

The Influence of Perfectionism on Anxiety in College Students: The Role of Perceived Stress and Resilience

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Abstract: This cross-sectional study examined the associations among multidimensional perfectionism, perceived stress, resilience, and anxiety among Chinese undergraduates ($N = 323$). The results demonstrated that parental expectations, personal standards, and doubts about actions can significantly predict college students' anxiety and that perceived stress mediated the association between these three dimensions of perfectionism and anxiety. Additionally, resilience significantly moderated the effect of personal standards on perceived stress. Notably, a higher level of resilience was associated with reduced stress in the presence of low personal standards. This study is crucial for understanding the complex mechanisms linking multidimensional perfectionism and anxiety and offers strategies for reducing anxiety among college students.

1. Introduction

Anxiety is a state characterized by high levels of negative emotion and physiological arousal, which can impair an individual's cognitive, perceptual, and learning abilities. Numerous studies have identified various detrimental consequences associated with anxiety symptoms. For instance, anxiety has been found to impact drinking behavior [1] sleep quality [2], and future academic performance [3]. College students, who are in a phase of increased independence and decision-making autonomy, represent a unique population to study in relation to anxiety [4]. While there are multiple factors that may contribute to anxiety, personal factors are believed to be the primary influencers among college students. Therefore, this study aimed to investigate the effects of certain individual factors on anxiety in college students, as well as the underlying mechanisms involved.

2. Multidimensional Perfectionism and Anxiety

As a characteristic attribute, perfectionism includes the establishment of excessively high personal performance standards. Additionally, the tendency to excessively criticize one's own behavior can be categorized into two types: maladaptive perfectionism and adaptive perfectionism, also known as negative perfectionism and positive perfectionism, respectively. The dimensions of perfectionism proposed by Frost et al. [5] are parental expectations, parental criticism, doubts about actions, concern over mistakes, personal standards, and organization. The first four dimensions (PE, PC, DA, CM) are associated with maladaptive perfectionism, while the last two dimensions (PS, OR) are

associated with adaptive perfectionism. Zi and Zhou [6] created a Chinese version in which parental expectation and parental criticism were combined into one dimension, asserting that a significant disparity between individual reality and standards leads to increased anxiety and worsened mental health. Therefore, personal standards also contribute to negative perfectionism.

According to the diathesis-stress model, a combination of individual factors and environmental stressors gives rise to internal and external difficulties. Perfectionism, as a personality trait characterized by striving for flawlessness, potentially influences individuals' anxiety levels in stressful or tense situations. Furthermore, individuals characterized by negative perfectionism tend to excessively criticize themselves and possess high emotional vulnerability [7], thus experiencing heightened anxiety in response to stressors. Positive perfectionism, on the other hand, lacks this tendency. Previous research has indicated that perfectionism affects anxiety levels, with adaptive perfectionists exhibiting the lowest anxiety and maladaptive perfectionists displaying the highest anxiety [8]. Moreover, perfectionism among college students can predict their level of active procrastination [9] and lead to increased academic pressure [10], consequently impacting college students' anxiety levels [11]. While most previous studies have examined and discussed perfectionism as a whole, each dimension of perfectionism may predict varying levels of anxiety in college students. Therefore, this study aimed to explore the relationship between each dimension of perfectionism and anxiety among college students.

3. Perceived Stress as a Mediator

Perceived stress is defined as a subjective level of stress that arises from a combination of objective stressful events, personality traits, and other factors. It refers to the extent to which individuals perceive their lives as unpredictable, uncontrollable, and overwhelmed. The impact of an "objective" stressful event is partially determined by an individual's perceived stress. Currently, college students face daily pressure from various sources, such as academics, peers, and family. Although stress is an inevitable part of life, excessive amounts of stress can have detrimental effects on both physical and mental health.

Perceived stress can have an impact on mental health. Individuals who perceive higher levels of stress tend to experience more negative emotions and have lower life satisfaction [12]. Perceived stress can also affect physiological health, for example, by decreasing immune system function. This, in turn, can ultimately influence anxiety levels [13]. Previous studies have also demonstrated that high levels of perceived stress are associated with procrastination and internet addiction, both of which can lead to changes in anxiety levels. Additionally, perceived stress itself can directly impact anxiety levels (Figure 1).

Perfectionism is characterized by a vulnerability-based form of narcissism, and it has a significant positive correlation with perceived stress, making individuals more prone to anxiety [14]. Consequently, individuals with negative perfectionist tendencies tend to experience greater levels of perceived stress and anxiety. The mindset of perfectionists, particularly negative perfectionists, can lead to a continuous increase in negative emotions as stress accumulates over time. On the other hand, positive perfectionists do not exhibit the same pattern [15]. In general, maladaptive perfectionists report higher levels of perceived stress and negative emotions, as well as lower levels of positive emotions. Therefore, this study aimed to investigate the specific role of perceived stress in each dimension of perfectionism and its association with anxiety among college students.

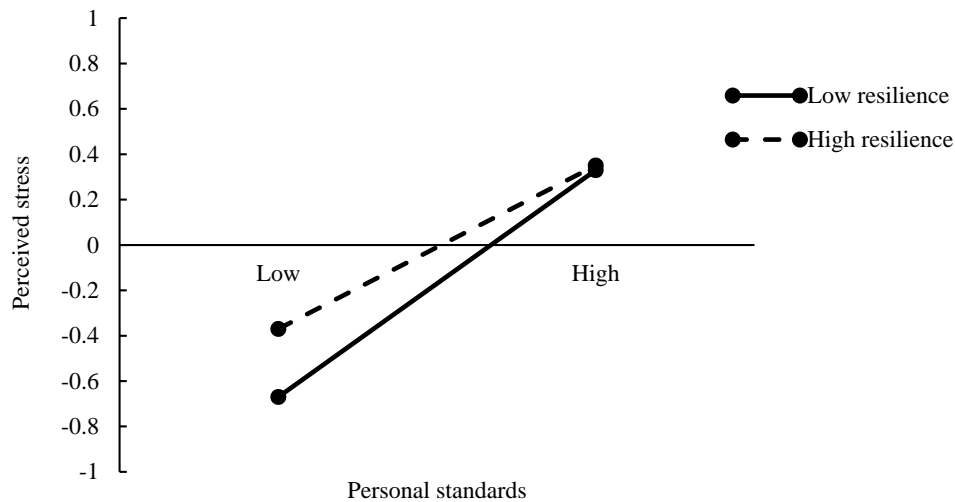


Figure 1: Relationship between personal standards and perceived stress at different levels of resilience.

4. Resilience as a Moderator

Furthermore, in addition to perfectionism and perceived stress, resilience is an important trait that is closely associated with anxiety. Resilience refers to the ability, process, and psychological functioning of an individual who surpasses expectations after experiencing adversity[16]. Resilience has significant implications for improving mental health.

The protective model holds that resilience can be utilized as a resource or asset to mitigate the impact of adversity on outcomes. Numerous studies have demonstrated that resilience plays a significant role in buffering and regulating the relationship between personality traits and anxiety [17]. Perfectionism, a specific personality trait, is also correlated with anxiety disorders. Hence, resilience can act as a protective factor against the development of anxiety symptoms resulting from perfectionism. It has been proven that resilience can effectively reduce perceived stress, which is often experienced by perfectionists. Therefore, resilience potentially plays a protective role in the developmental pathway leading to increased perceived stress associated with perfectionism.

Previous studies have indicated that resilience can modulate the influence of perceived pressure on depression [18], which is an internalizing problem akin to anxiety. Enhancing individual resilience appears to be crucial in mitigating the adverse effects of stress [19]. Consequently, resilience may also regulate the effect of perceived pressure on anxiety among college students. Therefore, it is necessary to investigate whether resilience can play a protective role in the pathway linking multidimensional perfectionism, perceived stress, and anxiety in college students.

5. Current Study

Anxiety is a prevalent emotional experience in today's high-pressure and fast-paced lifestyle. Previous studies have focused primarily on the relationship between perfectionism and anxiety without considering the role of perceived pressure and resilience. Additionally, there has been limited consideration of the associations between various dimensions of perfectionism and these factors. Thus, this study provides a new perspective on perceived stress and resilience for the prevention and intervention of anxiety among undergraduates with different dimensions of perfectionism, aiming to

promote better mental health. Specifically, we hypothesize that perceived stress mediates the relationship between specific dimensions of perfectionism and anxiety, with resilience playing a moderating role in this mediation model. The objective of this model is to identify protective and risk factors related to personality traits associated with anxiety among college students, thereby helping them cultivate a healthier psychology.

6. Methods

6.1 Participants and Procedures

We recruited 380 undergraduate students from multiple universities in China, including Shanghai Normal University and Southwest University. We excluded 57 participants due to invalid data, resulting in a final sample size of 323 participants. The full analysis consisted of 75.9% ($N = 245$) female students and 24.1% ($N = 78$) male students, with a mean age of 20.84 years ($SD = 0.97$) ranging from 18 to 25 years. We ensured the anonymity of the study participants and obtained informed consent from all college students prior to data collection. Participants completed questionnaires either in a quiet classroom or online and had the option to withdraw from the study at any time. The Ethics Committee of Shanghai Normal University approved this study.

6.2 Materials

We assessed multidimensional perfectionism using the Chinese version of the Frost Multidimensional Perfectionism Scale (CFMPS) revised by Zi and Zhou. The CFMPS is a self-report questionnaire consisting of 27 items that measure various aspects of perfectionism, such as worry about mistakes, personal standards, doubts about actions, parental expectations, and organization. Participants rated items on a scale from 1 (totally out of line) to 5 (totally in line). The reliability coefficients (Cronbach's α) for the five dimensions of the scale were 0.75, 0.75, 0.69, 0.76, and 0.83, respectively.

We assessed perceived stress using the Chinese Perceived Stress Scale (CPSS) developed by Yang & Huang, which is a Chinese version of the PSS developed by Cohen & Mermelstein. The CPSS measures an individual's perceived stress in the past month and consists of 14 items rated on a scale from 1 (never) to 5 (always). The internal consistency reliability coefficient for this scale in our study was 0.73.

We assessed resilience using the Resilience Scale for Chinese Adolescents (PSCA) developed by Hu & Gan. The PSCA is a 27-item instrument in which participants rate their agreement on a 5-point Likert scale ranging from 1 (completely out of line) to 5 (completely in line). The internal consistency reliability coefficient for this scale in our study was 0.85.

Anxiety was measured using the Self-rating Anxiety Scale (SAS) developed by William & Zung. The SAS consists of 20 items, and participants rate the frequency of their anxiety symptoms on a scale from 1 (no or little time) to 4 (most or all of the time). The items are summed to obtain a raw score, which is then multiplied by 1.25 and rounded to the nearest integer to obtain the standard score. The internal consistency reliability coefficient for this scale in our study was 0.89.

6.3 Data Processing and Analysis

Descriptive statistics were computed for all variables. To control for the type I error caused by multiple comparisons, we used the Bonferroni correction and set the significance level (p values) for all analyses at 0.001. We conducted further analyses to examine the mediating role of perceived stress and the moderating effects of resilience on perceived stress and anxiety. All the statistical analyses

were performed using SPSS 24.0 with the PROCESS plug-in.

7. Results

7.1 Descriptive Statistics and Correlation Analysis

Table 1 presents the descriptive statistics. Gender exhibited a positive correlation only with anxiety in college students ($r = 0.12$; $p < 0.05$). The four dimensions of negative perfectionism were significantly correlated with anxiety ($r = 0.49, 0.36, 0.31, 0.39$; $p < 0.001$), perceived stress ($r = 0.46, 0.39, 0.48, 0.51$; $p < 0.001$), and resilience ($r = 0.29, 0.23, 0.45, 0.37$; $p < 0.001$). The "organized" dimension of positive perfectionism did not show a significant association with anxiety ($r = -0.02$, $p > 0.05$). A significant correlation was observed between perceived stress and anxiety ($r = 0.29$, $p < 0.001$). Perceived stress also exhibited a significant correlation with resilience ($r = 0.29$, $p < 0.001$).

Table 1: Means (M), standard deviations (SD), and correlations between variables.

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|-------|---------|---------|---------|---------|---------|---------|--------|----|
| 1. Gender | - | | | | | | | | |
| 2. Concern over mistakes | 0.10 | - | | | | | | | |
| 3. Parental expectations | 0.04 | 0.52*** | - | | | | | | |
| 4. Personal standards | 0.03 | 0.69*** | 0.48*** | - | | | | | |
| 5. Doubts about actions | 0.03 | 0.57*** | 0.45*** | 0.55*** | - | | | | |
| 6. Organization | -0.02 | 0.06 | 0.14* | 0.36*** | 0.15** | - | | | |
| 7. Perceived stress | 0.04 | 0.46*** | 0.39*** | 0.48*** | 0.51*** | 0.25*** | - | | |
| 8. Resilience | 0.03 | 0.29*** | 0.23*** | 0.45*** | 0.37*** | 0.38*** | 0.29*** | - | |
| 9. Anxiety | 0.12* | 0.49*** | 0.36*** | 0.31*** | 0.39*** | -0.02 | 0.29*** | 0.16** | - |
| <i>M</i> | 1.76 | 2.59 | 3.00 | 3.02 | 3.26 | 3.55 | 3.14 | 3.30 | 40 |
| <i>SD</i> | 0.43 | 0.89 | 0.85 | 0.79 | 0.82 | 0.87 | 0.48 | 0.48 | 10 |

Notes. $N = 323$. Gender was dummy coded such that 0 = female and 1 = male. Based on Bonferroni correction, all p values were adjusted to 0.001. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

7.2 Mediating Role of Perceived Stress

The mediating effects of perceived stress were explored after controlling for gender. As shown in Table 2, in addition to organization, parental expectations ($\beta = 0.36$, $p < 0.001$), personal standards ($\beta = 0.30$, $p < 0.001$), and doubts about actions ($\beta = 0.39$, $p < 0.001$) directly predicted the anxiety level of college students. Parental expectations ($\beta = 0.39$, $p < 0.001$), personal criteria ($\beta = 0.48$, $p < 0.001$), doubts about actions ($\beta = 0.51$, $p < 0.001$), and organization ($\beta = 0.28$, $p < 0.001$) directly predicted the perception of stress. The worry dimension did not have a predictive effect on either anxiety or stress perception (Table 2).

Based on the above direct effect path, perceived stress was included in the mediation analysis. Due to the difference between the coefficients of the mediating effect and the direct effect, no mediating effect was found. However, the remaining results indicated that perceived stress partially mediated the effects of parental expectations, personal standards, and doubts about action. The mediating effect sizes were 0.07, 0.09, and 0.06, accounting for 19%, 29%, and 16% of the total effect, respectively. None of the bootstrap 95% confidence intervals contained 0, indicating the significance of the mediating effect. This result partially supported hypothesis 2 of this study (Table 2 and Table 3).

Table 2: The mediating role of perceived stress in the relationship between perfectionism and anxiety in college students.

| Regression equation (N=323) | | Fitting index | | | Coefficient significance | |
|-----------------------------|-----------------------|---------------|-----------------------|----------|--------------------------|----------|
| Outcome variables | Predictor variables | <i>R</i> | <i>R</i> ² | <i>F</i> | β | <i>t</i> |
| Anxiety | | 0.38 | 0.14 | 26.66 | | |
| | Parental Expectations | | | | 0.36 | 6.95*** |
| Perceived stress | | 0.39 | 0.16 | 29.42 | | |
| | Parental Expectations | | | | 0.39 | 7.63*** |
| Anxiety | | 0.41 | 0.17 | 21.5 | | |
| | Parental expectation | | | | 0.29 | 5.25*** |
| | Perceived stress | | | | 0.17 | 3.12** |
| Anxiety | | 0.33 | 0.11 | 19.06 | | |
| | Personal Standards | | | | 0.30 | 5.77*** |
| Perceived stress | | 0.48 | 0.23 | 47.54 | | |
| | Personal standards | | | | 0.48 | 9.71*** |
| Anxiety | | 0.36 | 0.13 | 16.25 | | |
| | Personal Standards | | | | 0.22 | 3.66*** |
| | Perceived stress | | | | 0.18 | 3.10** |
| Anxiety | | 0.41 | 0.16 | 31.39 | | |
| | Doubts about actions | | | | 0.39 | 7.59*** |
| Perceived stress | | 0.51 | 0.26 | 55.70 | | |
| | Doubts about actions | | | | 0.51 | 10.52*** |
| Anxiety | | 0.42 | 0.18 | 22.58 | | |
| | Doubts about actions | | | | 0.33 | 5.52*** |
| | Perceived stress | | | | 0.12 | 2.07* |
| Anxiety | | 0.12 | 0.14 | 2.28 | | |
| | Organization | | | | -0.02 | -0.39 |
| Perceived stress | | 0.25 | 0.64 | 11.02 | | |
| | Organization | | | | 0.25 | 4.63*** |
| Anxiety | | 0.33 | 0.11 | 12.56 | | |
| | Organization | | | | -0.10 | -1.83 |
| | Perceived stress | | | | 0.31 | 0.05*** |

Note. All variables in the model are brought into the regression equation with standardized variables. The gender variable is controlled for in the model, as shown below.

Table 3: Mediating effect of perceived stress on the relationship between perfectionism and anxiety in college students.

| variables | Indirect effect size | Boot Standard Error | Boot CI Lower Limit | Boot CI Upper limit | Mediating effect size |
|-----------------------|----------------------|---------------------|---------------------|---------------------|-----------------------|
| Parental expectations | 0.07 | 0.23 | 0.02 | 0.12 | 0.19% |
| Personal standards | 0.09 | 0.03 | 0.04 | 0.15 | 0.29% |
| Doubts about actions | 0.06 | 0.03 | 0.00 | 0.13 | 0.16% |

Note. The bootstrap standard error, Boot CI lower limit and Boot CI upper limit refer to the standard error of indirect effects estimated by the deviance-corrected percentile bootstrap method and the lower and upper limits of 95% confidence intervals, respectively.

7.3 Moderating Role of Resilience

To investigate whether resilience moderates the mediating effect of perceived stress on personal standards and anxiety college students, Model 59 in SPSS PROCESS was employed. The findings (refer to Table 4) revealed a significant interaction effect between personal standards and resilience on perceived stress ($\beta = -0.07$, $t = -2.18$, $p < 0.05$), whereas the interaction effect between perceived stress and resilience was not significant. This suggests that resilience moderates the relationship between personal standards and perceived stress.

To further elucidate this moderation effect, a simple slope analysis was conducted (Table 5). The results demonstrate that when resilience levels are high, a decrease in personal standards significantly lowers perceived stress ($b_{\text{simple}} = 0.07$, 95%CI [0.02, 0.14]). Thus, it can be inferred that higher levels of resilience enhance the effectiveness of improving personal standards in reducing perceived stress.

Table 4: The moderating role of resilience in the mediating model of personal standards.

| Variables | Perceived stress | | | College student anxiety | | |
|--------------------------------|------------------|---------|----------|-------------------------|---------|----------|
| | <i>SE</i> | β | <i>t</i> | <i>SE</i> | β | <i>t</i> |
| Personal criteria | 0.05 | 0.43 | 7.90*** | 0.06 | 0.21 | 3.30** |
| Resilience | 0.06 | 0.08 | 1.44 | 0.06 | 0.03 | 0.44 |
| Perceived stress | | | | 0.06 | 0.18 | 2.93** |
| Personal Criteria x Resilience | 0.03 | -0.07 | -2.18* | 0.06 | -0.01 | -0.20 |
| Stress perception x resilience | | | | 0.04 | 0.03 | 0.73 |
| R^2 | 0.25 | | | 0.14 | | |
| <i>F</i> | 26.22*** | | | 8.22*** | | |

Table 5: Mediating effects of perceived stress at different levels of resilience.

| Mediating Variables | Resilience | Indirect effect size | Boot Standard Error | Boot CI Lower Limit | Boot CI Upper limit |
|---------------------|------------------------|----------------------|---------------------|---------------------|---------------------|
| Perceived pressure | -1.00 (<i>M-1SD</i>) | 0.08 | 0.05 | 0.02 | 0.18 |
| | 0.00 (<i>M</i>) | 0.08 | 0.03 | 0.02 | 0.14 |
| | 1.00 (<i>M+1SD</i>) | 0.07 | 0.03 | 0.02 | 0.14 |

8. Discussion

The results indicated a significant positive correlation between all dimensions of negative perfectionism and college students' anxiety. Specifically, three dimensions—parental expectations, personal standards, and action doubts—were found to significantly and positively predict the level of anxiety in college students. These findings are consistent with previous research. College students face a multitude of responsibilities, including studying, extracurricular activities, and preparing for future job prospects. During this phase, the more expectations parents have and the more disconnected they are from their children's abilities and the surrounding environment, the greater the fear of disappointing parents and the greater the likelihood of experiencing anxiety. Additionally, in Chinese culture, family relationships are often closer, and the boundaries between individuals are less defined. Consequently, college students tend to place significant emphasis on meeting their parents' expectations and are constantly worried about receiving criticism for not meeting these standards.

These factors contribute to elevated levels of anxiety in college students. While setting personal standards can serve as a motivational and supervisory tool, prolonged pursuit of unrealistic goals that do not align with one's capabilities and the incessant pursuit of perfection can lead to heightened psychological distress. Perfectionists often harbor doubts about their actions and results and engage in repetitive checks, confirmations, and changes to ensure that their expectations are met. This tendency can result in inefficiency and procrastination among college students. Over time, this behavior not only hampers academic performance but also fosters a sense of inferiority, diminishing self-efficacy and self-esteem[20], thus contributing to anxiety.

Perceived stress plays a partial mediating role between three dimensions of negative perfectionism (parental expectations, personal standards, and doubts about actions) and college students' anxiety. This finding is partially consistent with the hypothesis of our study. Individuals with perfectionistic tendencies often view problems in an "all or nothing" way. This extreme perception creates significant pressure, leading to long-term anxiety and other negative emotions. Both parental expectations and personal standards imply that individuals are held at high standards, which are often influenced by societal norms and are subject to evaluation. Individuals with high demands frequently engage in self-criticism and rumination [21]. Negative perfectionists, in particular, experience doubts about their actions and possess a low tolerance for uncertainty, resulting in increased pressure and anxiety among college students. These individuals tend to be highly sensitive to stress, intensifying their experience of anxiety. This sensitivity may be attributed to intergenerational transmission or one's own coping styles. Negative perfectionists also exhibit heightened levels of anxiety due to their tendency to avoid stressors. They experience stress when there is a perceived imbalance between their "needs" and their ability to meet those needs, ultimately leading to anxiety. To prevent and reduce anxiety among college students in the future, it is essential to address negative perfectionism and actively work toward reducing the perception of pressure.

This study revealed that resilience plays a moderating role in the influence of personal criteria on perceived stress. A simple slope analysis revealed that reducing personal standards significantly decreased perceived stress levels, particularly when resilience was high. This finding aligns with the protective model of resilience, which suggests that resilience helps to mitigate the impact of adversity on outcomes.

The presence of personal standards can motivate some individuals, while others may experience significant pressure. Individuals with high levels of resilience tend to exhibit greater self-compassion, which serves to safeguard self-esteem [22]. Furthermore, high resilience enables individuals to effectively alleviate psychological distress resulting from pressure perception and anxiety associated with the fear of not meeting standards [23]. Additionally, even in cases where individuals fail to meet their desired standards, those with high resilience actively reconstruct their interpretation of failure through cognitive reappraisal [24], resulting in a stronger defense mechanism and reduced perceived stress caused by imbalances in self-demands. Moreover, highly resilient individuals may be momentarily frustrated by setbacks, but they strive to overcome them, facilitating effective stress relief. Therefore, it is advisable for college students to cultivate resilience while simultaneously improving their perfectionist tendencies. For example, they can enhance resilience through dialectical behavior therapy. Doing so will enable them to approach difficulties with greater confidence and positivity, ultimately reducing stress and anxiety levels.

9. Implications and Limitations

This study has a few limitations. First, this study focused only on individual factors, although college students' anxiety may be influenced by a range of factors, including interactions among individuals, their environment, and their behaviors. Future research could explore the role of

environmental factors, such as peer relationships, in different dimensions of perfectionism and anxiety. Second, perceived stress does not always have negative effects. In situations where individuals face tension or moderate levels of perceived stress, stress can actually promote motivation and yield positive results [25]. Future studies could investigate the effects of different levels of perceived stress on perfectionism and anxiety in various situations. Finally, there are multiple methods for classifying and measuring perfectionism. Future studies could consider utilizing multiple data collection methods and expanding the sample size to enhance the generalizability of the conclusions.

Despite these limitations, this study focuses on college students as the subject of research, explores the correlation between different aspects of perfectionism and anxiety, discusses the impact of perceived pressure as a threat, and highlights the protective effect of resilience. Additionally, this study supplements existing research in this field and lays the groundwork for future intervention strategies for anxiety among college students. The findings of this study suggest that reducing unrealistic parental expectations and personal standards, addressing self-doubt, and mitigating the impact of perceived pressure while enhancing resilience can effectively alleviate the anxiety experienced by college students.

10. Conclusions

In summary, this study explored the relationship between multidimensional perfectionism and anxiety as well as its potential mediating and moderating mechanisms. The results showed that parental expectations, personal standards, and doubts about actions can significantly predict college students' anxiety and that perceived stress mediated the association between these three dimensions of perfectionism and anxiety. Additionally, resilience significantly moderated the effect of personal standards on perceived stress. Notably, a higher level of resilience was associated with reduced stress in the presence of low personal standards. Thereby improving resilience and reducing perceived stress may be effective ways to prevent anxiety among college students.

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