, in addition to evidence of cultural sensitivity and personal growth. Adaptation was moderately high despite academic and social challenges and influenced by cultural proximity and English proficiency, with higher IC associated with better adjustment. Institutional support was valued but perceived as insufficient, highlighting the need for more systematic support in Hungary and similar higher education contexts.

Keywords: cross-cultural adaptation; Hungarian higher education; intercultural competence; international students; mixed methods
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INTRODUCTION

Study in a foreign country has become an increasingly prominent feature of global higher education. UNESCO (2025) reported that approximately 7 million higher education students are currently studying outside their home countries—up from approximately 2 million in 2000. Aspirations to pursue degrees

abroad are often explained through a push–pull framework that is shaped by conditions at home and perceived advantages in the host setting (Mazzarol & Soutar, 2002; Yerken & Nguyen Luu, 2022). These drivers are further amplified by the expansion of English–medium programs and online/hybrid study modes, which have opened cross-border pathways into a wider range of higher education systems (Altbach & Knight, 2007; Németh et al., 2025). Consequently, institutions face constant pressure not only to attract international students but also to develop graduates who can operate effectively across culturally diverse contexts (Brown et al., 2010).

Within this broader landscape, Hungary has emerged as a growing destination. The Tempus Public Foundation (2023) reported 41,947 international student enrollments at Hungarian universities in 2022, up from 36,090 in 2019/2020 (Yerken & Nguyen Luu, 2022), with Stipendium Hungaricum scholarship applications rising sharply to 80,000 for the 2024/2025 cohort (Tempus Public Foundation, 2025). This growth is linked to nationwide internationalization policies and Hungary's perceived position as a regional mediator between Western world (Western Europe and North America) and the countries of the Middle East and Asia (Németh et al., 2025; Pusztai et al., 2016). Against this background, examining intercultural competence (IC), which is considered an essential internationalization outcome and attribute of university graduates (Deardorff, 2006), along with international students' adjustment challenges in Hungary is both timely and policy relevant.

Deardorff (2004, p. 194) defines IC as "the ability to communicate effectively and appropriately in intercultural situations on the basis of one's intercultural knowledge, skills and attitudes." To foster IC, she proposed a process model comprising attitudes, knowledge, and skills, whose interplay shapes individuals' internal and external outcomes in intercultural settings (Bartel-Radic & Cucchi, 2025). Deardorff's (2006) model is useful in education settings because it identifies a clear, measurable set of attitudes and skills and captures the socialization process effectively (Sercu, 2023). With respect to cross-cultural adaptation, Kim (2001, p. 31) defines it as "the entirety of the phenomenon of individuals who, upon relocating to an unfamiliar sociocultural environment, strive to establish and maintain a relatively stable, reciprocal, and functional relationship with the environment." Kim's theory explains adaptation as a dynamic, cyclical stress–adaptation–growth process and accounts for why some individuals adapt more successfully than others do (Fanari & Kim, 2025; Kim & Kim, 2016).

While Deardorff's (2006) model specifies the key dimensions and outcomes of IC, Kim's (2001) framework explains how stress, coping, and environmental conditions affect adaptation trajectories over time. Both frameworks emphasize that IC and adaptation rely on sustained, meaningful contact that may lead to identify change. Importantly, both frameworks also treat these processes as nonlinear and dependent on individual-level variables, such as language resources and personal openness, as well as macrolevel environmental conditions, including institutional support and social networks. Using a mixed-method design, the present study integrates both frameworks to provide a more comprehensive picture of how IC and adaptation interact within a specific national higher education context. Drawing on both models, this study addresses the following research questions:

1. How do international students in Hungary perceive and experience intercultural competence during their studies?
2. What challenges and strategies do they report in adapting to the Hungarian academic and cultural environment?
3. To what extent do international students feel supported by their universities in developing intercultural competence?
4. What roles do English proficiency, prior cultural exposure, and social networks play in shaping intercultural experiences?

LITERATURE REVIEW

International Students' IC and Perceptions

Empirical findings across educational contexts suggest that learners generally hold positive perceptions of IC and tend to self-report relatively favorable levels of competence; however, how students conceptualize IC appears to be shaped by context and the nature of intercultural experience. Examining international students in German higher education, Odağ et al. (2016) reported that participants defined IC in relation to interaction, communication, and maintaining social harmony. In the Hungarian context, Marek et al. (2020) examined clinical IC among Hungarian medical students and reported no relationship between the knowledge dimension and other dimensions of IC. Nevertheless, higher IC was positively associated with higher English language proficiency and longer residence abroad, whereas structural constraints and student overload were identified as obstacles to developing IC.

Several scholars caution against interpreting positive perceptions or mobility experiences as evidence of inevitable IC development. Schartner (2016), using a longitudinal mixed-method design with international students at a British university, reported that multicultural exposure alone did not produce the expected gains in IC. Lantz-Deaton (2017) similarly reported limited developmental movement for most students, attributing this to time constraints and stress. Zhao et al. (2023) further argue that studying abroad and internationalized curricula do not necessarily improve IC. These cautions are significant: while high self-assessed IC might reflect genuine attitudinal readiness, it may not capture the full complexity of intercultural skill and knowledge development, especially under conditions of limited direct intercultural contact or insufficient institutional support. Taken together, these findings demonstrate that intercultural competence should not be assumed to be an automatic byproduct of student mobility.

Factors affecting IC

Research consistently identifies factors that correlate with higher IC levels. One of those factors is language proficiency, particularly English proficiency. Marek et al. (2020) reported a positive association between English proficiency and IC in Hungary, whereas Sarwari and Abdul Wahab (2017) reported that intercultural sensitivity is positively related to IC among international postgraduates in Malaysia. In a study of Chinese international students in the UK, J. Lu et al. (2025) reported that direct intercultural contact was strongly related to communication skills, whereas indirect contact contributed more to knowledge and attitudes, suggesting that the quality of contact matters more than the frequency alone. Similarly, Bultseva and Lebedeva (2021) reported positive correlations between intercultural experience, creativity, and IC in the context of Russian higher education. Addressing the lack of intercultural engagement in the context of higher education, Rubio-Alcalá et al. (2026) conducted a systematic literature review and reported that the most effective initiatives integrate language with social interaction, link academic content to everyday life, and offer structured yet flexible opportunities for two-way contact. At a pedagogical level, de Hei et al. (2020) found that collaborative learning aligned with perceptions of IC development when it was meaningful and process oriented, whereas Bartel-Radic and Cucchi (2025) reported that traits such as empathy, attributional complexity, and metacognition positively affected IC development during mobility and that challenges could contribute to growth when students managed negative emotions effectively. These findings collectively indicate that IC development is shaped by multiple interacting factors—such as linguistic, relational, individual, and pedagogical factors—rather than any single predictor and that structured opportunities for direct intercultural engagement may be necessary to aid the incidental learning that multicultural settings offer.

International Students' Cross-Cultural Adaptation

Like IC, empirical studies consistently demonstrate that cross-cultural adaptation is shaped by language proficiency, interpersonal interaction, length of stay, and cultural distance (Hou & Abu, 2024; Kim & Kim, 2016). There is also empirical evidence that sociocultural and psychological dimensions of adaptation are closely interrelated: W. Lu et al. (2024) report that social and cultural adjustment predict aspects of psychological well-being, and Sheng et al. (2022) report that academic adaptation can significantly predict psychological adaptation. Furthermore, Usman et al. (2026) reported that social and emotional adjustment to university was a significant predictor of academic performance among international students in Australia. Within Hungary specifically, Yerken and Nguyen Luu (2022) reported that students from post-Soviet countries viewed Hungary as contextually familiar but reported isolation related to the limited use of English on campus. Yerken et al. (2022) also reported sociocultural difficulties across domains, including affiliative relations, bureaucracy, and power relations, which were associated with perceived stress and lower life satisfaction. Németh et al. (2025) similarly reported on academic pressure, cultural differences, and social isolation, along with limited interaction with Hungarian students outside the classroom. Qualitative evidence has shown that the inability to speak Hungarian affects healthcare navigation and institutional inclusion, while stronger ties with fellow international students develop because of shared adaptation challenges (Pabingwit, 2025). Gebregergis and Csukonyi (2025b) reported that sociocultural adaptation significantly predicted psychological adaptation and that students with more Hungarian friends had better well-being, whereas age and prior travel experience also predicted better psychological outcomes. Overall, this body of evidence consistently implies that constrained host–national contact, cultural proximity, and language-related barriers are recurring challenges among international students in Hungary while also highlighting the protective role of social ties and institutional factors.

IC and Cross-Cultural Adaptation

Both Deardorff's (2006) model and Kim's (2001) theory emphasize process and change through meaning contacts, indicating that IC development and cross-cultural adaptation are intertwined rather than separate outcomes. Lin (2025) reported that cross-cultural adaptation significantly predicted global competence (another arguable term for IC), with social and psychological dimensions showing particularly strong effects. In Hungary, Gebregergis and Csukonyi (2025a) reported that intercultural sensitivity predicted sociocultural adaptation and reduced intergroup anxiety. Nevertheless, relationships between adaptation-related predictors and outcomes are not always consistent across contexts (Yerken et al., 2022). In light of these empirical and theoretical insights, a more integrative approach that accounts for IC perceptions, adaptation challenges, and views of institutional support simultaneously among international students is needed. Accordingly, this study seeks to extend the existing evidence base by providing additional empirical insights into these interrelated processes within the Hungarian higher education context.

RESEARCH METHOD

Participants and Context

The participants were international students enrolled in degree programs at various Hungarian universities and were recruited through convenience and snowball sampling. In the quantitative phase, 95 international students completed the survey (52 males, 54.7%; 43 females, 45.3%; mean age = 29 years, *SD* = 6.79). The participants were primarily from Asia (*n* = 76, 80.0%), Africa (*n* = 14, 14.7%), South America (*n* = 4,

4.2%), and North America (n = 1, 1.1%). Most were PhD students (n = 61, 64.2%), followed by MA students (n = 19, 20.0%) and BA students (n = 15, 15.8%). Institutional affiliations were mainly the University of Szeged (n = 29), Eötvös Loránd University (n = 24), the University of Debrecen (n = 22), and the Budapest University of Technology and Economics (BME; n = 14), with the remaining participants (n = 6) from other Hungarian universities.

Most participants reported excellent (n = 49, 51.6%) or good (n = 39, 41.1%) English skills (M = 4.43, SD = 0.66 on a 1–5 scale). With respect to length of stay, 44 had lived in Hungary for more than two years, 22 for 1–2 years, 25 for less than six months, and 4 for 6–12 months. Most were scholarship funded (n = 67, 70.5%). With respect to social connections, 27 participants reported having no or almost no Hungarian friends, and most indicated that more than one-third of their friends were other international students.

At the end of the survey, the respondents were invited to participate in semi structured interviews. Fifteen participants ultimately participated (10 males and 5 females; mean age approximately 31 years, SD = 4.70). Additionally, 10 participants were PhD program students, while 5 were MA program students. Five of the interviewees were affiliated with the University of Szeged, followed by 4 from the University of Debrecen, 3 from the Budapest University of Technology and Economics, 2 from the Eötvös Loránd University, and 1 from the University of Pécs.

Instruments

This study employed a cross-sectional design and used an online questionnaire and semi structured interviews. The questionnaire comprises five sections: informed consent, demographic information, IC (32 items), cross-cultural adaptation (22 items), and perceived institutional support (6 items). IC items were adapted from Zhao et al. (2023) and based on Deardorff's (2006) model, while adaptation items were adapted from Demes and Geeraert (2014) and Gebregergis and Csukonyi (2025b). All the items used a five-point Likert scale (1 = Absolutely not true to 5 = Absolutely true). The instrument was reviewed by the second author, who is an expert in applied linguistics with more than 20 years of experience in Hungarian higher education, and piloted with 24 postgraduate students at the University of Szeged. The overall internal consistency was acceptable (Cronbach's α = .855; IC: α = .875; adaptation: α = .819; institutional support: α = .887).

The semi structured interviews used a protocol reviewed by an expert in the field of applied linguistics and piloted before the main data collection. The interviews were conducted primarily online via Zoom or face-to-face when preferred by the respondent, in English (with Arabic and Kurdish used when preferred, translated and verified by participants), and lasted approximately 40 minutes (range: 33–48 minutes).

Data collection and analysis

Participants accessed the anonymous survey link shared via social media groups and university online communities in late November 2025. The first page presented an informed consent statement describing the study's purpose, the voluntary nature of participation, and the participants' right to withdraw at any time without penalty; participants confirmed consent before proceeding. No identifying information (e.g., names, email addresses, IP addresses, etc.) was collected, and responses were stored in anonymized form on a password-protected server accessible only to the researchers of the study. The completion time ranged from 7 to 18 minutes (M = 13.15). Quantitative data were analyzed using IBM SPSS Statistics (version 27), descriptive statistics, Pearson correlations, one-way ANOVA (with Welch's test and Games–Howell post hoc comparisons where variances were unequal), ANCOVA, and hierarchical multiple regression. The interviews were recorded, transcribed, and thematically analyzed using MAXQDA

(Version 24), following Braun and Clarke's (2022) framework of familiarization, coding, and iterative theme development.

RESULTS

Quantitative Findings

Descriptive statistics revealed high overall IC (M = 3.96, SD = 0.45). Attitudes had the highest mean (M = 4.22, SD = 0.62), followed by knowledge (M = 3.99, SD = 0.53), desired internal outcomes (M = 3.97, SD = 0.66), desired external outcomes (M = 3.93, SD = 0.74), and skills (M = 3.74, SD = 0.52). The descriptive statistics are presented in Table 1.

Table 1

Descriptive Statistics for Intercultural Competence and Its Dimensions

Variable	*M*	*SD*
IC attitudes	4.22	0.62
IC knowledge	3.99	0.53
IC skills	3.74	0.52
IC desired internal outcomes	3.97	0.66
IC desired external outcomes	3.93	0.74
IC total	3.96	0.45

Note. N = 95. IC = intercultural competence. Items were rated on a 5-point scale (1–5).

One-way ANOVA revealed no statistically significant differences in overall IC across length-of-stay groups, $F(3, 91) = 1.51$, $p = .218$. An ANCOVA controlling for English proficiency confirmed that length of stay was not a significant predictor of IC, $F(3, 90) = 1.01$, $p = .392$, partial $\eta^2 = .033$, whereas English proficiency was a strong and significant covariate, $F(1, 90) = 64.21$, $p < .001$, partial $\eta^2 = .416$.

With respect to cross-cultural adaptation, growth had the highest mean (M = 3.99, SD = 0.80), followed by coping (M = 3.51, SD = 0.83), while stress had the lowest mean (M = 2.74, SD = 0.70). However, reliability was acceptable for coping ($\alpha = .818$) and growth ($\alpha = .843$) but lower for stress ($\alpha = .556$).

Group comparisons by length of stay revealed no significant differences for coping, $F(3, 91) = 1.00$, $p = .399$, $\eta^2 = .03$, or growth, $F(3, 91) = 0.85$, $p = .469$, $\eta^2 = .03$, in the standard ANOVA. The stress approached but did not reach significance, $F(3, 91) = 2.49$, $p = .065$, $\eta^2 = .08$; however, Levene's test indicated unequal variances, and Welch's test was significant, $F(3, 37.48) = 20.70$, $p < .001$. Games–Howell post hoc comparisons revealed that compared with those who had lived for less than 6 months (mean difference = 0.65, $p < .001$) or more than 2 years (mean difference = 0.75, $p < .001$), the 6–12-month group reported significantly greater stress. Welch's test was also significant for coping, $F(3, 19.79) = 5.09$, $p = .009$, with the 6–12-month group reporting higher levels of coping than those who had lived for more than 2 years did (mean difference = 0.71, $p = .021$). Table 2 presents the adaptations by length of stay. Nevertheless, these results should be interpreted with caution, as the significant differences are driven largely by the 6–12-month subgroup, which was very small (n = 4) and unusually homogeneous (SD = 0.10 for stress and 0.29 for coping) relative to the other groups (e.g., n = 44, SD = 0.77 for stress among those who had lived for more than two years); the stress subscale also showed relatively low reliability ($\alpha = .556$).

Table 2

Cross-Cultural Adaptation by Length of Stay in Hungary

Variable	<6 mo (n = 25)		6–12 mo (n = 4)		1–2 yr (n = 22)		>2 yr (n = 44)		One-way ANOVA			Welch's ANOVA		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	$F(3, 91)$	p	η^2	F	df_2	p
Stress	2.70	0.44	3.35	0.10	2.96	0.78	2.60	0.77	2.49	.065	.08	20.70	37.48	< .001
Coping	3.59	0.80	4.14	0.29	3.46	1.06	3.44	0.75	1.00	.399	.03	5.09	19.79	.009
Growth	3.86	0.73	3.79	0.14	3.90	1.00	4.13	0.77	0.85	.469	.03	2.06	34.20	.124

Note. N = 95. mo = months; yr = years. Welch's F tests are reported with $df_1 = 3$, and the adjusted denominator degrees of freedom (df_2) are shown. Games–Howell post hoc comparisons were used where Levene's test indicated unequal variances.

Pearson correlation analysis revealed that IC was positively and significantly associated with growth (r = .624, p < .001) and coping (r = .421, p < .001). Its relationships with stress (r = −.195, p = .058) and institutional support (r = .197, p = .055) were not statistically significant. Growth was significantly related to coping (r = .608, p < .001) and support (r = .470, p < .001), and coping was also positively related to support (r = .369, p < .001).

A hierarchical multiple regression predicting IC was statistically significant, $F(5, 89) = 17.73$, p < .001, explaining 49.9% of the variance (adjusted R^2 = .471). English proficiency explained 42.5% of the variance at Step 1 and remained the strongest positive predictor throughout. Adding the number of international friends at Step 4 significantly increased the explained variance (ΔR^2 = .050, p = .004). In the final model, English proficiency (β = .604, p < .001) and number of international friends (β = .231, p = .003) were significant positive predictors; prior experience abroad, number of Hungarian friends, and institutional support were not significant. Table 3 presents the full regression results.

Table 3

Hierarchical Multiple Regression of Intercultural Competence on Predictor Variables

Step	Predictor(s) entered	R^2	ΔR^2	ΔF	p	Significant predictor(s)
1	English proficiency	.425	.425	68.82	< .001	English proficiency
2	+ Previous experience abroad	.425	.000	0.01	.924	English proficiency
3	+ No. of Hungarian friends	.441	.015	2.50	.117	English proficiency
4	+ No. of international friends	.490	.050	8.76	.004	English proficiency; no. of Hungarian friends; no. of international friends
5	+ Institutional support	.499	.009	1.54	.218	English proficiency; no. of international friends

Note. N = 95. Final model: $F(5, 89) = 17.73$, p < .001, adjusted R^2 = .471. The VIF values ranged from 1.02 to 1.12. VIF = variance inflation factor.

A second hierarchical regression predicting growth in adaptation explained 36.9% of the variance (adjusted R^2 = .334), $F(5, 89) = 10.42$, p < .001. English proficiency was significant at Step 1 (ΔR^2 = .119, p = .001), the number of Hungarian friends contributed significantly at Step 3 (ΔR^2 = .069, p = .006), the number of international friends at Step 4 (ΔR^2 = .036, p = .043), and institutional support made the greatest additional contribution at Step 5 (ΔR^2 = .138, p < .001). In the final model, English proficiency (β = .254, p = .004), number of international friends (β = .210, p = .016), and institutional support (β = .394, p < .001) were significant. Table 4 presents the hierarchical multiple regression results for predicting growth in cross-cultural adaptation.

Table 4
Hierarchical Multiple Regression Predicts Growth in Adaptation

Step	Predictor(s) entered	R^2	ΔR^2	ΔF	p	Significant predictor(s)
1	English proficiency	.119	.119	12.54	.001	English proficiency
2	+ Previous experience abroad	.126	.007	0.73	.395	English proficiency
3	+ No. of Hungarian friends	.195	.069	7.83	.006	English proficiency; no. of Hungarian friends
4	+ No. of international friends	.231	.036	4.21	.043	English proficiency; no. of Hungarian friends; no. of international friends
5	+ Institutional support	.369	.138	19.50	< .001	English proficiency; no. of international friends; institutional support

Note. $N = 95$. Final model: $F(5, 89) = 10.42$, $p < .001$, adjusted $R^2 = .334$.

Qualitative Findings

Following Braun and Clarke's (2022) thematic analysis protocols, five interrelated themes emerged from the semi structured interviews. These themes shed light on how these international students in Hungary perceive and experience IC, belonging, cross-cultural adaptation, and institutional support.

Theme 1. Facing a Hungarian-dominant language ecology through communicative mediation

Participants' initial and ongoing encounters were marked by an unexpected Hungarian-dominant linguistic environment, which led to communicative disorientation, particularly in public and administrative settings. Participant 5 vividly described the experience: "Before coming here, I was thinking that most people could understand English, but when I arrived here for the very first time, I saw no English signs! Everything was written in Hungarian, and I didn't even know what they said. I felt like…I was like an alien on another planet." To navigate this, participants relied on mobile translation applications (primarily Google Translate), gestures, and collaborative meaning-making. Participant 1 noted, "I just showed my phone to them," whereas Participant 2 observed that even when people "don't know English, they are very helpful." Language nonetheless remained a structural barrier, particularly in informal social contexts where digital mediation was not always practical (Participant 15).

Theme 2. Intercultural competence as relational work and interactional risk management

Participants consistently understood IC as fundamentally relational, emphasizing empathy, openness, and sensitivity over grammatical accuracy. Participant 10 noted that "successful communication is more about empathy and knowing other cultures' communication norms" than about grammar. This relational orientation was closely accompanied by caution: Participant 7 described being "cautious about the topics" discussed and attentive to potential offences, and Participant 14 recounted how well-intentioned communication shaped by personal values was interpreted unfavorably: "They thought that…We were judging." Participants studying the humanities reported being explicitly or implicitly taught about the significance of IC, while those in natural sciences (Participants 3, 4, 9, 15) noted that awareness developed primarily through practical encounters. Despite these differences, all the participants held positive attitudes toward IC.

Theme 3. Belonging through selective networks, place, and vulnerability

Belonging emerged as a selective and context-dependent rather than an automatic result of mobility. Social integration is heavily influenced by cultural proximity and emotional vulnerability. Participant 3 noted that communication felt "way easier" with people from linguistically or culturally similar backgrounds. Participant 9 described a fear of rejection: "Here, I'm afraid to start, because I'm afraid of rejection," and Participant 11 noted that early stress "affected my mental health." Over time, several participants became more selective: Participant 8 reflected, "At first, I was truly open to sharing…but as I went through the years, I realized that I was less open…. just to be...selective." The urban context also shaped opportunities; Participant 6 described arriving in Szeged and being struck by its quiet public spaces, limiting spontaneous social interaction.

Theme 4. Academic socialization into autonomy and pragmatic power relations

Several participants reported a mismatch between their prior educational experiences and Hungarian academic expectations of autonomy and self-direction. Participant 12 noted that lecturers "perceive us as autonomous learners who can do everything," in contrast to more directive models encountered previously. Participant 1 described critical assessment as "very different" and time-consuming to adjust to. Doctoral students, in particular, had to adopt new norms of independent reading and self-directed scholarship (Participant 13). Power relations were also visible in supervision interactions: Participant 2 described being corrected for overusing "sorry"—a culturally grounded politeness marker—by a supervisor who interpreted it as excessive apology. Despite these challenges, some participants, particularly those with experience studying outside their countries, adjusted relatively quickly (Participant 4: "I adapted very well…in one week I was able to understand the system").

Theme 5. Institutional support as fit, continuity, and accessibility

The participants evaluated institutional support not by its existence but by its relevance, continuity, and practical accessibility. Postgraduate students felt particularly underserved: Participant 9 noted, "there's not much support" for students at that level and described missing orientation due to a late arrival; as a result, he had significant difficulty understanding the system at first. Participant 3 acknowledged that social events existed but were "only for those students who are outgoing." Material conditions also mattered: Participant 15 cited inadequate dormitories and fewer professional opportunities in smaller cities. Competing priorities—academic, financial, and familial—further limit engagement with available support. These accounts collectively indicate that support was experienced as insufficient, particularly for longer-term and postgraduate students whose needs extended beyond their initial orientation.

DISCUSSION

The primary aim of this study was to examine how international students in Hungarian higher education perceive and experience IC, cross-cultural adaptation, and institutional support. Drawing on Deardorff's (2006) model and Kim's (2001) cross-cultural adaptation theory, the discussion integrates quantitative and qualitative findings with the four research questions. However, as this study employed a cross-sectional design, any developmental or temporal language used below (e.g., references to "stages" or "phases") reflects an interpretation consistent with Deardorff's (2006) and Kim's (2001) models rather than observed within-person change over time among the participants of the present study; confirming these patterns would require longitudinal data.

RQ1: Perceptions and Experiences of IC

The participants reported relatively high overall IC (M = 3.96, SD = 0.45), with attitudes having the highest mean score among the dimensions. Within Deardorff's (2006) process model, this pattern is theoretically significant since attitudes constitute the foundational dimension upon which knowledge and skill are built. The relatively lower scores for skills and knowledge may be consistent with participants being at an early or intermediate stage of IC development, where positive dispositions have not yet fully translated into the behavioral and cognitive competencies required for more advanced intercultural engagement. However, given the cross-sectional design of the study, this reflects a plausible interpretation of the data rather than an observed developmental trajectory. This gap between attitudinal readiness and demonstrated skill is a pattern noted in broader IC research and may be partly explained by the limited opportunities for structured intercultural skill development that many international students encounter, particularly in technically oriented degree programs where social interaction is constrained by the nature of the work (e.g., laboratory-based disciplines). The qualitative findings support this finding: participants consistently conceptualized IC as relational and interactional, emphasizing empathy and sensitivity rather than formal cultural knowledge. Notably, participants in the humanities reported being explicitly taught about the significance of IC communication, whereas those in the natural sciences described developing awareness primarily through practical intercultural encounters—a disciplinary divergence that suggests the need for IC development opportunities that are integrated into diverse program types rather than concentrated within social sciences and humanities curricula.

These findings align with Odağ et al.'s (2016) observation that students tend to define IC in relational and socially harmonizing terms, while also qualifying the arguments of Schartner (2016) and Lantz-Deaton (2017), who suggest that mobility does not automatically develop IC. Rather, the present findings indicate that IC can develop through intercultural encounters, although the degree of development varies by discipline and the nature of engagement.

RQ2: Adaptation challenges and strategies

The quantitative findings indicate that adaptation was characterized more strongly by growth and coping than by stress. Growth had the highest score, which suggests that students generally experienced adaptation as developmental. Nevertheless, the 6–12-month group showed the greatest stress, a cross-sectional, between-group difference that is consistent with—although it cannot directly confirm—the possibility that the early-middle phase is practically demanding before academic and social pressures stabilize. This pattern may reflect what Kim (2001) describes as the "drawback" phase of adaptation, in which initial enthusiasm gives way to more persistent and visible difficulties as the novelty of a new environment fades out. Given the very small size of this group and the lower reliability of the stress scale, this should be interpreted cautiously. Qualitatively, adaptation was shaped by a cluster of challenges: the Hungarian dominant language ecology, selective social belonging shaped by cultural proximity and emotional vulnerability, and academic socialization into new norms of autonomy and pragmatic interaction.

These results are broadly consistent with those of Yerken and Nguyen Luu (2022), Yerken et al. (2022), Pabingwit (2025), Németh et al. (2025), and Usman et al. (2026), who similarly report language barriers and limited host–national interactions as key challenges. The present study adds a process-oriented perspective by documenting how students actively manage these difficulties through mediation, selectivity, and gradual socialization, which aligns well with Kim's (2001) stress–adaptation–growth framework.

RQ3: Institutional Support

Institutional support played a more significant role in adaptation than in perceptions of IC. Although its association with IC was positive but not statistically significant, institutional support was

significantly related to both coping and growth and emerged as the strongest additional predictor of growth in the hierarchical regression. This pattern indicates that support does not directly shape perceptions of IC but creates enabling conditions for positive adaptation. Qualitatively, the participants did not evaluate support in terms of availability alone; they assessed it in terms of relevance, continuity, and practical accessibility. Postgraduate students felt least well served, particularly when orientation activities were limited to the initial arrival period or when events were designed primarily for socially confident students.

These findings reflect those of Marek et al. (2020), who identified structural constraints and student overload as barriers to IC development in Hungary, and de Hei et al. (2020), who argued that intercultural learning is more likely when conditions are process oriented rather than superficial. Furthermore, these results are also consistent with Hungarian studies showing that students often experience uneven inclusion and that adaptation is shaped by factors beyond formal policy or institutional intent (Németh et al., 2025; Yerken et al., 2022).

RQ4: Role of English Proficiency, Prior Exposure, and Social Networks

English proficiency emerged as the strongest predictor of overall IC ($\beta = .604$) and significantly predicted growth in adaptation, which is consistent with the findings of Marek et al. (2020) in Hungary. In contrast, prior experience living abroad did not significantly contribute to either model, and length of stay was not associated with differences in IC once English proficiency was controlled for. These findings suggest that mere exposure over time matters less than the quality of the linguistic and social resources available in the current environment. Social networks also played a differentiated role: the number of international friends significantly predicted both IC and growth, whereas the number of Hungarian friends was less stable. Qualitative accounts help explain this: students reported finding accessible and interpretively safe interactions more readily with culturally proximate peers or other international students than with host nationals, particularly given the limited shared culture. This finding supports J. Lu et al.'s (2025) argument that the quality and type of intercultural contact may matter more than its frequency or whether it involves host nationals exclusively. The nonsignificant effect of prior experience abroad is consistent with the findings of Schartner (2016), Lantz-Deaton (2017), and Zhao et al. (2023), who report that intercultural development does not emerge automatically as a result of mobility history.

Taken together, the mixed-method design of this study allowed for a more integrated understanding of IC and adaptation than either strand alone could provide. The quantitative data revealed which variables, notably English proficiency, social networks, and institutional support, are statistically associated with better IC and adaptation outcomes. The qualitative data, in turn, explained how and why these associations operate in practice: English functions as an enabling condition for participation and relationship-building; international social networks offer an accessible and emotionally safe context for intercultural interaction; and institutional support matters to the extent that it remains relevant, consistent, and responsive to students' actual circumstances. This integration reveals that IC and adaptation are not simply a function of individual characteristics or structural conditions alone but emerge from the integration of linguistic resources, social affordances, and institutional settings. The findings thus support the call for more contextualized, multilevel approaches to understanding and supporting international student development (Deardorff & Arasaratnam-Smith, 2017; Németh et al., 2025).

Nevertheless, the findings are not without limitations. The sample was relatively small, particularly for subgroup analyses by university and length of stay. As noted above, these results should be interpreted cautiously given the very small size of the 6–12-month subgroup. Moreover, while the quantitative results revealed no significant relationship between length of stay and IC, the qualitative data suggest that longer-staying students developed more deliberate strategies and greater recognition of the significance of IC. This divergence is better understood as complementary rather than contradictory: the qualitative interviews were able to reveal gradual and implicit forms of intercultural learning—such as increasingly deliberate strategy use—that a cross-sectional self-report scale is inherently limited in detection. This complementary pattern

might also suggest the need for longitudinal studies to better capture these nuances. Despite these limitations, the study provides a more nuanced perspective on international students' perceptions of IC and cross-cultural adaptation in the Hungarian higher education context.

CONCLUSIONS AND IMPLICATIONS

This study explored how international students in Hungarian higher education perceive and experience IC, negotiate cross-cultural adaptation, and evaluate institutional support. Across both the quantitative and qualitative strands, IC and cross-cultural adaptation emerged as closely interconnected and context-sensitive processes rather than as automatic outcomes of mobility. Participants reported positive attitudes toward IC and relatively high overall levels, with English proficiency and international social networks proving more influential than length of stay or prior experience abroad. Academic, social, and linguistic challenges shaped adaptation trajectories in ways broadly consistent with Kim's (2001) stress–adaptation–growth framework, while institutional support, although valued, was perceived as insufficiently sustained and tailored, especially for postgraduate students.

These findings also have several practical implications. First, universities should invest in English-language environments and support mechanisms beyond orientation events. This ensures that students, particularly those at the postgraduate level and those arriving outside the standard initial weeks, can access relevant support throughout their studies. Second, institutions should create and promote structured opportunities for meaningful intercultural interaction rather than assuming that diverse campus environments organically generate such contact. The findings of Rubio- Alcalá et al. (2026) provide further evidence supporting this implication. Third, given the significant role of international peer networks in both IC and adaptation, programs that facilitate connections among international students alongside host-national integration efforts may produce measurable developmental benefits. Fourth, instructors at Hungarian educational institutions should be advised that their expectations might not always align with those of their international students or their prior educational experiences. Finally, the mixed-method approach adopted in this study shows the value of integrating quantitative variables with qualitative processes to capture the lived complexity of intercultural development and adaptation. Future research should examine these dynamics longitudinally, explore disciplinary differences in IC development, and investigate the specific mechanisms through which institutional support can translate into growth outcomes.

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