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Factor Structure of Emotional Creativity Inventory (ECI-Averill, 1999) Among Iranian Undergraduate students in Tehran Universities

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Abstract

This paper describes the factor structure of Persian version of Emotional creativity Inventory (ECI-Averill, 1999) among 650 Iranian undergraduate students in Tehran Universities. The findings of confirmatory factor analysis provided support for three factor structure of emotional creativity construct that is: Preparedness (understanding and learning from one's own and others' emotion), Novelty (the ability to experience unusual emotions) and effectiveness/ Authenticity (the skill to express emotions adroitly and honestly) in Iranian community. These results are discussed in relation to possible cross-cultural similarities and differences in emotional creativity.

Keywords: Emotional creativity; Emotional creativity Inventory; factor structure; validity; reliability

1. Introduction

Emotional creativity refers to the richness of a person's emotional life (Ivcevic, Brackett & Mayer, 2007). Emotional creativity is the ability to experience and express novel effective mixtures of emotions (Averill & Thomas-Knowles, 1991).

Averill (1999, 2000) proposes three components for emotional creativity: preparedness, novelty, effectiveness /authenticity. Preparedness reflects a person understands of emotions and willingness to explore emotions. Novelty is an emotional response that is eccentric or unconventional. Effectiveness is described by response which must be appropriate for the situation or have benefit consequences for the individual or a group. And finally authenticity is defined by honest expression of one's experiences and values (Ivcevic, Brackett & Mayer, 2007).

Emotional creativity can be measured by performance tests and a self-report inventory (Averill & Thomas-Knowles, 1991). According to Averill (2004) the criteria of effectiveness and authenticity are difficult to recognize using simple self- report items. Emotional Creativity Inventory (ECI; Averill, 1999a) is a 30-item self-report questionnaire that focuses on the preparation and verification stages of emotional creativity. ECI have been developed in the

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United States with Americans participants. Studies carried out in western countries (Averill, & Thomas-Knowles, 1991; Gutbezhal & Averill, 1996; Averill ,1999a; 1999b; Ivcevic, Brackett & Mayer,2007; Humphreys, Jiao& Sadler,2008) have provided evidence of good construct, discriminant, and incremental validity, as well as internal consistency reliability.

Considering that the original instrument of ECI was analyzed using principal components analysis, researchers have suggested that a more rigorous method to cross validate the factor structure of measure is by means of a confirmatory factor analysis (Van Prooijen & Van Der Kloot, 2001). Given these recommendations, the current study uses confirmatory factor analysis (CFA) techniques to further test ECI's factor structure and to help determine whether it matches the results of the original study. On the other hand, according to Averill (1999) and Humphreys, Jiao& Sadler (2008) emotional creativity can be influenced by cultural dimensions. Therefore, examinations of perceptual aspects of EC and psychometric properties of ECI is necessary for considering contextual applicability outside Western cultures such as a developing society like Iran.

2. Method

2.1. Measure

All participants completed Emotional Creativity Inventory (ECI) (Averill, 1999). ECI is a self-report measure that can be administered individually or in groups. It consists of 30 items. “Of the 30 items that make up the ECI, 7 pertain primarily to emotional preparedness; 14 to novelty; 5 to effectiveness; and 4 to authenticity” (Averill, 2004, p. 336). Typical items of theses components are: “I can experience a variety of different emotions at the same time” (novelty) and “My emotions are almost always an authentic expression of my true thoughts and feelings” (authenticity). Only two of the 30 items constituting the current version of the ECI are reverse-scored (Averill, 1999).

2.1.1. Procedure

Using a Stratified Simple Sampling method, 650 (325 females and 325 males) undergraduate in Tehran Universities students were responded the inventory. All undergraduates at ages ranged from 18 to 42, with a median of 25 years**.** Items of the ECI were rated on a scale from 1 to 5. Total scores on the 3D-item scale could thus range from a low of 30 to a high of 150. The actual range of scores for the sample of 650 participants was 59 to 145, with a mean of 103.16 *(SD* = 15.24).

2.1.2. Statistical Procedures

Goodness of fit is assessed using cutoff criteria proposed by McDonald and Ho (2002). They recommend that use of the Root Mean Square Error of Approximation (RMSEA) due to its lack of sampling bias. Therefore the RMSEA fit index was used to estimate model adequacy. If the RMSEA was lower than 0.05 this model was seen as adequately describing relationships between the respective variables. In addition, an RMSEA value between 0.05 and 0.08 represents reasonable errors of approximation in the population (Browne & Cudeck, 1993). A CFA model with an RMSEA value between these limits (0.05 and 0.08) will also be accepted as a fair representation of observed relationships within the sample.

3. Results

Generally, the highest scores were obtained on the ECI total score. The means and standard deviations obtained (M=103.16, SD = 15.24) are remarkably similar to the data obtained from Averill comparable university students' sample.

To replicate the three dimensional structure of the ECI, confirmatory factor analysis using LISREL 8.7 (JÖreskog & SÖrbom, 2003), were conducted on items within each of the three domains based on the factor structure proposed by Averill (1999). The hypothesized model included the 30 items of the ECI.

Model were evaluated by several goodness-of-fit indices, including (x2), goodness of fit index (GFI), adjusted goodness-of-index (AGFI), comparative fit index (CFI), normed fit index (NFI), incremental fit index (IFI), root mean square error of approximation (RMSEA), root mean square residual (RMR) and standardized RMR.
As hypothesized, three factor structures of Averill model (1999) representing, novelty, preparedness and effectiveness/authenticity were confirmed and our model did fit the data well: Satorra- Bentler Scaled Squares Chi-Square (x2) = 1247.213 (p=0.7); GFI = .94; AGFI = .88 ; CFI= .94; RMSEA=.07; RMR= .082; Standardized RMR= 0.61; NFI =.91; NNFI= .94; IFI= .94. DF=404 , CHI-Square = 1482.261 . The fit indices from the CFAs that we interpreted are widely accepted and are considered to be strong. The GFI and AGFI values indicated acceptable model-to-data fit for 3-factor solutions of ECI. The RMSEA values also indicated that 3-factor model provided acceptable fit, with the RMSEA value for the 3-factor model falling below the .08 threshold measures of fit.

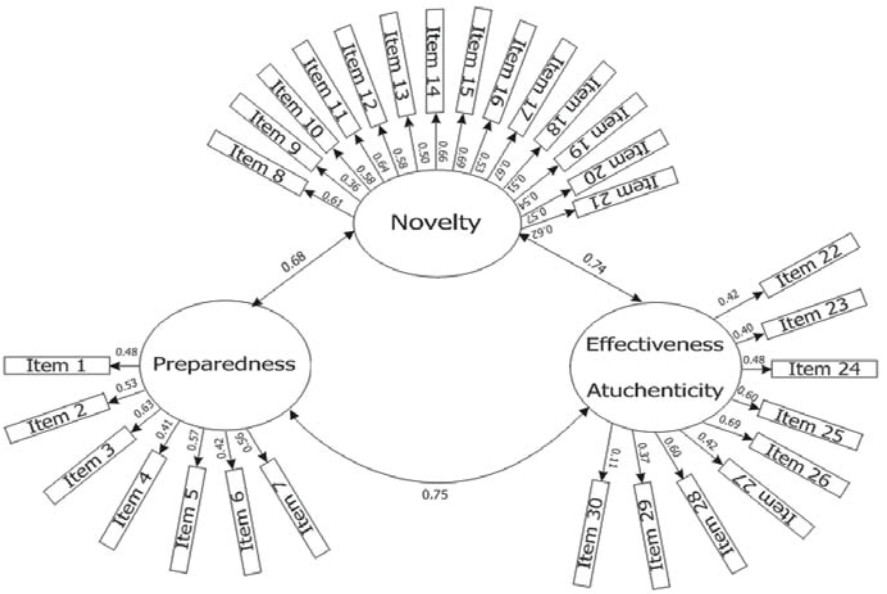

Fig.1. Confirmatory factor analysis model for Emotional Creativity Inventory

Also following the same procedure as Averill (1999), factor loadings greater than 0.3 were reported. As can be seen from the diagram 1, most item (twenty items) loadings were p >.5 but seven items were p >.4, 2 items were p >.3 and only item 30 was p <.3. So, all loadings except item 30 were significant at the.01 level. Overall, these results provide support for the hypothesized structure of the ECI (Preparedness, novelty, and effectiveness/authenticity) among Iranian university students. This suggests that the ECI measures a single construct; it does not mean, however, that the ECI cannot be decomposed into more homogeneous subdimensions.

4. Discussion

This study aimed to examine the factor structure of emotional creativity inventory. The results of this study support the three factor structure of emotional creativity inventory (Averill, 1999). The analyses undertaken and evidence of a good fit provide mixed support for Averill original three factors model.
The present study adds to the emotional creativity literature in regard to limited research available by showing that there are a consistency in results of two studies carried out in two different cultures that is the U.S and Iran. We had assumed that collectivist tendencies in Iranian values would make novel thinking much more difficult. Based upon this sample, though, the Iranian students were similar at experiencing new thoughts and emotions with American students who are supposed as having individualist tendencies. Our preliminary assumption attributes many of the unexpected findings to the strength of the convergence of the American and Iranian samples, which we believe is the greatest contribution of our investigation. The patterns of ECI were roughly comparable in Iran and the United

The similar factor structure of the ECI identified in two separate studies has theoretical importance. It implies that EC may not be culture-bound. Ghorbani (2004) gives reasons that collectivist and individualist values correlated positively in both societies. This outcome was observed with previous Iranian and American samples (Ghorbani et al, 2003), and Indian (Sinha& Tripathi, 1994) and Chinese (Ho & Chui, 1994) studies have similarly confirmed that elements of individualism and collectivism can be incorporated within the personality.

According to Brendan et al (2003) although individualism and collectivism are often related with national cultures, they do not always obey geographical boundaries. Such data claim against the extreme position that individualism and collectivism are fundamentally incompatible (e.g., Sampson, 1988, 1989; cited in Ghorbani, 2004). Furthermore, Brendan et al (2003) believe that even in strongly collectivist cultures, members of specific social groups such as university students may experience pressures to differentiate themselves from others and to express their individual selves. Whereas one of the important facet of emotional creativity is the ability to think in novel ways in comparison to group norms (Averill, 1999; Humphreys, Jiao& Sadler, 2008).Clearly, future researchers should thoroughly explore this matter further.

According to Averill (1999) during our life, we learn how to express our emotions from parents, teachers, and peers. Although culture is also important for emotional education, but maybe most important is direct experience with emotionally arousing events such as university. Both of samples of present study and initial Averill's study (1999) were university students which showed similar mean scores on ECI. One explanation for this result can be referring to development of technologies in mass communication which allows interaction between people of nations. University students are one of the biggest groups which may have more access to resources like internet which can be operate as a way to learn and experience of emotions and/or express them creatively. The internet breaks cultural boundaries across the world by enabling easy, near-instantaneous communication between people anywhere in a variety of digital forms and media. The Internet is associated with the process of cultural globalization because it allows interaction and communication between people with very different lifestyles and from very different cultures. Iran and the United States are large, diverse countries. As can be seen, the smallest loading was .30. This suggests that the ECI measures a single construct; it does not mean, however, that the ECI cannot be decomposed into more homogeneous subdimensions.

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