

Werde Tareke Gebregergis – Csilla Csukonyi

Levels of Cross-Cultural Adaptation and Sociodemographic Correlates Among Asian International Students in Hungary

Werde Tareke Gebregergis, PhD Candidate at the Institute of Psychology, Doctoral School of Human Sciences, Faculty of Humanities, University of Debrecen, Debrecen, Hungary; Lecturer at Asmara College of Education, Asmara, Eritrea

Email: weredetareke@gmail.com

Csilla Csukonyi, Assistant Professor at the Institute of Psychology, Doctoral School of Human Sciences, Faculty of Humanities, University of Debrecen, Debrecen, Hungary

Email: csukonyi.csilla@arts.unideb.hu

As international student mobility rises, cross-cultural adaptation has become a central focus of contemporary research on how students adjust to new cultural, academic, and social environments. Consistent with this trend, the present study examined levels of cross-cultural adaptation and their associations with sociodemographic factors among Asian international students in Hungary (N=344). Participants completed a self-report questionnaire assessing cross-cultural adaptation. Frequency distributions were used to determine adaptation levels, and Pearson product-moment correlations and independent-samples t-tests were used to explore relationships between sociodemographic factors and adaptation outcomes. The findings revealed that most students exhibited moderate to fair levels of general adaptation across the psychological, daily life, academic, and sociocultural dimensions. Several sociodemographic variables, including gender, educational status, age, friendship with locals, cultural similarity, and financial support, emerged as significant correlates of cross-cultural adaptation. Specifically, male students, older students, those with local friends, scholarship recipients, and those whose home cultures were more similar to the host culture demonstrated better cross-cultural adaptation. In contrast, length of stay and proficiency in Hungarian and English were not significantly associated with general adaptation. These findings underscore the need for host universities to design and implement comprehensive, evidence-based support systems that address the diverse sociodemographic characteristics of international students to promote successful cross-cultural adaptation. Implications, limitations, and future directions are discussed.

Keywords: cross-cultural adaptation, academic adaptation, daily life adaptation, sociocultural adaptation, psychological adaptation, sociodemographic factors

As the global mobility of students continues to accelerate, the issue of how international students adapt to new cultural and educational environments has become an increasingly prominent focus of scholarly inquiry. Researchers across a range of disciplines have sought to understand the process of cross-cultural adaptation and the factors that shape it. Within the broader framework of acculturation research, cross-cultural adaptation can be conceptualized as the extent to which individuals maintain psychological well-being and effectively adjust to the sociocultural conditions of their host environment (*Sam-Berry, 2010*). Traditionally, the process of cross-cultural adaptation has been divided into two interrelated yet distinct dimensions: psychological adaptation and sociocultural adaptation (*Searle-Ward, 1990*). Psychological adaptation primarily refers to individuals' emotional well-being and functioning, encompassing constructs such as life satisfaction, self-esteem, positive and negative affect, and overall mental health outcomes. In contrast, sociocultural adaptation concerns the external, behavioural dimension of adjustment, focusing on the acquisition of culturally appropriate skills, social behaviors, and practical competencies that facilitate effective functioning in a new sociocultural environment (*Ward-Kennedy, 1994; Ward-Rana-Deuba, 1999*). These two domains are grounded in distinct theoretical perspectives. Psychological adaptation is often understood through the stress and coping framework, which emphasizes how individuals perceive, interpret, and manage the challenges associated with intercultural transitions (*Ward et al., 2005*).

While Ward and colleagues focused on the dichotomy between psychological and sociocultural domains, later researchers have expanded this conceptualisation to a tripartite model of adaptation that includes psychological, sociocultural, and academic dimensions (*Schartner-Young, 2016, 2020*). Academic adaptation or adjustment pertains to students' ability to meet the intellectual and structural demands of their educational environment, encompassing familiarity with new teaching methods, assessment styles, and academic norms (*Schartner-Young, 2020*). Furthermore, in the process of developing and validating their general adaptation scale, *Polat and Arslan (2022)* introduced an additional dimension, daily life adaptation, which captures students' adjustment to practical, everyday aspects of living in the host country, such as navigating transportation systems, shopping, adapting to new lifestyles, and acquiring basic knowledge of local laws and regulations. Building on these frameworks, the present study examined four interrelated aspects of general cross-cultural adaptation: psychological adaptation, daily-life adaptation, academic adaptation, and sociocultural adaptation.

Although research on cross-cultural adaptation levels remains limited, several studies indicate that international students generally experience moderate to high levels of adaptation. For example, a recent study of Southeast Asian international

students at Chinese universities found that participants showed a moderate level of academic adaptation (*Shen–Luo, 2025*). Similarly, a cross-sectional study in Türkiye revealed that international students exhibited relatively high adaptation across academic processes, principles, and sociocultural aspects, while maintaining an overall moderate level of academic adaptation (*Alnajjar–Alacapınar, 2024*). Another Turkish study also found that many international students reported high levels of sociocultural and psychological adaptation, especially in the sociocultural domain (*Arslan–Polat, 2023*). Additionally, Chinese students studying in U.S. universities were found to face moderate academic challenges, reflecting an overall moderate level of academic adaptation (*Wang, 2022*). Overall, these findings suggest that international students tend to adapt moderately to their host societies. However, it is important to note that most studies focus on only one dimension of cross-cultural adaptation, even though the process involves multiple factors, such as academic, sociocultural, and psychological components.

Existing studies on the relationship between demographic factors and cross-cultural adaptation have yielded mixed and often inconsistent results. For example, females were found to have greater psychological difficulties (*Bethel et al., 2020; Sam et al., 2015*), and poorer sociocultural and daily life adaptation (*Arslan–Polat, 2023; Cao–Jia, 2024*). On the other hand, female students in New Zealand reported greater satisfaction with life and belongingness (*Bethel et al., 2020*). However, other studies found no significant gender differences in cross-cultural adaptation outcomes, such as depression (*Gebregergis et al., 2020; Razgulin et al., 2023; Rice et al., 2012*), intercultural competence (*Khukhlaev et al., 2022*), psychological, sociocultural, and academic adjustment (*Malay et al., 2024; Mokhothu–Callaghan, 2018; Swami et al., 2010; Yerken et al., 2022*). Age was another variable with inconclusive findings. Some studies indicated that younger students are more vulnerable to psychological problems (*Bethel et al., 2020*), intergroup anxiety (*Khukhlaev et al., 2022*), and challenges related to academic performance (*Yerken et al., 2022*). Conversely, *Neto (2022)* reported that younger international students in Portugal experienced better life satisfaction. Other studies found no association between age and adaptation outcomes, such as depression (*Gebregergis et al., 2020*), psychological and sociocultural adaptation (*Mokhothu–Callaghan, 2018; Taušová et al., 2019*).

Regarding educational level, some of the reviewed studies found that graduate students had better intercultural adaptation than undergraduates (*Han et al., 2017; Malay et al., 2024*). Similarly, *Su et al. (2021)* suggested that doctoral students' educational status could act as a protective factor against acculturative stress. On the contrary, *Yu et al. (2019)* reported no significant relationship between educational status and intercultural adaptation. Another sociodemographic factor examined is the source of financial support (scholarship recipients versus self-funded students).

Several studies have reported that students receiving scholarships demonstrate better overall intercultural adaptation than their self-funded counterparts (*Arslan–Polat, 2023*). Other sociodemographic variables, such as friendships with host nationals, cultural similarity or cultural distance between home and host cultures, length of stay, and proficiency in the host and English languages, are associated with cross-cultural adaptation. While international students who develop friendships with local peers tend to exhibit better adaptation outcomes (*Sheng et al., 2022*), students whose home cultures are more different from those of the host country report poorer adaptation (*Malay et al., 2024*). However, findings regarding the associations between length of stay, language proficiency (both host and English), and adaptation remain inconclusive and not yet well established (*Gebregergis–Csukonyi, 2025c; Wilczewski–Alon, 2023*). Overall, the inconsistent findings indicate that further research is needed to clarify the nature of the relationships between sociodemographic factors and international students' cross-cultural adaptation.

The Current Study and Statement of the Problem

Extensive evidence indicates that international students frequently encounter a range of adaptation challenges, including language barriers, cultural dissonance, and differences in academic practices. These challenges often produce feelings of alienation and may contribute to adverse psychological and academic outcomes such as stress, anxiety, depression, and academic underperformance (*Smith–Khawaja, 2011*). Although experiencing stress is an inevitable component of intercultural adjustment, prolonged or unmanaged acculturative stress can develop into more serious mental health difficulties (*Lazarus–Folkman, 1984*). Addressing these adjustment challenges is therefore crucial, as they directly influence students' academic achievement, sense of belonging, and satisfaction with their educational experience. A considerable body of literature has explored the role of both personal and contextual factors in facilitating or impeding successful adaptation. Variables such as cultural distance, social support, personality traits, coping styles, resilience, and self-efficacy have been consistently identified as significant predictors of international students' adaptation outcomes (*Araujo, 2011; Mesidor–Sly, 2016; Yusoff, 2011*). However, despite substantial progress in understanding these determinants, limited research has examined the levels of cross-cultural adaptation and their relationships with socioeconomic variables, particularly within the Hungarian higher education context. Moreover, much of the existing research tends to treat international students as a homogeneous group, thereby overlooking meaningful differences arising from distinct cultural, regional, or linguistic backgrounds. In addition, evidence on the relationship

between sociodemographic factors and cross-cultural adaptation is mixed and inconclusive, highlighting the need for further research. Recognizing these gaps, the present cross-sectional study seeks to investigate the levels of cross-cultural adaptation among Asian international students in Hungary, with a specific focus on how their adaptation outcomes relate to sociodemographic variables.

Research Questions

The study developed the following questions to guide the research.

1. What is the overall level of cross-cultural adaptation among Asian international students?
2. What are the levels of cross-cultural adaptation across the psychological, sociocultural, academic, and daily life domains among Asian international students?
3. Is there a significant relationship between sociodemographic characteristics and overall cross-cultural adaptation among Asian international students?
4. Do levels of psychological, sociocultural, academic, and daily life domains significantly differ across sociodemographic groups of Asian international students?

1. Methods

1.1 Sample of the Study

The sample for the present study consisted of 344 Asian international students enrolled in undergraduate and postgraduate programmes at the University of Debrecen, Hungary. Participants were selected using convenience sampling. As presented in Table 1, the sample included 171 males (49.70%) and 173 females (50.30%), with a mean age of 23 years. The average length of stay in the host country was approximately 24 months. Participants' educational status comprised both undergraduate (n=194; 56.40%) and postgraduate (n=150; 43.60%) students. In terms of financial status, 126 students (36.60%) were scholarship recipients, while 218 (63.40%) were self-supporting. Regarding language proficiency, most participants reported limited command of Hungarian, while their English

proficiency ranged from good to fluent. The participants originated from 35 Asian countries and regions.

1.2 Measure

1.2.1 Sociodemographic Information

Information regarding the participants' sociodemographic background was obtained through a set of self-developed questionnaire items. The collected variables encompassed a range of personal and contextual factors, including gender, age, country of origin, marital status, proficiency in the host country's language, source of financial support, duration of residence in the host country, educational qualifications, friendship with Hungarian nationals, and perceived cultural similarity between the participants' home culture and Hungarian culture.

1.2.2 Cross-Cultural Adaptation

The General Adaptation Scale for International Students (GASIS), developed and validated by *Polat and Arslan (2022)*, was employed to assess the intercultural adaptation of international students. GASIS is a 28-item self-report measure rated on a five-point Likert scale ranging from 1 (*Not at all competent*) to 5 (*Extremely competent*). It is a multidimensional instrument encompassing four domains: academic adaptation, sociocultural adaptation, psychological adaptation, and daily life adaptation, thereby capturing students' overall adjustment to both university life and the broader host society. In the original validation study, the subscales demonstrated strong internal consistency: psychological adaptation (8 items, $\alpha=.87$), sociocultural adaptation (7 items, $\alpha=.80$), academic adaptation (6 items, $\alpha=.83$), and daily life adaptation (7 items, $\alpha=.70$). The overall reliability coefficient for the full scale was $\alpha=.84$, indicating high internal consistency (*Polat–Arslan, 2022*). The total score ranges from 28 to 140, with higher scores representing greater intercultural adaptation. Subscale scores can also be calculated separately to evaluate adaptation within specific domains.

1.2.3 Procedure and Ethical Considerations

The study received ethical approval from the United Ethical Review Committee for Research in Psychology at the University of Debrecen. Data were collected using an online self-report questionnaire distributed to participants via their institutional email accounts through the central office of the International Student

Union at the University of Debrecen. In accordance with the ethical standards of the American Psychological Association (APA), participation was voluntary and based on informed consent. Participants were assured that all responses would remain confidential and would be used exclusively for research purposes.

1.2.4 Data Analysis

For data analysis, all responses were entered into SPSS (Version 26) for statistical processing. To assess the levels of cross-cultural adaptation among students, the interpretive framework proposed by *Polat and Arslan (2022)* was applied. According to this guideline, the mean scores of the overall scale are interpreted as follows: 1.00–1.80 (*Not adapted*), 1.81–2.60 (*Partly adapted*), 2.61–3.40 (*Moderately adapted*), 3.41–4.20 (*Fairly adapted*), and 4.21–5.00 (*Totally adapted*). The same procedure was followed to compute adaptation levels for the four specific dimensions: psychological, daily life, academic, and sociocultural. Based on these criteria, the total and subscale mean scores for general adaptation were categorized into five adaptation levels. Descriptive and inferential statistical techniques were subsequently employed. Univariate statistics (means, standard deviations, skewness, and kurtosis) were used to summarize the data and assess normality. To further examine associations between demographic variables and cross-cultural adaptation, Pearson's product-moment correlation and independent-samples t-test analyses were conducted.

2. Results

2.1 Descriptive Statistics and Reliability Coefficients

Table 1 presents descriptive statistics, including the mean, standard deviation, skewness, kurtosis, and reliability coefficients for the General Adaptation Scale and its subscales. The results indicated that the reliability coefficients for both the overall scale and the subscales ranged from adequate to strong. Additionally, the skewness and kurtosis values fell within the acceptable range of -2 to $+2$ (*Gravetter-Wallnau, 2014*), suggesting that the assumption of normality was not violated for either the overall scale or the subscales. Therefore, the data are deemed suitable for subsequent analyses that assume normality, such as correlation and independent-samples t-tests.

Table 1

Summary of Descriptive Statistics and Reliability Coefficients

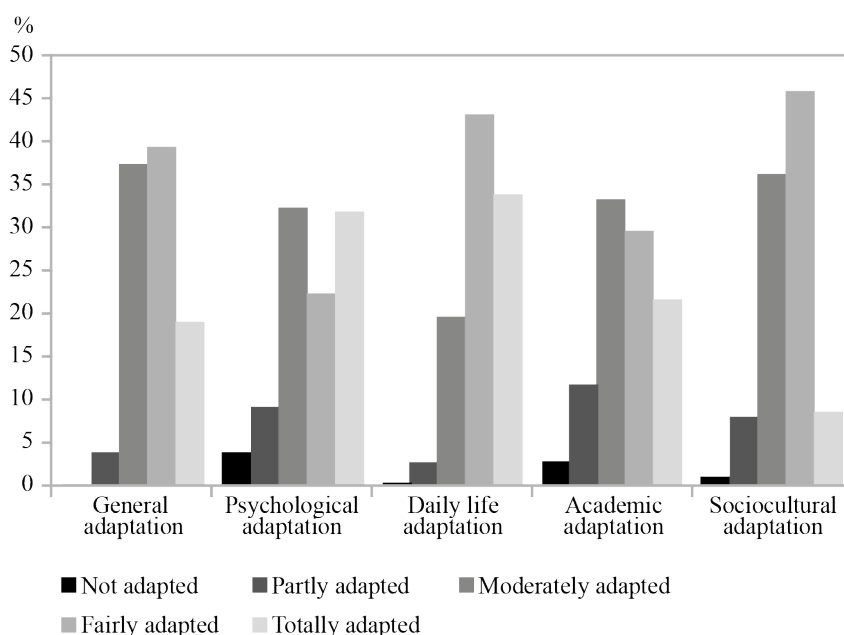
Variables	M	SD	Min	Max	Sk	Ku	Items	α
General adaptation	101.00	16.44	55.00	140.00	-0.03	-0.52	28	0.90
Psychological adaptation	28.70	7.38	8.00	40.00	-0.34	-0.52	8	0.89
Daily life adaptation	27.20	4.62	7.00	35.00	-0.52	0.46	7	0.77
Academic adaptation	21.00	5.16	8.00	30.00	-0.22	-0.60	6	0.84
Sociocultural adaptation	24.10	4.32	9.00	35.00	-0.25	0.36	7	0.67

Note: Sk = Skewness; Ku = Kurtosis; Min = Minimum; Max = Maximum.

2.2 Levels of Cross-Cultural Adaptation

The frequency distribution of general adaptation levels and their sub-dimensions is illustrated in Figure 1. Overall, the findings indicated that most students demonstrated moderate to fair levels of adaptation across both the general adaptation scale and its subcomponents. Specifically, 136 students (39.5%) exhibited fair overall adaptation, and 128 students (37.5%) reported moderate levels of general adaptation. Additionally, 66 students (19.2%) indicated total adaptation to the new environment, whereas only 13 students (3.8%) reported partial adaptation. Regarding psychological adaptation, most students were moderately adapted ($n=112$; 32.5%), fairly adapted ($n=77$; 22.4%), or fully adapted ($n=110$; 32.0%). A smaller proportion of students reported partial adaptation ($n=32$; 9.3%), while 13 students (3.8%) indicated poor or no adaptation. In terms of daily life adaptation, the majority of students demonstrated moderate ($n=68$; 19.8%), fair ($n=149$; 43.3%), or total ($n=117$; 34.0%) adaptation. A few students reported partial ($n=9$; 2.2%) or poor ($n=1$; 0.3%) adaptation levels. Regarding academic adaptation, most students ($n=115$; 33.5%) exhibited moderate adaptation, and 103 (29.9%) exhibited fair adaptation. A considerable proportion also reported total adaptation ($n=75$; 21.8%), whereas smaller groups indicated partial adaptation ($n=41$; 11.9%) or no adaptation ($n=10$; 2.9%). Finally, regarding sociocultural adaptation, the majority of students reported moderate ($n=125$; 36.4%) or fair ($n=158$; 45.9%) levels of adaptation. Some students indicated partial ($n=28$; 8.1%) or total ($n=30$; 8.7%) adaptation, while only three students reported poor sociocultural adaptation. Overall, these findings indicated that students' cross-cultural adaptation levels ranged primarily from moderate to fair across the assessed domains.

Figure 1

Levels of Cross-Cultural Adaptation and Its Subscales.

2.3 Association Between Demographic Factors and Cross-Cultural Adaptation

To examine whether the scores for general adaptation and its subcomponents differed significantly across sociodemographic factors, including gender, age, educational level, friendship with local people, source of financial support, and proficiency in Hungarian and English, independent-samples t-tests and Pearson product-moment correlation analyses were conducted. Independent-samples t-tests were used for categorical variables (e.g., gender), whereas Pearson correlation analyses were used for continuous variables (e.g., age).

2.3.1 Association Between Gender and Cross-Cultural Adaptation

An independent-samples t-test was conducted to examine whether scores on general adaptation and its subscales differed significantly between male and female students. A summary of the results is presented in Table 2. The findings indicated that male students demonstrated significantly higher levels of adaptation

than their female counterparts across general adaptation ($t=2.89, p < 0.01$), psychological adaptation ($t=2.33, p < 0.01$), and sociocultural adaptation ($t=2.81, p < 0.01$). However, no statistically significant differences were observed between the groups in the daily life and academic components of adaptation.

Table 2

Gender and Cross-Cultural Adaptation

Variables	Group	n	M	SD	t-test	p
General adaptation	Male	171	103.50	16.14	2.89	0.004
	Female	173	98.50	16.38		
Psychological adaptation	Male	171	29.80	7.21	2.81	0.005
	Female	173	27.60	7.41		
Daily life adaptation	Male	171	27.60	4.74	1.50	0.135
	Female	173	26.80	4.50		
Academic adaptation	Male	171	21.50	5.11	1.87	0.063
	Female	173	20.40	5.16		
Sociocultural adaptation	Male	171	24.60	4.13	2.33	0.020
	Female	173	23.60	4.44		

2.3.2 Association Between Educational Status and Cross-Cultural Adaptation

Table 3 presents the results of the independent samples t-test examining the relationship between educational level and adaptation scores. The findings indicated that educational level was significantly associated with general adaptation and three of its subcomponents. Specifically, postgraduate students (master's and doctoral) reported significantly higher levels of general adaptation ($t=2.73, p < .01$), psychological adaptation ($t=2.46, p < .05$), academic adaptation ($t=2.16, p < .05$), and sociocultural adaptation ($t=2.61, p < .05$) compared to undergraduate students. In contrast, daily life adaptation did not significantly differ between undergraduate and postgraduate students ($t=0.90, p > .05$).

Table 3

Educational Level and Cross-Cultural Adaptation

Variables	Group	n	M	SD	t-value	p
General adaptation	Undergraduate	194	98.90	15.76	2.73	0.007
	Postgraduate	150	103.70	16.94		
Psychological adaptation	Undergraduate	194	27.90	7.23	2.46	0.014
	Postgraduate	150	29.80	7.46		
Daily life adaptation	Undergraduate	194	27.00	4.76	0.90	0.366
	Postgraduate	150	27.50	4.45		
Academic adaptation	Undergraduate	194	20.40	4.93	2.16	0.031
	Postgraduate	150	21.60	5.38		
Sociocultural adaptation	Undergraduate	194	23.60	4.27	2.61	0.010
	Postgraduate	150	24.80	4.29		

2.3.3 Association Between Source of Financial Support and Cross-Cultural Adaptation

An independent samples t-test was conducted to examine whether students' sources of financial support were associated with differences in cross-cultural adaptation (see Table 4). The analysis revealed significant group differences across several adaptation dimensions. Students who received scholarships reported significantly higher levels of general adaptation ($t=4.14$, $p < .001$), psychological adaptation ($t=3.04$, $p < .01$), academic adaptation ($t=3.97$, $p < .001$), and sociocultural adaptation ($t=4.19$, $p < .001$) compared to their self-funded peers. However, no statistically significant difference was found between the groups in daily life adaptation.

Table 4

Source of Financial Support and Cross-Cultural Adaptation

Variables	Group	n	M	SD	t-value	p
General adaptation	Scholarship	126	105.70	16.30	4.14	<.001
	Self-support	218	98.30	15.92		
Psychological adaptation	Scholarship	126	30.30	7.45	3.04	0.003
	Self-support	218	27.80	7.20		
Daily life adaptation	Scholarship	126	27.70	4.53	1.44	0.151
	Self-support	218	26.90	4.67		
Academic adaptation	Scholarship	126	22.40	4.97	3.97	<.001
	Self-support	218	20.10	5.10		
Sociocultural adaptation	Scholarship	126	25.30	3.89	4.19	<.001
	Self-support	218	23.40	4.39		

2.3.4 Association Between Friendship with Locals and Cross-Cultural Adaptation

To examine the association between friendship with local people (Hungarians) and cross-cultural adaptation, an independent samples t-test was conducted. A summary of the descriptive and inferential statistics is presented in Table 5. The findings indicated that friendship with local individuals was strongly and consistently associated with higher adaptation levels. International students who reported having local friends showed significantly higher scores in general adaptation ($t=3.97, p < .001$) and across all four sub-dimensions: psychological ($t=3.97, p < .001$), daily life ($t=3.97, p < .001$), academic ($t=3.97, p < .001$), and sociocultural adaptation ($t=3.97, p < .001$).

Table 5

Local Friendship Status and Cross-Cultural Adaptation

Variables	Group	n	M	SD	t-value	p
General adaptation	With local friends	174	107.20	15.52	7.67	<.001
	Without local friends	170	94.60	14.88		
Psychological adaptation	With local friends	174	31.00	6.94	5.95	<.001
	Without local friends	170	26.40	7.14		
Daily life adaptation	With local friends	174	28.10	4.49	3.89	<.001
	Without local friends	170	26.20	4.57		
Academic adaptation	With local friends	174	22.70	5.00	6.91	<.001
	Without local friends	170	19.100	4.67		
Sociocultural adaptation	With local friends	174	25.4	4.10	5.73	<.001
	Without local friends	170	22.80	4.16		

2.4 Associations of age, length of stay, cultural similarity, Hungarian and English language skills with cross-cultural adaptation

Pearson product-moment correlation analyses were conducted to examine the associations of age, length of stay in the host country, home-host cultural similarity, host language proficiency, and English language proficiency with general adaptation and its four subcomponents. The correlation coefficients are presented in Table 6. The results indicated that home-host cultural similarity emerged as a consistent positive correlate of adaptation. Students whose home culture was more similar to the host (Hungarian) culture reported higher levels of general adaptation ($r=.26, p < .001$), as well as psychological ($r=.20, p < .001$), daily life ($r=.21, p < .001$), academic, and sociocultural ($r=.29, p < .001$)

adaptation. Age was also positively associated with general adaptation and three sub-dimensions. Older students demonstrated higher levels of general adaptation ($r=.23, p < .001$), psychological ($r=.22, p < .001$), academic ($r=.20, p < .001$), and sociocultural ($r=.17, p < .001$) adaptation; however, age was not significantly related to daily life adaptation. English language proficiency was positively correlated with daily life ($r=.14, p < .05$) and sociocultural ($r=.13, p < .05$) adaptation, but not with the other components or general adaptation scores. Neither the length of stay in the host country nor host language proficiency was significantly correlated with adaptation.

Table 6

Sociodemographic Correlates of Cross-Cultural Adaptation

Demographic factors	General adaptation	Psychological adaptation	Daily life adaptation	Academic adaptation	Socio-cultural adaptation
Age	0.23**	0.22**	0.10	0.20**	0.17**
Length of stay	0.07	0.06	0.03	0.10	0.84
Cultural similarity	0.26**	0.20**	0.11*	0.21**	0.29**
Hungarian language skills	0.03	0.01	0.01	0.01	0.11*
English language skills	0.08	0.05	0.14**	0.05	0.13*

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

3. DISCUSSION

The present cross-sectional study aimed to assess the levels of cross-cultural adaptation among Asian international students at the University of Debrecen, Hungary, and to examine how various sociodemographic factors relate to their adaptation experiences. The results revealed that most participants reported a moderate level of cross-cultural adaptation. Moreover, several sociodemographic variables were significantly associated with cross-cultural adaptation. Guided by the research objectives, this discussion focuses on two main areas: (1) the levels of cross-cultural adaptation and (2) the associations between sociodemographic factors and cross-cultural adaptation.

3.1 Levels of Cross-Cultural Adaptation

The results of this study show that most Asian international students achieved moderate to fair levels of general adaptation across psychological, daily life, academic, and sociocultural domains. This indicates that, overall, students successfully adjusted to the academic and social environment of the host country. The findings also suggest that their adaptation was fairly consistent across different domains, with only minor variations. These results are in line with previous studies reporting moderate to high levels of adaptation among international students in host societies (e.g., *Alnajjar–Alacapinar, 2024; Arslan–Polat, 2023; Sam, 2001; Shen–Luo, 2025*). However, it is important to note that the moderate to fair levels of adaptation observed in this study do not imply that students have fully adjusted to the host environment. Cross-cultural adaptation is a gradual, ongoing process that typically unfolds over an extended period. Since international students usually reside in the host country for a limited period, it is reasonable that many may not fully adapt during their time of study. Several contextual and institutional factors may help explain the study's findings. One possible reason is the University of Debrecen's multicultural environment, which hosts the largest population of international students in Hungary. This diverse academic and social setting likely supports the development of intercultural competence, sensitivity, and empathy, skills that are essential for successful cross-cultural adaptation (*Chen–Starosta, 1997, 2000; Genkova–Schreiber, 2025*). The use of English as the medium of instruction across all academic levels may also facilitate adaptation. English proficiency enables students to participate actively in academic discussions and communicate more easily with both local and international peers.

In addition, the strong presence of other Asian students at the University of Debrecen may provide a valuable source of social and emotional support. Contact with fellow nationals can ease feelings of isolation and help students cope with the challenges of living abroad. Finally, the University's wide range of extracurricular and cultural programmes, such as exhibitions, concerts, excursions, and intercultural festivals, likely contributes to positive adaptation experiences. These events give students opportunities to relax, learn about Hungarian culture, and build meaningful relationships with others (*Hendrickson, 2018; Thies–Falk, 2023*). According to cultural learning theory, individuals who engage in intercultural interactions and develop knowledge of the host society's norms are more likely to adapt successfully (*Ward–Masgoret, 2006; Wilson et al., 2013*). Overall, moderate to fair levels of adaptation observed among Asian international students may reflect a balance among institutional support, peer relationships, and individual coping strategies.

3.2 Associations Between Sociodemographic Factors and Cross-Cultural Adaptation

The significant relationship between gender and cross-cultural adaptation found in the present study suggests that Asian female international students tend to experience lower levels of cross-cultural adaptation compared to their male counterparts. In contrast, male students demonstrated higher psychological, academic, and sociocultural adaptation. This finding aligns with several previous studies that have reported poorer adaptation and greater adjustment difficulties among female students (e.g., Akhtar–Kroener–Herwig, 2019; Cao–Jia, 2024; Razgulin et al., 2023). However, it is worth noting that some studies have found the opposite pattern, indicating that female students may adapt more effectively than males (Lee et al., 2009), while others have reported no significant gender differences in adaptation (Vlachopanou et al., 2025). In the present study, the observed gender difference in cross-cultural adaptation may be influenced by cultural factors. In many Asian societies, collectivist cultural norms often emphasise traditional gender roles, where females are expected to be more conservative and less emotionally expressive (Aizawa–Whatley, 2006; Davis–Williamson, 2019). These sociocultural expectations may contribute to the lower levels of cross-cultural adaptation observed among female participants.

Regarding the relationship between age and adaptation, the present study reveals a positive association, indicating that older students tend to demonstrate better cross-cultural adaptation than their younger counterparts. This finding is consistent with previous research reporting that older students generally achieve higher levels of adaptation (Zhu et al., 2023). Conversely, several studies have suggested that younger international students are more susceptible to psychological difficulties (Bethel et al., 2020), intergroup anxiety (Khukhlaev et al., 2022), and academic performance challenges (Yerken et al., 2022). A plausible explanation for the positive association between age and adaptation may be that older students often have greater life experience and emotional maturity, enabling them to employ more effective coping strategies when navigating adjustment challenges. In relation to educational level, the current study also supports the findings of prior research suggesting that postgraduate international students exhibit better cross-cultural adaptation than their undergraduate counterparts (Han et al., 2017; Malay et al., 2024). This result may be attributed to the notion that postgraduate students typically have clearer academic goals and demonstrate stronger commitment to achieving their academic aspirations, despite potential adjustment difficulties. Such personal characteristics likely contribute significantly to their successful adaptation within the host environment.

Furthermore, the results indicate that both cultural similarity and friendship with local people are positively associated with cross-cultural adaptation. International students who develop friendships with locals and whose home culture shares similarities with the host culture tend to demonstrate better adaptation outcomes. This finding is consistent with prior research highlighting the crucial roles of local friendships (*Hofhuis et al., 2023*) and cultural similarity in facilitating adaptation. Conversely, a lack of local friendships and greater cultural distance may hinder adaptation. It appears plausible that friendships with locals provide social support and opportunities for cultural learning, both of which are essential components of successful adaptation. Similarly, cultural similarity between home and host countries can reduce culture shock and mitigate adjustment difficulties for international students. Another noteworthy finding of the present study is that scholarship students exhibit better adaptation than self-supporting students, a result also documented in previous studies. This outcome may be explained by the fact that scholarship recipients experience less financial pressure than self-funded students, and financial strain has been identified as a major factor contributing to difficulties in intercultural adjustment (*Larbi et al., 2022; Wilson et al., 2022*).

3.3. Implications of the Study

The findings of the present study hold both theoretical and practical implications. Theoretically, the study contributes to the existing literature by examining levels of cross-cultural adaptation in relation to sociodemographic factors within the Hungarian context. Moreover, unlike most previous studies that have explored international students as a homogeneous group, the current research specifically focuses on Asian international students. This targeted approach provides valuable insights into the patterns of cross-cultural adaptation among a distinct cohort. Practically, the findings offer important guidance for university administrators, educators, and mental health professionals. Host universities can utilize the empirical evidence from this study to design more targeted support programmes for international students. Given that a majority of participants reported moderate to fair levels of cross-cultural adaptation, universities should continue strengthening their efforts to foster full adaptation to the host environment. Various institutional strategies may be employed to support this goal, such as organizing intercultural festivals, conducting seminars and workshops on cross-cultural adaptation, offering counseling and guidance services, and providing academic and cultural orientation programmes for new students. Additionally, organizing student trips and tours can further promote social integration. University instructors should cultivate inclusive classroom environments that

embrace cultural diversity and adopt culturally responsive teaching approaches that facilitate adaptation. University counselors also play a vital role by providing mental health services, including individual and group counseling, to assist international students in managing adjustment challenges. Special attention should be directed toward groups identified as more vulnerable, such as female students, self-financed students, undergraduates, and those lacking friendships with locals, as these groups reported lower levels of adaptation.

3.4 Limitations of the Study and Directions for Future Studies

Several limitations of the present study should be acknowledged to guide future research. First, the study's focus on a specific cohort of Asian international students limits the generalizability of its findings to students from other regions. Future research could address this limitation by conducting comparative studies involving international student cohorts from different continents to identify variations in cultural adaptation patterns across groups. Second, the research was conducted at a single university, which may further constrain the generalizability of the results. Subsequent studies should seek to replicate and extend these findings by including participants from multiple higher education institutions across Hungary. Furthermore, the cross-sectional design of the study restricts the ability to capture the dynamic nature of cross-cultural adaptation over time. Longitudinal research designs would provide more comprehensive insights into how international students' adaptation evolves throughout their stay in the host country. Finally, the reliance on self-report data introduces the potential for social desirability bias, which may have influenced participants' responses. Future research should therefore consider employing experimental or mixed-methods approaches, combining quantitative and qualitative data collection techniques, to overcome these limitations and enhance the robustness of our study's findings.

3.4 Conclusion

With the rapid growth of international student mobility, cross-cultural adaptation has become a central focus of contemporary research aimed at understanding how students adjust to new cultural, academic, and social environments. In line with this global trend, the present study examined the levels of cross-cultural adaptation and their associations with sociodemographic factors among Asian international students in Hungary. The findings revealed that the students demonstrated moderate to fair

levels of psychological, daily life, academic, and sociocultural adaptation. Moreover, several sociodemographic variables, including gender, educational status, age, friendship with locals, cultural similarity, and financial support, emerged as significant correlates of adaptation. Given these findings, host universities should develop and implement comprehensive support systems designed to enhance international students' overall adaptation experiences. Particular attention should be directed towards groups identified as being more vulnerable to adaptation challenges, including female students, younger students, self-financed students, undergraduates, and those lacking friendships with local peers.

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