

The Impact of Positive Mindfulness on Mental Health in Middle School Students: The Moderating Role of Gender

Tingye Chai¹, Jie Wu¹, Zijian Zhang¹ and Xianglian Yu^{1,*}

¹Psychology Department, Education College, Jiangnan University, Wuhan City, Hubei Province, 430056, China

*Corresponding Author: Xianglian Yu. Email: psyu@jhu.edu.cn

Abstract

As they grow older, secondary school students gradually develop and mature in physical aspects, but their psychological development is not yet adequate. At a time of intense social competition, the pressure on students in terms of academics and socializing has also increased substantially. In the context of resumption of schooling after the epidemic, secondary school students may develop anxiety, depression, and other unfavorable conditions for their mental health. It has been shown that Positive Mindfulness is closely related to anxiety, depression, and stress perception. The purpose of this study was to examine the current status and relationship between Positive Mindfulness and mental health, and to explore the moderating role of gender in the relationship between Positive Mindfulness and mental health. A questionnaire was administered to 750 middle school students using the Positive Attention Perception Scale, the Stress Perception Scale, and the subscales of the Psychiatric Symptom Rating Scale. The results showed that: (1) middle school students' levels of anxiety, depression, and perceptual stress differed significantly in gender and grade dimensions, and their levels of Positive Mindfulness did not differ significantly in gender and grade dimensions; (2) middle school students' Positive Mindfulness were significantly negatively correlated with anxiety, depression, and perceptual stress, respectively, and there was a significant positive correlation between anxiety, depression, and perceptual stress; (3) middle school students' Positive Mindfulness could reverse predict anxiety, depression, and perceptual stress, respectively, and could account for 16.3% of their Positive Mindfulness, and 16.3% of their Positive Mindfulness. and were able to account for 16.3%, 20.4%, and 23.2% of the variance, respectively; (4) gender plays a moderating role between Positive Mindfulness and anxiety, depression, and perceived stress. The present study concluded that Positive Mindfulness is closely related to mental health, which suggests that schools, families, and communities can promote positive development and mental health of adolescents through effective Positive Mindfulness training.

Keywords

Positive Mindfulness, mental health, anxiety, depression, perceived stress, gender, middle school students.

1. Introduction

As the knowledge of psychology gradually spreads into the public's view, mental health emphasized by psychology gradually develops into a very hot topic nowadays (Landolt et al., 2023). With the rapid development of the society, the fast-paced life brings various kinds of pressure to the people in this society, and people are more and more concerned about their mental health level, hoping to get rid of all aspects of life's troubles.

Mindfulness originates from Buddhism and is defined in Western psychology as the awareness of not judging critically what is happening or feeling in the current situation (Kabat-Zinn, 2003). Right mindfulness includes the ability to observe and describe experiences, the ability to be aware of the present moment, and the ability to remain objective and non-reactive to inner experiences (Baer et al., 2006). Positive Mindfulness consists of three categories: trait-based positivity, state-based positivity, and positivity training. Trait Mindfulness focuses on the aspect of competence, which is a quality with individual variability (Brown & Ryan, 2003) and is the ability to be positively aware to varying degrees that exists in all individuals (Sayers et al., 2015). This trait ability can be improved through training. State Mindfulness focuses on the state aspect and refers to a state of mindfulness that an individual enters through the elicitation of mindfulness training. State mindfulness training includes exercises with state mindfulness and state mindfulness-related therapies. Positive Mindfulness exercises include tai chi, yoga and pilates. Positive thought-related therapies such as mindfulness-based stress reduction program (MBSR), mindfulness-based cognitive therapy (MBCT) and dialectical behavior therapy (DBT). behavior therapy (DBT) and dialectical behavior therapy (Han, 2024).

The definition of mental health has been discussed by many scholars and previous researchers, resulting in many types of definitional content, but so far no clear and unified type has been identified. With the "mental health" more and more in the modern people's field of vision, the discussion has reached a white-hot, the formation of a hundred schools of thought. Mental health is a concept with rich connotations, and in China, its definition and standards have not yet been strictly differentiated, and people often need to determine its specific meaning according to their own situation when exploring this issue, in addition, academics are also interpreting the concept of mental health in different ways. Some scholars believe that mental health means that what a person thinks in his heart and what he is going to do are the same, and the whole individual is in a state of internal and external harmony and consistent pace (Chen & Tian, 2002). Some scholars believe that mental health implies that an individual is continuously energetic, optimistic, and able to better adapt to society and give full play to his or her role in society and physical potential (H. Liu, 2001). According to many researchers' discussion of this concept, mental health can be defined in a broad and narrow sense. In a broad sense, mental health means that a person is in a good or normal state in terms of thinking and cognition, emotion and emotion, willpower, personality traits, self-control, and social adaptability, which can help them better cope with the challenges and pressures of their daily lives; in a narrow sense, mental health In a narrower sense, mental health refers to the absence of mental illness in an individual. In short, mental health refers to the harmonization of physiological and psychological functions of an individual in terms of self-awareness, growth and development, interpersonal relationships and social adaptation (Xiao, 2005). Using the above experience as a reference, this study discusses mental health in three dimensions: anxiety, depression, and perceived stress, whose more popular conceptualization is easier to be applied in social practice.

With the development of psychology, scholars in Western psychology have begun to pay attention to the study of "Positive Mindfulness" in recent years, which is mainly reflected in the theoretical study of clinical problems and the application of practice, but there are still many shortcomings in the study and practice of Positive Mindfulness in the field of education. Therefore, this study examines the role of gender in the regulation of Positive Mindfulness and anxiety, depression, and perceptual stress.

1.1. The relationship between Positive Mindfulness and mental health of junior high school students

Since Kabat-Zin first used it to improve the pain experience of chronic pain patients in 1982, Positive Mindfulness has increasingly attracted the attention of scholars, and the theoretical

research related to it has been increasing, and a series of Positive Mindfulness intervention therapies have been formed, such as positive stress reduction therapy, positive cognitive therapy, and so on, and some studies have now shown that positive stress reduction therapy has a good therapeutic effect on depression, anxiety and other problems (Chayadi et al., 2022). In recent years, scholars have tried to apply Positive Mindfulness to the field of education, mainly in aspects related to the Positive Mindfulness practice of educators and students, in order to improve the psychological condition and adaptability of educators and educated people in educational situations. Through a series of studies, scholars have found that Positive Mindfulness has a positive effect on relieving anxiety (Stinson et al., 2020), depression (Sarazine et al., 2021), and stress perception (Alzahrani et al., 2023). In addition, it has been shown that Positive Mindfulness significantly predicts individual self-esteem and moderates individual mental health (McConville et al., 2017). This shows that research on Positive Mindfulness is important for the field of education, especially for the psychological adjustment and development of students. Various studies have shown that positive mindfulness traits are significantly negatively correlated with various negative indicators of mental health and significantly positively correlated with positive psychological indicators (Black et al., 2012; Jin et al., 2020). Positive Mindfulness training improves mental health in all groups. Depressed patients who underwent an 8-week positive mindfulness training experienced a significant decrease in depression and a significant increase in well-being in the training group compared to the control group (Pots et al., 2014). An 8-week positive mindfulness intervention alleviated depression, anxiety, and stress in Iranian soccer players after they retired from the sport (Norouzi et al., 2020). The positive mindfulness training program has been shown to be effective in improving the mental health of Iranian soccer players (Black et al., 2012; Jin et al., 2020). Although the relationship between Positive Mindfulness and many concepts has been identified in numerous studies, the question of whether gender has a unique effect when Positive Mindfulness takes effect, which involves individual differences, has yet to be focused on and further investigated.

1.2. Research Implications

Theoretical significance: although the current research on Positive Mindfulness and anxiety and depression as well as gender differences in anxiety and depression has been relatively complete, the research on the moderating role played by gender in the pathway of Positive Mindfulness to the role of anxiety and depression is still insufficient. And most of the studies have been conducted with college students or special groups as subjects. The present study takes middle school students as a subject group to study the relationship between Positive Mindfulness and anxiety, depression, and perceived stress, which enriches the previous studies, and can also provide a theoretical basis for the refinement of the differentiation of Positive Mindfulness training.

Practical significance: The analysis content of this study starts from the relationship between Positive Mindfulness and mental health, and with sufficient data support, provides the analysis of the relationship between Positive Mindfulness and mental health of students on the dimensions of different demographic variables, which provides the theoretical basis for the school to launch targeted, scientific, and efficient Positive Mindfulness training for students to help their psychological adjustment after resumption of schooling. Finally, from the point of view of today's educational thinking, although the state and all walks of life are paying more and more attention to the mental health of students, in absolute terms, the level of attention is still far from adequate. The gradual development of mental health education requires theoretical guidance, and it is inefficient, even ineffective and harmful to conduct mental health education hastily without differentiating between demographic factors such as group and gender. This study can provide insights for the Positive Mindfulness training module in mental

health education to emphasize the impact of gender differences and to be clearer about its mechanism of action, so that it can be used to promote the development of mental health education and the level of mental health of secondary school students.

1.3. Research hypotheses

Based on the above analysis, this paper puts forward the following hypotheses:

- (1) There are significant differences in the gender and grade dimensions of Positive Mindfulness, anxiety, depression and perceived stress among junior high school students;
- (2) There is a significant correlation between Positive Mindfulness, anxiety, depression and perceived stress in middle school students;
- (3) Positive Mindfulness of middle school students can inversely predict anxiety, depression and perceived stress;
- (4) Gender plays a moderating role between Positive Mindfulness and anxiety, depression, and perceived stress.

2. Research Design

2.1. Research subjects

In this study, junior high school students in a middle school were used as subjects, and a total of 750 questionnaires were randomly distributed to the three grades of junior high school, and a total of 650 valid questionnaires were recovered. The basic information of the subjects is shown in Table 1 below.

Table 1. Overall distribution of subjects

Demographic variable	Category	Number of persons	Percentage valid
Gender	Male	324	49.8%
	Female	326	50.2%
Grade	7th grade students	356	54.8%
	8th grade students	200	30.8%
	9th grade students	94	14.5%

2.2. Sampling procedure

This study is a survey of junior high school students to investigate their psychological state and prepare them for resumption of schooling. Consent was obtained from the school, teachers, and students before the survey. In order to ensure the validity and reliability of the questionnaire, this survey was conducted using an anonymous survey procedure.

2.3. Research tools

2.3.1. Positive Attention Awareness Scale

The Mindful Attention Awareness Scale (MAAS) used to measure the level of mindfulness was developed by Brown and Ryan in 2003 (Brown & Ryan, 2003). The total number of questions on this scale is 15, and subjects are asked to select the one that most closely matches their feelings based on the most recent week. The rating after the questions is based on a Likert 6-point scale, with choices 1 through 6 representing the frequency of occurrence from highest to lowest, and the higher the level of Positive Mindfulness, the higher the score measured, then indicating that the subject is more attentive to being aware of the present moment. In this study, the Cronbach's alpha coefficient for this scale was 0.94.

2.3.2. Perceived Stress Scale

Perceived stress was measured using the Perceived Stress Scale (PSS-10), which was used in this study using the Chinese version of the PSS-10 scale (Liu et al., 2015). The entire scale consists of 10 questions and is scored on a 5-point Likert scale, of which there are 4 reverse-scored questions, and the higher the scores of all the questions, the higher the level of stress perception of the subjects. In this study, the Cronbach's alpha coefficient of the scale was 0.80.

2.3.3. Self-assessment scale of psychiatric symptoms

Anxiety and depression levels were measured using the two-part molecular weight scale for anxiety and depression in the Self-Checklist for Psychiatric Symptoms (Symptom Checklist 90, SCL-90) (Derogatis et al., 1973). The depression section consists of 13 questions and the anxiety section consists of 10 questions, which are scored on a 5-point scale; higher scores on each subscale indicate more frequent occurrence of the associated symptoms. The Cronbach's alpha coefficient for the anxiety subscale in this study was 0.91, and the Cronbach's alpha coefficient for the depression subscale was 0.94.

2.4. Data processing

This study mainly used SPSS23.0 statistical software package to analyze and process the collected data, and the data processing mainly included correlation analysis and regression analysis.

3. Analysis of results

3.1. Current Research on Positive Mindfulness, Anxiety, Depression, and Perceived Stress in Middle School Students

3.1.1. Descriptive statistics of middle school students' Positive Mindfulness, anxiety, depression, and perceived stress

Table 2. Descriptive statistics of positive mindfulness, anxiety, depression, and perceived stress in middle school students

Scale	M	SD
Positive Mindfulness	64.65	16.86
Anxiety	12.98	5.07
Depression	18.07	7.91
Perceived stress	21.98	4.91

The data in Table 2 shows that the mean value of positive thoughts is 64.65, the mean value of anxiety is 12.98, the mean value of depression is 18.07 and the mean value of perceived stress is 21.98.

3.2. Analysis of Differences in Demographic Variables of Positive Mindfulness, Anxiety, Depression, and Perceived Stress among Middle School Students

3.2.1. Gender differences in positive mindfulness, anxiety, depression, and perceived stress among middle school students

The data in Table 3 show that the levels of anxiety, depression, and perceived stress of middle school students are all significantly different by gender ($P < 0.05$), with girls' data having higher levels than boys' data; and the levels of positive mindfulness of middle school students are not significantly different by gender dimension ($P = 0.068 > 0.05$).

Table 3. Tests for gender differences in positive mindfulness, anxiety, depression, and perceived stress among junior high school students

	Male (n=324) (M±SD)	Female (n=326) (M±SD)	t	P
Positive Mindfulness	65.82±18.13	63.43±15.45	1.83	0.068
Anxiety	12.40±4.71	13.58±5.36	-3.05	0.002
Depression	16.98±7.20	19.20±8.45	-3.76	0.000
Perceived stress	21.40±4.63	22.53±5.12	-2.97	0.003

3.2.2. Test of Grade Level Differences in Positive Mindfulness, Anxiety, Depression, and Perceived Stress in Middle School Students

Table 4. Grade difference test for positive mindfulness, anxiety, depression, and perceived stress in middle school students

	7th grade students (n=356)	8th grade students(n=200)	9th grade students (n=94)	F	P
Positive Mindfulness	65.67±17.25	62.59±16.48	65.18±15.88	2.21	0.111
Anxiety	12.46±4.52	13.45±5.66	13.98±5.48	4.63	0.010
Depression	17.34±7.38	19.12±8.76	18.62±7.76	3.50	0.031
Perceived stress	21.53±4.55	22.86±5.05	21.83±5.65	4.77	0.009

The data in Table 4 shows that there are significant differences in anxiety, depression, and perceived stress in junior high school students in terms of grade level ($P < 0.05$), and the level of the data in the second and third years of junior high school is $>$ first year. The differences in positive mindfulness in junior high school students in terms of grade level dimensions are not significant ($P = 0.111 > 0.05$).

3.3. Correlation analysis of positive mindfulness, anxiety, depression, and perceived stress in middle school students

Table 5. Correlation analysis of positive mindfulness, anxiety, depression, and perceived stress in middle school students

	Positive Mindfulness	Anxiety	Depression	Perceived stress
Positive Mindfulness	1	-0.40**	-0.45**	-0.48**
Anxiety		1	0.88**	0.55**
Depression			1	0.62**
Perceived stress				1

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

As shown in Table 5, middle school students' positive mindfulness was significantly and negatively correlated with anxiety, depression, and perceived stress; anxiety was significantly and positively correlated with depression and perceived stress with each other.

3.4. Regression analysis of positive mindfulness, anxiety, depression, and perceived stress in middle school students

Table 6. Regression analysis of positive mindfulness on anxiety, depression, and perceived stress in middle school students

Dependent variable	Independent variable	<i>Beta</i>	<i>t</i>	<i>R</i> ²	<i>F</i>
Anxiety	Positive Mindfulness	-0.40	-11.21	0.16	125.76
Depression		-0.45	-12.89	0.20	166.15
Perceived stress		-0.48	-14.00	0.23	196.11

As shown in Table 6, positive mindfulness in middle school students significantly predicts anxiety, depression and perceived stress and can account for 16.3% of the variance value for anxiety, 20.4% of the variance value for depression and 23.2% of the variance value for perceived stress.

3.4.1. Analysis of the Moderating Role of Gender in Positive Mindfulness and Anxiety, Depression, and Perceived Stress of Junior High School Students

When the positive mindfulness of junior high school students was analyzed in correlation with gender, the results showed that positive mindfulness was not significantly correlated with gender. Wen Zhonglin et al. suggested that a variable that is not significantly correlated with the independent variable or the dependent variable cannot be a mediating variable, but it has the potential to play a moderating role between the variables (Wen Zhonglin et al., 2005). A variable that is less correlated with both the independent and dependent variables is likely to be a more desirable moderating variable. Therefore, we can analyze the moderating effect of gender. Regression analyses were conducted with anxiety, depression, and perceived stress as dependent variables and positive mindfulness level of middle school students as predictor variables, respectively. The results are shown in the table below.

Table 7. Moderating role of gender in positive mindfulness and anxiety, depression, and perceived stress

Factor	predictor	<i>Beta</i>	<i>R</i> ²	<i>Adjusted R</i> ²
Anxiety (boys)	Positive Mindfulness	-0.35**	0.17	0.17
Anxiety (girls)		-0.46**		
Gender x positive mindfulness		-0.55**	0.18	0.18
Depression (Boys)		-0.38**	0.22	0.21
Depression (girls)		-0.53**		
Perceived stress (boys)		-0.71**	0.24	0.23
Gender x positive mindfulness		-0.41**	0.24	0.24
Perceived stress (girls)		-0.56**		
Gender x positive mindfulness		-0.66**	0.26	0.26

As shown in Table 7, gender plays a moderating role in both positive mindfulness and anxiety, depression, and perceived stress.

4. Discussion

4.1. Characterization of positive mindfulness, anxiety, depression and perceived stress in junior high school students

In this study junior high school students' positive mindfulness level is not significantly different in gender, but from analyzing the resultant data, it can be seen that boys' positive mindfulness level is still higher than girls' to a certain extent, which may be due to the fact that females' physical and mental development in adolescence is faster than that of boys', so that higher rational development, which will have more judgments with a critical, linking the past and the future to the things that happen in the present, leads to lower positive mindfulness level. Similarly, the obtained results have higher levels of anxiety, depression, and perceived stress in girls than in boys, which may also be due to the influence of this developmental factor, with the difference being that the differences in the gender dimensions of all three factors except positive mindfulness are significant.

The middle school students' positive mindfulness levels were not significant on the grade dimension, but the anxiety, depression, and perceived stress levels were all significantly different on the grade dimension, with the levels of the higher grades' data basically higher than the levels of the lower grades' data. This may be due to the fact that as the grade level increases, the difficulty of schoolwork gradually increases, the amount of study gradually increases, and as the midterm exam approaches, students gradually experience more pressure from family, school, and society, including the possibility of increasingly complex interpersonal networks, all of which may cause students to experience increased stress, mood swings, and feelings of anxiety or depression.

From the mean values of the descriptive statistics, middle school students' positive mindfulness level is at a medium-high level, and the levels of anxiety, depression, perceived stress, and other reverse measures of mental health are all low, indicating that students' overall mental state is good.

4.2. Analysis of the relationship between positive mindfulness, anxiety, depression, and perceived stress in junior high school students

The positive mindfulness level of junior high school students is significantly and negatively correlated with anxiety, depression, and perceived stress levels, with correlation coefficients of -0.403, -0.452, and -0.482, respectively. The results of the present study are in line with those of the previous study (Alzahrani et al., 2023), which illustrates that the positive mindfulness level of junior high school students can inversely predict the anxiety, depression, and perceived stress levels. Since higher levels of positive mindfulness imply less automated reactions and thinking about what is happening in the present moment, or facilitate the prevention of irrational beliefs, there will be many fewer negative judgments in stressful states, so it is conducive to maintaining emotional stability, positivity, and thus avoiding falling into anxiety, depression, and high-pressure states (Bravo et al., 2018).

Middle school students' perceived stress levels are significantly and positively correlated with anxiety and depression, indicating that perceived stress positively predicts anxiety and depression. This gives us guidance for our practice in educational work and educational activities that the high pressure perceived by an educated person could potentially mean that he or she has fallen or is about to fall into a state of anxiety or depression. As educators, this gives us a warning about our educational styles and how to proceed with content organization.

4.3. Analysis of the Moderating Role of Gender in Positive Mindfulness on Anxiety, Depression, and Perceived High Pressure in Middle School Students

This study found that gender has a significant moderating role in the relationship between positive mindfulness and mental health, which is manifested in the stronger inverse predictive effect of positive mindfulness on girls' anxiety, depression, and perceived stress, and the relatively weaker effect on boys'. This gender difference may stem from the interaction of multidimensional factors (Greenson et al., 2024). From a sociocultural perspective, traditional gender role expectations shape different modes of emotional expression and stress coping: the societal requirement for men to be "strong and introverted" may result in boys being more inclined to suppress their emotions or act out their stress, whereas girls are more likely to internalize their stress and fall into rumination, a difference that makes the nonjudgmental nature of positive mindfulness more appropriate for girls. awareness trait to be more attuned to girls' emotional regulation needs and thus more effective in alleviating their psychological distress (Marcisz-Dyla et al., 2022). This effect is further reinforced by the gender differentiation of adolescent psychological development, where girls are generally more emotionally sensitive and tend to think repeatedly about negative events than boys (Bloise & Johnson, 2007), and positive mindfulness significantly reduces the negative effects of such psychological mechanisms on girls by blocking automated negative cognitions and enhancing acceptance of the present moment. At the level of physiological mechanisms, hormonal changes during puberty may enhance girls' adaptability to positive mindfulness training, making it easier for them to stabilize their emotional responses through positive mindfulness practice. Differences in the utilization of social support resources also provide a realistic basis for the role of gender moderation (O'Rourke et al., 2022), with girls generally more proactive in seeking psychosocial support and applying positive mindfulness techniques systematically, thus amplifying the effects of the intervention. This amplifies the effects of the intervention. Taken together, gender regulation is essentially a combination of socio-cultural norms, psychological and behavioral patterns, and biological characteristics. Positive mindfulness improves mental health through the pathway of Awareness-Acceptance-Regulation (AAR), which is more likely to be found in girls due to higher emotional load, exposure to social stress, and coping styles. This pathway is strengthened in female students due to their higher emotional load, exposure to social stress, and adaptability of coping styles. In the future, we need to pay attention to gender differences and design more targeted positive mindfulness interventions, such as combining the emotional management needs of female students with the action-oriented characteristics of male students, in order to improve the effectiveness of mental health education.

5. Conclusions and Recommendations

5.1. Conclusion

This study takes junior high school students as the research object, and investigates their positive mindfulness and mental health level before school resumes, and the study finds that:

- (1) There are significant differences in the levels of anxiety, depression, and perceived stress in junior high school students in terms of gender and grade, and positive mindfulness does not differ significantly in terms of gender and grade;
- (2) Middle school students' positive mindfulness was significantly negatively correlated with anxiety, depression, and perceptual stress, respectively, and could inversely predict 16.3%, 20.4%, and 23.2% of their variances, respectively; anxiety, depression, and perceptual stress were significantly positively correlated with each other;

(3) Gender plays a moderating role between positive mindfulness and anxiety, depression and perceived stress.

5.2. Shortcomings of the study

This study examined the relationship between positive mindfulness, anxiety, depression, and perceived stress among junior high school students, the differences between these variables on the dimensions of demographic variables, and the moderating role of gender in positive mindfulness and other variables. Although the results obtained from data processing are consistent with the findings of previous researchers and support the research hypotheses, there are still some shortcomings in this study: firstly, the selection of the sample of subjects was limited to middle school students in a middle school, which is a small scope of measurement and the ecological validity of the obtained results is not high; secondly, in the selection of the scales, the SCL-90 subscale was used to measure mental health, and the mental ill-health scale was used to measure mental ill-health, and the SCL-90 scale was used to measure mental health. scale for measuring mental health, there is still some inappropriateness in judging the level of mental health by the degree of mental unhealthiness; also, the selection of the time for administering the test was poor, and the time for administering the test was close to the holding of large-scale activities and examinations, which affected the students' emotional state at the moment, and had a certain impact on the questionnaire survey; lastly, the relationship between positive mindfulness and anxiety, depression and so on is mostly embodied in positive mindfulness training, and the present study seldom included the previous research on positive mindfulness training into consideration, only in the research value. into consideration, and only slightly mentioned in the part of research value and practical utilization of the conclusion.

5.3. Recommendations

First of all, for educators, paying attention to the gradual increase of students' stress and adjusting it according to individual circumstances is the basic path to maintain students' mental health. Some educators have gone too far in saying "no pressure, no motivation" and only give pressure regardless of whether or not it can be transformed into motivation, which, according to the findings of this study, is detrimental to students' mental health. Therefore, educators need to control the degree of pressure to facilitate its transformation into positive momentum, rather than hindering it.

Secondly, for positive mindfulness training, since gender has a moderating role and a certain explanation rate in positive mindfulness and anxiety, depression, and perceived stress in junior high school students, indicating that gender factors affect the training results, but positive mindfulness does not differ significantly in grade level dimensions, so positive mindfulness training in the future can pay more attention to the influence of factors such as gender, and practice with a targeted focus on different groups and individual differences.

Statements

Funding Statement: This research was funded by Hubei Provincial Department of Education 2024 Annual Provincial Education Science Planning Project (grant No. 2024ZX021), and Provincial Teaching and Research Project of Hubei Province Colleges and Universities (Grant No. 2023298).

References

- [1] Alzahrani, A. M., Hakami, A., AlHadi, A., Al-Maflehi, N., Aljawadi, M. H., Alotaibi, R. M., Alzahrani, M. M., Alammari, S. A., Batais, M. A., & Almigbal, T. H. (2023). The effectiveness of mindfulness training

- in improving medical students' stress, depression, and anxiety. *PloS One*, 18(10), e0293539. <https://doi.org/10.1371/journal.pone.0293539>
- [2] Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27–45. <https://doi.org/10.1177/1073191105283504>
- [3] Black, D. S., Sussman, S., Johnson, C. A., & Milam, J. (2012). Psychometric assessment of the Mindful Attention Awareness Scale (MAAS) among Chinese adolescents. *Assessment*, 19(1), 42–52. <https://doi.org/10.1177/1073191111415365>
- [4] Bloise, S. M., & Johnson, M. K. (2007). Memory for emotional and neutral information: Gender and individual differences in emotional sensitivity. *Memory (Hove, England)*, 15(2), 192–204. <https://doi.org/10.1080/09658210701204456>
- [5] Bravo, A. J., Pearson, M. R., & Kelley, M. L. (2018). Mindfulness and Psychological Health Outcomes: A Latent Profile Analysis among Military Personnel and College Students. *Mindfulness*, 9(1), 258–270. <https://doi.org/10.1007/s12671-017-0771-5>
- [6] Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848. <https://doi.org/10.1037/0022-3514.84.4.822>
- [7] Chayadi, E., Baes, N., & Kiropoulos, L. (2022). The effects of mindfulness-based interventions on symptoms of depression, anxiety, and cancer-related fatigue in oncology patients: A systematic review and meta-analysis. *PloS One*, 17(7), e0269519. <https://doi.org/10.1371/journal.pone.0269519>
- [8] Chen, J., & Tian, H. (2002). Main Problems of Psychological Health Education in Colleges and Universities and Our Countermeasures. *Journal of Yangzhou University(Higher Education Study)*, 4, 25–29. <https://doi.org/10.19411/j.cnki.1007-8606.2002.04.008>
- [9] Derogatis, L. R., Lipman, R. S., & Covi, L. (1973). SCL-90: An outpatient psychiatric rating scale--preliminary report. *Psychopharmacology Bulletin*, 9(1), 13–28.
- [10] Greeson, J. M., McBride, E. E., Chin, G. R., Lee, H. H., & Colangelo, A. P. (2024). Trait mindfulness and mind-body health in students: The role of gender, race, and ethnicity. *Journal of American College Health: J of ACH*, 72(8), 2844–2855. <https://doi.org/10.1080/07448481.2022.2135374>
- [11] Han, M. (2024). The promotion of Tai Chi on college students' mental health based on the perspective of Dual-factor model: The mediating role of mindfulness [Master's dissertation]. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFDTEMP&filename=1024738632.nh>
- [12] Jin, Y., Zhang, M., Wang, Y., & An, J. (2020). The relationship between trait mindfulness, loneliness, regulatory emotional self-efficacy, and subjective well-being. *Personality and Individual Differences*, 154, 109650. <https://doi.org/10.1016/j.paid.2019.109650>
- [13] Kabat-Zinn, J. (2003). Mindfulness-Based Interventions in Context: Past, Present, and Future. *Clinical Psychology: Science and Practice*, 10(2), 144–156. <https://doi.org/10.1093/clipsy.bpg016>
- [14] Landolt, S. A., Weitkamp, K., Roth, M., Sisson, N. M., & Bodenmann, G. (2023). Dyadic coping and mental health in couples: A systematic review. *Clinical Psychology Review*, 106, 102344. <https://doi.org/10.1016/j.cpr.2023.102344>
- [15] Liu, H. (2001). Re-conceptualization of mental health concepts and standards. *Journal of Psychological Science*, 4, 481–480. <https://doi.org/10.16719/j.cnki.1671-6981.2001.04.031>

- [16] Liu, W., Yi, J., Zhong, M., & Xiongzhao, Z. (2015). Measurement Invariance of the Perceived Stress Scale in College Men and Women. *Chinese Journal of Clinical Psychology*, 23(5), 944–946. <https://doi.org/10.16128/j.cnki.1005-3611.2015.05.043>
- [17] Marcisz-Dyla, E., Dąbek, J., Irzyniec, T., & Marcisz, C. (2022). Personality Traits, Strategies of Coping with Stress and Psychophysical Wellbeing of Surgical and Non-Surgical Doctors in Poland. *International Journal of Environmental Research and Public Health*, 19(3), 1646. <https://doi.org/10.3390/ijerph19031646>
- [18] McConville, J., McAleer, R., & Hahne, A. (2017). Mindfulness Training for Health Profession Students- The Effect of Mindfulness Training on Psychological Well-Being, Learning and Clinical Performance of Health Professional Students: A Systematic Review of Randomized and Non-randomized Controlled Trials. *Explore* (New York, N.Y.), 13(1), 26–45. <https://doi.org/10.1016/j.explore.2016.10.002>
- [19] Minchan, X. (2005). Research on School Mental Health Education: Comparison Between P.R. China and United States of America [Doctoral Dissertation]. East China Normal University.
- [20] Norouzi, E., Gerber, M., Masrour, F. F., Vaezmosavi, M., Pühse, U., & Brand, S. (2020). Implementation of a mindfulness-based stress reduction (MBSR) program to reduce stress, anxiety, and depression and to improve psychological well-being among retired Iranian football players. *Psychology of Sport and Exercise*, 47, 101636. <https://doi.org/10.1016/j.psychsport.2019.101636>
- [21] O'Rourke, T., Vogel, C., John, D., Pryss, R., Schobel, J., Haug, F., Haug, J., Pieh, C., Nater, U. M., Feneberg, A. C., Reichert, M., & Probst, T. (2022). The Impact of Coping Styles and Gender on Situational Coping: An Ecological Momentary Assessment Study With the mHealth Application TrackYourStress. *Frontiers in Psychology*, 13, 913125. <https://doi.org/10.3389/fpsyg.2022.913125>
- [22] Pots, W. T. M., Meulenbeek, P. A. M., Veehof, M. M., Klungers, J., & Bohlmeijer, E. T. (2014). The efficacy of mindfulness-based cognitive therapy as a public mental health intervention for adults with mild to moderate depressive symptomatology: A randomized controlled trial. *PloS One*, 9(10), e109789. <https://doi.org/10.1371/journal.pone.0109789>
- [23] Sarazine, J., Heitschmidt, M., Vondracek, H., Sarris, S., Marcinkowski, N., & Kleinpell, R. (2021). Mindfulness Workshops Effects on Nurses' Burnout, Stress, and Mindfulness Skills. *Holistic Nursing Practice*, 35(1), 10–18. <https://doi.org/10.1097/HNP.0000000000000378>
- [24] Sayers, W. M., Creswell, J. D., & Taren, A. (2015). The Emerging Neurobiology of Mindfulness and Emotion Processing. In B. D. Ostafin, M. D. Robinson, & B. P. Meier (Eds.), *Handbook of Mindfulness and Self-Regulation* (pp. 9–22). Springer. https://doi.org/10.1007/978-1-4939-2263-5_2
- [25] Stinson, C., Curl, E. D., Hale, G., Knight, S., Pipkins, C., Hall, I., White, K., Thompson, N., & Wright, C. (2020). Mindfulness Meditation and Anxiety in Nursing Students. *Nursing Education Perspectives*, 41(4), 244–245. <https://doi.org/10.1097/01.NEP.0000000000000635>
- [26] Wen, Z., Hou, J., & Zhang, L. (2005). A COMPARISON OF MODERATOR AND MEDIATOR AND THEIR APPLICATIONS. *Acta Psychologica Sinica*, 2, 268–274.