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**CLINICAL PSYCHOLOGY & NEUROPSYCHOLOGY | RESEARCH ARTICLE**

# Development and Validation of the Acculturative Stress Scale for Pakistani Muslim Students

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**Abstract:** The current study aimed to develop a culturally competent scale to examine the unique stressors encountered by Muslim Pakistani students during their stay abroad. A pool of 31-item was subjected to Explanatory Factor Analysis (EFA) which yielded the final 24 items scale resulted in six distinct domains of stressors, academic (six items), general living and finance (four items), perceived discrimination (three items), cultural and religious (four items), local & environmental (four items), language barrier (three items). The Multidimensional Acculturative Stress Scale was developed and validated for Pakistani students and can be used as a diagnostic tool by campus counselors and mental health practitioners.

Subjects: Education - Social Sciences; Social Psychology; Counseling Psychology; Educational Research; Higher Education

Keywords: Pakistani; acculturative stress; academic stressors; financial stressors; cultural stressors; religious stressors; discrimination

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## PUBLIC INTEREST STATEMENT

The twenty-first century is a century of globalization and socio-economic progress. The developing countries are increasingly becoming aware of their deficiencies, particularly in the education sector. Therefore, there is a greater surge for studying abroad in universities of developed countries. This trend is also growing in Pakistan. Many of the students who are awarded scholarships by the Government come back successfully but a few of them fail to complete their education. In varying degrees, the Muslim Pakistani students report various stressors that inhibit a successful and healthy cultural adjustment. Unfortunately, the domains of stressors have not been thoroughly examined in the case of Muslim Pakistani students. The current study identifies the acculturative stressors of Pakistani students and assesses their acculturative stress in quantitative parameters. This scale can be used as a diagnostic tool by Mental Health professionals to explore acculturative stress levels of Pakistani students. This study has vital implications for the stakeholders in this regard i.e. Higher Education Commission of Pakistan, host educational institutions and Pakistani students.

## 1. Introduction

Studying abroad can have various challenges for international students (Bai, 2016). These challenges are determined by cultural, academic, social, linguistic, monetary and existential stressors (Smith & Khawaja, 2011). Students often report loneliness and homesickness (Zhang & Goodson, 2011), and face discrimination, particularly when their home culture is Asian, African or Middle Eastern (Smith & Khawaja, 2011). Such factors have been described as acculturative stress (Berry, 2006b)

The Organization for Economic Co-operation and Development (OECD, 2015) revealed that in comparison to other minority groups, international students from Asian countries i.e., students from China, Hong Kong and also other parts of Southeast Asian countries such as Malaysia, Indonesia, China, and Malaysia, constitute 62 % of the global student population, encounter more stress due to language and cultural differences. The literature revealed that Asian international students are considered as an identical group, and the inter-group variances are usually overlooked. Although there are similarities amongst Asian students, they have been dealt with in accordance with the variance in their ethnicities (Nailevna, 2017). It is, therefore, essential to recognize the diversity among international students and consider cultural and social factors to conduct serious research (Tummala-Narra & Claudius, 2013). The present study examines the case of Pakistani students studying overseas.

Most of the Pakistani students are Muslims and follow the teachings of Islam in varying degrees. Currently, approximately 47,164 Pakistani students are studying in different foreign universities (UNESCO, 2016). This number is three times greater than the reported number of Pakistani students a few decades back (UNICEF, 2017). The number has increased since the Government of Pakistan has taken noticeable steps to promote students' mobility. The Higher Education Commission of Pakistan (HECP), in the decade following 2003, facilitated nearly 8537 Pakistani students to study abroad at different foreign universities (Kayani, Ahmed, Shah, & Ali, 2015). To what extent these students would have encountered acculturative stress has been an area of some academic discussion, but a limited amount of research.

### 1.1. The rationale of the study

According to a report published in a leading Pakistani newspaper in 2015, 177 Pakistani scholars, who received scholarships from the Government of Pakistan under various scholarship schemes, returned without the completion of their degrees due to educational, health-related and adjustment issues (Haq, 2015). Similarly, in the year 2018, 428 scholars could not complete their studies based on inauspicious reasons (Abbasi, 2018). In light of these findings, the present aim was to identify the reasons for such dropouts that should be identified and examined especially when the literature on students from Muslim and developing countries indicate that acculturative stress cannot be ignored.

Since acculturative stress has been the first matter of concern among students studying outside their country of residence (Smith & Khawaja, 2011), the present research aims to develop an indigenous measure to explore the acculturative stress of Muslim Pakistani students. It has been argued that stress and associated factors are not comparable across different ethnic groups (Church, 1982). The literature reveals that Pakistani students are unique in their identity, religion, and core cultural values and traditions (Jibeen & Khalid, 2010a), which requires them to be taken into account as a separate entity. The unique cultural disposition demands a unique scale for measurement. It is argued that without a cultural context, any assumption about identification and existence of stressors will remain uncertain and tentative. The Muslim Pakistani students have a unique identity due to political, social, cultural, economic, and psychological factors (Jibeen & Khalid, 2010a) and therefore a detailed inquiry into their acculturative stress must consider an instrument sensitive enough to measure the distinct attributes in the domains of stressors.

### 1.2. An operational definition of acculturative stress

Acculturation refers to a dual process of psychological and cultural change at the individual or group level, which takes place as a result of direct contact with the host culture. It has been

argued that the new demands of the host society may impede the social, psychological and physical aspects of an individual (Berry, 2006b). These demands may become stressors and pose a challenge in acculturation by affecting the mental health of international students. It has also been established that an inability to deal with such challenges may give rise to acculturative stress (Berry, 2006b). In this context, acculturative stress refers to unbearable events, uninviting behaviors of host nationals, and tense situations, that are confronted by international students and reduce chances of cultural adjustment.

For the current study, acculturative stress denotes a form of strain in which stressors have their source in the acculturation process in the host country (Berry, Phinney, Sam, & Vedder, 2006; Lazarus, 1990). An individual's response to the acculturative stress scale will define his/her acculturative stress level. A high or low score will correspond to indicate high or low acculturative stress. Due to the descriptive nature of the study, it does not formulate any assumption about the factor structure of the new measure.

## 2. Literature review: sources of acculturative stress

International students experience a variety of challenges (Alavi & Mansor, 2011). However, little is known about the acculturative stressors among Pakistani students. Possibly particular stressors may affect Pakistani students more than other foreign students from around the world and vice versa (Jibeen & Khalid, 2010b). Based on the available literature on international students, mainly Asian, a few parallels can be drawn regarding Pakistani students.

Previous research acknowledged that the transition to a new learning environment may be a challenging experience particularly for Asian international students (Frambach, Driessen, Beh, & van der Vleuten, 2014; Kühnen et al., 2012). Asian students have been reported to continuously struggle with transformation and adaptation to new thinking patterns and organization of ideas and concepts into writing (Lin & Scherz, 2014). The primary educational stressors include assignments, time constraints to learn and revise the academic material before the exams, low grades, insufficient skills in relevant subjects/fields, difficulties in comprehending the content, and inability to adapt to the interactive pattern of classrooms (Liao & Wei, 2014; Salam, Yousuf, Bakar, & Haque, 2013).

In the available literature, there is a scarcity of studies that focus on the educational experiences of Pakistani students. However, the differences in the education system as an impeding factor has also been discussed by various studies focusing on pedagogical approaches and learning skills in the context of the Pakistani educational system (Ali, Tariq, & Topping, 2013). Moreover, Pakistan is characterized as a collectivistic culture (Hofstede, 2005) and international students from collectivistic cultures find it difficult to respond to non-hierarchic and informal interaction between teachers and students at western universities (Rienties & Tempelaar, 2013). Likewise, the students who are the recipient of grants and scholarships are required to show excellent academic records in order to sustain their financial grants, which serves as an additional stressor for them (Poyrazli, Arbona, Bullington, & Pisecco, 2001).

Language challenges also affect international students' transition process (Mori, 2000) as inadequate knowledge of the host language may impede processes of communication, interaction, and adaptation (Yeh & Inose, 2003). Language proficiency is also associated with academic adjustment as it is an essential component to participate in the class, general discussions, and academic writing. Those with inadequate language skills become vulnerable to higher levels of stress and anxiety (Erdine Duru & Poyrazli, 2007). According to research conducted on Pakistani students in China, the most significant factor to hinder the adjustment process was a lack of competency for intercultural communication (Su, 2017).

Financial challenges are among the commonly cited challenges for international students (Yang & Clum, 1995). The financial constraints could add to the level of acculturative stress. Poyrazli et al. (2001) revealed that Turkish students who were awarded scholarships from their local Government

to study in the US experienced greater stress as compared to the self-financed students. The scholarship holders suffered due to deferred connecting services among Turkey and the US resulting in a delay in receiving their monthly stipend (Poyrazli et al., 2001)

Islam is the fastest-growing religion in the world and is the second in terms of the number of followers (Cole & Ahmadi, 2010). Similarly, the number of Muslim students worldwide is increasing. The research literature confirms that during overseas education, Muslim students face problems in attending to their religious obligations. The results of research conducted on Muslim south Asian students (belonging to Turkey, Bangladesh, and China) showed that they had to face difficulties in implementing Islamic values and meet religious obligations in American universities (Tummala-Narra, Alegria, & Chen, 2012). They could not offer prayer on time, find halal food, and suffered from constant guilt for not fulfilling their religious obligations, which also invited criticism from fellow Muslims (Tummala-Narra et al., 2012). Previous research findings indicate that Muslim identity makes Muslim international students more prone to be discriminated against (Cole & Ahmadi, 2010). There are some qualitative studies in this regard,e.g. (Goforth, Oka, Leong, & Denis, 2014; Mukminin, Yanto, & Yanto, 2013; Tummala-Narra & Claudius, 2013), but there is no scale available for quantitative measurement of religious stressors.

The available literature (Erdinc Duru & Poyrazli, 2011; Mukminin et al., 2013; Tummala-Narra et al., 2012; Tummala-Narra & Claudius, 2013) reveals that perceived discrimination and bias can negatively influence international students' adjustment and mental health. In fact, the post 9/11 US, Muslim international students are at risk of facing negative attitudes (Tummala-Narra & Claudius, 2013). In the US alone, the post 9/11 enrolment of Pakistani students significantly dropped (Hamrick, 2007)

The present study aims to establish a culturally proficient scale to measure the acculturative stress of Muslim/Pakistani students. In the initial stages of scale development, it was necessary to consider the scope and generalizability of the target construct. A systematic review of the literature of available scales and constructs was obligatory to establish a new instrument. It was also essential to look at and compare the available tools to measure acculturative stress before introducing a new scale as stressors may differ at each of many levels of abstraction (Jibeen & Khalid, 2010a). The frequently used existing measure Acculturative Stress Scale of International Students (ASSIS) (Sandhu & Asrabadi, 1994) records students' responses on discrimination, ethnicity, assimilation, loneliness, family, hate, fear, and guilt, etc. However, the scale has been criticized for not including academic stressors, which should be considered as a significant stressor for international students (Bai, 2016). Furthermore, ASSIS does not take into account relevant stress dimensions and is more focused on measuring perceived hate and discrimination. Another essential feature missing from the available list of acculturative stressors has been less emphasis on physical and living conditions, cultural, and academic aspects. A sufficient number of studies support the importance of these stressors (Mori, 2000; Yeh & Inose, 2003).

Besides, the problems identified in the available scales of acculturative stress and factors relevant to Pakistani students, the available literature also emphasizes the need for the development of a culture-specific tool to measure the acculturative stress for a specific community (Bai, 2016; Church, 1982). The identification of culture-specific issues, values, traditions, religion, among students from a particular country help to initiate better services for their adjustment (Jibeen & Khalid, 2010a). The present aim was to develop a culturally competent scale to examine the unique stressors encountered by Muslim Pakistani students during their stay abroad.

## 3. Method
An item pool of 60 items was generated. The recurring themes were identified by conducting an extensive literature review related to international and Asian international students (de Araujo, 2011; Smith & Khawaja, 2011; Swami, Arteche, Chamorro-Premuzic, & Furnham, 2010; Ward & Masgoret, 2004; Zhang & Goodson, 2011), examining the already existing acculturative stress

scales (Bai, 2016; Jibeen & Khalid, 2010a; Sandhu & Asrabadi, 1994; Suh et al., 2016) and taking opinion from Pakistani students who returned back after successful completion of their degrees. These themes included factors that were academic (15 items), financial (14 items), discriminatory (nine items), cultural and religious (six), local and environmental (eight), language-related (five), and homesickness experiences (three).

The content validity was established by taking experts' opinions. The experts comprised of university teachers (two), clinical psychologists (two) Ph.D. researchers and international scholars (ten) who returned after completion of their degree. These experts carefully evaluated the item pool, discussed and assessed the face validity of the scale.

Subsequently, 31 items were retained for the next procedure. These 31 items were organized into different categories. The 31 items scale covered the following domains of stress, academic (six items), general living and finance (four items), perceived discrimination (three items), cultural and religious (four items), local and environmental (four items), language barrier (three items). The five-point rating scale (5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = strongly Disagree) was used to get the responses. A higher score on the Multidimensional acculturative stress scale indicated a higher level of stress; a lower score meant a lower level of stress.

### 3.1. Sample
The participants were males (86.2%) and females (13.2%) and their ages ranged from 21–45 years. Their length of stay in the host country ranged between 1 − 4 years. Most of them were unmarried. The participants were enrolled for masters (42.4%) and Ph.D. programs (57.6%). Pakistani students *(n = 96)* from central Europe (Austria, France, Hungary, United Kingdom, Italy) accounted for 43%, students *(n = 38)* from Western European countries (Belgium and Germany) accounted for 17%, students *(n = 60)* from South East Asian countries (Malaysia, South Korea, China) accounted for 26.9%, the students *(n = 15)* from Middle East (Turkey) accounted for 6.7% and the remaining 6.3% of students *(n = 14)* were from North America. Respondents were restricted to take part only once in the study. (See supplementary Table 1). It was supposed that all the international students would have enough English language proficiency as per the entry requirements of the host country, hence this study was conducted in the English language.

### 3.2. Procedure
The sample for the study were Muslim Pakistani students, who under the Higher Education Commission of Pakistan' (HECP) requirements were to return after successful completion of the degree (Masters and Ph.D. degrees). The researcher sent an invitation to Pakistani students enrolled in various foreign universities through their email addresses. The students were briefly informed about the aims of the study.

### 3.3. Measures
Those students who gave informed consent were sent a link to complete the 31 items Acculturtaive Stress Scale for Pakistani Muslim students along with the two scales i.e., Depression Stress and Anxiety Scale (Lovibond & Lovibond, 1995) and Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) to measure the criterion-related validity of the scale. A demographic questionnaire was also provided to the participants for the enquiring of demographics information.

### 3.4. Ethics
The researcher obtained informed consent and shared all the information relevant to the objectives of the study through an email. The students were free to withdraw at any point in research. Confidentiality of the participants was assured and maintained by following APA VI, which includes that during discussions, presentations, or journal articles (related to the study), their identity and other personal details will not be released.

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## 4. Results

The factor structure of the scale was established through Exploratory Factor Analysis (EFA). EFA has been extensively used to determine construct validity. This technique is widely used to distribute the number of items among small meaningful factors, and to identify the number of factors and to establish an association among observed variables (Morgado, Meireles, Neves, Amaral, & Ferreira, 2018). The sample consisted of 232 students. For factor analysis, the minimum number of the participant is five participants per item (Singh, Junnarkar, & Kaur, 2016). However, any number above 200 has been considered sufficient to carry out the statistical analysis (Singh et al., 2016).

The correlation matrix of the final 31 items was subject to Principal Component Analysis (PCA). The Varimax rotation method was selected. All factors were extracted based on an eigenvalue of 1.0 or higher than 1.0. Pakistani students participated from different regions of the world, however, the Kaiser-Meyer-Olkin generated a value of .864 indicating sampling adequacy for the current study (Jibeen & Khalid, 2010b; Singh et al., 2016). Aside from this, Bartlett's test of sphericity was significant (*p* = .0001) which is indicative of variance among participants' responses (Jibeen & Khalid, 2010a). After the initial extraction, the decision to retain enough factors is subject to the total variance explained, the Kaiser Criterion, simple structure of element distinct from the other factors with underlying items have high loadings within the structure and the meaningfulness of the factor and its justification with the existing theory (Jibeen & Khalid, 2010a; Singh et al., 2016) was used to determine the significant factors (Beavers et al., 2013). The six-factor structure generated the most meaningful solution. The six-factor solution was preferred over the other four, five and seven-factor solutions.

As a result of the EFA analysis, 24 items were retained. The commonality coefficients, item loadings and principal component analysis for the final 24 items are presented below (Tables 2 and 3). The six resultant components were comprised of those carefully chosen items with a factor loading above .30 or/and at least .50 on a specific component (Field, 2009). The final six-factor analysis comprised of academic stressors (i.e. stressors related to new academic demands and differences in educational systems) local and environmental stressors (i.e. problems that arose due to cultural differences among home and host countries), living and financial stressors (i.e., challenges pertaining to financial resources and facilities that are essential for social life, cultural and religious stressors (items that reflect difficulties in implementing Islamic values and meet religious obligations), language (represented problems to understand and communicate with native speakers) and discrimination (factor recorded their concern for bias).The six-factor structure yielded 13.56%, 12.16%, 12.01%, 10.01%, 8.94%, 8.47% variance correspondingly. The overall variance explained by all of these factors accounted for 65.20%. The commonalities for the 24-items scale ranged from .40 to .80 after extraction (See Table 1)(See supplementary Table 2).

### 4.1. Reliability analysis

The Cronbach alpha of the current total scale was r = . 895. In the current study, the internal consistencies of the subscales of the ASSPMSs were as follows: Academic (r = .834, six items), Local and Environment (r = .822, four items), Living and Finance (r = .861, four items), Cultural & Religious (r = .744, four items), Language (r = .781, three items), Discrimination (r = .768, three items). (See supplementary Table 3).Cronbach alpha of the subscales showed adequate reliabilities even with a minimum number of three items (Hinkin, 1995)

### 4.2. The validity of the new scale

The criterion-related validity of the ASSPMISs could be assessed through many tests. However psychological distress (depressive symptoms) and well being (satisfaction with life) are significant variables in stress studies (Ensel & Lin, 1991). The criterion-related validity was analyzed through hierarchical regression. The sum score of the 24 items of the newly developed Acculturative Stress Scale for Muslim Pakistani students students was obtained. These scores were used to predict students' depression and satisfaction with life. To explore the impact of the newly established

| Table 1. Demographic characteristics of the sample (N = 232) | |
|---|---|
| **Variables** | **f (%)** |
| Gender | |
| Male | 200(86.2) |
| Female | 32(13.8) |
| Working status | |
| Part-time employed | 15(6.5) |
| Full time employed | 24(10.4) |
| Unemployed | 192(83.1) |
| English Language Proficiency | |
| Excellent | 54(23.3) |
| Very Good | 128(55.2) |
| Good | 43(18.5) |
| Satisfactory | 7(3.0) |
| Length of stay at current place/host country | |
| Less than one year | 37(16.0) |
| One year | 5(2.2) |
| I and a half year | 6(2.6) |
| 2 Year | 34(14.7) |
| 2 and a half year | 21(9.1) |
| 3 Year | 28(12.1) |
| 3 and a half year | 15(6.5) |
| Four years | 37(16.0) |
| More than four years and less than 5 | 48(20.8) |
| Which degree are you currently pursuing? | |
| Masters | 98(42.4) |
| PhD | 133(57.6) |

Note: Numbers do not add up to 232 because of missing data.

scale, demographics of the students (gender, age, length of stay in the host country) were entered and controlled through hierarchical regression.

The demographic variables did not account for the change in depression ($R_2$ = 0.8). The newly established scale of Acculturative Stress accounted for a significant amount of variance ($R_2$ = 12.3%) and proved to be a strong positive predictor of depression (β = .247, β = 0.37, *t* = 4.87, *p* < .001). Likewise, demographic variables did not account for a variance in the prediction of life satisfaction ($R_2$ = 0.2%). The Acculturative Stress Scale accounted for a significant variance to predict satisfaction with life and proved to be a significant negative predictor of satisfaction with life (β = −.147, β = 0-.421, *t* = −6.245, *p* < .001).

These results provided satisfactory evidence regarding the good criterion-related validity of the ASSPMSs. The results revealed that ASSPMSs were significantly correlated in the predictable direction (negatively with life satisfaction and positively with depression). It implies students' inability to deal with such challenges may give rise to acculturative stress and they may suffer from mental health challenges and depression. However, in case these students are able to cope with the challenges in the new environment and take these new experiences as an opportunity to grow, they experience satisfaction in life. The current results confirmed the results of earlier studies (Pan, Wong, Chan, & Joubert, 2008)

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**Table 2. Item means, standard deviations factor loadings and commonalities of 24 items Acculturative Stress Scale for Pakistani Muslim students**

| Item description | M | S. D | FI | FII | FIII | FIV | FV | FVI | h |
|---|---|---|---|---|---|---|---|---|---|
| | | | **EFA Factor Loadings** | | | | | | |
| 1. Overall, teachers do not seem pleased with my academic efforts. | 3.91 | .807 | .804 | .077 | .087 | -.019 | .015 | .205 | .702 |
| 2. I am not happy with how my study plan is progressing. | 3.55 | 1.024 | .781 | -.004 | .070 | -.008 | .039 | .057 | .620 |
| 3. I am not able to meet the academic deadlines here. | 3.94 | .891 | .753 | .132 | .176 | .180 | -.072 | -.064 | .657 |
| 4. My quality of life is being negatively affected by my academic burden. | 3.13 | 1.091 | .663 | .198 | .213 | .180 | .013 | .175 | .587 |
| 5. I am not getting enough academic support from my supervisor here. | 3.74 | 1.034 | .558 | .188 | .151 | -.063 | .090 | .410 | .550 |
| 6. It is difficult to cope with the differences in Pakistani and western academic setup | 3.46 | 1.101 | .501 | .272 | .336 | .022 | -.020 | .187 | .474 |
| 7. I am not comfortable participating in the local events here | 3.40 | 1.151 | .121 | .800 | -.008 | .181 | .195 | .204 | .768 |
| 8. I feel like I do not fit in here. | 3.76 | 1.046 | .177 | .787 | .136 | .181 | .092 | .139 | .730 |
| 9. It is difficult to adapt to the new environment here. | 3.45 | 1.103 | .241 | .707 | .161 | .145 | .099 | .173 | .645 |
| 10 Using local public services (transportation, healthcare system, banking etc.) is hard for me. | 4.09 | .924 | .019 | .608 | .105 | .206 | .075 | .147 | .451 |
| 11. I have trouble managing my living budget here. | 3.30 | 1.192 | .220 | .122 | .872 | .104 | -.007 | .138 | .854 |
| 12. I do not have enough money to cover all my expenses. | 3.36 | 1.150 | .182 | .039 | .870 | .133 | -.004 | .175 | .840 |
| 13. I feel stressed because my basic expenses (rent, groceries, clothing etc.) are high. | 3.01 | 1.182 | .130 | .088 | .821 | .061 | .051 | .082 | .712 |
| 14. It is hard to find accommodation here. | 3.61 | 1.068 | .220 | .398 | .526 | .080 | .103 | .179 | .532 |
| 15. I am unable to celebrate my traditional religious activities (Eid, Ramadan). | 3.68 | 1.118 | .138 | .166 | .023 | .761 | .116 | .076 | .646 |
| 16. I do not feel free to perform my religious rituals (obligatory prayers) here. | 4.00 | .976 | .090 | .123 | .076 | .760 | .124 | .149 | .644 |
| 17. I do not feel free to wear my traditional clothing here. | 3.51 | 1.173 | -.058 | .130 | .114 | .751 | .073 | .186 | .638 |
| 18. It bothers me when people judge my cultural and religious values. | 3.20 | 1.150 | .046 | .355 | .124 | .533 | .019 | .012 | .428 |

*(Continued)*

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## Table 2. (Continued)

| Item description | M | S. D | FI | FII | FIII | FIV | FV | FVI | h |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | EFA Factor Loadings | | | | |
| 19. I feel difficulty communicating with local people due to the language barrier. | 2.27 | 1.077 | -.049 | .119 | .026 | .089 | **.861** | .064 | .770 |
| 20. I face difficulties understanding the local language. | 2.03 | .995 | .088 | .102 | .007 | .076 | **.811** | .006 | .682 |
| 21. I need to seek help to improve my language skills for daily use. | 2.41 | 1.024 | -.022 | .108 | .039 | .113 | **.779** | .023 | .634 |
| 22. I feel that because I am a foreign student I am denied the privileges enjoyed by the local scholars here. | 3.45 | 1.191 | .168 | .291 | .232 | .116 | .120 | **.734** | .734 |
| 23.I feel that I am denied several opportunities because of my ethnicity. | 3.66 | 1.025 | .127 | .336 | .137 | .253 | .012 | **.723** | .734 |
| 24. I feel discriminated against due to my gender. | 4.23 | .702 | .300 | .120 | .193 | .236 | -.023 | **.648** | .618 |

Note: Item 1–6 = Academic, item 7–10 = Local & Environment, Living & Finance = 11–14, Cultural & Religious = 15–18, Language & Communication 19–21, Discrimination = 22–24.

FI = Academic, FII = Local & Environment, FIII = Living & Finance = 11–14, FIV = Cultural & Religious, FV = Language & communication, FVI = Discrimination = 22–24.

Items in bold represent Factor loadings > .3 against relevant factors. Principal component analysis (PCA) analysis was used with a varimax rotation method.

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| Table 3. Final factors, variance explained and alpha values of Acculturative Stress scale of Pakistani Muslim students (N = 232) | | | |
|---|---|---|---|
| **Factors** | **Items** | **% of variance** | **Alpha** |
| Academic | 6, 2, 7, 3, 9 4 (6 items) | 13.558 | .834 |
| Local and environmental | 18,19,20, 17 (4 items) | 12.162 | .822 |
| Living and finance | 31, 30, 27,29 (4 items) | 12.061 | .861 |
| Culture and religious | 13, 14, 16,15 (4 items) | 10.013 | .744 |
| Language | 25,24,26 (3 items) | 8.944 | .781 |
| Discrimination | 22, 21, 23 (3 items) | 8.470 | .768 |
| ASSPIMSs | 31 items | 65.209 | .895 |

Note: ASSPMSs = Acculturative stress scale of Pakistani Muslim students

## 5. Discussion

The current study aimed to develop a culturally competent scale to examine the Acculturative Stress encountered by Muslim Pakistani students overseas. The scale was established by following the established norms of test construction and an EFA was performed to find a better fitting model. Exploratory factor analysis resulted in a 24 items scale, retaining those items with high loading and those that fall under the critical category. The factors explored in the current study provided confirmatory evidence to formerly acknowledged themes in literature (Church, 1982; Mori, 2000; Mukminin et al., 2013; Yeh & Inose, 2003).

The recent finding regarding academic stressors has confirmed the themes identified in the current research (Bai, 2016; Liao & Wei, 2014), suggesting that academic stressors are an influential factor in the acculturation process. On the academic front, Pakistan scholars are at higher risk of experiences academic stress as the Pakistani educational system is outdated and demands new changes (Akhtar, 2012). In the Pakistani education system, a student's qualifications are tested every year according to a specific syllabus. The majority of students, instead of detailed study, prepare selected syllabus to appear and qualify (Haider, 2008a) Under this pattern, they succeed with high scores but if they get a chance to study abroad, these scholars encounter extreme challenges due to the difference in study habits, teaching and learning pattern, classroom participation and disparities in the course content of the home and host countries (Haider, 2008a). Moreover, Pakistani students also lack the use of critical learning skills (Tran, 2013). In particular, issues related to academic writing create extreme stress (Inamullah, Hussain, & Din, 2008). Hence, the fallouts of the current research revealed that the experience of the different learning environments, differences in educational setup and cultural norms of host and home culture, and second language anxiety made studying abroad a challenging experience (Aubrey, 1991). Moreover, these students come from a collectivistic culture (Hofstede, 2005; Kashif, Ur Rehman, Mustafa, & Basharat, 2014), where family pressure can be high in showing excellence in education; which can cause additional stressors among these students (Tempelaar, Rienties, Giesbers, & van der Loeff, 2013). The outcomes of the present research are consistent with the results of Bai (2016).

The current study further revealed local and environmental stressors, accounting for 12.16% variance. The presence of local and environmental stressors reflects that international students suffer from emotional and physical problems while complying with the tradition of the host culture. The results of the current study confirm the research conducted on Asian international students from Japan, Korea, Thailand, and Taiwan (Gebhard, 2010, 2012).

The current study further found that living and financial stressors explained the 12.01% variance in the Acculturative Stress Scale, which clarifies their importance. The variance is related to the fact that the scholarship holders, under the immigration and scholarship rules, have little opportunities for employment abroad. Due to which, they solely depend upon the scholarship or stipend for maintaining basic facilities. This situation can exacerbate if the scholarship holder supports their family back home or lives with family in the host country as men serve as the breadwinner for the family in Pakistani culture (Khalid, 2011). As the sample of the current study consists of more males than females, the experience of financial challenges seems justified.

The findings of the present research are consistent with the literature, considering financial and living resources as a significant factor in the acculturative process (Liu, 2009; Wenhua & Zhe, 2013). However, these results are contrary to the researches conducted on Chinese international students (Bai, 2016; Pan, Yue, & Chan, 2010), which exposed that Chinese scholarship holders do not face any financial concern during the acculturative process, possibly because of getting enough financial support from their family along with the availing scholarships from the Chinese Government.

Besides the educational, living and corporate level of stress, the participants of the present study, as Muslims, identified religious and cultural issues as an essential concern during their acculturative adjustment, accounting for a 10.01% variance. The literature exposed reasons for experiencing cultural and religious stress among Muslim international students. For Muslim international students, 9/11 had a considerable impact. In the post 9/11 perception of the Western world, Islam has been seen as a religion promoting extremism and Muslims have been viewed as violent and hatred-inducing (Seppy, 2018). As a result, Muslims across the world are at risk of facing negative attitudes (Tummala-Narra & Claudius, 2013). In the case of Muslim immigrants and Muslim international students strict visa policies, strict work rules, and discriminatory behavior have been reported (Ali & Bagheri, 2009; OECD, 2013a; Tummala-Narra & Claudius, 2013). This has given rise to new stressors for Muslim international students (Tummala-Narra & Claudius, 2013). The findings of the present research have validated the results of the literature review (Cole & Ahmadi, 2003; Mukminin et al., 2013; Nasir & Al-Amin, 2006; Tummala-Narra & Claudius, 2013) and a research conducted on Muslim South Asian students (belonging to Turkey, Bangladesh, and China)in which they reported having difficulties in implementing Islamic values and meet religious obligations in the host university (Tummala-Narra et al., 2012). They could not offer prayer on time, find halal food, and suffered from constant guilt for not fulfilling their religious obligations (Tummala-Narra et al., 2012). Similarly, Muslim female students reported that they faced discrimination due to their head cover (Tummala-Narra et al., 2012) or general dressing (Cole & Ahmadi, 2003). All such practices add to their acculturative stress.

The outcomes of the present study support the findings that international students' host language proficiency helped them deal with the challenges effectively (Desa, Yusooff, & Kadir, 2012). However, this factor did not explain much variance, i.e. 8.9% only. This level of variance could be the reason the English language is the official language in Pakistani higher education institutes (Sajid & Siddiqui, 2015). The results of the current study confirm the available literature (Poyrazli, Thukral, & Duru, 2010; Yeh & Inose, 2003) stating that the English language can ease the communication and adjustment process. However, the items were not limited to assess the command of the English language only. Therefore, it is also recommended to learn the local language to avoid language stress. However, there is further research needed to explore the importance of language proficiency in non-English speaking countries.

Finally, Pakistani Muslim students recorded their concern for bias and discrimination, accounting for an 8.47% variance. In the current study, a lower level of discrimination was experienced by Pakistani students. One reason is globalization; students are mentally ready to experience and handle such a situation. The second reason could be the lesser duration of the stay of international

students in the host country than immigrants. The students are supposed to come back after a specified period of time and therefore encounter fewer events of discrimination than immigrants. There can be other factors, which also need to be investigated.

## 6. Implications, recommendations, and limitations

The primary aim of this study was to construct a comprehensive measure covering all the essential aspects which can cause acculturative stress among Pakistani students during their stay in foreign countries. The indigenously developed scale was to chart the acculturative stressors of Pakistani students. The items in the scale were generated through a detailed review of literature relevant to Asian international scholars and conducting in-depth interviews with Pakistani international scholars. It provided us with detailed insight into challenges that are distinctive to the Pakistani cultural context

This scale can be used as a diagnostic tool to assess the acculturative stress of Pakistani students. Mental Health professionals or counselors can explore acculturative stress levels by looking at the overall score on the newly established scale. Even a high score on any subscale can determine the problematic area of the individual. Keeping this view, mental health professionals can offer needed interventions to that aspect.

It is the first culturally competent acculturative stress scale constructed and validated for Muslim Pakistani students across the world. The new measure is comparable in some aspects to the available scales measuring the acculturative stress of international scholars and exploring areas identified in the existing literature. It is broad, focusing on the significant stressors and introducing new dimensions of acculturative stress not existing in a single measure. For instance, the current study has exposed the overlooked aspects (e.g. cultural and religious challenges) of Muslim international students' lives. The current scale quantifies these cultural and religious challenges and this could expedite opportunities for more empirical research.

Also, It is proposed to validate the findings of the study on other Muslim international students to observe the between-group differences and contributing factors in their acculturative stress.

Despite the strength, there are several limitations of the study which should be considered in future studies. First, though the present study provided a sufficient indication of the reliability and validity of the newly established scale. However, the data was collected through email and it is established that internet surveys are subject to selection bias, under-representation, and nonparticipation (Greenacre, 2016). Hence, this limitation must be addressed in future studies by taking face to face data from the participants of a specific country. Second, this study was a preliminary study of scale development, it is recommended that more studies should be conducted to validate the current findings. Third, it is suggested to perform confirmatory factor analysis with another sample of Pakistani scholars. Finally, as the data of the present study comprised of HEC students only, it is recommended to validate the results of the study with other Pakistani students, studying abroad, i.e., self-financed and candidates of semester exchange programs to explore within-group differences in experiences of acculturative stress.

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### Correction
This article has been republished with minor changes. These changes do not impact the academic content of the article.

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