Revision of the Emotion Regulation Flexibility Scale (FlexER) in Chinese College Students

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Abstract

Objective: To translate and revise the Flexible Emotion Regulation Scale (FlexER) developed by Denise et al., and to explore the structure, reliability, and validity of the FlexER scale, as well as its application among Chinese university students.

Method: The Flexible Emotion Regulation Scale and the Resilience Scale were administered to 1010 undergraduate students, and item analysis, validity analysis, and reliability analysis were conducted on the Flexible Emotion Regulation Scale.

Results: The 9 items showed good discrimination, with correlations between each item and the total score ranging from 0.30 to 0.62. Exploratory factor analysis yielded three dimensions: variability, inertia, and diversity. Confirmatory factor analysis model indices: 2 = 41.69 (df = 24), RMSEA = 0.04, GFI = 0.98, AGFI = 0.96, NFI = 0.94, CFI = 0.98, IFI = 0.98. All indices indicated that the model achieved an acceptable level of fit. The overall Cronbach' s α for the FlexER scale was 0.72, with α coefficients for each dimension ranging from 0.66 to 0.68.

Conclusion: The Chinese version of the FlexER scale demonstrates good reliability and validity among university student populations and is suitable for assessing emotion regulation flexibility in Chinese university students.

Full Text

Revision of the Flexible Emotion Regulation Scale (FlexER) for Chinese College Students

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Abstract: This study aimed to translate and revise Dörfel et al.' s Flexible Emotion Regulation Scale (FlexER), examining its factor structure, reliability, and validity among Chinese college students. A total of 1,010 undergraduate students completed the FlexER and the Connor-Davidson Resilience Scale (CD-RISC). Item analysis, validity analysis, and reliability analysis were conducted on the FlexER. The results indicated that nine items demonstrated good discrimination, with item-total correlations ranging from 0.30 to 0.62. Exploratory factor analysis yielded three dimensions: variability, sluggishness, and diversity. Confirmatory factor analysis produced the following model fit indices: $^2 = 41.69$ (df = 24), RMSEA = 0.04, GFI = 0.98, AGFI = 0.96, NFI = 0.94, CFI = 0.98, IFI = 0.98, all indicating acceptable model fit. The Cronbach' s α coefficient for the total scale was 0.72, with subscale α coefficients ranging from 0.66 to 0.68. The Chinese version of the FlexER exhibits good reliability and validity among college students and is suitable for assessing emotion regulation flexibility in Chinese university populations.

Keywords: Flexible Emotion Regulation Scale; emotion regulation flexibility; reliability; validity

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Emotion regulation refers to how individuals influence which emotions they experience, when they experience them, and how they experience and express these emotions [1]. Gross proposed five categories of emotion regulation strategies: situation selection, situation modification, attentional deployment, cognitive change, and response modulation [1]. While no single strategy is inherently superior, their effectiveness varies across different contexts. For instance, the use of cognitive reappraisal shows a significant negative correlation with depressive symptoms under high life stress, but no significant correlation under low stress conditions [2]. Individuals must adjust their emotion regulation strategies according to situational demands to achieve optimal outcomes. To investigate this phenomenon, Bonanno introduced the concept of emotion regulation flexibility [3].

Emotion regulation flexibility refers to the degree to which individuals adjust their emotion regulation strategies in response to changing external emotional contexts. Aldao and colleagues defined it as the synchrony between situational changes and corresponding shifts in emotion regulation strategies [4]. The premise of emotion regulation flexibility is situational change, the core is strategy modification, and the key is the synchrony of this change [5]. Both excessively low and high emotion regulation flexibility characterize various psychological problems, and flexibility is associated with individual adaptation and mental health [6]. For example, individuals with depression exhibit low emotion regulation flexibility [7], whereas those with borderline personality disorder show high flexibility [8]. In low-stress situations, individuals with lower flexibility

demonstrate better interpersonal adaptation than those with higher flexibility [9], possibly because highly flexible individuals expend more cognitive resources on emotion regulation, leaving fewer resources for goal attainment and thereby impairing interpersonal adaptation. Thus, emotion regulation flexibility is intimately linked to individual adaptability, with moderate flexibility potentially being more adaptive than either extreme.

Given the close relationship between emotion regulation flexibility and psychological health/adaptation, and its growing importance in psychopathology and mental health research, effective measurement tools have become essential. However, the field currently lacks adequate measures. To address this gap, Dörfel developed the Flexible Emotion Regulation Scale (FlexER), which has demonstrated significant correlations with the Resilience Scale (RS-11) [10], consistent with previous research indicating a positive relationship between psychological resilience and emotion regulation flexibility [11].

Nevertheless, the applicability of the FlexER in Chinese populations remains unexplored, and its factor structure is unclear, limiting assessment to a total score. To develop a more effective, reliable, and structurally clear instrument, the scale was translated into Chinese with the authors' permission. Using university students as a sample, this study examined the psychometric properties, reliability, and validity of the Chinese version of the FlexER, aiming to provide a valid measurement tool for Chinese populations, characterize emotion regulation flexibility in this context, and contribute to the broader literature.

2. Participants and Methods

2.1 Participants

The sample comprised 1,010 undergraduate students from a university in Sichuan Province, including 330 males and 680 females aged 17-28 years (M = 20.00, SD = 1.35). Valid questionnaires from 600 participants were used for exploratory factor analysis (EFA), and 410 for confirmatory factor analysis (CFA).

2.2.1 Flexible Emotion Regulation Scale (FlexER)

The original FlexER developed by Dörfel was used with the authors' permission. The translation team consisted of one faculty member and five graduate students from the psychology department. Three members translated the English items into Chinese, emphasizing semantic integrity and comprehensibility, and produced an initial Chinese draft. The remaining three members conducted back-translation. Semantic analysis was performed on each item, with necessary revisions made. Expert review further refined the wording, yielding the preliminary Chinese version of the FlexER. The scale comprises 12 items rated on a 5-point scale (1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree), with items 5, 7, and 9 reverse-scored. Higher scores indicate greater emotion regulation flexibility.

2.2.2 Criterion Measure

The Connor-Davidson Resilience Scale (CD-RISC) [12,13] served as the criterion measure. This 25-item scale uses a 5-point rating system (0 = never, 1 = rarely, 2 = sometimes, 3 = often, 4 = almost always). It comprises three dimensions: tenacity, strength, and optimism. The scale demonstrates good reliability, with Cronbach' s $\alpha = 0.91$ for the total scale, $\alpha = 0.86$ for tenacity, $\alpha = 0.81$ for strength, and $\alpha = 0.63$ for optimism. High tenacity reflects conscious integration of behavioral control, goal setting, and decision-making under adversity; high strength involves viewing negative life events as normal; and high optimism entails positive attitudes and beliefs when facing difficulties.

2.3 Statistical Analysis

SPSS 21.0 was used for data entry, independent samples t-tests, exploratory factor analysis, internal consistency reliability analysis, and correlation analysis. AMOS 22.0 was employed for confirmatory factor analysis.

3. Results

3.1 Item Analysis

Participants were divided into high-scoring (top 27%) and low-scoring (bottom 27%) groups based on total FlexER scores. Independent samples t-tests [13] on each item revealed significant differences between groups for all 12 items ($p < 0.001$), indicating satisfactory item discrimination.

Item-total correlation analysis showed that Item 10, "If necessary, I sometimes intensify my negative emotions to achieve goals," correlated only 0.27 with the total score, failing to meet the criterion of item-total correlations exceeding 0.30 [14]. Consequently, Item 10 was removed. All remaining items correlated significantly with the total score ($p < 0.001$), with coefficients ranging from 0.30 to 0.62.

3.2.1 Exploratory Factor Analysis

EFA was conducted on 600 questionnaires. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett' s test of sphericity assessed factorability. Results indicated a KMO value of 0.77 and Bartlett' s $^2 = 1273.20$ ($p < 0.001$), confirming data suitability for factor analysis. Principal component analysis with varimax rotation [15] retained items with factor loadings above 0.40 [16]. Based on eigenvalues greater than 1 and the scree plot [Figure 1: see original paper], three factors were extracted. Consistent with scale content, the three sub-dimensions were labeled variability, sluggishness, and diversity (Factor 1, Factor 2, Factor 3). Factor loadings for the 11 items ranged from 0.53 to 0.78, with variability items loading at 0.61–0.77, sluggishness items at 0.68–0.78, and diversity items at 0.53–0.76. All communalities exceeded 0.47. The three factors cumulatively explained 54.69% of the variance .

3.2.2 Confirmatory Factor Analysis

CFA was performed on 410 questionnaires. Item 2 (“If helpful for achieving task goals, I may sometimes reduce my positive emotions in certain situations”) showed a factor loading of 0.07, and Item 11 (“If I want to put myself in a negative emotional state, I can find ways to do so”) loaded at 0.11. Both loadings were below 0.45, leading to their removal and leaving nine items. Good model fit is indicated by CFI > 0.90, RMSEA ≤ 0.08, and $^2/\mathrm{df} < 2$ [17,18]. The model demonstrated excellent fit: $^2 = 41.69$ (df $= 24$), RMSEA $= 0.04$, GFI $=$ 0.98, AGFI $= 0.96$, NFI $= 0.94$, CFI $= 0.98$, IFI $= 0.98$. The revised nine-item version explained 60.88% of the variance. Factor loadings are presented in .

Inter-factor correlations are presented in . Correlations among the three dimensions and with the total score ranged from 0.17 to 0.75 (all $p < 0.001$), supporting the scale’ s three-factor structure.

3.2.3 Criterion Validity

Correlations between the total FlexER score, its variability and diversity dimensions, and the CD-RISC total and subscale scores are presented in . Except for the sluggishness dimension, which did not significantly correlate with tenacity, optimism, or the total resilience score, all other correlations were significant. These results demonstrate good criterion validity, confirming that the FlexER effectively measures emotion regulation flexibility in college students.

3.3 Reliability

The Cronbach’ s α coefficient for the total FlexER scale was 0.72, with subscale α coefficients of 0.68 for variability, 0.68 for sluggishness, and 0.66 for diversity. These values are within acceptable ranges, indicating satisfactory reliability.

4. Discussion

This study revised the FlexER scale among 1,010 Chinese college students in a Chinese cultural context, yielding good reliability and validity. The Chinese version maintains high consistency with the original scale, demonstrating cross-cultural stability and suitability for assessing emotion regulation flexibility in Chinese university students.

Item analysis demonstrated good discrimination in Chinese college students. The overall α coefficient of 0.72 indicates satisfactory reliability. EFA identified three dimensions—variability, sluggishness, and diversity—each comprising three items, with Cronbach’ s α coefficients ranging from 0.66 to 0.68. Variability reflects the flexible application of emotion regulation strategies. Sluggishness represents the habitual use of a single strategy. Diversity indicates the richness of strategies available to an individual. Notably, a person may possess multiple strategies and switch when one fails (high variability), yet habitually rely on either multiple or a single strategy (resulting in high or low sluggishness,

respectively). The significant positive correlation between emotion regulation flexibility and psychological resilience aligns with theoretical frameworks proposing that flexibility is rooted in resilience [4].

Item 10 ("If necessary, I sometimes intensify negative emotions to achieve goals") showed an item-total correlation below 0.30, while Items 2 ("If helpful for task goals, I may reduce positive emotions") and 11 ("I can put myself in a negative emotional state if desired") had factor loadings below 0.45. These findings diverge from Western research, suggesting these items are unsuitable for Chinese college students. This may reflect Chinese cultural values that discourage reducing positive affect or deliberately experiencing negative emotions. Research indicates that in Chinese "face" culture, individuals are reluctant to experience negative emotions like anger, whereas in honor cultures, anger carries positive connotations [19]. Consequently, these three items were removed, and CFA confirmed that the revised scale effectively measures emotion regulation flexibility in Chinese university students.

In summary, the revised three-factor, nine-item FlexER scale demonstrates good reliability and validity, providing an appropriate tool for measuring emotion regulation flexibility in Chinese college students.

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Note: Figure translations are in progress. See original paper for figures.