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## Mental Health Model of Acculturation among International Students in Pakistan

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### ABSTRACT

*Many universities in Pakistan accept a substantial number of international students. International students who choose to study abroad face a variety of difficulties, including issues with acculturation, acculturative stress, and related mental health issues. This study examines the mental health model of acculturation among international students in Pakistan. The sample consisted of 450 international students. Data were collected from international students studying at Pakistani universities. The findings revealed that acculturation can lead to acculturative stress, and international students with a better social support network experience better psychological and sociocultural adaptation, which directly or indirectly impacts their psychological and social well-being. Moreover, some personal, social, and economic factors also affect the process of acculturation and mental health outcomes. The study's findings confirmed that acculturation is a process and can be tested as a mental health model.*

**Keywords:** Acculturation, Acculturative stress, Psychological adaptation, Sociocultural adaptation, Mental well-being, Social well-being, International students

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## INTRODCUTION

Many universities in Pakistan accept a substantial number of international students. According to the interior ministry's report, Pakistan's educational institutions receive students and scholars from approximately 37 nations, including those from Asian, European, North American, and African countries (Butt, 2014). Globally, the number of international students increased by 25.3% between 2012 and 2017 (UNESCO, 2019). However, international students face many challenges in Pakistan. One of the foremost challenges international students face in Pakistan is the language barrier. Although English is widely used in higher education, everyday interactions often require proficiency in Urdu or regional languages. This can lead to difficulties in socializing, accessing essential services, and fully integrating into academic and social life (Qomi et al., 2024). Unlike Western countries, where multilingual support systems are more established, Pakistan lacks structured language assistance programs for international students. Pakistan's collectivist culture, which emphasizes family values, hierarchical relationships, and religious traditions, can be challenging for international students from more individualistic societies. The expectation to conform to social norms, such as gender roles and religious practices, may lead to feelings of alienation and cultural shock (Berry, 1997). The pressure to adapt without adequate support can result in social withdrawal, increased stress, and reduced academic performance. Pakistan has a deeply religious society, where Islamic practices significantly shape public and private life. International students from diverse religious backgrounds may struggle to navigate religious expectations, including prayer customs, dietary restrictions, and social norms related to dress codes (Safdar et al., 2003). While some may find comfort in the shared Islamic identity, others may feel marginalized due to differences in sectarian beliefs or religious unfamiliarity.

Concerns about personal safety, political instability, and security threats can heighten acculturative stress. Pakistan has faced security challenges, and international students—especially those from politically sensitive regions—may feel anxious about their well-being (Hasanović et al., 2020). Perceptions of instability, combined with incidents of discrimination, may discourage

international students from fully engaging in social and academic life. International students often face financial difficulties due to the limited availability of scholarships and high living costs in urban centers such as Islamabad, Lahore, and Karachi. Additionally, finding suitable housing can be a challenge, as many landlords prefer local tenants, and student hostels may not meet international standards (Fang & van Liempt, 2021). The lack of financial independence and economic constraints add to their psychological distress. Pakistan has a significant gap in mental health awareness and resources, both for local and international students. Stigma surrounding mental health issues prevents students from seeking help, and counseling services are either nonexistent or inadequate at most universities (Ozer & Schwartz, 2020). The absence of culturally competent psychological support tailored for international students leaves them vulnerable to prolonged acculturative stress.

Despite the growing body of research on acculturation and mental health outcomes among international students worldwide, few studies have explicitly focused on the experiences of international students in Pakistan. Existing research has focused primarily on acculturative stress and mental health challenges faced by international students in Western countries such as the United States, Canada, Australia, and European nations (Riaz & Rafique, 2019). However, the sociocultural, economic, and institutional contexts of Pakistan differ significantly from those of these regions, making it imperative to investigate how international students in Pakistan experience and cope with acculturation-related mental health challenges (Riaz & Rafique, 2019; Rimsha, 2024). Furthermore, while studies have explored various models of acculturation and their psychological impact, there is limited evidence on the applicability of these models within the Pakistani context. The unique cultural dynamics of Pakistan, including collectivist social structures, religious influences, and differing educational environments, may influence acculturative stress and coping mechanisms differently from those in other regions. However, this aspect remains unexamined mainly in the literature (Riaz, 2020).

Another gap lies in the limited empirical data on the mental health outcomes of international students in Pakistan. While anecdotal evidence and scattered qualitative insights exist, there is a need for comprehensive, data-driven research that assesses the relationships among acculturative stress, coping strategies, and mental health outcomes in this specific student population. Additionally, most existing studies on the acculturation of international students in South Asia tend to focus on India and China, leaving a significant gap in knowledge regarding Pakistan (Jun et al., 2024; Ma, 2021). To address this gap, this study aims to develop a mental health model of acculturation that captures the unique challenges and coping mechanisms of international students in Pakistan. By identifying key stressors, cultural adjustment patterns, and mental health implications, this research provides practical insights for universities, policymakers, and mental health practitioners to enhance support systems for international students in Pakistan.

## LITERATURE REVIEW

Acculturation affects mental health and operates according to a process paradigm. Positive social and cultural adjustments are indicators of mental health outcomes among international students (Berry, 1997; Koo et al., 2021). Numerous studies in the existing body of literature have revealed that international students have more mental health concerns (Riaz & Rafique, 2019; Prasath et al., 2022). Specifically, international students may experience heightened levels of anxiety, depression, and adjustment issues, which significantly affect their mental health (Can et al., 2021; Liu et al., 2022). Research suggests that international students in Pakistan experience significant acculturative stress due to differences in cultural norms, religious practices, and social structures. A study by Hassan (2025) revealed that students from non-Muslim majority countries, particularly African and Central Asian students, reported higher levels of acculturative stress due to religious and cultural dissonance. Similarly, Ali et al. (2021) identified financial instability and a lack of institutional support as primary contributors to stress among international students in Pakistan, leading to adverse mental health outcomes. Given these psychological and sociocultural challenges, it is crucial to explore how the acculturation process influences international students' psychological and social well-being, two critical components of mental health (Carla, 2018; Yılmaz & Temizkan, 2022). Therefore, in the current study, mental health outcomes are examined through both psychological and sociocultural determinants to provide a holistic understanding of student well-being.

In response to these challenges, various coping strategies have been identified in the literature. Social support, for example, plays a pivotal role in mitigating the adverse effects of acculturative stress (Kristiana et al., 2022). Strong social networks—whether from peers, family, or institutional support services—serve as protective factors against anxiety and depression (Pedersen et al., 2011). Furthermore, a substantial body of research is available on the impact of cultural intelligence and social support on the acculturation process (Kristiana et al., 2022; Thompson, 2018). Cultural intelligence positively correlates with both adaptation and immigrant performance (Keyvanara et al., 2014). Moreover, similar to cultural intelligence, in the form of a supportive social network and close carers, social support has several beneficial impacts (George et al., 2020). A better deal with stressful conditions is facilitated by social support, both perceived and actualized, especially for international students (Brisset et al., 2010).

The “reception context” within Pakistani higher education can be critically conceptualized through the lens of Portes and Rumbaut’s (2001) Segmented Assimilation Theory, which posits that varying combinations of structural opportunities, community reception, and institutional responses shape the experiences of minority or immigrant groups. In the context of Pakistani universities, international students—particularly those from Africa, China, and the Middle East—encounter a differentiated reception shaped by uneven institutional policies, varying faculty preparedness, and diverse domestic student attitudes. While government initiatives, such as scholarships under the Pakistan

Technical Assistance Programme (PTAP), suggest a formal openness to educational internationalization (Hoodbhoy, 2019), institutional policies often lack clear frameworks for intercultural integration or academic support, especially in nonelite universities. Faculty members, although often academically qualified, are frequently underprepared for multicultural classroom dynamics and rarely trained in inclusive pedagogy or second-language support, affecting their capacity to teach and assess international students effectively (Ahmed & Zahra, 2021). Moreover, domestic students' attitudes toward different international groups are shaped by media narratives, racial stereotypes, and perceived competition for resources, often resulting in greater acceptance of students from Islamic or Western countries, whereas African students, in particular, report experiences of exclusion or bias (Ali, 2023). These dynamics create a segmented and sometimes stratified assimilation experience, where some students integrate more smoothly while others face marginalization within the academic and social fabric of Pakistani higher education.

While psychological support is critical, the role of other personal, social, and economic factors is also part of the current study. As covariates, the length of stay (as an individual factor), relationship satisfaction (a social factor), and employment status and scholarship/self-support (economic factors) were also included in the current research. Length of stay may have an impact on the acculturation process. Length of stay and study duration as personal factors may have an impact on the acculturation process (Alsaifi & Shin, 2017). Miglietta and Tartaglia (2008) discovered that length of stay has a significant effect on the process of acculturation and fosters adaptability in immigrants through the development of cultural knowledge and language skills. As an economic factor, one of the major sources of stress for international students is money (Ranasinghe, 2023). Students who supported themselves financially were under added stress and had to seek employment to meet their needs (Alsaifi & Shin, 2017). Scholarships have been shown to be a significant source of financial assistance for international students (Akhtar, 2012). Employment status, acculturative stress, and mental health are related. According to Lam (2017), one of the greatest struggles for international students is unemployment resulting from cross-cultural experiences. Owing to language barriers and other cultural challenges, some employers encourage immigrants to accept lower-paying professions, which creates occupational issues for international students (Khatiwada, 2010). Similarly, relationship satisfaction, a social factor, also affects the acculturation process among students (Umar, 2020).

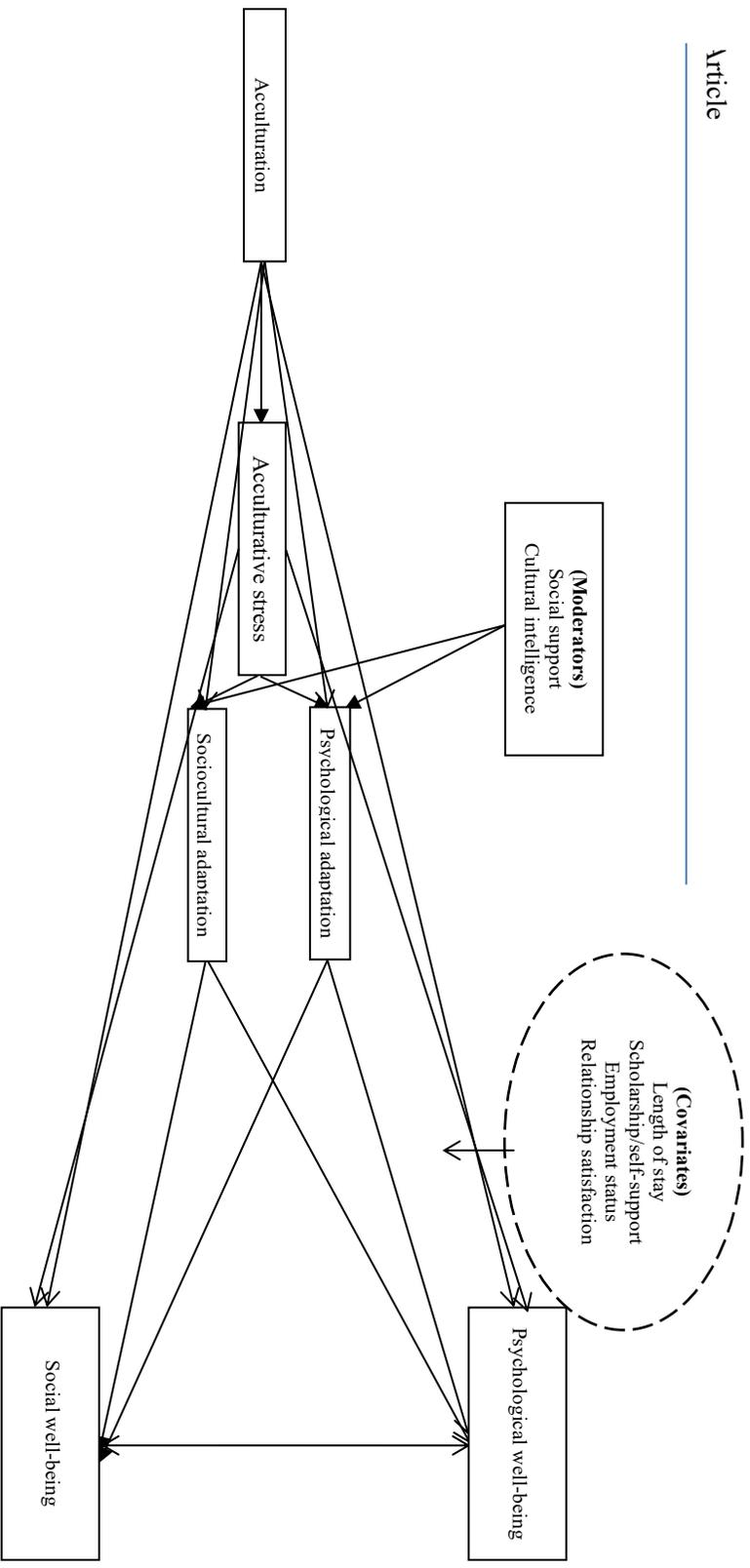
The overall well-being of international students is influenced by their ability to manage stress, adapt to new environments, and establish social connections. Universities in Pakistan have initiated various programs, including psychological counseling, international student societies, and cultural orientation sessions, to support student well-being. According to Farooq et al. (2023), students who actively participated in extracurricular activities and peer mentoring programs reported higher life satisfaction and lower psychological distress. However, Naseer and Javed (2022) criticized the lack of culturally sensitive mental health services, arguing that mental health support in Pakistani universities is still

underdeveloped. In conclusion, existing research highlights the intricate relationships among acculturation, mental health, and coping mechanisms among international students. Acculturative stress, if left unaddressed, can have profound psychological and social consequences. However, strong social support systems, resilience-building strategies, and institutional interventions can significantly improve students' mental health outcomes. Given the increasing number of international students worldwide, further research is needed to explore innovative strategies that enhance psychological well-being in multicultural academic settings.

### **Theoretical Framework**

Acculturation is a complex psychological and sociocultural process that international students experience when they move to a new cultural environment. The current research is based on Berry's (1997) process model of acculturation. Berry's process model of acculturation is one of the most widely recognized frameworks for understanding how individuals adapt to a new cultural environment. It explains acculturation as a dynamic process influenced by psychological and sociocultural factors, with individuals undergoing cognitive, behavioral, and emotional changes in response to intercultural contact. The model emphasizes that acculturation is not a uniform process, but rather varies based on individual preferences, group dynamics, and societal conditions (Berry, 1997; Riaz & Rafique, 2019). Berry's model also highlights the role of acculturative stress, which arises when individuals face difficulties in adapting, such as language barriers, discrimination, and cultural conflicts (Berry, 2005). This model remains relevant for studying international students, as their acculturation experiences in host countries directly impact their psychological adaptation, academic success, and social well-being (Berry, 2019). By applying Berry's framework, researchers can assess how different acculturation strategies influence mental health, sociocultural adjustment, and overall student experiences in diverse educational settings.

The current mental health model of acculturation provides a comprehensive framework for understanding how individuals adjust to cultural transitions and the impact of these changes on their social and psychological well-being. This model integrates theories of acculturative stress and psychological and sociocultural adaptation to explain how international students navigate their new environment and how various factors influence their overall well-being. This is a unique contribution to the indigenous collectivistic context of Pakistan; as such, a comprehensive theoretical process model has never been tested in this context before. The mental health model of acculturation posits that the relationship between acculturative stress and psychological and sociocultural adaptation is bidirectional (Berry, 2005). High acculturative stress negatively affects both psychological and sociocultural adaptation, leading to mental health problems such as anxiety and depression. At the same time, difficulties in adaptation—such as struggling with language or social norms—can increase acculturative stress, creating a lack of social well-being.



**Figure 1 : Hypothetical Mental Health Model of Acculturation among International Students in Pakistan**

Protective factors such as cultural intelligence and social support can mitigate this stress and enhance adjustment (Kristiana et al., 2022). For example, students with a strong ethnic identity and positive coping mechanisms, such as seeking social support and engaging in cultural activities, tend to experience lower levels of stress and better mental health outcomes (Cao et al., 2021). This mental health model of acculturation provides a valuable framework for understanding how international students in Pakistan navigate cultural transitions and cope with acculturative stress. Psychological and sociocultural adaptations are closely linked, and without adequate support, students may face significant challenges related to psychological and social well-being.

### METHOD

This study used a correlational research design. Purposive sampling was used to gather the data. A total of 450 international students comprised the survey sample ( $M_{\text{age}} = 22.12$ ,  $SD = 2.21$ ). The sample size used in the present study was representative, and the structural equation modeling (SEM) criterion was used to estimate it.

#### Participants

A sample of 450 international students can be considered representative, as it captures a diverse cross-section of the international student population studying in the country. Pakistan hosts students from various regions, including China, Central Asia, Africa, and the Middle East, who are enrolled in different universities across major cities such as Islamabad and Lahore. A well-distributed sample ensures the proportional representation of students from other nationalities, academic disciplines, and university settings (public and private). Given that Pakistan has thousands of international students, a sample size of 450 is statistically significant, allowing for generalizable findings with a reasonable margin of error and confidence level. Additionally, considering factors such as gender, language background, and field of study further enhances the sample's validity and reliability. Moreover, for most studies, a minimum sample size of 200 participants is recommended, or at least 5 to 10 cases per estimated parameter. This approach may be shorthand for the commonly used rule of 5 or 10 cases per estimated parameter (e.g.,  $200/5 = 40$ , meaning that 40 parameters could be estimated with a sample of 200) (Kline, 2011). In SEM, for model testing, 450 cases met the established criteria for the sample size needed for a mediation model (Sideridis et al., 2014; Wolf et al., 2013).

The sample is evenly split between men (50%;  $M_{\text{age}} = 22.10$ ;  $SD = 2.13$ ) and women (50%;  $M_{\text{age}} = 22.19$ ;  $SD = 2.29$ ), with the majority being unmarried (82.9%), while 17.1% are married. Concerning financial support, most students rely on family support (73.6%), followed by scholarships (20%), and a smaller percentage are self-supporting (6.4%). The age distribution ranged from 19–27 years, with the largest groups being 21-year-olds (24.7%), 20-year-olds (22.0%), and 22-year-olds (18.0%). In terms of length of stay in Pakistan, most students

have been in the country for one year (54.2%), 41.6% have lived for two years, and a smaller percentage, 4.2%, have stayed for three years. The majority of the students were unemployed (88.0%), whereas 12.0% were employed. The sample represents a diverse range of countries of origin, with the highest representation from Africa (23.8%), followed by East Asia (23.6%), the Middle East (18.9%), Central Asia and Russian States (14.0%), North America (9.8%), East Europe (6.7%), and South Asia (3.3%). This demographic breakdown provides a comprehensive overview of the diverse backgrounds, financial circumstances, and settlement patterns of international students studying in Pakistan.

The sample comprised institutionalized students who lived in both private and institutional settings (such as universities, colleges, etc.). The inclusion criteria for participants were as follows: (a) were studying at a Pakistani academic institute as their host institution; (b) did not find English to be a barrier to their studies; (c) were enrolled in degree-level programs at Pakistani institutions; (d) came from a different linguistic, cultural, or ethnic background with little exposure to the local culture; and (e) were students who were either on scholarships or family support were included in the target population. International students who traveled to the host institution to enroll in a 2- or 4-year program (e.g., Butt, 2014; Sawhney, 2008) and (g) participants in the sample had to have attended the host institution for at least one year of the whole study period.

The participants for the study were selected through purposive sampling across six major universities in Pakistan, with a focus on institutions with substantial international student presence. The selection process involved coordination with university departments and student affairs offices to identify and recruit international students who were currently enrolled and met the study criteria. The final sample comprised 450 participants, distributed as follows: University of the Punjab Lahore (90), International Islamic University Islamabad (100), Lahore University of Management Sciences (30), National University of Modern Languages Islamabad (100), National University of Science and Technology Islamabad (100), and Quaid-i-Azam University Islamabad (30). This distribution, while ensuring representation from each university, was not strictly proportional to the actual international student populations of these institutions. Instead, it reflects a balance between institutional accessibility, student availability, and logistical feasibility. Notably, universities such as LUMS and Quaid-i-Azam University, which host relatively smaller numbers of international students, had proportionally smaller samples (30 each). In contrast, institutions such as IIUI, NUML, and NUST, known for larger international cohorts, were more heavily represented, with 100 participants each.

## **Measures**

The instruments used in the present study include the Relationship Assessment Scale (Hendrick, 1988), East Asian Acculturation Scale (Berry, 2001), Acculturative Stress Scale for International Students (Sandhu & Asrabadi, 1994), Psychological Adaptation Scale (Demes & Geeraert, 2013), Revised Socio-Cultural Adaptation Scale (Wilson, 2013), Cultural Intelligence Scale (Ang

et al., 2007), Multidimensional Scale of Perceived Social Support (Zimet et al., 1988), Warwick-Edinburgh Mental Well-being Scale (Tennant et al., 2007a), and Social Well-being Scale (Keyes, 1998). All scales were Likert-type and were reliable and valid measures. Before the scales were administered, written informed consent was obtained from the respondents as well as the relevant authorities. The covariates included were length of stay (as a personal factor), relationship satisfaction (a social factor), and employment status and scholarship/self-support (economic factors).

#### Procedure

The data were collected at the University of the Punjab Lahore, International Islamic University Islamabad, Lahore University of Management Sciences, National University of Modern Languages Islamabad, National University of Science and Technology Islamabad, and Quaid-i-Azam University Islamabad. Informed consent was obtained from the respondents after the provision of compulsory information and a brief introduction. After informed consent was obtained from international students, the researcher evaluated their level of English ability and cultural exposure (Martirosyan et al., 2015; Crowne, 2013). However, international students with little previous international experience were included in the sample. Throughout the entire data collection process, the researcher was on board, gathering the information and responding to the participants' questions. The participants took approximately 30 minutes to complete the scales, with no time restriction. Eighty-five percent of the participants responded, and the authors identified the number of fully completed and returned responses. Only fully completed questionnaires were included in the data analysis by examining the missing values via SPSS. A small number of participants were referred to related mental health service providers in the province of Punjab and the capital city of Islamabad.

The study also included a series of cross-cultural validation steps. These include a) conducting cultural adaptation of items by using confirmatory factor analysis (CFA) to account for context-specific meanings or culturally inappropriate assumptions; (b) performing pilot testing with small, culturally diverse student groups of 100 international students to assess clarity and relevance; and (c) executing measurement invariance testing across genders, cultures, languages, or institutions to confirm whether the scale operated equivalently across cultural subgroups statistically. The East Asian Acculturation Scale was selected based on its theoretical relevance to the broader concept of acculturative processes and its established psychometric properties in prior cross-national research. Nonetheless, we recognize this as a limitation of the study and recommend that future research adapt or develop instruments that are more inclusive of non-East Asian cultural frameworks, particularly for African and Middle Eastern student populations in globalizing higher education contexts.

## RESULTS

For data analysis, AMOS (Version 10) and SPSS (Version 26) were used. To test the hypothetical model, SEM was used. For data analysis in SEM, the

Hayes (2013) approach was utilized to examine direct and indirect effects (Hayes et al., 2017). The psychometric characteristics of each scale employed in the current study. The results revealed that the assumption of normality for subsequent hypothesis testing was supported. The data from all scales were found to be normally distributed. Additionally, the alpha reliability coefficients of all scales, which ranged from 0.86 to 0.97, demonstrated greater levels of internal consistency than those of any other scale employed in the current investigation.

**Table 1: Model fit indicators for testing the mental health model of acculturation**

Hypothetical Model	CFI	NFI	TLI	RMSEA	$\chi^2_{df}$	<i>p</i>
Default Model	.54	.66	.69	.78	54.24(14)	.00
Modified Model	1.00	.99	.99	.02	17.18 (14)	.24

CFI: comparative fit index, NFI: normed fit index, TLI: Tucker–Lewis index, RMSEA: root mean square error of approximation.

The fit indices for the mental health model of acculturation are shown in Table II. The results showed that fitness indices support the current study's hypothetical model. The fitness indices, including CFI = 1.00, NFI = 0.99, TLI = 0.99, RMSEA = 0.02, and the overall model  $\chi^2(14) = 17.184, p = .245$ , were good. However, because the chi-square value is sensitive to sample size, we cannot rely solely on it to determine whether a model should be accepted or rejected (Schermelleh-Engel et al., 2003; Vandenberg, 2006). As a result, the second criterion, the chi-square/df, was also tested ( $17.18/14 = 1.22$ ), which also supported the hypothetical model's sparse fitness.

In the present study, the hypothetical model was modified because cultural intelligence does not play a moderating role ( $p > .05$ ) between acculturative stress, psychological adaptation, and sociocultural adaptation. Another moderating variable, social support, did not moderate the relationship between acculturative stress and sociocultural adaptation. Similarly, the covariate “employment status” also had no effect ( $p > .05$ ) on acculturative stress, adaptation, or mental health outcome variables. The justification for model modification was based on improving model fit and was data driven. A key justification for modifications is improving model parsimony, ensuring that the revised model remains simpler and more interpretable while still explaining the relationships between variables (Hair et al., 2019). Additionally, if high modification indices suggest unmodeled relationships that align with prior theoretical frameworks, including them can enhance construct validity (Brown, 2015).

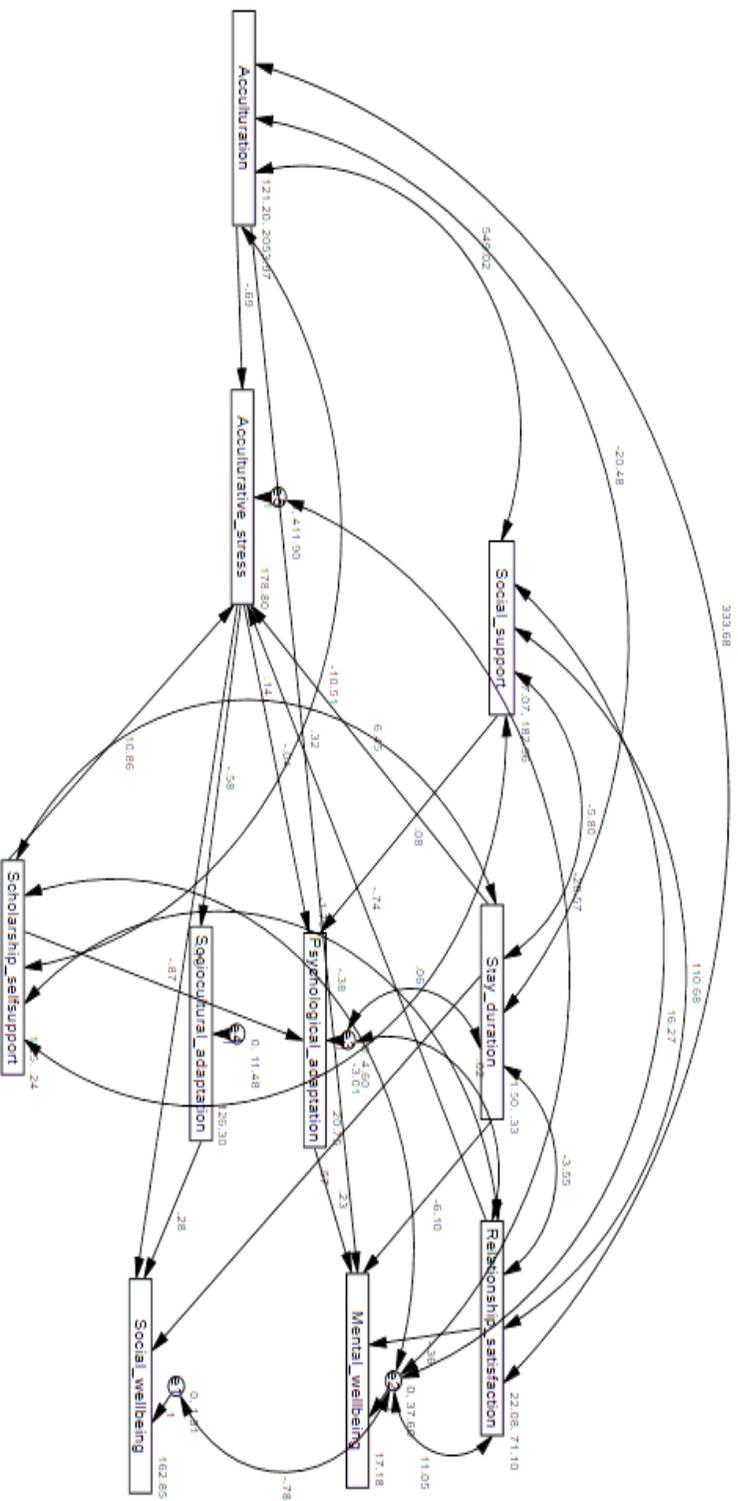


Figure 2: The tested mental health model of acculturation with standardized path estimates

The path model effectively proved the indirect effects of acculturation on psychological adaptation and sociocultural adaptation, as well as the indirect effects of acculturative stress on social and mental well-being. The path model also revealed that social support had a moderating effect on the relationship between acculturative stress and psychological adaptation, whereas cultural intelligence had no moderating effect. The covariates of the hypothesized model (personal, social, and economic factors) are presented in Table 2. The regression analysis in Table 2 reveals significant relationships between acculturation, acculturative stress, adaptation, and well-being outcomes. Acculturation negatively predicts acculturative stress ( $\beta = -0.66, p < .001$ ), indicating that greater acculturation is associated with lower stress levels. Length of stay ( $\beta = 0.07, p = .01$ ) slightly increases acculturative stress, whereas financial support ( $\beta = -0.11, p = .00$ ) and relationship satisfaction ( $\beta = -0.13, p = .00$ ) mitigate it. Acculturative stress strongly impairs sociocultural adaptation ( $\beta = -0.99, p = .00$ ) and psychological adaptation ( $\beta = -0.49, p = .00$ ), whereas financial support ( $\beta = 0.11, p = .00$ ), social support ( $\beta = 0.28, p = .00$ ), and sociocultural adaptation ( $\beta = 0.17, p = .00$ ) positively influence psychological adaptation. Social well-being benefits from length of stay ( $\beta = 0.08, p = .00$ ) but is negatively impacted by acculturative stress ( $\beta = -0.83, p = .00$ ). Mental well-being is positively influenced by psychological adaptation ( $\beta = 0.51, p = .00$ ), acculturation ( $\beta = 0.88, p = .02$ ), and relationship satisfaction ( $\beta = 0.18, p = .04$ ). These findings highlight the complex interplay between acculturation, stress, and well-being, emphasizing the importance of financial and social support in mitigating stress and enhancing adaptation.

**Table 2: Regression coefficients of the study variables**

Independent variables	Effect	Dependent variables	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>
Acculturation	→		-.68	.04	-.66	.00
Length of stay	→	Acculturative stress	6.44	2.73	.07	.01
Financial support	→		-10.85	2.24	-.11	.00
Relationship satisfaction	→		-.73	.23	-.13	.00
Acculturative stress	→		Sociocultural adaptation	-.58	.00	-.99
Acculturative stress	→		-.03	.02	-.49	.00
Financial support	→	Psychological adaptation	.87	.24	.11	.00
Social support	→		.08	.01	.28	.00
Sociocultural adaptation	→		.27	.01	.17	.00
Length of stay	→	Social well-being	.57	.14	.08	.00
Acculturative stress	→		-.75	.09	-.83	.00
Length of stay	→		6.09	.00	.21	.04
Psychological adaptation	→	Mental well-being	.22	.00	.51	.00
Acculturation	→		.32	.00	.88	.02
Relationship satisfaction	→		.36	.00	.18	.04

In model modification, employment status and cultural intelligence were removed because of likely cross-loadings and low loading values, which may not theoretically align well. The employment status and cultural intelligence were

weakly justified within the conceptual framework (e.g., not strongly tied to the latent constructs or outcomes of interest) and were removed to improve model parsimony. In the Pakistani context, relational and experiential factors (e.g., social support and time-based immersion) are more predictive of acculturation success than are status-based or trait-based factors such as employment and CQ (Riaz & Rafique, 2019; Shamim, 2023). This may reflect broader cultural scripts, collectivist values, and structural limitations that reduce the relevance of individual traits or professional roles in shaping cultural adaptation (Bashir & Khalid, 2022; Chen, 2025). CQ and employment status are often contextually limited—they are effective in cross-national corporate settings but less impactful in everyday interpersonal or community-level adaptation, especially in homogeneous or conservative cultures such as Pakistan (Chen et al., 2025; Hajro et al., 2019). Additionally, institutional barriers and job mismatch among migrants or returnees may make employment a source of stress rather than acculturative gain (Hajro et al., 2019).

The effect sizes reported in Table 2 generally range from small to large when interpreted via Cohen's (1988) guidelines:  $\beta \approx .10$  (small),  $.30$  (medium), and  $.50$  (large). Notably, the strongest standardized effect observed was the impact of acculturative stress on sociocultural adaptation ( $\beta = -0.99$ ,  $p = .00$ ), which far exceeds the conventional threshold for a large effect and underscores the disruptive role of stress in students' cultural integration. Similarly, acculturative stress has large and medium-to-large effects on social well-being ( $\beta = -0.83$ ) and psychological adaptation ( $\beta = -0.49$ ), aligning with Berry's theoretical model, where stress acts as a key inhibitor of adaptive outcomes. The effect of acculturation on reducing stress ( $\beta = -0.66$ ) is also substantial and supports Berry's assertion that increased cultural engagement mitigates psychological strain. The role of social support in enhancing psychological adaptation ( $\beta = 0.28$ ) and the buffering effect of financial support on stress ( $\beta = -0.11$ ) represent small-to-moderate effects, which is consistent with previous research among international students in collectivist contexts (e.g., Kristiana et al., 2022; Mahmood & Burke, 2018). These effects are also comparable to findings in Western and East Asian studies (e.g., Koo et al., 2021; Yoon et al., 2013), where stress consistently emerges as the strongest negative predictor of adjustment and mental health. The  $\beta = 0.88$  effect of acculturation on mental well-being, although theoretically unexpected given the indirect pathways, suggests that acculturation may have both mediated and partially direct influences on psychological outcomes in this cultural context—possibly because of the salience of host cultural competence in high-context societies such as Pakistan. Overall, the magnitude and direction of effects align well with both theoretical expectations and empirical evidence from comparable international student samples, confirming the robustness of the mental health model of acculturation.

An unusually high effect size of  $\beta = -0.99$  between acculturative stress and sociocultural adaptation is likely a statistical artifact rather than substantively meaningful, as it implies near-perfect negative predictability—an implausible outcome in behavioral research. Such a value may arise from multicollinearity, measurement overlap, or suppression effects, all of which can distort path

estimates. While acculturative stress is known to negatively impact adaptation, effect sizes of this magnitude typically suggest model misspecification or redundancy between constructs rather than a genuine empirical phenomenon. Therefore, this result should be critically examined through validity checks and potential model respecification.

## **DISCUSSION**

The study indicated how international students assimilated in Pakistan via the mental health model. Most of the findings align with the existing body of literature, and the path model supports the mental health model of acculturation (Fathi et al., 2018; Heinemann, 2017). According to the path model, acculturation has a direct effect on acculturative stress, but an indirect effect on psychological adaptation. The relationship between acculturation and psychological adaptation is mediated by acculturative stress because international students find adjusting to a new cultural context extremely challenging, since they must deal with some acculturative stress (Berry, 2005; Hansen et al., 2021). Acculturative stress is linked to a new cultural environment; the individual experiences it while experiencing the psychological adaptation process of acculturation (Tiwari, 2017). Therefore, acculturative stress, which individuals experience in a new cultural setting, also helps them cope with new cultural expectations by adopting various methods. International students can experience better psychological adjustment during their studies if they can control their level of acculturative stress (Riaz & Rafique, 2019).

The findings of the study supported that acculturative stress mediated the relationship between adaptations and mental health outcomes (mental well-being and social well-being). Moreover, the current findings revealed that international students' mental health and acculturative stress were correlated, although the relationship was mediated by psychological and sociocultural adaptation. According to Mahmood and Burke (2018), international students' acculturative stress can be reduced by improving all sociocultural adaptation-related factors. The degree of acculturative stress may rise or fall as a result of this cultural divide, which affects an individual's capacity for psychological adjustment and mental health. Owing to a lower level of psychological adaptation, cultural stress results in cognitive imbalance, which leads to emotional balance, psychological concerns, and mental health issues (Yoon et al., 2013).-Numerous studies have shown that sociocultural adaptation increases international students' levels of social well-being (Berry, 2005; Mahmood & Burke, 2018).

In the present study, the moderating effects of social support and cultural intelligence on the relationship between acculturative stress and psychological adaptation were also examined. International students with better social support networks exhibited less acculturative stress and more psychological adaptation. In previous studies, social support has gained substantial importance as a mediating factor between acculturative stress and adjustment factors (Lashari et al., 2023; Sullivan & Kashubeck-West, 2015). As a coping mechanism and an acculturation strategy, social support enhances resilience, which in turn protects

individuals from mental health issues and promotes greater psychological adjustment (Han et al., 2016). A person can be shielded from any potential stressful situation by having social support. The majority of international students who enroll in Pakistani universities come from collectivist nations (such as Asian and African nations), which means that these students are more relationship-focused and more dependent on social support than they are on cultural intelligence. Collectivistic cultures emphasize interdependence, where individuals view themselves as interconnected with their social groups (family, community, etc.). This inherent interconnectedness means that social support is not just a helpful resource but a core component of one's identity and well-being (Wissing et al., 2019). This may account for the lack of a significant moderating role for cultural intelligence (Nguyen, 2015).

The study also investigated how relationship satisfaction, financial support, and length of stay impact the outcomes of acculturative stress, psychological adaptation, sociocultural adaptation, and mental health. It was found that relationship satisfaction has an effect on international students' mental health and acculturative stress. These findings are consistent with those of previous studies and evidence suggesting that improving general relationship satisfaction reduces acculturative stress levels and enhances the mental health of international students (Li et al., 2021; Vatsk, 2011). According to current research, among international students, longer stays are related to a reduction in acculturative stress and an improvement in mental and social well-being. Compared with international students who had been studying at Pakistani universities for one year, those who had been there for three years experienced less acculturative stress and better mental and social well-being. Increased life satisfaction and sociocultural competencies facilitate adaptation to a new cultural setting (Wang et al., 2018). Finally, financial support was a significant economic factor in the path model. International students who received scholarships experienced less acculturative stress and greater psychological adaptation than those who paid for their own education. The current results are in line with earlier research showing that financial support improves acculturative outcomes (Aljaberi et al., 2021; Latino et al., 2020). This study provides key insights into the relationships between mental health outcomes and various psychosocial factors. Our findings indicate that social support, relationship satisfaction, financial support, and length of stay play crucial roles in the mental and social well-being of international students in Pakistan.

Based on the findings of the current study, Pakistani universities can significantly enhance their support for international students by implementing proactive and culturally sensitive strategies. This includes establishing robust prearrival orientation programs that address cultural adjustment, providing ongoing access to mental health professionals with cross-cultural competency, and fostering inclusive campus environments that promote social integration. Universities should prioritize the creation of peer support networks, cultural exchange programs, and readily accessible resources that address language barriers and feelings of isolation. Mental health programs should prioritize social support networks and train individuals in effective coping strategies to manage

stress. Furthermore, policymakers should consider integrating mental health education into public health initiatives to promote awareness and accessibility. Another important consideration is the role of healthcare providers in fostering a holistic approach to mental health care. By addressing both psychological and social factors, mental health practitioners can offer more comprehensive support. Additionally, digital mental health interventions, such as teletherapy and online support groups, present promising avenues for increasing accessibility to mental health care, particularly for underserved populations.

While the study highlights valuable correlations, it is important to acknowledge its limitations. The cross-sectional design restricts causal inferences, and self-reported data may introduce response biases, especially the possibility of social desirability. Future research should explore longitudinal studies and experimental designs to further validate these findings. Moreover, the study's reliance on purely numerical findings presents a limitation, as it lacks nuanced, qualitative insights that could significantly enrich our understanding of international students' experiences at Pakistani universities. While quantitative data effectively reveal patterns and correlations related to the acculturation process and mental health outcomes, they fail to capture the lived realities, individual narratives, and subjective interpretations of these students. Qualitative research, such as in-depth interviews or focus group discussions, would have allowed researchers to explore the underlying reasons behind the observed trends, uncover specific cultural challenges, and gain a deeper understanding of the students' coping mechanisms and support needs. This missing qualitative context leaves a gap in our comprehension of the complex dynamics at play, potentially hindering the development of more targeted and effective support interventions.

## **CONCLUSION**

The findings confirmed the mental health model of acculturation among international students. Acculturation was found to have an indirect effect on psychological and sociocultural adaptation. While acculturative stress has both direct and indirect effects on social well-being, it does not affect mental well-being. Additionally, the relationship between acculturative stress and psychological adaptation was strongly influenced by social support. According to the results on personal, social, and economic factors, the length of stay (a personal factor) has a considerably strong effect on social well-being and mental well-being, but a negative effect on acculturative stress. In contrast to its strong positive impact on mental health, relationship satisfaction (a social factor) has a significant negative effect on acculturative stress. Greater financial assistance (an economic component) has a significant positive effect on psychological adaptation but a significant negative effect on acculturative stress.

One limitation of the study is that the exclusion criterion related to English language proficiency may have introduced systematic bias. By requiring a minimum level of English fluency, the study potentially excluded international students who are experiencing the greatest acculturative stress—particularly those struggling with language barriers, which are a core component of cultural

adjustment. As a result, the findings may underrepresent the experiences of the most vulnerable subgroup within the international student population. This limitation will be addressed in future research by incorporating multilingual assessment tools and providing language support during data collection to ensure broader inclusivity and more accurate representation of diverse acculturative experiences.

To foster a more inclusive and supportive environment for international students, Pakistani universities should adopt a structured set of differentiated strategies tailored to students' diverse backgrounds and needs. For those from collectivistic cultures—such as those in Sub-Saharan Africa or East Asia—peer mentoring programs that emphasize group-based support, collaborative learning, and community building can ease the transition and align with social expectations. Students facing financial hardship would benefit from the establishment of emergency economic aid protocols and access to part-time, on-campus employment opportunities that provide financial stability without compromising academic engagement. For students from non-Muslim backgrounds, universities should initiate interfaith dialogue programs that promote mutual respect and cultural understanding, alongside policy accommodations for diverse religious practices, including prayer spaces and the observance of non-Islamic holidays. Finally, students in the early stages of acculturation require extended cultural orientation programs that go beyond one-time briefings to include ongoing support for academic norms, healthcare access, communication styles, and everyday social integration. These targeted interventions acknowledge the heterogeneity of international student experiences and are essential for improving student well-being, academic success, and institutional inclusivity in Pakistani higher education.

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