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The impact of acculturation identification and acculturative stress on creativity among Iranian immigrants living in Malaysia

Mehrdad F. Falavarjani and Christine J. Yeh

ABSTRACT
The authors investigate how patterns of heritage and mainstream cultural identification and acculturative stress may explain how Iranians living in Malaysia demonstrate enhanced creativity in creative achievements and creative problem-solving. The sample included 328 Iranian students who were recruited using a cluster sampling method. The results reveal that acculturative strategies (biculturalism, bicultural integration, or bicultural marginalisation) are associated with enhanced creativity. Specifically, strategies that involve disengaging from cultural practices, also referred to as marginalisation, are associated with creative achievements and finding creative solutions to problems. Moreover, heritage cultural identification mediated the relationship between culture shock and creative solution. That is, students who experienced culture shock in the mainstream culture relied on their cultural heritage knowledge and showed decline in their ability to solve a problem creatively. The findings illuminate how creative accomplishment and enhanced creativity potential may be linked to acculturation strategies.

Research on the acculturative experiences of immigrants has tended to focus on the negative impact of living abroad (i.e. Abu-Rayya and Sam 2017; Nguyen and Benet-Martinez 2012). Specifically, previous research explores how acculturating individuals are frequently marginalised and influenced by the dominant mainstream culture and, hence face developmental and psychological concerns (Abu-Rayya and Sam 2017; Nguyen and Benet-Martinez 2012). Many of these groups experience marginalisation due to their ethnicity, minority/majority status, lack of access to equitable educational practices and mobility, and securing financial stability in a new country (Eroğlu 2017; Yeh et al. 2008). These acculturative challenges have emphasised the association of family dynamics (Fuller-Iglesias 2015), peers (Ali and Fokkema 2015; Yeh et al. 2014), parents and teachers (Carol 2014), perceptions of discrimination (Fischer-Neumann 2014), intergroup attitudes (Statham and Tillie 2016), gender (Kofman 2013), age (Sun 2016), and ethnic identity and language (Soehl 2016) on immigrants’ adaptation.
Conversely, researchers have also examined the benefits of living in different cultures including strategies for academic achievement (Xu and Wu 2016), life satisfaction (Chow 2007), sociocultural, psychological (Yeh et al. 2005, 2008), cross-cultural (Statham and Tillie 2016), and successful adaptation strategies (Ertorer 2016). Researchers propose that exposure to multiple perspectives through living in a new cultural setting can enhance individuals’ creativity (e.g. Tadmor, Galinsky, and Maddux 2012). However, it is unclear what the impact of navigating dual cultural identities while coping with acculturative stress is on creative potential (Leung et al. 2008).

Acculturation research has also focused on the experience of individuals moving to a country perceived as the dominant culture, such as the United States, Canada, or Australia; these are countries with similar cultural values that prioritise Western traditions of independence. In fact, researchers have investigated whether or not the impact on creativity is stronger when the mainstream country’s status is equal to that of the individual’s heritage country (Leung et al. 2008).

Another perspective is that individuals from ‘higher status’ countries may benefit from being less anchored to their privileged vantage point especially since power reduces individual’s ability to comprehend how others may think or feel (Galinsky et al. 2006). When so-called ‘higher status’ cultures interact with immigrants from countries from a perceived lower social status (due to social mobility, economic factors, minority status, etc.), they may react by ignoring other cultural groups’ ways of being or they may continue to endorse their own value systems and maintain their privileged position.

Tadmor, Galinsky, and Maddux (2012) demonstrated how bicultural individuals displayed more fluency, flexibility, and novelty on a creative uses task. They also found that biculturals showed higher levels of integrative complexity, an information processing capacity that involves considering and combining multiple perspectives. This underscores the role of cognition in acculturation processes (Kosic et al. 2004). Consequently, biculturals, in comparison to assimilated or separated individuals, became more creative which contributed to being more professionally successful (Bechtoldt et al. 2010). Hence, it is important to examine whether or not the effects on creativity are stronger when the mainstream country’s status is equal to that of the individual’s heritage country (Tadmor, Galinsky, and Maddux 2012).

This study centred on a sample of Iranian students living in Malaysia. We focused on the experience of Iranian immigrants because they are a minority group with an empire history, collectivistic cultural values, and a monocultural societal structure. Moreover, current research on immigrant adjustment has primarily focused on the experiences of immigrants coming to North America, Europe, Canada, and Australia which are dominant countries with high social status. These studies have tended to examine the link between acculturation patterns of heritage and mainstream cultural identification and how that relates to acculturative stress. However, we are interested in the association between acculturation identification, acculturative stress, creative achievements, and creative problem-solving ability, among Iranian students living in Malaysia. This study also seeks to build upon the current work on Iranian immigrants in Malaysia (Arbabi et al. 2016) and how these individuals navigate coming from to monocultural society (Iran) to a multicultural society (Malaysia).
Acculturation identification and creativity

Numerous acculturation studies are based on Berry’s (1980) acculturation theory, which assumes the disconnect between the heritage and mainstream cultures. Berry identified four acculturation strategies: (1) assimilation, (2) separation, (3) bicultural marginalisation, and (4) bicultural integration. Assimilation involves surrendering one’s cultural heritage and embracing the mainstream culture. Separation involves holding onto one’s own culture. Bicultural marginalisation involves separating oneself from both the heritage and mainstream cultures. Finally, bicultural integration involves simultaneously keeping one’s own cultural heritage and adopting a mainstream cultural identity. Research on the bicultural experience of immigrants has typically focused on individual’s identification in the mainstream and heritage cultures and how it may affect an individual’s cultural adjustment process (Abu-Rayya and Sam 2017; Nguyen and Benet-Martínez 2012). However, the role of second culture exposure in fostering creative potential has received little attention (Tadmor, Galinsky, and Maddux 2012). Exploring how creativity and creative potential may be harnessed during the cultural adaptation process may shed light on possible coping strategies and strengths that emerge during the process of migration to a new culture (i.e. Yeh et al. 2006).

Cheng, Sanchez-Burks, and Lee (2008) explored the link between creativity and Bicultural Identity Integration (BII), the degree to which bicultural individuals perceive their dual cultural identities to be largely integrated and compatible (high BII) versus dissociated and difficult to integrate. They found that among Asian Americans, high BII predicted higher levels of creative performance on a culturally specific task. However, in their study, the association between all patterns of heritage-mainstream cultural identification and creativity were ignored. Accordingly, it is unclear how bicultural individuals show enhanced creativity, compared to other acculturation strategies. Most significantly, the samples did not include participants who lived abroad; the results were constrained to creative tasks that drew on identity-relevant knowledge domains and creativity due to expansion of cultural knowledge.

In subsequent research, Tadmor, Galinsky, and Maddux (2012) showed that individuals with a dual heritage-mainstream cultural identity exhibited enhanced creativity and professional success, compared with individuals who revealed a monocultural identity. More specifically, individuals with a marginal identity tended to not be as creatively successful as those with an integrated cultural identity; however individuals with a marginal identity tended to be more successful than those with an assimilated and/or separated identity on lab-based creativity tasks (Small c) and the real-world creative achievements (Big C innovations). However, their findings mainly drew from the U.S. context which limits its relevance to other parts of the world with competing cultural values and social policies (Rudmin 2003, 2006; Rudmin, Wang, and Castro 2016). Moreover, they overlooked the effects of acculturative stress on creativity potential of acculturating individuals.

Acculturative stress and creativity

During the acculturation process, individuals experience incongruent cultural values, contrasting practices, language difficulties, and discrimination (Yeh et al. 2003). These experiences result in cognitive dissonance and contribute to cultural shock (Oberg 1960), later
referred to as acculturative stress (Berry 1980, 2006). Berry’s model is based on the stress and adaptation paradigm (Lazarus and Folkman 1984) and conceptualises acculturative stress as a reaction to the individuals’ perceived inability to resolve incongruent values, customs and practices in their mainstream cultures. Traditionally, it is believed such cultural stressors may lead to disorientation when familiar practices and norms are absent (Berry 1980; Lee, Koeske, and Sales 2004).

On the contrary, Leung et al. (2008) suggested that detrimental influences of acculturative stress take place primarily in the initial stages of moving into a new culture. When the difficult adjustment stages have passed, there are more opportunity for new perceptions to approaching different life tasks and learning new styles of thinking (Rudmin 2010). Ward, Bochner, and Furnham (2001) offered that not all immigrants are able to handle the stress of an unaccustomed atmosphere and that they may feel overwhelmed by insurmountable cultural differences, which may lead to culture shock (Leung and Chiu 2010). To handle the ensuing stresses, some may cling to their own cultural beliefs, norms, and values, more than while living in their own culture. Some others may simultaneously practice both cultural norms and subsequently develop higher levels of integrative complexity, a robust predictor of creativity (Tadmor, Galinsky, and Maddux 2012). As a result, exposure to a new culture may foster either greater flexibility or greater rigidity; and thus, only a subgroup of immigrants is able to manage and overcome stress effectively.

However, if enhancement or decline of creativity potential is a possible psychological effect of acculturation, then examining the role of acculturative stress on creativity is especially important. In fact, experiences of acculturative stress serve to show what impacts on the creativity potential of acculturating individuals when examining the relationship between heritage-mainstream patterns of acculturation identification and creativity. Based on the studies proposed, a mediation model of acculturative stress on the association between acculturation strategies and psychological outcomes, it is assumed that such effects will be pronounced for the association between modes of acculturation identification and creativity, as a psychological outcome of acculturation process (Zamboanga et al. 2009).

**Iranian-Malaysian acculturation context**

As a minority group, Iranians do not have a long history of immigration and only recently began immigrating in large numbers (Rahmandoust, Ahmadian, and Shah 2011). The largest wave of Iranian immigration coincided with the rise of the Islamic Republic in 1979 in the aftermath of a major revolutionary upheaval. Recently, after the Iranian presidential election of 2009, a new influx of immigrating Iranian elites took place (Shoamanesh 2009). The mandatory visa for entry is one of the challenges Iranians encounter when travelling to emigra-tional destinations such as the U.S. and Western Europe. Thus, Iranians often choose countries where they are able to move without a visa. Malaysia is one of the few countries that permits Iranians to immigrate and stay for a period of up to three months with a tourist visa, received upon arrival. As a result, Malaysia has become one of the most attractive travel, investment, and education destinations for Iranians in recent years.

According to the *push–pull* migration model of Iranians in Malaysia developed by Rahmandoust, Ahmadian, and Shah (2011), they discuss three main reasons why Iranians immigrate to Malaysia: (1) economic and demographic, (2) political, and (3) social and cultural proxies. For example, economic and demographic conditions include the lack
of relevant and proper employment opportunities, unfair access to resources, and limited access to resources. These conditions push Iranians to immigrate and feel a pull to Malaysia where better opportunities to access jobs with higher income, meritocracy, and decent democracy are practiced. Politically, the lack of individual freedoms, and limited opportunities for elites are accounted as the push factors in Iran and, in Malaysia, personal freedom, free speech, and possibility of free religious activities as pull factors. Finally, social and cultural reasons such as the feeling of discrimination and inequality in society, corruption, lack of scientific research activities, and low quality of education system in Iran push Iranians to move to Malaysia where the rule of law in society, attention and respect for scientific research activities, and high quality of education are practiced.

Culturally, Malaysia is deemed as a multiethnic, multicultural, multireligious, and multilingual society (Reid 2010). Many Malaysians were members of aboriginal tribes that still live in Malaysia. Both Chinese and Indian cultural influences made their mark through the initiation of trade with China and India and increased with migration to Malaysia by British colonisation in the eighteenth century (Reid 2010). Additionally, the official language in Malaysia is English, a sign of British influence, which created a communication bridge between communities.

According to a non-official report from the Iranian embassy in Malaysia, more than 70,000 Iranians are living in Malaysia, which has increased annually over the past six years. This data includes around 14,000 academic students and about 100 university lecturers (Memariani 2011). Therefore, the new wave of Iranian immigration to Malaysia is unique from other immigration patterns because both cultures may be characterised as developing countries. Despite the fact that both heritage and mainstream cultures bear some resemblances, Iran and Malaysia are also culturally distant.

Historically, Iran is recognised as one of the world’s oldest countries with a specific longstanding civilisation whereas Malaysia is recognised as a more modern country. Malaysia is a democratic Monarchy, whereas Iran is ruled by an authoritarian government. Although both countries follow the teaching of Islam, the majority of Iranians are Shi’a Muslims while Malaysians are Sunni. Furthermore, Iran is also viewed as a male dominated society, whereas in Malaysia; there is an emerging practice of gender equality. Other noticeable differences are language, physical appearance, cuisine, and clothing. Therefore, Iranian immigrants to Malaysia are often exposed to the stress of cultural change and acculturation identification as they must learn to adapt to different styles of clothing, dress, and gender roles in particular.

Core hypotheses

Iranian students were deemed as an ideal sample to study the association between variations of acculturation process and creativity since they are recognised as successful international students in Malaysia (Memariani 2011). Hence, following the model of acculturation proposed by Berry (1980), we posit the following hypotheses:

Hypothesis 1: Iranian immigrants’ acculturation identification will influence their levels of creativity potential in creative achievements and creative problem-solving ability.

Hypothesis 1a: Iranian immigrants’ with a dual cultural identity (i.e. the integration or marginal mode) will demonstrate enhanced creativity in achievements and problem-solving ability.
Hypothesis 1b: Iranian immigrants’ with a monocultural identity (i.e. the separation or assimilation mode) will demonstrate lower creativity in achievements and problem-solving ability.

Hypothesis 1c: In comparison with individuals holding a monocultural identity (separation or assimilation mode), Iranian immigrants’ with a dual cultural identity (integration or marginal mode) will demonstrate higher creativity in creative achievements and correct solution in the problem-solving ability.

Hypothesis 2: Acculturative stresses will influence the level of creative achievements and the problem-solving ability.

Hypothesis 3: Acculturative stress mediates the association between modes of acculturation identification and creativity in creative achievements and the problem-solving ability.

Method

Participants

Iranian students who were first generation immigrants living in Malaysia were chosen as a group of interest in the study. A total of 328 full-time postgraduate Iranian students completed the questionnaire; their average age was 32 years old (SD = 5.73). The sample consisted of 58.0% men and 40.0% women who were pursuing their graduate studies at Universiti Putra Malaysia (UPM). Overall, 92.0% of students were self-financed. They had been living in Malaysia for an average of 2.81 years (range of 8 months to 8 years; SD = 1.55). This range shows that the students have the basic knowledge of the culture of Malaysia.

Procedure

Data was collected from three classes in each of ten different departments (Human Ecology, Educational Studies, Economic and Management, Computer Science and Information Technology, Engineering, Forestry, Environmental Studies, Agriculture, Food Science and Technology, and Veterinary Medicine) using a cluster sampling method at UPM. A total of 364 surveys were distributed and 328 were completed with a 90.11% response rate. UPM was chosen due to: (a) their high number of Iranian students and (b) their high number of papers published and invention patents recorded by Iranian students in comparison to other universities of Malaysia.

A set of questionnaires were designed to measure the patterns of: (1) Acculturation Identification, (2) Acculturative Stress, and (3) Creativity. Participants answered subsequent background questions that assessed age, gender, marital status, number of languages spoken, years living in Malaysia, and sources of financial support. The questionnaire was translated into Persian using a ‘back translation’ method (Yeh and Inman 2007).

Measures

Creativity was measured using two tests, the Duncker’s Candle Problem and Creative Achievement Questionnaire (CAQ).

Duncker’s Candle Problem is a cognitive performance test designed to measure the influence of cognitive bias that limits or prevents individuals from using objects only in
the way they have been traditionally used. It has been used to assess creative problem-solving abilities in numerous studies and is viewed as a reliable measure of creative problem-solving (e.g. Maddux and Galinsky 2009; Tadmor, Galinsky, and Maddux 2012). The test consists of a task for participants to solve to assess their problem-solving abilities.

Specifically, participants were asked to fix a lit candle on a wall made of cork board in such a way that the candle wax would not drip onto the table below (Figure 1). The respondents were given a candle, a box of matches, and a box full of thumbtacks to complete the task by either sketching the image for the solution or writing down the solution. The simple solution is actually to empty the box of thumbtacks and to place the candle in the box using the tacks. However, due to pre-existing associations, expectations and cognitive biases, participants will not use the box full of thumbtacks as a ‘candle holder’ to prevent the wax from dripping onto the table (Maddux and Galinsky 2009). Subjects were asked to write or to sketch the solution or both. If subjects’ answers were accepted by either approach and they mention or draw the solution correctly, we marked it as the correct solution.

The CAQ (Carson, Peterson, and Higgins 2005) is a self-reported measure of creative achievement. It specifically assesses creative achievement across ten domains of creativity: visual arts, music, dance, creative writing, architectural design, humour, theatre and film, culinary arts, inventions, and scientific inquiry (Carson, Peterson, and Higgins 2005). Participants were presented with a 96-item checklist organised into three broader categories: (1) talents, (2) concrete achievements, and (3) perceptions by others. The first category includes 13 domains; the 10 aforementioned domains plus the three additional domains of individual sports, team sports, and entrepreneurial ventures based on the individuals’ talents. The respondents completed the survey by marking the talent or ability that they believe they are good at. The second part consists of rating the domains based on their perceived level of accomplishment for that specific domain from 0 to 7. A response indicating no achievement in the area (‘I have no training or recognized talent in this area’) is rated with zero points. Additional response options that vary in degrees of training include

Figure 1. Duncker’s Candle Problem and solution.
I have taken lessons in this area; weighing one point), and six additionally consecutive questions of increasing levels of perceived achievement. A score is generated for each domain, which amounts to a total CAQ score. The third section is includes three questions to gain an understanding of how others may perceive the participant in reference to their creativity. In this third section, respondents were asked to consider the achievements that they have been accomplishing in Malaysia. The reliability coefficient for the CAQ was acceptable (α = 0.64).

Acculturation Identification was measured using the Vancouver Index Acculturation scale (VIA; Ryder, Alden, and Paulhus 2000). This scale has 20 content-paired items and participants were asked to indicate whether they agree with the statements presented describing identification with the culture of their country of origin (Iranian culture; α = 0.83) and the culture of their current mainstream country (Malaysian culture; α = 0.76) using a 5-point Likert scale (‘strongly disagree’–’strongly agree’). The identification scales were approximately orthogonal (r = 0.09), which permitted the classification of the four acculturation identities. Sample items include ‘I often participate in my heritage cultural traditions’ with the content-paired item of ‘I often participate in mainstream Malaysian cultural traditions’ and ‘I would be willing to marry a person from my heritage culture’ with a paired item of ‘I would be willing to marry a Malaysian person.’

Importantly, this method for classifying and analysing acculturation identification has been previously validated in the literature (Ward and Rana-Deuba 1999). First, Malaysian cultural identification and Iranian cultural identification scales can both be split into median splits, creating a four-fold typology of acculturation. This categorical approach is useful in illustrating differences among the four modes of acculturation. Second, heritage and mainstream patterns of acculturation can be analysed using multiple regression, which has the advantage of analysing all the information in the data set. Using this method, the main effects of the four acculturation attitudes are demonstrated by the cross-product interaction term for Malaysian and Iranian cultural identifications (Ward and Rana-Deuba 1999). Specifically, scale scores for separate levels of identification with each culture are first standardised. Then, the interaction is computed by multiplying the standardised Iranian and Malaysian identification scales. The significance of the differences between the four modes of acculturation is analysed using simple slope analysis (Aiken and West 1991). A high score on the interaction term means individuals prefer biculturalism (either bicultural integration or bicultural marginalisation), whereas a low score indicates a monocultural preference (assimilation or separation).

Acculturative Stress was measured with the Acculturative Scale for International Students (ASSIS; Sandhu and Asrabadi 1994). Respondents were presented with 36 statements rated using a five-point Likert scale (Strongly Disagree to Strongly Agree). The ASSIS comprises seven subscales: eight items assessing perceived discrimination (‘I am treated differently in social situations,’ α = 0.75), five items measured home sickness (‘I miss the people and country of my origin,’ α = 0.70), and five statements measured perceived hatred (‘People show hatred toward me non-verbally,’ α = 0.71). Fear was assessed by four statements (‘I fear for my personal safety because of my different cultural background,’ α = 0.64), Stress due to change (culture shock) measured by three items (‘I feel uncomfortable to adjust to new cultural values,’ α = 0.48), Guilt was evaluated by two statements (‘I feel guilty to leave my family and friends behind,’ α = 0.65), and Miscellaneous items made up of 10 items (α = 0.68). The ASSIS scores ranged from 36 to 180.
points (ASSIS $\alpha = 0.91$) and scores above 109 indicate significant acculturative stress (Sandhu and Asrabadi 1994).

**Pilot study**

The researchers began this project by first conducting a pilot study of 50 Iranian graduate students who were an average age of 33.48 (SD = 6.48). In terms of gender, 31 of the students were male and 19 were female. The pilot study was conducted to assess the reliability of the scales selected and whether or not any of the survey items were confusing to participants. The surveys listed above were used in the pilot study and were found to be highly reliable with alpha coefficients ranging from 0.60 to 0.80. Participants were asked to identify any unusual or confusing statements or expressions for each of the items. None were reported. Hence, it was concluded that the scales were appropriate, clear, and made sense to the sample.

**Results**

Each of the study’s variables had an acceptable alpha reliability and normal distribution, with the exception of the CAQ which was slightly skewed to the right (skewness = 1.80; kurtosis = 2.57). Hence, the CAQ was transformed using the log 10 transformation method (Table 1). According to Mertler and Vannatta (2005), since CAQ is positively skewed we applied log 10 (CAQ + 1). In addition, the responses to the Duncker’s Candle Problem were sorted into dichotomous categories: ‘correct’ or ‘incorrect’. In order to keep the integrity of the study and replicate the original experiment, responses that did not solve the problem (the wax was not prevented from dripping onto the table) were scored as ‘incorrect’. Overall, 29.3% of participants solved the Duncker’s Candle Problem correctly (the matchbox was used as a candle holder and not just a matchbox). The participants’ total score in CAQ ranged from 0 to 56 ($M = 11.78$, $SD = 11.19$). However, the result of spearman’s rho shows no association between the CAQ and Duncker’s Candle Test (.061, $p = .304$). Thus, they measure different aspects of creativity.

| Table 1. Summary statistics and correlation between variable set. |
|---|---|---|---|---|---|---|---|---|---|---|
| Range | Correlations |
| Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| (1) Gender (1 = male) | 0.39 | 0.49 | – | – | – | – | – | – | – | – | – |
| (2) Age | 31.76 | 5.73 | –.07 | – | – | – | – | – | – | – | – |
| (3) Martial status (1 = single) | 1.47 | 0.57 | –.15 | .41 | – | – | – | – | – | – | – |
| (4) Years in Malaysia | 2.81 | 1.55 | –.08 | .3 | .15 | – | – | – | – | – | – |
| (5) No. language (1 = bilingual) | 2.32 | 0.57 | .09 | .09 | .03 | .03 | – | – | – | – | – |
| (6) ASSIS | 100.01 | 19.38 | –.12 | −.00 | .00 | –.09 | – | – | – | – | – |
| (7) Mainstream culture | 36.99 | 6.68 | –.08 | .15 | .07 | –.08 | .10 | –.08 | – | – | – |
| (8) Heritage culture | 28.33 | 6.08 | –.01 | .13 | .13 | –.06 | .02 | .25 | .09 | – | – |
| (9) Mainstream-heritage interaction$^c$ | 0.38 | 1.10 | –.04 | .07 | –.09 | –.20 | .03 | –.20 | .12 | –.27 | – |
| (10) Log CAQ | 11.78 | 11.19 | –.12 | .20 | .17 | –.10 | –.07 | .04 | .00 | .02 | .11 |

Notes: 1. $^a > .001$, $^b > .05$, 2. Numbers of subjects change from 260 to 328, 3. Log CAQ = Log10 transformation method was used for normalizing the CAQ score, 4. ASSIS: Acculturative Scale for International Students, and 5. $^c$ = standardised heritage scale × standardised mainstream scale.
In terms of participants’ acculturation identification, a comparison of mean scores indicate that respondents identified more with their own culture \((M = 36.99, SD = 6.68)\) than with the mainstream’s culture \((M = 28.33, SD = 6.08)\). Moreover, the acculturative stress scores of this study ranged from 52 to 150 \((M = 100.01, SD = 19.47)\). Overall, 30.5% of the Iranian students scored above 109, indicating high levels of acculturation stress. As illustrated by Table 1, heritage-mainstream cultural interaction correlated positively with creative achievements \((r = 0.11, p = .01)\), providing support for the first hypothesis. Moreover, holding onto Iranian cultural identity was negatively associated with CAQ. In addition, acculturative stress was negatively, but not significantly, correlated with creative achievements \((r = −0.04, p = .36)\). Thus, the second hypothesis was not supported.

**Prediction and comparison: acculturation identification and problem-solving ability**

A hierarchical, binary logistic regression was conducted with the control variables entered in the first step and with patterns of heritage and mainstream cultural identities entered into the second step (Table 2). After controlling for the effects of gender, age, marital status, number of languages spoken, and years in Malaysia, regression analysis shows that the interaction term between both cultures remained the positive significant predictor of the creative solution \((B = 0.78, \text{S.E.} = 0.19, \text{Wald} = 15.64, p = .000, R^2 = 0.22)\). By contrast, having a stronger hold on the heritage culture was negatively associated with the problem solution. These findings indicate the key role of biculturalism, (either as bicultural marginality or bicultural integration) in comparison to monoculturalism (separation or assimilation) as associated with enhanced problem-solving ability. This result provides grant support for the first hypothesis.

Next, a comparison among four acculturation identities (obtained by median splits) in the problem solution (including correct and incorrect) using chi-square was conducted (median split was chosen to not violate the test assumption). The results indicated significant differences in the creative task between four modes of acculturation \(\chi^2 (3, 260) = 24.46, p < .001\). Marginals were the most successful group in solving the problem creatively (51.7% of marginal students solved the problem correctly), in comparison to students identified as bicultural, 49.3%, assimilated, 34.3% and separated, with 13.3% using the correct answer (Figure 2). As demonstrated by Figure 2, both bicultural integration and bicultural marginalisation have the highest number of correct solutions.

**Table 2. Patterns of heritage and mainstream cultural identification predicting the problem solution including control variables (Step 2).**

<table>
<thead>
<tr>
<th></th>
<th>(B)</th>
<th>(\text{S.E.})</th>
<th>(\text{Wald})</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (1 = Male)</td>
<td>−0.27</td>
<td>0.32</td>
<td>0.70</td>
<td>.402</td>
</tr>
<tr>
<td>Age</td>
<td>0.01</td>
<td>0.03</td>
<td>0.01</td>
<td>.907</td>
</tr>
<tr>
<td>Marital status (1 = single)</td>
<td>−0.01</td>
<td>0.31</td>
<td>0.01</td>
<td>.966</td>
</tr>
<tr>
<td>No. languages (1 = bilingual)</td>
<td>0.23</td>
<td>0.23</td>
<td>0.95</td>
<td>.330</td>
</tr>
<tr>
<td>Years in Malaysia</td>
<td>0.08</td>
<td>0.10</td>
<td>0.54</td>
<td>.464</td>
</tr>
<tr>
<td>Mainstream culture</td>
<td>0.04</td>
<td>0.02</td>
<td>2.45</td>
<td>.117</td>
</tr>
<tr>
<td>Heritage culture</td>
<td>−0.05</td>
<td>0.02</td>
<td>3.96</td>
<td>.047</td>
</tr>
<tr>
<td>Mainstream-heritage cultural interaction</td>
<td>0.78</td>
<td>0.19</td>
<td>15.64</td>
<td>.000</td>
</tr>
<tr>
<td>Constant</td>
<td>−0.54</td>
<td>1.48</td>
<td>0.13</td>
<td>.717</td>
</tr>
</tbody>
</table>

Note: 1. Nagelkerke \(R^2 = .22\), 2. The Hosmer and Lemeshow test was not significant, indicating a good model fit \(\chi^2 (8) = .88, p = .55\).
However, the marginal individuals are the only group that solved the problem correctly more frequently than incorrectly. This finding is consistent with the first hypothesis.

**Prediction and comparison: acculturation identification and creative achievements**

A hierarchical, multiple regression was conducted with gender, age, marital status, number of languages spoken, and years in Malaysia as control variables in the first block and with heritage and mainstream cultural patterns in the second block (Table 3). The study models demonstrated a good fit ($F < 0.01$). Consistently, the results demonstrated the cultural

**Table 3. A hierarchical, multiple regression predicting Log CAQ.**

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th>Step 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$\beta$</td>
<td>$B$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Constant</td>
<td>0.330*</td>
<td>-</td>
<td>0.502*</td>
<td>-</td>
</tr>
<tr>
<td>Gender (1 = male)</td>
<td>-0.071</td>
<td>-0.085</td>
<td>0.013</td>
<td>0.177*</td>
</tr>
<tr>
<td>Age</td>
<td>0.013</td>
<td>0.177*</td>
<td>0.020</td>
<td>0.028</td>
</tr>
<tr>
<td>Marital status (1 = single)</td>
<td>0.102</td>
<td>0.151*</td>
<td>0.016</td>
<td>0.061</td>
</tr>
<tr>
<td>No. languages (1 = bilingual)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years in Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heritage culture</td>
<td>-</td>
<td></td>
<td>-0.006</td>
<td>-0.092</td>
</tr>
<tr>
<td>Mainstream culture</td>
<td>-0.001</td>
<td>-0.018</td>
<td>0.044</td>
<td>0.124*</td>
</tr>
<tr>
<td>Heritage-mainstream cultural interaction</td>
<td></td>
<td></td>
<td>0.087</td>
<td>0.11</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.087</td>
<td>0.11</td>
<td>0.11</td>
<td>0.124*</td>
</tr>
<tr>
<td>$F$</td>
<td>5.08**</td>
<td>4.018**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *$p > .05$, **$p > .001$.**
interaction of both cultures positively and significantly predicted the creative achievements ($\beta = 0.126, p = .04$). The stronger cultural identity with the heritage or mainstream culture was negatively associated with creative achievements.

As age and number of languages spoken were the strongest predictors of creative achievement, they were controlled using a one-way between-group analysis of covariance (one-way ANCOVA). ANCOVA was used to compare the four types of acculturation identification. Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, and homogeneity of variances. After controlling for effect of the variables, the outcomes reveal significant differences among four modes of acculturation and creative achievement [$F(3, 264) = 3.77, p = .01$]. Specifically, marginals accomplished the highest amount of creative achievement ($M = 1.04$), whereas, assimilationists achieved the lowest amount ($M = 0.84$). Separationists and integrationists approximately achieve similar intermediate levels of creative work ($M = 0.95, 0.96$ respectively), partially supporting the first hypothesis.

**Test of mediating effect of patterns of heritage and mainstream cultural identification**

Our final hypothesis assessed whether or not acculturative stress mediated the association between modes of acculturation identification and creativity in creative achievement and the problem-solving ability. To test the last hypothesis, multiple regression analyses were conducted using the bootstrapping method with bias-corrected confidence estimates (Preacher and Hayes 2008). Regarding both creativity measures, the result of the 95% confidence interval of the indirect effects of 5000 bootstrap resamples (Preacher and Hayes 2008), showed no indirect effects of heritage, mainstream or interaction terms with participants’ total score of acculturative stress.

Mediation analyses were rerun on each of the seven acculturative stress subscales and the measure of creative problem-solving (Duncker’s Candle Problem). Our findings demonstrate that culture shock (stress due to change in culture) was positively associated with the heritage culture ($B = 0.84, t (266) = 4.89, p = .0001$). It was also found that stress was negatively correlated to creative problem-solving ($B = -0.12, Z (266) = -2.09, Wald = 4.39, p = .04$). Lastly, results indicate that heritage culture was negatively associated with creative problem-solving ($B = -0.05, Z (266) = -2.43, Wald= 5.92, p < .01$). As Figure 3 illustrates, results of bootstrapping also confirmed the mediation effect of the heritage

![Figure 3](image)

**Figure 3.** Indirect effect of culture shock on creative solution through heritage cultural identity.

Note: *$p > .05$, **$p > .001$.**
cultural identity ($B = -0.041; CI = -0.089$ to $-0.009$). However, the mediating role of heritage and mainstream cultural patterns between each acculturative stress subscale and creative achievement was not pronounced. Therefore, results only provide partial support for the last hypothesis.

**Discussion**

Researchers have long been interested in the experiences of individuals living abroad (Rudmin 2006), but have primarily centred their research on the negative impact of immigration and acculturation, especially in the context of a country with dominant social status. The current study focused on the acculturation experiences of Iranian students living in Malaysia. This study is unique because Iran and Malaysia are two cultures that were also deemed of similar social status. We also interested in examining the positive effects of acculturation identification and acculturative stress, namely on creativity potential.

The results indicate that the Iranian participants were inclined to maintain a separatist identity. This may be due to the fact that, for many Iranians, the issue of upholding a Persian identity without loss of self and feeling of hopelessness is a key cultural value (Safdar, Lay, and Struthers 2003). In Iranian culture, the importance of connectedness to family, friends, and traditions of the heritage has been expressed repeatedly (Safdar, Struthers, and Van Oudenhoven 2009). In addition, since the sample included graduate students, it is likely that they received minimal social and financial support from the mainstream institution (as mentioned, 92% of participants did not receive financial aid from the University). Hence, due to this lack of support, Iranians experiencing difficulties with mainstream culture may move towards the separation mode of acculturation (Rudmin 2003, 2006; Rudmin and Ahmadzadeh 2001; Safdar, Lay, and Struthers 2003).

The findings also demonstrated that holding onto one’s heritage and cultural practice was the least successful type of acculturation strategy in terms of creative problem-solving. Perhaps this separatist strategy impacted creative problem-solving because it is a test of cognitive bias and openness to trying different ways of problem-solving. However, this subgroup of people were as successful as integrationists were in creative achievement. Previous research has indicated that these individuals may have benefited from social and emotional supports from culturally diverse individuals in Iran. Perhaps, these supports encouraged them to cooperate with creative people from their own culture, and subsequently, accomplish more creative achievements (Bruckman 2008; Perry-Smith 2006; Zhou et al. 2009).

Furthermore, the findings indicate that biculturalism, either as bicultural integration or bicultural marginalisation, is related to enhanced creative problem-solving and creative achievements, in comparison to individuals practicing a monocultural identity (i.e. assimilation and separation). This finding supports the idea that although culture may restrict creativity potential, the experience of cultural exchange may nurture the inventive expansion of ideas (Leung et al. 2008). However, the results do not address the idea that everyone who has lived abroad for an extensive period of time creatively succeeds at the same rate (Maddux and Galinsky 2009). Culturally responsive, education based programmes and interventions may play a role in facilitating positive development, identity, and adaptation (Romo, Mireles-Rios, and Hurtado 2016).
Consistent with previous research (Tadmor, Galinsky, and Maddux 2012), individuals who practice dual cultural identities show enhanced creativity and professional success when compared with individuals who practice a monocultural identity. Accordingly, Tadmor, Galinsky, and Maddux (2012) found that integrationists demonstrate enhanced creativity. Perhaps when individuals who have lived abroad and have extensive exposure to new and old cultural knowledge, simultaneously juxtapose and combine two cultural practices, it results in more complex general information processing capabilities, known as integrative complexity. These cognitive processes may capture the domain-general creative benefits of living abroad (Leung and Chiu 2010; Tadmor et al. 2012).

In contrast, researchers reported that individuals with a marginal identity tend to not be as creatively successful as those with an integrated cultural identity, but more successful than those with an assimilated or separated identity. Current findings present that individuals who disengaged from both cultural norms were the most successful group in solving the candle problem and accomplishing the aggregated domains of creative achievements. These findings coincide with a few studies that demonstrate that marginal individuals are more interculturally effective than bicultural, assimilated, or separated individuals (Lee 2010; Rudmin and Ahmadzadeh 2001). This same body of research also questions typical interpretations of marginalisation as the worst strategy of acculturation (e.g. Berry 1980; Nguyen and Benet-Martínez 2012). In fact, research has questioned the existence and validity of the traditional classification of marginal individuals as anomic persons who disengage from both heritage and mainstream cultural practice and consequently, suffer from alienation, distress, and low self-esteem (Rudmin 2003, 2006; Rudmin and Ahmadzadeh 2001).

Contextually, it seems that marginal individuals’ expression may be a tendency to resist conformity to cultural and social norms of both collectivistic cultures for need of being individualistic among the interdependent people who are educated (Li and Kanazawa 2016; Triandis 1994). These individuals may prefer to pick and choose what they deem to be appropriate from each culture rather than allowing society to dictate ascribed expectations. They may also choose to develop a different lifestyle that benefits from all sorts of human interactions and resources available in the surrounding social environments (e.g. Rudmin 2006).

Such behaviour would explain why marginals would be expected to achieve greater cognitive and behavioural benefits than assimilated or separated individuals. However, our findings call to question why marginals may be creatively more successful than biculturals? It is posited that a second factor must be taken into consideration – the strength of disengagement from only two cultural identities. Detaching from the social norms of one’s heritage culture, while being exempted from the social norms of mainstream culture, provide marginals with a sense of autonomy and self-determination leaving those around them to have few expectations of how they should behave (Li and Kanazawa 2016; Rudmin 2010). Being individualistic in a collectivistic culture provides an advantage of attachment to all regardless of culture and race (Levy et al. 2007). These marginal individuals would be expected to be more creatively successful than bicultural individuals who set their behaviours to reach and satisfy the expectation of people of both cultures. Moreover, this result is also supports the analytical stories of highly creative persons such as Sigmund Freud, Albert Einstein, T. S. Eliot, Igor Stravinsky, Martha Graham, etc. Based on their
biographies, these highly creative individuals marginalised themselves from cultures, religions, families, societies, friends, and colleagues and spent time alone as self-marginalised rather than integrated or assimilated into other cultures while living extensively abroad (Gardner 2011).

However, as our findings revealed, for individuals living abroad, the negative association between acculturative stress and creativity shows that this stress is changing. Therefore, our results contradict the idea of culture shock existing in the initial stage of the acculturation process. In fact, once the difficult adaptation stages have passed, adjusting to a new culture offers opportunities for new perspectives to approaching various life tasks and in learning new ways of thinking (See, Leung et al. 2008).

In addition, the results indicate a mediating effect of strong engagement with the heritage culture in the association between culture shock and creative problem-solving ability. The reasons behind the effect, according to Leung and Chiu (2008), is to manage the stressful experience of living in a new culture. Although some may rely on the conventional ideas of their own culture and resist the mainstream culture’s ideas, clinging to one’s own heritage ideas lead to diminished creative potential. Hence, separation might be used as a strategy to cope with the stress, especially where individuals are without political voice or socioeconomic force (Rudmin 2003, 2006). These individuals are consistently less creative in terms of problem-solving (Chiu et al. 2000). Similarly, Runco (2004) argues that the interaction of personal and contextual factors in perceiving two cultural connections may be shocking or distressing and thus, lead individuals to reject novel and inaccessible ideas in order to reduce negative reactions. Consequently, rejecting new ideas from the mainstream culture diminishes their creative ability (Rhodes 1987). Hence, with the negative attitude, such as obstinate resistance to adapting a living-abroad experience, may have counterproductive impacts on unprepared or unappreciative individuals (Leung and Chiu 2008).

**Limitations**

There are several limitations of the current study worth mentioning. First, it is important to note that correlational studies using self-report questionnaires are always potentially susceptible to assumptions of causal direction, shared method variance, and social desirability. Regarding the former, pre-existing acculturation stress may have caused the students to choose a new cultural coping strategy of acculturation, rather than the new cultural identity leading to different levels of stress. The stress → acculturation strategy assumption may be convincing because of the wealth of prior research supporting this directional assumption as well as the meaningful theoretical coping stress strategy (Berry 1980; Zamboanga et al. 2009).

Second, the sample of Iranian students is not representative of all Iranians in Malaysia. There may be differences between the acculturative stressors encountered by individuals who are involved in different jobs and professions outside of the academic environment. Future studies on larger and more representative samples would be necessary to establish the generalisability of the findings for Iranians, and to extend the results to other international groups, especially those with different cultural contexts from the culture of Malaysia. In addition, further research on a sample of Iranians in the West or other Asian countries might be interesting for drawing a cross-cultural comparison looking
for how long exposure to second culture may impact on creativity when the mainstream
country’s status is or is not equal to that of the individual’s heritage country (Leung et al.
2008; Tadmor, Galinsky, and Maddux 2012). Additionally, further research might be
necessary to examine such influence in the context when equally powerful and confident
cultures interact or when powerful minority and powerless dominant cultures interact
(Rudmin, Wang, and Castro 2016).

Moreover, since enhanced creativity was reached from different scopes and forms of
multicultural experience (‘Big M’: e.g. living in a foreign country; ‘little m’: e.g. times tra-
velling abroad, exposure to cross-cultural information at heritage) (Leung and Chiu 2008,
2010; Leung et al. 2008), the other limitation of the study can be the bias of examining
‘little m’ multicultural experience in the multicultural society of the mainstream nation.
Thus, future research may deal with a comprehensive look at ‘Big M’ and ‘little m’ multi-
cultural experiences in association with ‘Big C’ and ‘small c’ creativity, among a diverse
and successful group of international professionals. Although investigations of ‘little c’
creativity outcomes and processes can potentially enlighten our understanding of how
living-abroad experiences can impact cognitive processes in larger scale creative ende-
vours, future research might focus on how and what life process marginal individuals
with ‘little c’ should take to traverse to ‘Big C’ creative individuals (Maddux et al. 2009;
Rich 2009).

Finally, there were limitations with the measures. The measure of creative problem-
solving, the Duncker Candle Problem, was problematic because it assumed that ‘innova-
tive’ solutions to the candle problem were labelled as ‘incorrect’. This specific measure of
so-called creative problem-solving seemed to endorse narrow definitions of creativity. The
researchers used this measure due to lack of availability of other measures but caution
interpretations of this measure beyond the specific definition of creative problem-
solving provided. Future studies may seek to develop broader ways of reliably measuring
this construct of creative problem-solving. It is also possible that cultural differences
within Iranian and Malaysian culture might lead to different strategies for solving this
problem differently. Future studies may compare how Iranians in Iran versus Iranians
in Malaysia may solve this problem differently.

There were also limitations with the alphas of one of the ASSIS subscales. As seen, most
of the alphas were in the range of 0.64–0.75. However, the stress due to change subscale (3
items) has an alpha of $\alpha = .48$ which accounted for the difference between the subscales.
There was also a lower alpha when comparing Malaysia ($\alpha = 0.76$), and Iran ($\alpha = 0.83$) on
the Cronbach’s alpha of the VIA scale (Difference = 0.07). We interpreted the Malaysia
scale as reliable as the corresponding Iranian scale in assessing the culture of Malaysia.
We also analysed the alpha for the culture of Malaysia, looking at the item-total table,
under the section of Cronbach’s alpha for item deletion. We determined that by deleting
item 4, ‘I would be willing to marry a person from Malaysian culture,’ the alpha would rise
up to $\alpha = 0.80$ (a 0.4 increase). This item is the primary reason for the lower alpha on the
Malaysian scale.

Conclusion

Our results also help clarify what has traditionally been labelled the ‘adjustment-performance
paradox’ – the paradox that the highest performing international employees (in our
case university students) may also be those who experience the most severe culture shock (Thomas 1998). Specifically, unlike Tadmor, Galinsky, and Maddux (2012), when we found that the marginal acculturation strategy, typically the most stressful type of adjustment identification (Berry 1980, 2006), achieved greater success in creative achievement and problem-solving than other acculturation identifications, especially biculturalism. The researchers demonstrated that the critical factor driving these findings was marginals’ greater capacity for problem-solving and creative achievement.

In addition, the current project also illuminates how exposure to a second culture may impact on creativity when the mainstream and heritage country are of equal social status. The researchers implicated that the adjustment-performance paradox may be that adjustment supports not only embracing mainstream or heritage-mainstream culture but goes beyond the boundary of these two cultures to include a multicultural attitude since the process of becoming bicultural may be a stressful experience. In fact, when acculturating individuals in two cultures of similar status embrace a bicultural identity, they may not develop a higher cognitive complexity since they are not always exposed to unconventional ideas (as seen in cultures of very distinct social status) and, thus, show a lower performance on creative tasks and achieve less in terms of creative works. As a result, if a group adopts an assimilation or a bicultural mindset, believing that minority members should be absorbed into mainstream culture or heritage and mainstream culture, the minority members’ ability to adopt a multicultural identity will be greatly constrained when heritage and mainstream cultures share several resemblances and social statuses like Iran and Malaysia.

An increasing range of immigrants move into various countries with different acculturation contexts due to economic and political transmutations. Therefore, it is relevant and pertinent to investigate what are the critical elements in determining successful cross-cultural interactions for immigrants in societies, such as Iran and Malaysia. The ability to simultaneously connect with both heritage and mainstream cultures and/or to become multicultural attached to humanity, regardless of one’s culture or ethnicity may be a key to translating foreign experiences abroad into a tangible toolbox that strengthens people’s creative potential and abilities around the world. The researchers believe it was important to study how creativity and creative problem-solving may be influenced by the acculturation experience for immigrants. Whereas, previous research has focused on the more negative aspects of acculturation and the immigration process, this study contributes to the literature by investigating positive aspects of the acculturation process: creative achievement and creative problem-solving. Based on our results, we can say that the acculturation strategy of biculturalism (including both marginal and integration) may benefit from the negative effects of acculturative stress to enhance our participants’ creativity potential. Based on our findings, it could be recommended that individuals may consider international exchanges or programmes in order to expose them to new customs, values, behaviours, which in turn may improve their creativity and creative process.

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References


