A 2-STAGE FACTOR ANALYSIS OF THE EMOTIONAL EXPRESSIVITY SCALE IN THE CHINESE CONTEXT

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The Emotional Expressivity Scale (EES) is a commonly used self-report measure of emotional expressivity. The current study aimed to evaluate the factor structure of the Chinese version of EES among a group of healthy college students using both exploratory and confirmatory factor analyses. Preliminary exploratory factor analysis revealed the presence of two factors, namely the emotional suppression and emotional expression. A subsequent confirmatory factor analysis using an independent sample confirmed this 2-factor structure of the Chinese version of EES.

Key words: emotion expression, Chinese, confirmatory factor analysis

Emotional expressiveness, as the most obvious observable stage of processing of emotion, has been receiving renewed interest among researchers (Coan & Allen, 2007; Shaw et al., 2003; Sloan, Strauss, & Wisner, 2001). Despite the most recent advance of affective science approach to the understanding of the nature of emotional disturbances (e.g., Kring & Moran, 2008), the use of self-report measures still reserve its advantages over recording of electromyography activity and videotaping in clinical practice, e.g., simplicity and less time-consuming. Measures of self-report emotion expression, such as Emotional Expressivity Scale (EES), have been shown with good reliability and validity in general population (Dobbs, Sloan, & Karpinski, 2007; Kring, Smith, & Neale, 1994). The EES (Kring et al., 1994) is a 17-item self-report measure of individual differences in emotional expressivity. Participants are required to rate their responses on a 6-point Likert-type scale (1 = never true to 6 = always true). Kring et al. (1994) found EES to have high internal consistency and test-retest reliability. Apart from this, EES also has good convergent and discriminate validity based on all of the self-report, other report, and observational methods of assessment (Dobbs et al., 2007; Kring et al., 1994). These western-based studies support a one-factor model of the EES (Dobbs et al., 2007; Kring et al., 1994). That means, EES is intended to capture a general emotional expressivity. Studies also showed there was a gender difference in emotional expression. Women had higher scores in EES as compared to men, that means women are more expressive than

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men (Kring et al., 1994; Gross & John, 1995).

However, although an extensive body of literature has examined emotional expression, the majority of the studies has been limited to western-based samples, and does not take cultural variations into consideration. Very little is known about the emotional expression in another culture such as Chinese. Chinese people are traditionally cultivated to reserve their emotional expression (Tsai & Levenson, 1997), whereas the Caucasian people are traditionally encouraged to experience diverse emotions and to accentuate their emotional expressions (e.g., Butler, Lee, & Gross, 2007). These findings suggest that the EES developed from the western culture may not be applied directly to the Chinese culture.

The purpose of the current study was to examine the factor structure of the Chinese version of the EES. Given the fact that Chinese are more conservative in expressing their emotion as compared to their western counterparts, we anticipated that the original one-factor model of EES was not sufficient to explain the latent structure of emotional expression in Chinese sample. In particular, we hypothesized that emotional expression might be manifested in terms of a two-factor model involving both the ability to express one's emotion and the ability to reserve or withhold one's emotion in Chinese people. In so doing, we adopted a more rigorous 2-stage factor analysis to test the latent factor structure of the Chinese version of EES. Moreover, we also tested the competitive model of a one-factor structure of the Chinese version of EES.

METHODS

Participants

A convenience sample of 338 undergraduate students and 171 senior high school students participated in the study. Among the participants, 240 (47.2%) are males and 269 (52.8%) are females. The mean age was 18.86 ± 1.359 years. The mean years of education were 12.42 ± 1.537 years for males and 12.60 ± 1.371 years for females. After informed consent was obtained, participants were asked to complete a demographic questionnaire (e.g., age, sex), the EES and the SPQ. Participants completed the questionnaires in a group setting. Other questionnaires were completed as well, but they are not reported here.

The EES

We adopted a 2-stage translation process for the Chinese version of the EES with the approval of the author of the EES. The original version of the EES (Kring et al., 1994) was translated to a Chinese version of EES (C-EES) by a postgraduate student of psychology who was bilingual in both the Chinese and English language. The Chinese version was then independently back-translated into English by another bilingual postgraduate student without reference to the original version. The back-translated version was then compared with the original EES by the research team. Finally, the researchers came to an agreement on a version of the EES that guaranteed equivalence on both linguistics and concept of original version (Chang, Chau, & Holroyd, 1999).

Data Analysis

Data were analyzed by using the Statistical Package for Social Sciences (SPSS) for Windows version 13.0 (SPSS Inc, Chicago, IL, USA). Internal consistency of the EES was assessed by using Cronbach's alpha coefficients. A Cronbach's reliability statistic of .70 is considered as the minimum acceptable criterion of instrument internal reliability (Kline, 2000).

Determination of the factor structure of the EES was firstly conducted by the use of exploratory factor

analysis (EFA). The data used was randomly selected 163 (32%) cases from the database. A principal components factor extraction method with an varimax factor rotation was used. To further examine the factor structure of the EES we conducted a CFA with use of the rest cases of data according to the results of EFA using LISREAL version 8.7 (Joreskog & Sorbom, 2004). All factors were allowed to freely correlate and all items were allowed to load only on their hypothesized factor.

RESULTS

The Bartlett test of sphericity ($\chi^2(136) = 2701.944, p < 0.0001$) was significant indicating the data were not an identity matrix and the Kaiser-Meyer-Olkin value was 0.854 indicating that the data fit the statistical assumptions of multivariate normality and sampling adequacy for factor analysis (George & Mallery, 2003). Concerning the results of the EFA on the EES, a scree test (Cattell, 1966) suggested a two-factor solution accounting for a total of 42.54%. Table 1 shows that the first factor comprised items tapping the suppression of emotion such as “I keep my feelings to my self”, and is labeled

Table 1. Factor Loadings From the Exploratory Factor Analysis of the EES

Items	Emotional suppression	emotional expression
5. I keep my feelings to myself. (R)	0.813	0.105
6. Other people aren't easily able to observe what I'm feeling.(R)	0.784	
14. Even if I am feeling very emotional, I don't let others see my feelings. (R)	0.765	
11. I am not very emotionally expressive. (R)	0.751	
2. Even when I'm experiencing strong feelings, I don't express them outwardly. (R)	0.749	0.115
1. I don't express my emotions to other people. (R)	0.653	
9. I don't like to let other people see how I am feeling. (R)	0.613	
12. I am often considered indifferent by others. (R)	0.607	0.23
16. The way I feel is different from how others think I feel. (R)	0.508	-0.153
17. I hold my feelings in. (R)	0.338	0.102
8. People think of me as an unemotional person. (R)	0.188	
4. People can "read" my emotions.	0.139	0.808
15. I think of myself as emotionally expressive.		0.791
7. I display my emotions to other people.		0.77
10. I can't hide the way I am feeling.		0.723
3. Other people believe me to be very emotional.	-0.158	0.583
13. I am able to cry in front of other people.	0.118	0.451

Table 2. Comparisons of Different Factor Models of EES

Good-of-fit indices ^a	Confirmatory factor analysis (n = 343)	
	1-factor model ^b	2-factor model
χ^2	1133.6166	403.5250
df	119	118
p	<0.001	<0.001
GFI	0.7194	0.8781
AGFI	0.6393	0.8420
SRMR	0.1306	0.06815
NFI	0.7139	0.8838
NNFI	0.7051	0.9074
CFI	0.7419	0.9196
IFI	0.7435	0.9201
RMSEA	0.1579	0.08411
p (RMSEA < 0.05)	<0.001	<0.001

Note. ^a *df*—degree of freedom; *p*—*p* value; GFI—Goodness-of-fit index (>0.90 accepted.); SRMR—Standard Root Mean Square Residuals; NFI—Normed Fit Index (>0.90 accepted.); NNFI—Non-normed Fit Index (>0.90 accepted.); CFI—Comparative Fit Index (>0.95 accepted.); IFI—Incremental Fit Index (>0.95 accepted.); RMSEA—Root Mean Square Error of Approximation (<0.06 accepted.)

^b Kring et al. (1994)

Table 3. Comparisons of EES Scores Between Males and Females

	Male (N = 240)	Female (N = 269)	<i>F</i>	<i>p</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
EES total score	55.368 (9.374)	60.537 (10.271)	17.870	0.0005
Emotionally Reserved	39.464 (8.005)	41.627 (8.450)	4.995	0.007
Emotionally Expressive	15.900 (4.310)	18.914 (4.650)	28.454	0.0005

as “emotion suppression factor”; whereas the second factor comprised items capturing expression of emotion such as “I display my emotions to other people”, and was labeled as “emotion expression factor”. The results did not support the one-factor model (Gross & John, 1998; Kring et al., 1994).

Given the results of EFA and the proposed one-factor model, we conducted a CFA adopted both one-factor and two-factor models. The result revealed the two-factor model ($\chi^2(118) = 403.53$, $NNFI = .91$, $IFI = .92$, $CFI = .92$, $GFI = .88$, $RMSEA = .084$) was more acceptable for the data. However, the one-factor model was not an acceptable solution for

the data ($\chi^2(119) = 1133.62$, $NNFI = .71$, $IFI = .74$, $CFI = .74$, $GFI = .72$, $RMSEA = .16$). All reversed items (11 items in total) composed the first factor meaning emotionally reserved, and others belonged to the second factor meaning emotionally expressive (Table 2). Cronbach's alpha coefficients for the total scale showed a high internal consistency reliability of 0.816. Cronbach's alphas for the two factors were 0.84 and 0.788 respectively indicating adequate internal consistency. The result of comparison of EES scores based on gender type (M/F) using the F-value demonstrated remarkable difference between males and females as shown in table 3, females were more expressive than males, replicating previous results (Kring et al., 1994; Nicholls, Clode, Lindell, & Wood, 2002).

DISCUSSION

The current findings failed to support the one-factor model of the EES in the Chinese sample. Instead, a two-factor model comprising both emotion suppression and expression was demonstrated. These findings are a contrast to the original version of EES and other related validation studies among Caucasians (e.g., Dobbs et al., 2007; Kring et al., 1994). However, the current findings are consistent with general cross-cultural findings between Caucasians and Chinese (Butler et al., 2007; Tsai & Levenson, 1997). In particular, Asians were found to report higher levels of habitual expressive suppression than European Americans (Butler et al., 2007), whereas Chinese participants were more conservative in emotional expression (Tsai & Levenson, 1997). Such significant cultural differences of emotion perception and expression between Caucasians and Chinese people have been manifested in explicit behavioral level as shown in our findings.

However, it should be noted that the current findings only provide preliminary validation of the Chinese version of EES and further research should be conducted to cross validate this two-factor model in a larger independent healthy sample and clinical patients with emotional disturbances. Despite these limitations, the current findings add further knowledge to the clinical utility of the Chinese version of EES. In clinical settings of mainland China, we do not have standardized or validated self-report scale specifically assessing emotional expression. Clinicians and other medical professionals can now administer such a scale to their clinical cases for assessment and screening of potential emotional disturbances cases. On the other hand, there is also a trend of increasing Chinese immigrants in North America, Australia, and Europe. The two-factor model of emotional expression in the current Chinese sample may alert western clinicians to be very cautious in interpreting their findings when assessing clients coming from China or ethnic group speaking Chinese. Finally, the current findings may open a window for further cross-cultural studies of affective sciences.

Chi-square= 403.53, df= 118, P-Value= 0.00000, RMSEA= 0.084

Fig. 1. Final factor structure of EES

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