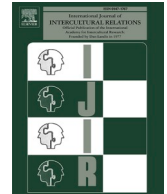




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Cultural intelligence, acculturation, adaptation and emotional displays of other-condemning emotions and self-conscious emotions among Chinese international students in the UK

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ABSTRACT

Are emotional display rules – cultural norms regarding how to express emotions in culturally and socially proper ways – influenced by individuals' acculturating experiences? The current study investigated the impact of cultural intelligence and acculturation variables (e.g., mainstream and heritage cultural identification, sociocultural adaptation, acculturative stress) on displays of other-condemning emotions (anger, disgust and contempt) and self-conscious emotions (shame and guilt) among Chinese international students in the UK ($N = 161$). The results indicated that there were indirect effects of cultural intelligence on emotional display rules through cultural identification and cultural adaptation. This research extends our current knowledge about the mechanisms that may influence emotional display rules and offers some practical guidance for acculturating individuals.

Introduction

Emotional display rules are cultural norms about how people should express emotions in a culturally and socially acceptable way (Matsumoto et al., 2008). These rules are not only learned from an early age but are also influenced by acculturative experiences; however, previous studies have rarely focused on the acculturation of emotional display rules (Mesquita et al., 2016). Therefore, this paper seeks to expand this literature by examining the impact of cultural intelligence and acculturation variables (e.g., heritage cultural identification, sociocultural adaptation, acculturative stress) on emotional display rules among bicultural individuals.

Other-condemning emotions vs. self-conscious emotions

We focused on participants' endorsements of displays of other-condemning emotions (anger, contempt and disgust) and displays of self-conscious emotions (shame and guilt). Other-condemning emotions reflect criticism toward other individuals, especially when other people fail to follow rules during social interactions (Haidt, 2003). Because the expression of other-condemning emotions may be viewed as reflections of autonomy that help individuals claim their rights, they may be viewed as more acceptable in cultures that value independence (i.e., individualistic cultures) (Boiger et al., 2013; Markus & Kitayama, 2001). On the other hand, because the

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expression of other-condemning emotions may cause conflict and undermine group harmony, they may be seen as less acceptable in cultures that value interdependence (i.e., collectivistic cultures) (Boiger et al., 2013; Markus & Kitayama, 2001; Safdar et al., 2009). In contrast, shame and guilt are considered to be types of self-conscious emotions (Lewis, 1992; 2000). They may be viewed as less desirable within individualistic cultures because these emotions might obstruct the cultural imperative to maintain a positive self-view (Heine et al., 1999). In collectivistic cultures, however, shame and guilt might be more valued because they are experienced when one breaks social rules and fails to fulfil social obligations (Mesquita et al., 2016). The expression of shame and guilt might be beneficial for maintaining harmonious relationships in collectivistic cultures because these feelings point out personal defects and to some extent might contribute to adjusting oneself to social norms (De Leersnyder et al., 2013).

In the present research, we considered factors that might influence bicultural individuals' endorsements of emotional display rules: heritage and mainstream culture identification, sociocultural and psychological adaptation, and cultural intelligence. More details are described below.

Acculturation and adaptation

At the individual level, acculturation refers to the process of continually interacting with people from other cultures that differ from one's original culture (Berry, 2003; Berry & Hou, 2021). According to Berry's (1997) bi-dimensional theory of acculturation, one's heritage cultural identity and mainstream cultural identity are relatively independent from each other. Ryder et al. (2000) supported this theory with empirical evidence. Also, some research has supported Berry's (1997) claim that the strategy of integration (maintaining the heritage culture and participating in the mainstream culture) leads to better psychological and sociocultural adaptation (Berry et al., 2006; Nguyen & Benet-Martínez, 2013; Choy et al., 2021), though other research has not (Bierwaczzonek & Kunst, 2021).

A commonly-studied outcome of acculturation, adaptation (also known as cultural adjustment) refers to the ways that individuals reorganise themselves to fit into new cultural contexts in efficient and comfortable ways (Berry et al., 2002; Berry, 2022). Searle and Ward (1990) first proposed two distinct but interrelated components of cultural adaptation: sociocultural adaptation and psychological adaptation. Later, Berry et al. (2006) found that these two recognisable forms of adaptation emerged in their factor analysis of 5366 immigrant youth (aged 13–18 years old) from 13 societies.

Sociocultural adaptation refers to the ability to accommodate and cope with daily life in the new cultural environment (Sam et al., 2022; Searle & Ward, 1990; Ward & Kennedy, 1999). A higher level of sociocultural adaptation difficulties may be related to more negative emotions that may strongly impact one's life quality (Spencer-Oatey & Xiong, 2006).

By contrast, psychological adaptation refers to feelings of well-being, life satisfaction, and low acculturative stress in the new cultural context (Sam et al., 2022; Ward & Kennedy, 1999). Ward and Kennedy (1994) suggested that psychological adaptation could be indexed by acculturative stress and life satisfaction. Acculturative stress refers to an individual's stress response when they fail to manage their daily life events and intercultural contacts during acculturation (Sam & Berry, 2010). Acculturative stress has been linked with higher levels of negative emotions, anxiety and depression (Choy et al., 2021; Crockett et al., 2007). For instance, Chinese international students with higher levels of acculturative stress are at high risk of experiencing depression (Wei et al., 2007).

Life satisfaction, another indicator of psychological adaptation, refers to an individual's own appraisal of their quality of life (Shin & Johnson, 1978). Because self-reported life satisfaction allows people to judge their life quality according to their own subjective standard, it can be measured universally – different individuals may endorse various values and have different understandings of life (Diener et al., 2003). Altogether, less acculturative stress and higher life satisfaction indicate better psychological adaptation.

Cultural intelligence

Cultural Intelligence (CQ) refers to one's ability to adapt effectively in culturally diverse contexts (Earley & Ang, 2003). CQ as a multidimensional construct comprises four elements: metacognitive CQ (higher order cognitive skills, ability to learn, understand, develop and strategize within different cultural settings), cognitive CQ (knowledge of different cultures), motivational CQ (straightforward intentions and interests about learning in a functional way to deal with different cultures) and behavioural CQ (culturally proper actions) (Ang et al., 2007; Ng & Earley, 2006). Theoretically, individuals with high CQ can understand, learn and adapt well in cross-cultural environments. Adanlawo et al. (2021) suggested that intercultural business organisations should employ multilingual employees and offer cultural training for their expatriate employees to tackle communication barriers across borders and enhance CQ.

Relations among cultural intelligence, acculturation and adaptation

In terms of the relation between cultural intelligence (CQ) and acculturation, Peng et al. (2015) found that motivational CQ (one of the four dimensions of CQ) and heritage cultural identification were positively associated. Furthermore, Wang et al. (2015) found that mainstream culture identification was positively related to CQ among Chinese international students studying in the USA. As CQ is a construct that taps individuals' ability to understand and absorb cultures (Earley & Ang, 2003), it is reasonable that CQ would be positively related to both heritage cultural identification (Hypothesis 1a) and mainstream cultural identification (Hypothesis 1b).

Previous research has demonstrated that heritage cultural identification is positively related to psychological adaptation, whereas mainstream cultural identification is related to better sociocultural adaptation (Berry et al., 2006; Ward & Kennedy, 1994). In Ryder et al.'s (2000) study, mainstream culture identification was also related to better psychological adaptation. Zhang and Goodson (2011) found that mainstream cultural identification was negatively correlated with sociocultural adaptation difficulties and depression,

whereas heritage cultural identification was negatively related to depression among Chinese international students in the USA. Therefore, following the previous research, it was hypothesised in this study that heritage cultural identification would be positively associated with life satisfaction (Hypothesis 2a) and negatively correlated with acculturative stress (Hypothesis 2b); meanwhile, mainstream cultural identification would be positively correlated with sociocultural adaptation (Hypothesis 2c) and life satisfaction (Hypothesis 2d) and negatively correlated with acculturative stress (Hypothesis 2e).

Because acculturative stress reflects negative affect (Crockett et al., 2007), acculturative stress may also predict displays of negative emotions, such as displays of other-condemning emotions (i.e., anger, contempt and disgust) (Hypothesis 3a) and displays of self-conscious emotions (i.e., shame and guilt) (Hypothesis 3b). Conversely, life satisfaction may negatively predict displays of other-condemning emotions (Hypothesis 3c) and self-conscious emotions (Hypothesis 3d).

In terms of the relationship between cultural intelligence and adaptation, recent empirical studies have shown that CQ is positively related to sociocultural adaptation and psychological adaptation (Ang et al., 2007; Presbitero, 2016; Wang et al., 2015). For instance, Presbitero (2016) demonstrated that cultural intelligence positively predicted both psychological adaptation and sociocultural adaptation among international students in Australia. Therefore, we hypothesised that cultural intelligence would be positively associated with sociocultural adaptation (Hypothesis 4a) and life satisfaction (Hypothesis 4b), and negatively associated with acculturative stress (Hypothesis 4c). Integrating those variables together, heritage cultural identification, mainstream cultural identification, sociocultural adaptation, acculturative stress and life satisfaction may play mediator roles between CQ and displays of other-condemning emotions (Hypothesis 5a) as well as CQ and displays of self-conscious emotions (Hypothesis 5b).

Method

Participants

161 Chinese international students (49 % females; $M_{age} = 24.32$, $SD_{age} = 3.35$) living in the UK participated in this study. All participants were enrolled at a British university at the time that data was collected (32 % Bachelor's degree, 57 % Master's degree and 11 % doctorate). Participants were recruited online by posting a survey link on popular social networking websites (e.g., www.weibo.com) and by recruiting students on campus at a London-area university. The first 91 respondents were entered into a lottery to receive an Amazon gift voucher (i.e., every ten participants had a chance to receive an Amazon gift voucher worth £20); the rest of the participants each received a £ 5 Amazon gift voucher directly after completing the survey.

Materials

Demographic questionnaire. Demographic questions asked about participants' gender, age, education level, resident time in the UK (i.e., "For how long have you been living in the UK?"), and English proficiency (i.e., "Please rate your English language proficiency by using 1–7 points; 1 refers to extremely bad and 7 refers to extremely good.").

Cultural Intelligence Scale (CQS; Ang et al., 2007). This 20-item scale measures four cultural intelligence (CQ) dimensions: motivational CQ (5 items, e.g., "I enjoy interacting with people from different cultures"), cognitive CQ (6 items, e.g., "I know the cultural values and religious beliefs of other cultures"), meta-cognitive CQ (4 items, e.g., "I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me"), and behavioural CQ (5 items, e.g., "I vary the rate of my speaking when a cross-cultural situation requires it"). A 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7) was applied to rate each item. Consistent with previous research (Presbitero, 2016), the composite score indicating the overall CQ was used in this study. Individuals with high endorsement on the four dimensions of CQ have the ability and willingness to understand and learn the knowledge of diverse cultures, and in turn, they are willing to act in a culturally acceptable way. Therefore, if individuals score higher on multiple dimensions of CQ, they could more easily adapt in new cultural settings and adjust themselves to behave in a proper way in the new culture. A higher score indicates higher cultural intelligence in general. The Cronbach's alpha reliability of the CQ was .94.

Vancouver Index of Acculturation (VIA; Ryder et al., 2000). This measure is a two-subscale self-report instrument that assesses an individual's heritage cultural identification and mainstream cultural identification. Each subscale includes 10 items that refer to traditions, marriage, social activities, comfort, entertainment, behaviour, practices, values, humour, and friends. For example, in terms of friends, a heritage cultural identification item is, "I am interested in having friends from my heritage culture," and a mainstream identification item is, "I am interested in having British friends." Each item is rated on a 9-point scale ranging from strongly disagree (1) to strongly agree (9). For the purposes of this study, the mainstream contexts were referred to as "British", and the heritage items specifically measured Chinese culture identification. This instrument has been found to be valid and reliable in many studies (Huynh et al., 2009). The Cronbach's alpha reliabilities of mainstream identification and heritage identification were .93 and .88, respectively.

Sociocultural Adaptation Scale (SCAS; Ward & Kennedy, 1999). This is a 20-item, unidimensional scale to assess sociocultural adaptation. It requires participants to indicate the amount of difficulty they experience in different situations, such as "understanding the local value system" or "making friends", by applying a 5-point scale anchored with *No difficulty* (1) to *Extreme difficulty* (5). For easier interpretation of coefficients, we reverse-coded this scale so that higher scores indicated better sociocultural adaptation. The Cronbach's alpha reliability of sociocultural adaptation was .93.

Riverside Acculturation Stress Inventory (RASI; Benet-Martínez, 2003). The RASI is a multiple dimension scale that contains 15 items. Its five subscales (3 items each) describe five acculturative stress domains: language skills (e.g. "I often feel misunderstood or limited in daily situations because of my English skills"); discrimination (e.g. "I have been treated rudely or unfairly because of my cultural/ethnic background"); intercultural relations (e.g. "I feel that my particular cultural/ethnic practices have caused conflict in my

relationships"); cultural isolation (e.g. "When I am in a place or room where I am the only person of my ethnic/cultural group, I often feel different or isolated"); and work challenges (e.g. "In looking for a job, I sometimes feel that my cultural/ethnic status is a limitation"). Each item is rated on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). This instrument has been shown to be highly valid and reliable in several studies (Miller et al., 2011). In the current study, the total score was used to indicate participants' acculturative stress in general. A higher total score indicates a higher level of acculturative stress. The Cronbach's alpha reliability for the total acculturative stress scale was .85.

The Satisfaction with Life Scale (SWLS; Diener et al., 1985). Another indicator of psychological adjustment among Chinese international students was measured with the SWLS, which was developed by Diener et al. (1985) to assess global life satisfaction. It is the most generally applied instrument to measure life satisfaction. The SWLS is a unidimensional scale which includes five items, and participants rate their agreement by using a 7-point Likert-type scale, from 1 (strongly disagree) to 7 (strongly agree). A higher score indicates higher life satisfaction. The Cronbach's alpha reliability of the life satisfaction scale was .81.

Display Rule Assessment Inventory (DRAI). The DRAI, developed by Matsumoto et al. (2005), has several versions. The instrument applied in this paper was adjusted according to the research requirements of the present research. It measured emotional display rules by asking participants what they should do if they felt each of five emotions in five social contexts. Anger, contempt, and disgust were emotions from the original version of the DRAI, and shame and guilt were added specifically for the current research. The five contexts were as follows: alone, with family, close friends, acquaintances, and people online. For each emotion in each context, six possible behavioural options were provided: show more than you feel it (*amplify*), express it as you feel it (*express*), show it but with another expression (*qualify*), show less than you feel it (*de-amplify*), hide feelings by showing something else (*mask*), hide feelings by showing nothing (*neutralize*). For simplicity, responses were scored in the manner applied by Fok et al. (2008) to create a continuous variable. This continuum arranges the response categories in the following order of descending strength: *Amplify*, *Express*, *Qualify*, *De-amplify*, *Mask*, and *Neutralize*. The category of *Other* was removed since only 1 % of participants chose this option. "Amplify" was coded as 6, "neutralize" was coded as 1, and the other categories fell in between in a step-wise metric. Therefore, higher scores represent more endorsement of expressing an emotion (Fok et al., 2008).

Procedure

The participants (i.e., Chinese international students living in the UK) completed the study in English. Participants completed the demographic questions and the measures of CQ, heritage culture identification, mainstream culture identification, sociocultural adaptation, acculturative stress, and life satisfaction and DRAI.¹

Results

Tests of associations

Table 1 reports mean scores and standard deviations of participants' age, resident time in the UK (time in months), English proficiency (English), heritage cultural identification (HC), mainstream cultural identification (MC), cultural intelligence (CQ), sociocultural adaptation (SCAS), acculturative stress (RAS), life satisfaction (SWLS), displays of other-condemning emotions (OCEMO; combined displays of anger, contempt and disgust; and displays of self-conscious emotions (SCEMO; combined displays of shame and guilt). Endorsement of each emotion was averaged across the five social contexts to assess participants' general, cross-situational tendency to display the emotion. Pearson correlation coefficients between variables are also displayed on Table 1.

Participants' age was significantly positively related to cultural intelligence and displays of other-condemning emotions and displays of self-conscious emotions. Resident time in the UK was significantly positively associated with English proficiency, heritage cultural identification, sociocultural adaptation and displays of other-condemning emotions. Moreover, English proficiency was significantly positively correlated with mainstream cultural identification, cultural intelligence, and sociocultural adaptation, while significantly negatively associated with acculturative stress. Cultural intelligence was significantly positively associated with both heritage cultural identification and mainstream cultural identification, confirming Hypothesis 1a and Hypothesis 1b. Furthermore, cultural intelligence was significantly positively associated with sociocultural adaptation and life satisfaction, whereas acculturative stress was significantly negatively associated with these variables, confirming Hypotheses 4a, 4b, and 4c, respectively. Additionally, both heritage cultural identification and mainstream cultural identification were significantly positively correlated with life satisfaction, confirming Hypotheses 2a and 2d; meanwhile, mainstream cultural identification was significantly positively correlated with sociocultural adaptation, confirming Hypothesis 2c. However, no significant correlations were found between heritage

culture identification and acculturative stress, nor between mainstream cultural identification and acculturative stress; therefore, Hypotheses 2b and 2e were rejected. Also, sociocultural adaptation was significantly negatively correlated with acculturative stress.

¹ The research also examined cultural influences on display rules among Chinese international students in the UK by a cultural priming method. However, the cultural priming effects on emotional display rules were not significant, and therefore will not be discussed further. The cultural priming methods and results are available on request.

Table 1
Means, Standard Deviations and Bivariate Coefficients.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1.Age	24.32	3.35										
2.Time	21.64	32.12	-.06									
3.English	4.73	1.38	.08	.37 ***								
4.HC	6.43	1.55	.06	.17 *	.15							
5.MC	5.42	1.31	-.02	.10	.24 **	.35 ***						
6.CQ	4.60	.98	.17 *	.16	.33 ***	.39 ***	.51 ***					
7.SCAS	3.48	.70	.09	.16 *	.32 ***	.05	.21 **	.37 ***				
8.RASI	2.81	.58	-.10	-.06	-.26 **	.10	-.13	-.16 *	-.35 ***			
9.SWLS	21.68	5.57	-.02	.05	.10	.18 *	.32 ***	.31 **	.18 *	-.08		
10.OCEMO	9.40	2.68	.18 *	2.7 **	.16	.16	.03	.05	-.09	.10	.11	
11.SCEMO	6.85	2.05	.26 **	.01	.04	-.06	.09	.12	-.11	.05	.14	.45 ***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$; English = English proficiency, HC = heritage cultural identification, MC = mainstream cultural identification, CQ = cultural intelligence, SCAS = sociocultural adaptation, RASI = acculturative stress, SWLS = life satisfaction, OCEMO = displays of other-condemning emotions, SCEMO = displays of self-conscious emotions.

Hierarchical regressions

Two hierarchical multiple regressions were conducted to test the predictors of displays of other-condemning emotions and displays of self-conscious emotions (see Table 2). Participants' age, gender (male = 1, female = -1), resident time in the UK, and English proficiency were entered in the first block as control variables in each regression model. Cultural intelligence, heritage cultural identification, mainstream cultural identification, sociocultural adaptation, acculturative stress and life satisfaction were entered in the second block.

Results revealed that resident time in the UK significantly predicted greater displays of other-condemning emotions; over and above the control variables, acculturative stress was a significant positive predictor of displays of other-condemning emotions (confirming Hypothesis 3a). For displays of self-conscious emotions, participants' age was a significant positive predictor; furthermore, heritage cultural identification, acculturative stress and life satisfaction approached significance as predictors of displays of self-conscious emotions. Because acculturative stress approached significance as a predictor for displays of self-conscious emotions, there was some tentative support for Hypothesis 3b. Life satisfaction did not significantly predict the display of other-condemning emotions; therefore, Hypothesis 3c was rejected. Life satisfaction approached significance as a predictor of displays of self-conscious emotions, but it was a positive rather than negative relation; therefore, Hypothesis 3d was rejected.

Indirect effects of cultural intelligence on displays of emotions

The indirect effects of cultural intelligence on displays of emotions were tested next. An SPSS tool, the PROCESS macro (Hayes, 2013), was used for testing serial mediation effects (Model 6). Of relevance here, it is not necessary to have a significant association between predictor (X) and outcome (Y) variables to obtain a significant indirect effect of X on Y through the mediating variable (Hayes, 2009). This is especially the case when the putative causal process is complicated and lateral, because the total association between two variables includes all the direct and indirect paths, which may act in opposing directions (Hayes, 2009). Two serial mediation models were tested to predict displays of other-condemning emotions and displays of self-conscious emotions. Cultural intelligence was the independent variable, and the four mediators in order were heritage cultural identification, sociocultural adaptation, acculturative stress and life satisfaction. To reproduce the previous hierarchical regression models, all previous control variables (i.e., age, gender, resident time in the UK, English proficiency) and mainstream cultural identification were included as covariates.²

Examination of the 95 % bias-corrected confidence intervals (CI) based on 5000 bootstrap samples indicated support for two indirect effects. The indirect effect of cultural intelligence on displays of other-condemning emotions through sociocultural adaptation and, in turn, to acculturative stress, was significant ($b = -.07$, $SE = .04$, 95 % CI [-.20, -.01]). Detailed pathways are showed in Fig. 1. Higher cultural intelligence was linked with higher sociocultural adaptation; higher sociocultural adaptation, in turn, was linked with less acculturative stress; higher acculturative stress, in turn, was linked with more displays of other-condemning emotions. Moreover, the indirect effect of cultural intelligence on displays of self-conscious emotions through heritage cultural identification was significant ($b = -.14$, $SE = .09$, 95 % CI [-.41, -.01]). Detailed pathways are showed in Fig. 2. Therefore, Hypothesis 5a and Hypothesis 5b were partially supported.

Discussion

The present study investigated the indirect effects of cultural intelligence on endorsement of displays of other-condemning and self-

² These models were constructed on the basis of the pattern of associations previously reported. Mainstream cultural identification was included as a covariate because mainstream cultural identification showed the weakest associations with the DVs in the previous hierarchical regression models.

Table 2
Results of Hierarchical Regression Analyses Testing Predictors of Displays of Other-Condemning Emotions and Displays of Self-Conscious Emotions.

Model	Displays of other-condemning emotions			Displays of self-conscious emotions		
	β	t	p	β	t	p
Block 1						
Age	.11	1.31	.192	.27	3.07	.003
Gender	.10	1.18	.242	.06	.68	.500
Time in UK	.25	2.65	.009	.03	.29	.775
English Proficiency	.07	.79	.434	.05	.47	.641
R^2	.11		.008	.08		.042
Block 2						
CQ	-.13	-1.12	.264	.07	.62	.538
HC	.14	1.46	.148	-.18	-1.88	.062
MC	-.04	-.34	.733	.09	.83	.407
SCAS	-.04	-.37	.714	-.16	-1.56	.122
RASI	.19	2.04	.044	.16	1.69	.094
SWLS	.11	1.18	.239	.17	1.71	.089
ΔR^2	.08		.09	.08		.088

Note: The significant values are in bold.

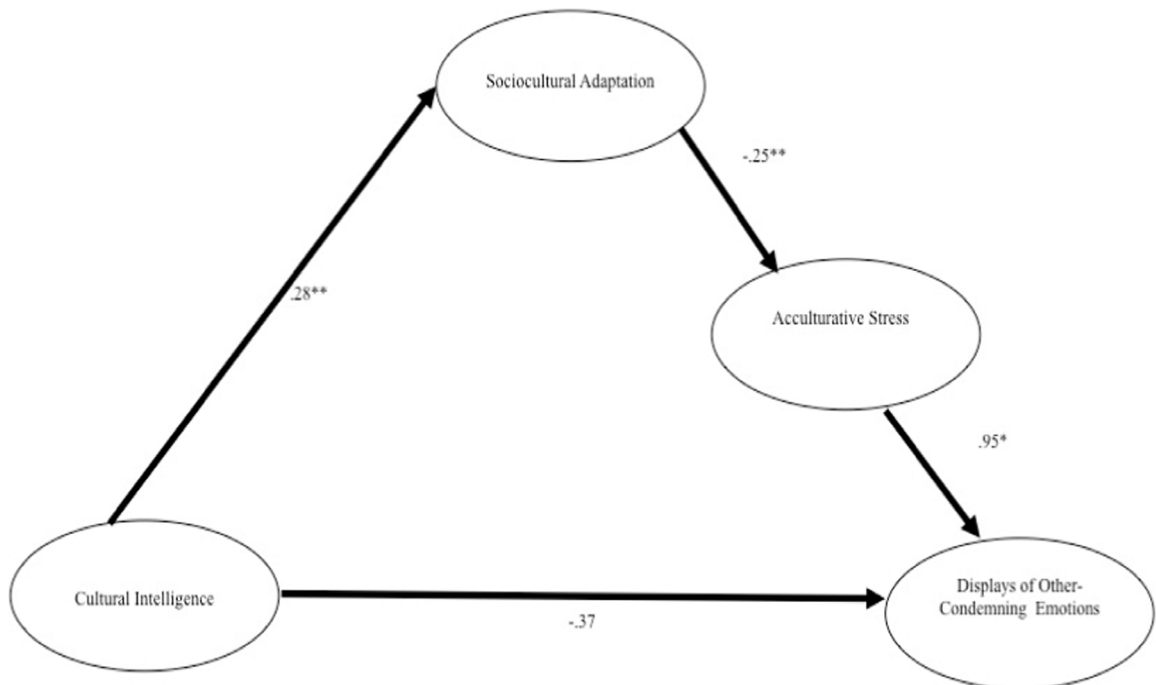


Fig. 1. The Indirect Effects of Cultural Intelligence on Displays of Other-Condemning Emotions. Note: Numbers in the figure are standardised path coefficients, $p^* < .05$; $p^{**} < .01$.

conscious emotions through cultural identification and cultural adaptation. The main findings are discussed below.

As predicted, cultural intelligence (CQ) was positively correlated with both heritage cultural identification and mainstream cultural identification, consistent with previous studies (Peng et al., 2015; Wang et al., 2015). Because CQ is a construct tapping the ability to understand, learn and strategize the ways of dealing with diverse cultural systems in culturally appropriate ways (Earley & Ang, 2003), it is logical that individuals high in CQ would be knowledgeable about and more fluent in both heritage and mainstream cultures. Moreover, acculturation theory suggests that heritage and mainstream cultural identification are relatively independent of each other (Berry, 1997; Ryder et al., 2000), and that the strategy of integration seeks to combine both cultural identifications. CQ – the ability to deal with multiple cultural settings – enables individuals to have multiple cultural identifications, such as strong identification with both Chinese and British culture, and, in turn, better adaptation.

Further confirming hypotheses, CQ was positively correlated with sociocultural adaptation and life satisfaction and negatively correlated with acculturative stress. These results supported several previous studies (Ang et al., 2007; Wang et al., 2015). CQ implies individuals’ capability to fit in a new cultural context. Fitting in better in new cultural situations and feeling better in terms of

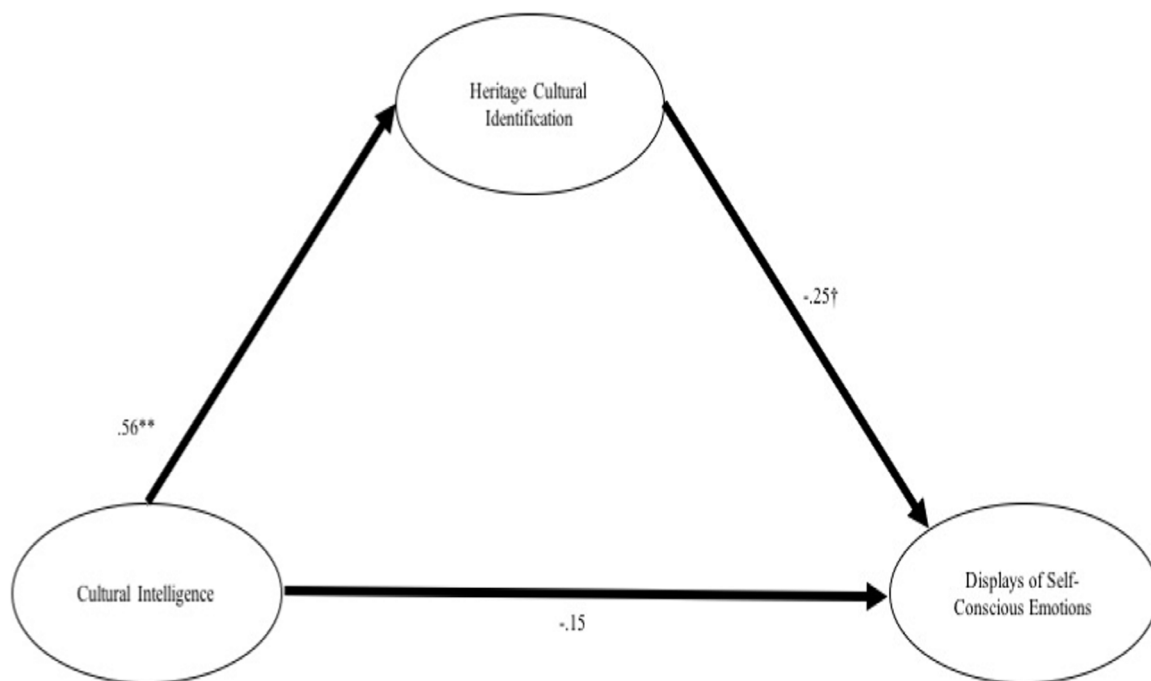


Fig. 2. The Indirect Effects of Cultural Intelligence on Displays of Self-Conscious Emotions. Note: Numbers in the figure are standardised path coefficients, $p \dagger < .09$; $p^* < .05$; $p^{**} < .01$.

psychological adjustment requires knowledge of the new culture (cognitive CQ), willingness to learn and understand the new culture (motivational CQ), higher-order cognitive ability to notice, learn about, and navigate the new culture (metacognitive CQ), and culturally appropriate and functioning behaviours (behaviour CQ). Therefore, this study provided empirical support that individuals with higher CQ have better sociocultural and psychological adaptation (more life satisfaction and less acculturative stress).

Additionally, acculturative stress showed significance as a predictor of displays of other-condemning emotions and approached significance as a predictor of display of self-conscious emotions. Acculturative stress, indicating poorer psychological adaptation, can be a trigger of negative emotions (Crockett et al., 2007). In this study, individuals with more acculturative stress showed a trend towards endorsing the display of more other-condemning emotions (e.g., anger, contempt and disgust) and more self-conscious emotions (e.g., shame and guilt). Though these results should be interpreted cautiously given they did not quite reach significance for self-conscious emotions, they imply that international students experiencing acculturative stress might be anxious and frustrated, which is expressed through displays of other-condemning emotions. They might also express shame and guilt for experiencing acculturation difficulties, such as when they create difficulties for others or experience failure in living up to role expectations in the new cultural setting. These speculations might be verified in future studies that have higher statistical power.

Finally, this study investigated the association of cultural intelligence with displays of emotions through cultural identification and cultural adaptation. Serial mediation analyses revealed that there was an indirect effect of cultural intelligence on displays of other-condemning emotions through sociocultural adaptation and acculturative stress. Individuals with higher cultural intelligence were higher in sociocultural adaptation, which was then linked with less acculturative stress; in turn, less acculturative stress triggered less endorsement of displays of other-condemning emotions (anger, contempt and disgust). Also, there was an indirect effect of cultural intelligence on displays of self-conscious emotions through heritage cultural identification: individuals with higher cultural intelligence reported higher heritage cultural identification, and in turn, endorsed less displays of self-conscious emotions (e.g., shame and guilt). This seems counter-intuitive as heritage cultural identification in this study refers to Chinese cultural identification, and those with higher heritage cultural identification should display more shame and guilt, which are prevalent emotions in Chinese cultural contexts (De Leersnyder et al., 2013). It is important to note that, regardless of cultural setting, shame and guilt are still relatively negative emotions. Therefore, in this acculturative case, it is reasonable to surmise that culturally intelligent individuals invoke adaptive elements of heritage cultural identification, which in turn protect against the endorsement of displaying negative emotions like shame and guilt.

Limitations, future directions, and conclusion

There were several limitations of this study. First, applying self-report surveys invariably allows social desirability bias, which should be kept in mind when interpreting the results. For example, Chinese participants may be reluctant to admit that they are experiencing acculturative stress due to greater mental health stigma in Chinese cultures (Ng, 1997). Also, participants in this study

were Chinese international students in the UK. It is worthwhile for future studies to include other bicultural individuals and in different receiving cultures to test relationships between cultural intelligence and emotional display rules. It is possible that international students who are not visible minorities in the UK might report different relationships among these variables; for example, they may experience less acculturative stress due to perceiving less discrimination, and in turn, report less endorsement of negative emotional displays.

In sum, the present study offers empirical evidence that cultural intelligence was positively correlated with sociocultural adaptation and life satisfaction, and negatively correlated with acculturative stress. Moreover, there was tentative evidence that acculturative stress may lead to more displays of other-condemning emotions (anger, contempt and disgust) and self-conscious emotions (shame and guilt). There were also indirect effects of cultural intelligence on emotional display rules through cultural identification and cultural adaptation. Individuals with higher cultural intelligence reported higher heritage cultural identification, and in turn, reduced displays of shame and guilt. The results of this research shed further light on the mechanisms that may influence emotional display rules and offer deeper insight into the complex dynamics of cultural identity and emotional display rules, especially in the context of Chinese identity in acculturation. They emphasize the significance of cultural intelligence in navigating diverse cultural environments and underscore the potential impact on emotional well-being and interpersonal interaction. These findings also offer some practical guidance for acculturating individuals. For example, these findings might help university counselling services in their provision to Chinese international students. If these students seek counselling due to acculturative stress, the counsellor might note that they particularly express other-condemning and self-conscious emotions. This might be treated by encouraging the clients to enhance their cultural intelligence, such as by developing a better grasp of the mainstream language or improving knowledge of different cultural customs. Additionally, clients might be encouraged to strengthen their heritage (Chinese) cultural identification, which our results suggest might decrease the display of self-conscious emotions (shame and guilt). Overall, our results highlight the important role of cultural intelligence in the acculturation of emotional display rules.

CRedit authorship contribution statement

Imada Toshie: Writing – review & editing, Supervision. **Marshall Tara:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Deng Jie:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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