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Self-Compassion as a Mediator in the Effect of Dispositional Mindfulness on Anxiety and Aggressiveness in College Students with Left-Behind Experience

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Abstract: Few studies have comprehensively explored the mechanism of the association between dispositional mindfulness and the process of internalization and externalization. Given that dispositional mindfulness can enhance the level of self-acceptance, the present study investigated the role of self-compassion in the effect of dispositional mindfulness on anxiety and aggressiveness among college students with left-behind experience (LBE). A total of 385 Chinese college students with LBE reported their level of dispositional mindfulness, anxiety symptoms, aggressiveness, and self-compassion. Dispositional mindfulness was negatively associated with anxiety and aggressiveness after controlling for gender, age, and whether they are the only child in family. Additionally, self-compassion partially mediated the link between dispositional mindfulness and anxiety, but it didn't mediate the link between dispositional mindfulness and aggressiveness. The findings highlight the importance of dispositional mindfulness and self-compassion on reducing internalizing and externalizing problems of college students with left-behind experience and also provide coping strategies for the intervention of this special group.

Keywords: Dispositional mindfulness; self-compassion; anxiety; aggressiveness; left-behind experience

1 Introduction

As a result of rapid urbanization, left-behind children (LBC) have received extensive attention from the society in China. LBC are defined as children or adolescents under 16 years old, who stay at home alone or are raised in the absence of one or both migrant parents [1]. Nowadays, a large number of people with left-behind experience (LBE) have become an adult and entered college. The impact of left-behind experience on their psychological well-being and psychosocial development during early adulthood has become an important issue in the studies of left-behind children. A growing body of research has documented that college students with LBE tend to show higher level of negative emotions, lower level of self-esteem, less adaptive coping styles, as well as worse interpersonal relationships compared to their peers without such experience [2,3]. However, most studies have focused on the negative and problematic characteristics of college students with, ignoring the protective effect of positive characteristics on the potential negative outcomes of LBE [4]. Given the importance of this research area and the lack of positive perspectives in existing findings, the current study aimed to identify potential protective factors for anxiety and aggressiveness, two of the most common psychological and behavioral problems, of college students with LBE, and examine potential mechanisms of the protecting effects.

1.1 Anxiety and Aggressiveness in Individuals with LBE

Anxiety is one of the most important negative outcomes of early adversity [5]. The rate of anxiety tends to increase across childhood and adolescence, and these continuous long-term outcomes may influence one's academic, vocational and social functioning until adulthood [6,7]. In a study with a clinical sample of 103 patients with social anxiety disorder, 56% reported having experienced emotional neglect during childhood, and 39% experienced childhood emotional abuse [8]. Moreover, it has been found that the likelihood of having mental health problems including anxiety, depression, and paranoid psychosomatic symptoms are significantly higher for students with LBE than those without such experience [2,9]. People persistently experiencing high levels of anxiety are at increased risk for depression or behavioral disorders if they do not receive timely intervention or correction [10,11]. Empirical evidence that advances our understanding of anxiety in college students with LBE is crucial for future preventive intervention design and development in this research area.

Similar to anxiety symptoms, considerable attention has been paid to individual aggressiveness following early adverse experiences [12]. Many studies indicated that anxiety and aggressiveness were the two most common internalizing and externalizing problems resulting from early adverse experiences. For example, prior research has reported that adverse experiences in childhood such as abuse, household dysfunction, and interpersonal conflict are positively associated with anxiety symptom and aggressive behavior in adulthood [5,13]. Furthermore, several studies on Chinese college students reported that there is a strong positive correlation between anxiety and aggressiveness [14,15]. Thus, internalizing and externalizing problems may be coexistent in individuals with adverse experience [5,13]. Similarly, several studies have found high level of both anxiety and aggressiveness among college students with LBE occurred at the same time [2,16]. Hence, it is important to explore the potential protective factors of both anxiety and aggressiveness among LBE college students.

As an effective self-regulation ability, dispositional mindfulness is a protective factor to reduce the internal and external problems of individuals [17]. Thus, one candidate variable likely to be associated with anxiety and aggressiveness is dispositional mindfulness. In this study, we examined the role of dispositional mindfulness as one potential protective factor of anxiety and aggressiveness in a sample of college students with LBE from China.

1.2 Mindfulness, Anxiety and Aggressiveness

Dispositional mindfulness refers to one's general tendency to attend to the present moment nonjudgmentally and purposefully with openness and acceptance [18,19], and it has been found common among the general population, even without interventions or intentional attempts to develop mindfulness skills [20]. Mindful individuals may be more able to disengage from ruminating on the adverse experience, which breaks the vicious cycle of rumination and psychological distress [21]. Mindfulness may also facilitate the process of reappraisal, protecting against negative situations by enabling individuals to acquire a more balanced perspective towards stressful situations (e.g., reframing the early left-behind experience as an opportunity to cultivate resilience) [22]. Mindfulness is considered as a promising cognitive-affective/behavioral mechanism to mitigate psychological symptoms among disadvantaged individuals [23,24]. Furthermore, according to the re-perceiving model of mindfulness, mindfulness can help people re-perceive the moment-by-moment experience with greater objectivity, get rid of automatic behavioral and emotional patterns, and take adaptive responses to negative stimulation [25]. Mindfulness would thus buffer the undesirable impacts of negative factor. A growing body of literatures has documented that there is a close relation between dispositional mindfulness and anxiety and aggressiveness. Two findings indicated that dispositional mindfulness inversely relates to self-reported anxiety and aggressiveness [26,27]. Moreover, adults and children who were clinically diagnosed with anxiety disorders were able to benefit from mindfulness strategies, experiencing less anxiety through enhanced self-awareness, improved self-regulation, attunement in the present moment, and self-management on attentional behaviors [28,29]. Similarly, a case study by Singh et al. [30] found that teaching a highly aggressive individual to mindfully pay attention to his soles of feet when encountering aggression-provoking stimuli resulted in a significant decrease in his

aggressive outbursts. Therefore, this study proposed Hypothesis 1: Dispositional mindfulness negatively predicts anxiety and aggression among college students with left-behind experience.

Furthermore, mindful awareness requires one to accept oneself by a non-judgmental approach. Self-compassion is a sign of high self-acceptance and a critical component in the process of nurturing resilience and mitigating negative effect of individuals with early adverse experience [31]. Therefore, another purpose of the present study is to examine the mediating role of self-compassion in the effect of dispositional mindfulness on anxiety and aggressiveness of LBE college students.

1.3 The Role of Self-Compassion

Self-compassion refers to the ability to adopt a caring and compassionate attitude towards oneself, recognize one's experience as part of the shared human experience, and bring nonjudgmental awareness to one's painful thoughts and experiences rather than over-identifying them [32]. Preliminary research suggested that self-compassion may be a valuable inner resource that mitigates individuals' stress. Specifically, trait self-compassion can ease people of distressing situations involving rejections, failure, or negative feedback [33]. Research has found that lower self-compassion is related to anxiety and characterized by negative self-narratives (e.g., self-critical, over-identification with negative emotions), whereas higher self-compassion is associated with lower level of anxiety and less distorted self-reflection [33,34]. In terms of aggressiveness, men and women who lacked self-compassion reported higher verbally aggression towards their romantic partners [35]. Moreover, self-compassion was also associated with less dispositional proactive and reactive aggression in at-risk adolescent males [36].

As a sign of high self-acceptance, self-compassion is influenced by individuals' self-attention and self-regulation [37]. Specifically, individuals with higher level of mindfulness are more attentive, aware, and acceptive of what they are facing in the moment, so they become kinder and less critical to themselves [38]. For example, intervention research suggested that self-compassion commonly improves psychological symptoms after implementing mindfulness-based interventions (MBIs) [39]. Moreover, a longitudinal study has found that self-compassion may be originally developed via mindfulness [40].

Overall, self-compassion is a crucial attitudinal factor in the mindfulness-psychological/mindfulness-behavioral adaptive variables relationship [41]. MBIs researchers have found self-compassion is an important mechanism of change [42]. And, most previous studies have found that the cultivation of self-compassion is an important technique in cognitive-behavioral training and mindfulness-based practices, partially mediating the link between cognitive factors and negative symptoms among young adults [32,43]. Xu et al. [44] found that self-acceptance was a mediator in the association between mindfulness and peace of mind. Moreover, self-compassion partially mediated the dispositional mindfulness–happiness relationship in non-meditators [41]. Thus, it was considered that mindfulness may increase self-compassion, leading to decreased negative symptoms (like anxiety and aggressiveness). Therefore, this study proposed Hypothesis 2: Self-compassion partially mediates the effect of dispositional mindfulness on anxiety and aggressiveness.

To sum up, this study analyzes the protective factors and built-in mechanisms of internal and external problems of college students with LBE from a positive perspective. Compared to previous studies concentrating on LBE's negative outcomes, present study focuses on providing coping strategies for LBE college students to deal with their early adverse experience.

1.4 The Current Study

Taken together, the current study proposes that self-compassion acts as a mediator of the relation between dispositional mindfulness and anxiety and aggressiveness among LBE college students. Based on the reviewed literatures, following hypotheses were proposed: (a) dispositional mindfulness would be negatively associated with anxiety and aggressiveness and (b) self-compassion would partially mediate the effect of dispositional mindfulness on anxiety and aggressiveness. The research model shown in Fig. 1. This study will deepen our understanding of how dispositional mindfulness reduces the internalizing and

externalizing problems among college students with left-behind experience.

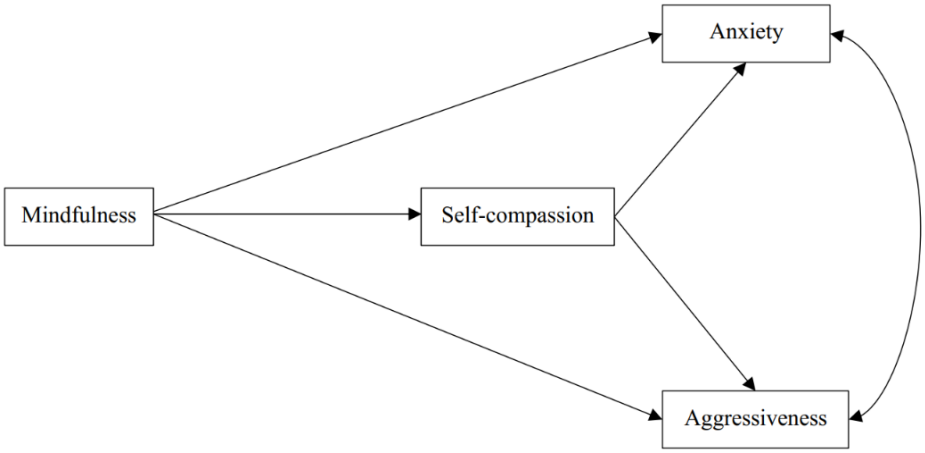

Figure 1: Hypothesized mediation model: Indirect effect of mindfulness on anxiety and aggressiveness through self-compassion

2 Method

2.1 Participants and Procedure

This study was approved by the Research Ethics Committee of the corresponding author's institution. Participants were recruited from a university in Chongqing, China. A total of 385 college students with left-behind experience completed the survey and 159 (41.30%) of the participants were males. The mean age of the participants was 19.79 years old (SD = 0.88). School administrators were contacted, and the approval of this study was obtained from teachers and college students prior to implementation. The purpose of the study and the informed consent form were provided to all participants in the beginning. Participants were asked to complete the questionnaires that measured demographic data, dispositional mindfulness, self-compassion, anxiety and aggressiveness.

A participant will be considered as a LBE college student if (1) his or her mother or father used to leave the hometown for a job for more than 6 months in their growth, and (2) he or she currently lives with his or her classmates at university rather than living together with their relatives or a single parent [45]. In the current study, the average age of participants when their mother or father went out to work was 2.17 years old (SD = 1.10). All participants' mother or father has left the local place for a job over 6 months and the average length of left-behind experiences for participants was 8.44 years (SD = 5.53). The frequency of LBE college students' contact with parents was less than once a week. LBE participants were further divided into the following subgroups: (1) "mother absent": those whose mother has left them to work; (2) "father absent": those whose father has left them to work; (3) "both absent": those whose parents both have left them to work. For 385 LBE college students in our study, there are 69 (18.3%) in the 'father absent' type, 17 (4.5%) in the 'mother absent' type, 291 (77.2%) in the 'both absent' type, and 8 missing left-behind type information. 102 (26.5%) participants were from the one-child family.

2.2 Measures

Dispositional Mindfulness. Dispositional mindfulness was measured by the Chinese version of Mindfulness Attention Awareness Scale (MAAS) [46]. The original MAAS is a widely used scale to assess an individual's dispositional mindfulness [18]. This scale includes 15 items (e.g., "I find myself doing things without paying attention"), with each rated on a 6-point scale from 1 (always) to 6 (never). All items were reversely scored to compute a composite score. Higher scores indicate higher levels of dispositional mindfulness. It has been confirmed that this scale has great reliability and validity among Chinese adolescents [47]. In the present study, Cronbach's Alpha value for the scale was 0.89.

Self-compassion. Self-compassion was assessed by the Self-Compassion Scale, a 26-item questionnaire consisting of six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification [32]. Items are designed to capture how respondents perceive their actions toward themselves in difficult times (e.g., "When times are really difficult, I tend to be tough on myself") and are rated using a Likert-type scale anchored from 1 (almost never) to 5 (almost always). The SCS has good reliability and validity cross-culturally [48]. In the present study, Cronbach's Alpha value for the scale was 0.77.

Anxiety. Zung's Self-Rating Anxiety Scale (SAS) was applied to assess the severity of anxiety symptoms [49]. The scale consists of 20 items and each item is scored on a Liker-type scale of 1–4. The original total score plus 1.25 will be the "Anxiety Index" score (<50 as normal; ≥50 as anxiety cases) [50]. This measure has been demonstrated with satisfactory reliability and validity in Chinese sample [51]. In the present study, Cronbach's Alpha value for the scale was 0.76.

Aggressiveness. Aggressiveness was assessed by the Aggression Questionnaire, a 22-item questionnaire consisting of four subscales: hostility, physical aggression, impulsivity and anger proneness [52]. Each item is rated using a Likert-type scale anchored from 1 (almost never) to 5 (almost always). This measure has satisfactory reliability and validity in Chinese sample [53]. In the present study, Cronbach's Alpha value for the scale was 0.88.

2.3 Data Analysis

All analyses in present study were performed using SPSS 20.0 and Amos 20.0. The proportion of missing data was less than 1%, and missing data were processed by mean imputation [54]. We first used the factor analysis to detect common method biases. Secondly, descriptive statistics and correlations for all variables were performed. Finally, we tested the hypothesized model with Amos 20.0. In all analyses, gender, age and whether they are the only child in family were controlled, because previous studies indicated that these demographics might have an effect on internalizing and externalizing problems of college students with left-behind experience [55–57].

3 Results

3.1 Check for Common Method Bias

The data were collected from self-report questionnaires. Therefore, Harman's one factor test was applied to test common method biases [58]. The result of unrotated factor analysis showed that 18 factors were generated and explained 61.39% of the total variation. The first principal factor explained only 15.04% of the variance. In addition, we conducted a confirmatory factor analysis with Amos 20.0, and the fitting index didn't achieve the acceptable scope ($\chi^2/df = 10.16$, comparative fit index (CFI) = 0.35, Tucker-Lewis index (TLI) = 0.34, root mean square error approximation (RMSEA) (90% confidence interval (CI)) = 0.25 [0.22, 0.29]), which indicated that common method bias will not influence results in this study.

3.2 Preliminary Analyses

Means, standard deviations (SD), and Cronbach's alpha coefficients of the measures are shown in Tab. 1. All the measures have acceptable reliability. Tab. 1 also shows significant correlations between mindfulness, self-compassion, anxiety, and aggressiveness.

Table 1: Descriptive statistics and correlations between variables ($N = 385$)

Variables	*M*	*SD*	α	1	2	3	4
1. Mindfulness	59.31	11.50	0.89	—			
2. Self-compassion	83.13	10.61	0.77	0.40***	—		
3. Anxiety	45.62	8.93	0.76	–0.38***	–0.40***	—	
4. Aggressiveness	54.20	12.76	0.88	–0.26***	–0.37***	0.36***	—

Note: $^{*}p < 0.05$. $^{**}p < 0.01$. $^{***}p < 0.001$.

3.3 Testing for the Proposed Model

The factorial algorithm (one of the items parceling strategies in structural equation modeling) was used to parcel the indicators of variables to form indicators of each latent variable in this study [59].

We built a measurement model, which was found to fit the data well ($\chi^2/df = 3.16$, CFI = 0.93, TLI = 0.90, RMSEA (90%CI) = 0.075 [0.066, 0.084]). The measurement model was sound and suitable for further analysis of the structural equation model. Based on this measurement model, we then built a direct effect model that demonstrated the effects of dispositional mindfulness on anxiety and aggressiveness after controlling for the covariates (i.e., gender, age, and whether they are the only child in family). This model also fits the data well ($\chi^2/df = 3.24$, CFI = 0.94, TLI = 0.92, RMSEA (90% CI) = 0.076 [0.062, 0.091]). Path analyses revealed that dispositional mindfulness was a significant negative predictor of anxiety ($\beta = –0.46$, $p < 0.001$) and aggressiveness ($\beta = –0.33$, $p < 0.001$). Based on the direct effect model, we inserted self-compassion between dispositional mindfulness and anxiety, as well as between dispositional mindfulness and aggressiveness to establish an indirect effect model (see Fig. 2). We found that this indirect effect model also fits the data well ($\chi^2/df = 2.99$, CFI = 0.92, TLI = 0.90, RMSEA (90% CI) = 0.072 [0.063, 0.081]). Fig. 2 shows the path coefficients of the model. All path coefficients were statistically significant except the path from self-compassion to aggressiveness. More importantly, bootstrap analyses showed that the relationship between dispositional mindfulness and anxiety was mediated by self-compassion (with the indirect effect = –0.06, 95% CI = [–0.11, –0.02]). The relationship between dispositional mindfulness and aggressiveness wasn't mediated by self-compassion. The standardized direct and indirect effects are reported in Tab. 2 (with 95% CI using the bootstrap method).

Table 2: Standardized direct and indirect effects of variables Anxiety and Aggressiveness ($N = 385$)

Variable	Direct effect			Indirect effect		
	B	95% CI	*ρ*	*β*	95% CI	*ρ*
Anxiety						
Mindfulness	–0.34	–0.46/–0.21	***	–0.06	–0.11/–0.02	***
Self-compassion	–0.18	–0.28/–0.06	***	0	—	—
Aggressiveness						
Mindfulness	–0.30	–0.43/–0.18	***	0.01	–0.05/0.07	
Self-compassion	0.02	–0.12/0.17		0	—	—
Self-compassion						
Mindfulness	0.35	0.23/0.48	***	0	—	—

Note: Bootstrap sample size = 5000; CI = confidence interval. $^{***}p < 0.001$.

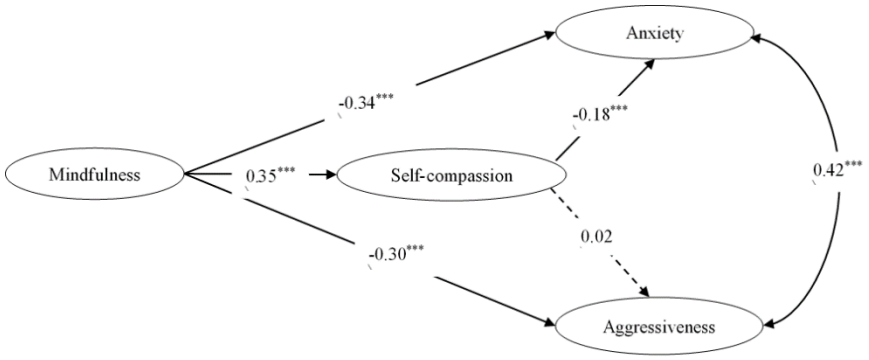

Figure 2: Mediation model ($N = 385$)

Note: With standardized beta weights and significance levels added, and the dotted line indicated that the coefficient is not significant. The covariates (gender, age, and whether they are the only child in family) were controlled in the equation, but they were not shown in the figure for the sake of brevity. $^{***}p < 0.001$.

4 Discussion

The current study formulated a mediation model to clarify the mechanism underlying the relation between dispositional mindfulness and anxiety and aggressiveness among Chinese LBE college students, and our findings shed light on how dispositional mindfulness negatively predicts anxiety and aggressiveness. As expected, the results indicated the mediating effect of self-compassion in the association between dispositional mindfulness and anxiety. However, self-compassion didn't mediate the link between dispositional mindfulness and aggressiveness.

Specifically, our direct effect model suggested that dispositional mindfulness negatively associated with anxiety and aggressiveness, which is similar to previous cross-sectional findings [26,27] and also coincides with the re-perceiving model of mindfulness [25]. These results also indicated that dispositional mindfulness plays a positive role in mental and behavioral health among individuals with early adverse experiences. For individuals with high level of mindfulness, adverse experiences appear to be particularly slight, because they think self-related information in an open and non-defensive way [27], which could ease psychological and behavioral problems such as anxiety and aggressiveness.

Furthermore, in line with previous research [38,40], our findings showed that dispositional mindfulness was positive associated with self-compassion among Chinese LBE college students. The indirect effect model indicated that the direct effect of dispositional mindfulness on anxiety was still significant when self-compassion was inserted into the relation between dispositional mindfulness and anxiety. According to the mindfulness-to-meaning theory [60], positive appraisal that flows from mindfulness can increase one's appreciation for adversity as an opportunity for personal transformation and growth, which in turn can mitigate negative outcomes. In addition, self-acceptance through mindfulness may be a key mechanism that underlies the therapeutic efficacy of reappraisal for promoting positive psychological outcomes. Thus, compared to individuals having adverse experiences with lower level of personality mindfulness, those with higher level of dispositional mindfulness were more likely to have better self-compassion, which could be helpful to alleviate their anxiety. The present study provided preliminary evidence indicating that individuals having earlier adverse experiences with high level of dispositional mindfulness experienced less severe symptoms of anxiety through the development of self-compassion.

However, another important finding of the present study was that self-compassion didn't mediate the link between mindfulness and aggressiveness. Specifically, there is no association between self-compassion and aggression in the current study. It may result from inappropriate measure of aggressiveness or participant's immature self-knowledge. In terms of measuring tools, the surface validity of self-reported aggression scale was relatively high in the present study due to concealment and social approval. Future research needs to collect data from multiple sources, including self-, peer-, and teacher-report measures to

assess variables more accurately. In terms of participants, college students are still in the growth stage of forming self-knowledge. They have not formed an in-depth understanding of others and themselves [61], nor have they realized the commonness of reasons between caring about themselves and others. Therefore, there is no correlation between their attitudes towards themselves and others. For the results of the current study, self-compassion was associated with inward anxiety, but not with aggressiveness toward others. The results may imply the developmental nature of self-compassion: as individuals grow up, their understanding of themselves and others will increase, and their self-compassion level will change accordingly.

Several limitations need to be considered when interpreting the results of this study. First, causal inference cannot be made due to the cross-sectional and non-experimental nature of the current study design. Future research should use longitudinal or experimental designs to better validate the paths (e.g., mindfulness→self-compassion→anxiety or mindfulness→aggressiveness) found in the current study. Second, this study relied primarily on self-report measures to collect data. Future studies should collect data through more reliable methods and examine whether the results were stable across various measures. Third, despite the efforts to ensure the representativeness of the LBE sample, the participants were only chosen from a university in Chongqing, China, thereby limiting our ability to generalize the findings to LBE college students in other areas of the country. Fourth, there is no comparison of the results of college students with and without LBE. Future studies are supposed to collect data from both groups and examine whether the results differ between the two groups. Finally, there is still some controversy over our definition of the left-behind experience as over 6 months, and future studies need to discuss a more appropriate length of time.

In spite of these limitations, this study explores the protective factors and built-in mechanisms of internal and external problems of LBE college students from a positive perspective, which provides a new angle for future research and has important theoretical and practical implications for improving the psychological and behavioral adaptability among LBE college students in China. First, consistent with other studies [17], our findings suggest that high level of dispositional mindfulness is a significant protective factor for LBE college students' internalizing and externalizing problems. Thus, improving the level of dispositional mindfulness should be the focus of interventions that aimed at decreasing the risk of LBE college students' internalizing and externalizing problems. Second, given that self-compassion is an important mechanism, through which dispositional mindfulness impacts LBE college students' anxiety, enhancing self-compassion may be promising in reducing the risk of anxiety. In conclusion, our findings could broaden the implications of mindfulness-based therapies even further to treatments for anxiety- and aggressiveness-related disorders. Likewise, our findings also suggest applications of mindfulness-based strategies for specific at-risk populations, for example, providing coping strategies for individuals with early adverse experience.

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Conflicts of Interest: The authors declare that they have no conflicts of interest to report regarding the present study.

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