

## **Measuring Emotionality across Cultures: Self-Reported Emotional Experiences as Conceptualizations of Self**

***Sowan Wong and Michael Harris Bond***  
***The Chinese University of Hong Kong***  
***Hong Kong***

The purpose of this study was to compare the emotional experiences of individuals from different cultures. The self-reported emotional experiences of individuals from 30 nations in the Intercultural Study on Emotional Antecedents and Reactions (ISEAR) database (Scherer, 1997) were analyzed across seven emotions in terms of their intensity, length, and recency. Through exploratory factor analysis, three, single-factor constructs were identified as underlying these different aspects for all seven emotions, namely emotional intensity, emotional length and emotional recency. Using these metrically equivalent constructs, the emotional experiences of citizens from different cultures were compared in terms of their intensity, length and recency. These aspects of emotionality may be related to different features of the social-cultural system. Further studies in the area may help towards understanding the socialization of emotional experience.

In layman's terms, emotions can be understood as strong feelings of any kind (Cowie, 1993), or in more scientific terms, emotions are internal reactions elicited and shaped by the subjective appraisal of antecedent situations or events (see e.g. Scherer, 1998; Solomon, 1976). The perception and expression of emotions – what, when and how one should feel, as well as when and how one should react subsequently – are believed to be shaped and governed by social and cultural norms. These learned perceptions of emotions can be then understood as a kind of conceptualization of self of individuals. For instance, the overt expression of emotions, including facial expression, verbal expression and the physical behavior, may or may not mirror the internal emotional experience of an individual under the influence of the display rules in the culture (Ekman & Friesen, 1971). As the overt expression of emotions of individuals may differ from one culture to another, these differences maybe one of the basis for the formation of the various stereotypes of emotions of people from different cultures (see e.g. Pennebaker, Rimé & Blankenship, 1996). Various cross-cultural studies have been conducted in an attempt to understand the universality and cultural variations of emotions across cultures (e.g., Mesquita & Frijda, 1992; Pennebaker et al., 1996; Scherer & Wallbott, 1994). In most studies, however, even though more than one emotion was being studied, different self-reported emotions were treated and studied separately. In order to explore if different emotions could be synthesized into simpler constructs of emotionality, this study employed the database from the Intercultural Study on Emotional Antecedents and Reactions (ISEAR) initiated by Klaus Scherer and his colleagues (1986), and analyzed the data. The ISEAR database comprised data of the recollected responses on the intensity, length and recency of seven emotions: joy, fear, anger, sadness, disgust, shame and guilt, taken from 2,-921 individuals of 37 nations, and is the largest cross-cultural dataset on emotions (Scherer, 1997).

When attempting to synthesize the different emotions in the ISEAR dataset, exploratory factor analysis can be used to investigate if there are simpler factor structures of emotionality. In this research, responses on different

emotions in the ISEAR database were factor analyzed in terms of their intensity, length and recency. The resulting factor structures would indicate whether and how different emotions could be synthesized into simpler constructs of emotionality.

A simplification of separate emotions into different aspects of emotionality would allow researchers to calculate citizen scores of emotionality with comparable samples across cultures. The citizen scores can then reveal the typical psychological make-up of individuals in different nations in terms of their conceptualizations of self with respect to emotionality. Thus, the present study helped lay the groundwork for understanding emotionality across cultures. Future studies can be conducted by discovering and establishing linkages among citizen emotionality, predisposing societal factors, concurrent psychological factors and behavioral outcomes across cultures (see e.g., Lim, Bond & Bond, 2002).

### **Method**

#### ***Material***

*The ISEAR database.* The ISEAR database derives from Scherer and his colleagues' questionnaire study of seven emotions: joy, anger, fear, sadness, disgust, shame, and guilt, conducted in 37 countries on 5 continents (Scherer, 1997). The participants were 2,-921 university students, with 55% women, 45% men, with a mean age of 21.8 years. Among the participants, 43% of them were psychology students while the rest were students from different disciplines (see Scherer, 1997; Scherer & Wallbott, 1994, for further details about the participants). The questionnaire consisted of a general instruction and seven, two-page sections, one for each of the seven emotions studied. The sequence of the seven target emotions in the questionnaire was randomized to control for any ordering effect. Participants were asked "to recall a situation in which he or she had recently experienced a strong emotion of the kind indicated and for which they vividly remembered the circumstances and their reactions" (Scherer, 1997, p. 905). Then, they answered a number of

structured questions with respect of the situation and the emotional experience generated.

The responses that were analyzed in the present study concerned the “time distance” of the emotion, i.e., when the emotion last happened, (“when did this happen?”, responses were made on a four-point scale, from “days ago” to “years ago”), the intensity of the emotion (“how intense was this feeling?”, responses were made on a four-point scale, ranging from “not very” to “very intense”), and the length/duration of the emotion (“how long did you feel the emotion?”, responses were made on a four-point scale, from “a few minutes” to “a day or more”). Thus, there were three scores for each of the seven emotions for every participant, and they were used as the unit of analysis in the present study.

As the number of participants varied greatly from country to country, in the present study, only those countries that had at least 20 male and 20 female participants were included in the analysis. As a result, responses from participants of 30 countries (2,-571 participants in total) were used in this study.

### *Design*

In an attempt to simplify the three, seven-factor structures of emotions – the recency, intensity and length of the seven emotions – three, pooled factor analyses were first conducted. Pooled samples with equal number of male and female participants from each nation were used in order to ensure equal representation of participants of all nations (see Bond, 1988). As the minimum number of either male or female participants of all nations was 20, all national samples were subjected to the pooling requirement that 20 participants from each gender were randomly selected, resulting a pooled sample with 1,-200 participants. Next, reliability analyses were conducted, first with the pooled samples, then nation by nation with the maximum number of participants of each nation, in order to check the validity of the newly found factor structures. After that, correlations among the constructs found were calculated once they proved to be valid by the reliability analyses. A strong correlation among the constructs would mean that they might be further simplified to a single construct of emotionality; whereas a weak correlation would mean that the constructs should be treated separately. Finally, analyses of variance were conducted, with emotional recency, intensity and length as dependent variables and gender, as well as nation as independent variables.

### **Result**

The results will be presented in several steps. First, the results of the pooled factor analyses, followed by the reliability analyses. Correlations among the constructs were then presented, and finally, the analysis of variance on the three aspects of emotionality.

#### *Pooled Factor Analysis*

Responses on the seven emotions of 1,-200 participants (2 x 20 participants x 30 nations) were

subjected to three principal-components factor analyses according to the three different aspects of emotional experience being studied (emotional recency, length and intensity). (The raw scores on the “time distance” of different emotional experiences were reversed in the present study in order to accommodate to the meaning of the term “emotional recency”, so a higher score denoted a more recent experience of an emotion while a lower score referred to a more distant experience of an emotion.) A separate scree test of the resulting eigen-values for each aspect of emotional experience indicated the presence of a single-factor structure of emotionality for each aspect of emotional responding.

For emotional recency, the single-factor solution accounted for 37.14% of the total variance. Among the seven emotions, the loadings on the single-factor solution ranged from .57 to .64 (see Table 1a). The single-factor solution for emotional intensity accounted for 31.22% of the total variance, with factor loadings ranging from .51 to .59 for the seven emotions (see Table 1b). Finally, for emotional length, the single-factor solution accounted for 28.91% of the total variance, with factor loadings of the seven emotions ranging from .46 to .62 (see Table 1c).

#### *Reliability Analysis*

Reliability analyses were first conducted with the pooled samples to test the internal consistency of the factor structures. For emotional recency, a Cronbach’s alpha of .72 was found. The item-total correlation of the seven emotions ranged from .39 to .46, with an average of .43 (see Table 2a). Regarding emotional intensity, a .63 Cronbach’s alpha was found. The item-total correlation of the seven emotions ranged from .30 to .37, with an average of .34 (see Table 2b). For emotional length, a Cronbach’s alpha of .59 was found. The item-total correlation of the seven emotions ranged from .25 to .37, with an average of .30 (see Table 2c).

In order to check whether the three single-factor solutions on emotional recency, intensity and length were valid across nations, further reliability analyses were carried out. In these analyses, responses from all participants were used and the analyses were conducted separately for each nation. The average of the Cronbach’s alphas across 30 nations for emotional recency was .67, with a range from .54 to .76. For emotional intensity, the average alpha was .59, ranging from .41 to .70, and for emotional length, the average was .51, with a range from .23 to .68. These values for the Cronbach alpha arise, then, out of 30 replications on the same set of seven measures. Nothing is known about the expected range of such results, but we judge that these outcomes justify the conclusion that a single construct runs through the measures of emotional recency, length, and intensity.

The item-total correlations on the seven emotions for the single-factor solution on emotional recency across each of the 30 national samples were all positive. The average item-total correlation was .38. For emotional intensity, the item-total correlations of the seven emotions across each of the 30 national samples were mostly positive, with an average of .31 (with the exceptions of the Netherlands, which had a -.02 correlation for “anger”).

Finally, for emotional length, the item-total correlations were also mostly positive across each of the 30 national samples (with the exceptions of Chile, with a -.002 correlation for “shame”, China, with a -.09 correlation for “fear”; Costa Rica with a -.06 correlation for “sadness”; Guatemala with a -.02 for “sadness”; Switzerland with a -.05 correlation for “shame”, and Venezuela with a -.04 correlation for “guilt”). The average item-whole correlation across each of the 30 national samples was .26. Again, nothing is known about the expected distribution of item-whole correlations across 30 replications of seven-item constructs, but we judge that these outcomes justify the conclusion that a single construct runs through the measures of emotional recency, length, and intensity.

Thus, the reliability analyses confirmed the existence of three, single-factor constructs of emotionality across nations, namely emotional recency, emotional intensity and emotional length. This implies that for any of the three constructs, if an individual reports a high score on one of the seven emotions in a construct, that person tends to report high scores on the other six emotions in the same construct.

Correlations among the three constructs of emotionality, viz., recency, intensity, and length, were calculated to see if they could be further simplified. Responses from all the participants of the 30 countries were used in the calculation. For each of the respondents, average scores among the seven emotions for each of the three constructs were calculated, so each respondent would then have three scores, one for each index of emotionality. Correlations were first calculated at an individual level, nation by nation; then averages of the correlations among the three indices across the 30 nations were calculated. Among the three constructs, there was an average correlation of -.31 between emotional recency and emotional length, ranging from a correlation of -.03 to -.55. Between emotional recency and emotional intensity, there was an average correlation of -.23, with a range of -.04 to -.49. Finally, between emotional length and emotional intensity, the average correlation was .43, ranging from .16 to .65. As the patterns of the relationships among the three indices of emotionality varied from nation to nation, it was suggested that these indices should be kept separate when analyzing their relationships with other variables in future research.

### *Analyses of Variance*

The analyses were conducted with the responses from all the participants across the 30 nations. Each participant had an average score for each of the three constructs of emotionality. A higher score on the constructs denoted a more recent, more intense or a greater length of emotional experience, while a lower score represents a reported more “distant”, less intense or a shorter length of emotional experience. The scores were then subjected to a two-way analysis of variance (ANOVA), with 30 nations and 2 genders.

There was a main effect for gender for all the three aspects of emotionality, with females scoring higher than males on emotional recency,  $F(1, 2,571) = 15.87, p < .01$

( $M_s = 2.24$  vs.  $2.14$ , for females and males, respectively); on emotional intensity,  $F(1, 2,571) = 25.23, p < .01$  ( $M_s = 2.94$  vs.  $2.85$ , respectively); and on emotional length,  $F(1, 2,571) = 39.65, p < .01$  ( $M_s = 2.97$  vs.  $2.83$ , respectively). There was also a main effect of nation for all three aspects of emotionality: for emotional recency,  $F(29, 2,571) = 14.23, p < .01$ ; for emotional intensity,  $F(29, 2,571) = 11.67, p < .01$ ; and for emotional length,  $F(29, 2,571) = 16.14, p < .01$ . The mean scores for the 30 countries on emotional recency, emotional intensity and emotional length are listed in Tables 3a, 3b and 3c respectively. No interaction effect was found between nations and gender on any aspect of emotionality.

### **Discussion**

This research was designed to identify possible, simpler constructs of emotionality across different emotions. Results revealed that there were three, single-factor constructs underlying the seven emotions that were being studied – joy, anger, fear, sadness, disgust, shame, and guilt – across individuals of 30 nations, namely, emotional recency, emotional intensity, and emotional length. The yield of the study made this research the first study that explored and employed these variables on emotionality and laid the groundwork for further research on citizen differences in emotionality.

### *The Constructs of Emotionality*

The identification of the three constructs of emotionality, viz., emotional recency, emotional intensity and emotional length, revealed that different emotions can be synthesized and studied in simpler ways: When an individual reports a more recent, more intense or longer experience of one emotion, he/she is likely to report a more recent, more intense or longer experience of another emotion. Likewise, when an individual reports a more distant, less intense or shorter experience of one emotion, he/she is likely to report a more distant, less intense or shorter experience of another emotion.

Thus, the findings of the present study did not support the need to distinguish positive emotionality versus negative emotionality, at least for recollected emotions (see., Patrick, Curtin & Tellegen, 2002). However, one may argue that the present study was a study of negative emotionality since among the seven emotions being studied, only one of them, joy, was a positive emotion. In order to check and validate the existence of the three, single-factor constructs of emotionality, factor analyses calling for two factors were conducted with the pooled samples, as well as separately with each national sample, with respect to emotional recency, intensity and length. Results revealed that there was no consistent pattern of the structures of the two-factor solutions among the seven emotions for each of the three aspects of emotionality across the 30 nations. Moreover, the positive emotion, joy, did not separate from other negative emotions in the two-factor solution. Thus, the results helped justify the argument of the presence of three, single-factor constructs of emotionality.

In the present research, three new structures of emotionality were found. One way to explain such findings was that this research actually tapped different aspects of emotions and emotionality when compared with previous research in the area. The data used in this research came from the ISEAR database (Scherer, 1997). Respondents in the study were asked to recall situations he/she had strong experiences of the particular emotions that were being studied, and answer questions concerning those emotional experiences. In other words, respondents were to select situations with a dominant emotion from their memories and report their experience of those emotions, as well as reactions in those situations. However, previous research in emotions and emotionality usually adopted time-contingent measures of emotional experience (Wheeler & Reis, 1991), with which respondents were asked to report what they were feeling at that moment. Checklists with different adjectives on emotions were usually used for respondents to describe their emotional experience (see e.g. Barrett & Russell, 1998; Larsen & Diener, 1987; Yik & Russell, 2001). Thus, the present research explored an interface of emotions and emotionality that was not dealt with in previous research. It was discovered that when asked about one's emotional experiences based on situations he/she experienced a dominant emotion, the individual tended to experience very similarly with respect to emotional recency, intensity and length across different emotions.

### *Gender and Cultural Differences in Emotionality*

The stereotype that females are more emotional than males seemed to be confirmed in the present study. The robust and consistent significant main effects of gender on all three aspects of emotionality indicated that across nations, females tended to have more recent, more intense, and longer emotional experiences than males across different types of emotion. These findings are consistent with previous research in gender stereotyping of emotions and emotionality (see e.g., Fischer & Manstead, 2000; Plant, Hyde, Keltner & Devine, 2000; Fabes & Martin, 1991). With the three constructs of emotionality, researchers will be able to calculate the male and female average scores in emotional recency, intensity and length in different nations, and then correlate them with other national indices, e.g. economic, societal, political, and socialization indices, in order to understand possible origins of these gender differences in emotionality across nations, including differences in gender stereotypes (e.g., Williams & Best, 1982).

Apart from gender stereotypes of emotionality, there are also cultural stereotypes of emotions and emotionality; for instance, East Asians are often identified as "inscrutable" by Westerners (Smith and Bond, 1999, ch. 4), and people from countries of warm climates are believed to be more passionate than people from countries of cold climates (Pennebaker et al., 1996). The findings of this research revealed that there were significant main effects of nations on all three aspects of emotionality: emotional recency, emotional intensity and emotional length. Further analyses of the patterns of citizen scores in emotional intensity, length and recency across nations

become possible, and finding their correlates with other national indices in future research may help "unpackage" these national differences and understand the origins of cultural stereotypes in emotionality.

The three constructs in emotionality yielded in this research demonstrated that different emotions can be understood in simpler constructs in terms of emotional recency, emotional intensity, and emotional length. With these three constructs, the process of socialization of emotional experience in different societal-cultural systems, as well as its effect on the conceptualizations of self in terms of emotionality, may be uncovered by investigating the relationships between the citizen scores in emotionality with other national indices of different nations in future research.

### **About the Authors**

**Sowan Wong** is a graduate student in psychology from the Chinese University of Hong Kong who is interested in social psychology across cultures.

**Professor Michael Bond** is a social-personality psychologist with an interest in culture who has taught and conducted in Hong Kong at the Chinese University for the last 28 years.

### **Contact Details**

Sowan Wong, M.Phil Student, Department of Psychology, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong.  
Phone: 852-2609-6578  
Fax: 852-2603-5019  
Email: sowan@cuhk.edu.hk

Professor Michael Bond, Department of Psychology, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong.  
Phone: 852-2609-6578  
Fax: 852-2603-5019  
Email: mhb@cuhk.edu.hk

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**Table 1a**  
*Factor Loadings of the Seven Emotions on Emotional Recency*

Emotions	Loadings
Sadness	.64
Joy	.63
Fear	.62
Shame	.62
Guilt	.61
Anger	.57
Disgust	.57

*Note.* The percentage of variance subsumed by the factor was 37.14.

**Table 1b**  
*Factor Loadings of the Seven Emotions on Emotional Intensity*

Emotions	Loadings
Guilt	.59
Fear	.59
Shame	.56
Joy	.56
Sadness	.55
Disgust	.55
Anger	.51

*Note.* The percentage of variance subsumed by the factor was 31.22.

**Table 1c**  
*Factor Loadings of the Seven Emotions on Emotional Length*

Emotions	Loadings
Anger	.62
Disgust	.59
Joy	.55
Shame	.52
Fear	.52
Guilt	.49
Sadness	.46

*Note.* The percentage of variance subsumed by the factor was 28.91.

**Table 2a**  
*Item-Total Correlation of the Seven Emotions on Emotional Recency*

Emotions	Item-Total Correlation
Joy	.45
Fear	.44
Anger	.39
Sadness	.46
Disgust	.39
Shame	.44
Guilt	.43

*Note.* The Cronbach's alpha of the construct was .72.

**Table 2b**  
*Item-Total Correlation of the Seven Emotions on Emotional Intensity*

Emotions	Item-Total Correlation
Joy	.34
Fear	.37
Anger	.30
Sadness	.34
Disgust	.34
Shame	.34
Guilt	.37

*Note.* The Cronbach's alpha of the construct was .63.

**Table 2c**  
*Item-Total Correlation of the Seven Emotions on Emotional Length*

Emotions	Item-Total Correlation
Joy	.31
Fear	.29
Anger	.37
Sadness	.25
Disgust	.34
Shame	.30
Guilt	.27

*Note.* The Cronbach's alpha of the construct was .59.

**Table 3a**  
*Mean Scores on Emotional Recency for the 30 Countries*

Country	Female	Male	<u>M</u>
Australia	2.40	2.44	2.42
Austria	2.34	2.14	2.24
Botswana	1.79	1.85	1.82
Bulgaria	2.26	2.16	2.21
Chile	2.43	2.28	2.36
China	2.96	2.84	2.90
Costa Rica	2.33	2.23	2.28
Finland	2.57	2.51	2.54
Germany	2.47	2.21	2.34
Greece	2.00	1.81	1.91
Guatemala	2.05	2.19	2.12
Hong Kong	2.36	2.23	2.30
India	1.98	1.93	1.96
Italy	2.35	2.24	2.30
Japan	2.45	2.25	2.35
Malawi	1.96	1.81	1.89
Mexico	2.10	1.96	2.03
Netherlands	2.32	2.22	2.27
New Zealand	2.22	2.46	2.34
Nigeria	1.89	1.91	1.90
Poland	2.37	2.17	2.27
Portugal	2.04	1.87	1.96
Spain	2.41	2.25	2.33
Sweden	2.46	2.25	2.36
Switzerland	2.37	2.07	2.22
United States	2.52	2.47	2.50
Venezuela	2.17	2.15	2.16
Yugoslavia	1.77	1.82	1.80
Zambia	1.94	1.74	1.84
Zimbabwe	2.02	1.79	1.91

**Table 3b**  
*Mean Scores on Emotional Intensity for the 30 Countries*

Country	Female	Male	<u>M</u>
Australia	2.87	2.66	2.77
Austria	3.23	2.90	3.07
Botswana	3.27	3.05	3.16
Bulgaria	2.86	2.86	2.86
Chile	2.63	2.68	2.66
China	2.90	2.97	2.94
Costa Rica	2.80	2.76	2.78
Finland	2.80	2.49	2.65
Germany	3.16	3.03	3.10
Greece	3.24	3.14	3.19
Guatemala	2.76	2.70	2.73
Hong Kong	2.74	2.65	2.70
India	2.86	2.82	2.84
Italy	2.88	2.85	2.87
Japan	2.65	2.64	2.65
Malawi	3.09	3.15	3.12
Mexico	2.84	2.68	2.76
Netherlands	3.09	2.72	2.91
New Zealand	2.97	2.76	2.87
Nigeria	2.92	2.89	2.91
Poland	2.92	2.84	2.88
Portugal	2.99	2.80	2.90
Spain	2.81	2.76	2.79
Sweden	2.88	2.81	2.85
Switzerland	2.97	2.87	2.92
United States	2.89	2.82	2.86
Venezuela	2.84	2.80	2.82
Yugoslavia	3.15	2.99	3.07
Zambia	3.08	3.08	3.08
Zimbabwe	3.25	3.23	3.24



**Table 3c**  
*Mean Scores on Emotional Length for the 30 Countries*

Country	Female	Male	<u>M</u>
Australia	2.93	2.65	2.79
Austria	2.91	2.48	2.70
Botswana	3.45	3.32	3.39
Bulgaria	3.07	3.22	3.15
Chile	2.44	2.34	2.39
China	2.90	2.80	2.85
Costa Rica	3.09	2.87	2.98
Finland	2.82	2.51	2.67
Germany	2.92	2.68	2.80
Greece	3.14	3.07	3.11
Guatemala	2.97	2.66	2.82
Hong Kong	2.94	2.74	2.84
India	3.10	3.09	3.10
Italy	2.86	2.75	2.81
Japan	2.88	2.88	2.88
Malawi	3.21	3.23	3.22
Mexico	3.10	2.84	2.97
Netherlands	2.80	2.57	2.68
New Zealand	3.04	2.79	2.92
Nigeria	3.13	3.16	3.15
Poland	2.90	2.80	2.85
Portugal	3.07	2.79	2.93
Spain	2.55	2.48	2.51
Sweden	2.66	2.58	2.62
Switzerland	2.60	2.50	2.55
United States	3.04	2.97	3.01
Venezuela	3.04	2.91	2.98
Yugoslavia	3.09	2.72	2.91
Zambia	3.19	3.27	3.23
Zimbabwe	3.35	3.34	3.35