

# Advances in the Study of Psychological Stress and Eating Behavior in Children and Adolescents

Ting He, Le Wang\*, Sha Wang, Nannan Ma, Li Mei, Mengdan Zheng

Shaanxi Provincial People's Hospital Children's Hospital, Xi'an 710000, Shaanxi Province, China

\*Corresponding author: Le Wang, wanglele62822@163.com

**Copyright:**© 2024 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

**Abstract:** With the rapid development and change in society, children and adolescents are facing more and more psychological pressure, which comes not only from academic performance and interpersonal relationships but also from family environment, social expectations and other aspects. Psychological stress not only affects the mental health of children and adolescents but is also closely related to their eating behavior. Therefore, exploring the relationship between psychological stress and eating behaviors is of great significance in promoting the physical and mental health development of children and adolescents. Based on this, the study reviewed the research progress on the relationship between psychological stress and eating behavior of children and adolescents in recent years. The relationships between psychological stress and general eating behaviors, abnormal eating behaviors and eating disorders were successively reviewed, and the related physiological mechanisms were explored with a view to providing a scientific basis for mental health education and eating behavior intervention for children and adolescents.

**Keywords:** Children; Adolescents; Psychological stress; Eating behavior; Research progress

**Online publication:** August 12, 2024

## 1. Introduction

In today's society, children and adolescents face increasing psychological pressures that originate from a variety of sources, including academics, family, society and media <sup>[1]</sup>. Meanwhile, eating behavior, as an important part of daily life, is not only related to an individual's physical health but also closely related to psychological health <sup>[2]</sup>. Therefore, exploring the relationship between psychological stress and eating behavior in children and adolescents is of great significance for preventing and improving related psychological problems and promoting healthy growth <sup>[3]</sup>. In recent years, with the crossing over and integration of the fields of psychology, nutrition, and medicine, more and more studies have begun to focus on the intrinsic link between psychological stress and eating behavior in children and adolescents <sup>[4]</sup>.

These studies have not only revealed the mechanism of psychological stress on eating behavior but also explored how to alleviate psychological stress by adjusting eating behavior. However, the current studies still have certain limitations and controversies, such as the diversity of research methods, the representativeness

of samples and the consistency of conclusions. The purpose of this paper is to review the progress of research on psychological stress and eating behaviors of children and adolescents in recent years, aiming to provide theoretical support and reference for subsequent studies, as well as targeted advice and guidance for practitioners.

## 2. Current situation of psychological pressure on children and adolescents

In modern society, children and adolescents are facing multiple psychological pressures that come from several aspects<sup>[5]</sup>.

- (1) With the intensification of educational competition, children and adolescents face tremendous pressure in academics, and they not only have to cope with heavy course loads but also have to participate in a variety of tuition classes and exams, and this pressure may lead to anxiety, depression and other psychological problems<sup>[6]</sup>.
- (2) In the process of growing up, children and adolescents need to deal with interpersonal relationships with their peers, parents and teachers, and because they lack sufficient social experience and communication skills, they are prone to encounter difficulties and frustrations in interpersonal relationships, which may lead to psychological pressure. Meanwhile, as they grow older, children and adolescents begin to think about their future. However, due to their lack of sufficient cognition and experience, it is difficult for them to determine their career direction and development goals, and this sense of confusion may lead them to feel helpless and anxious<sup>[7,8]</sup>.
- (3) With the Internet's popularization, its influence on children and adolescents is increasing, and negative information, violent content and bad social habits on the Internet may damage their mental<sup>[9,10]</sup>.

## 3. Stress and abnormal eating behavior

Abnormal eating behavior is an intermediate state between normal eating and eating disorders, also known as the subclinical state of eating disorders, including three types of restrictive eating, emotional eating and exogenous eating<sup>[11]</sup>. Symptoms include irregular eating habits, excessive weight-control behaviors (e.g., frequent dieting, excessive exercise, etc.), excessive concern and evaluation of body image and fear or aversion to food. These symptoms, although not meeting the criteria for a formal diagnosis of eating disorders, may still have a negative impact on an individual's mental health and physical health<sup>[12,13]</sup>.

A number of studies have demonstrated that there is a relationship between abnormal eating behavior and stress. For example, Li D *et al.* (2022) investigated 1,649 rural left-behind children in a region of Guizhou using a multistage stratified sampling method and found that stress stimulated unhealthy food choices either directly or indirectly (by promoting negative emotional effects)<sup>[14]</sup>. As for the adolescent group, Wang Y (2020) found a positive correlation between the level of psychological stress and abnormal eating behaviors by analyzing a survey of 937 adolescents in his study, i.e., the higher the level of psychological stress, the more serious the abnormal eating behaviors<sup>[15]</sup>. In another study, Lu J *et al.* (2019) also further supported the relationship between stress and abnormal eating behaviors among medical students, and at the same time, it also emphasized the need to learn the skills of emotional regulation, to learn to express emotions, and to positively cope with stressful changes<sup>[16]</sup>.

## 4. Stress and eating disorders

Eating disorders refer to a group of mental health problems related to eating behavior, weight control, and

perceptions of body image. These problems are usually characterized by extreme preoccupation with food, weight and body image to the extent that they interfere with the patient's daily life and mental health<sup>[17]</sup>. Eating disorders mainly include anorexia nervosa, bulimia nervosa, and vomiting nervosa<sup>[18,19]</sup>. According to relevant studies, about 25% to 35% of children have experienced eating disorders<sup>[20]</sup>. In contrast, in the adolescent population, the detection rate of eating disorders ranges from 1.10% to 3.23%, and the incidence of eating disorder tendency or subclinical eating disorders is as high as 10% to 30%<sup>[21,22]</sup>. Eating disorders can have a serious impact on the mental health of patients, which may lead to anxiety, depression, low self-esteem, and social distress, which may further exacerbate the symptoms of eating disorders, creating a vicious cycle<sup>[22]</sup>. At the same time, eating disorders can also pose a serious threat to patients' physical health, such as malnutrition, endocrine disorders, digestive disorders, and cardiovascular problems, which, in extreme cases, may even lead to life-threatening conditions<sup>[24]</sup>.

Eating disorders are closely related to stress, for example, Cui Y (2022) found a positive correlation between childhood psychological abuse and eating disorders in adolescents, i.e., the more severe the childhood psychological abuse, the greater the tendency to eating disorders<sup>[25]</sup>. Chen G *et al.* (2015) investigated the relationship between negative emotions and eating disorders in overweight/obese adolescents, and they concluded that the two are closely related to each other, and at the same time, they also proposed that treatment should be targeted<sup>[26]</sup>. Li C *et al.* (2010) suggested that children with eating disorders must be diagnosed and intervened at an early stage, and appropriate eating skills training and behavioral interventions should be carried out so as to reduce complications, improve prognosis, and ensure the normal development of children during the critical period<sup>[27]</sup>.

## 5. Relevant physiological mechanisms

Facing stress, children and adolescents' eating behavior may undergo a stress response. On the one hand, they may choose high-sugar and high-fat foods to seek short-term pleasure to relieve the negative emotions caused by stress<sup>[28]</sup>. On the other hand, they may also reduce food intake due to loss of appetite or anxiety, resulting in unbalanced nutrition or malnutrition. These stresses lead to a series of endocrine changes. When the body feels stressed, the adrenal medulla secretes adrenaline and norepinephrine, which increase the heart rate, raise the blood pressure, and prepare the body for the "fight or flight" response. At the same time, when an individual is under stress, the hypothalamic-pituitary-adrenal axis (HPA axis) is activated<sup>[29]</sup>, releasing cortisol, the stress hormone, which affects blood glucose levels, immune function, and protein metabolism. Prolonged high levels of cortisol can lead to a range of health problems, including a weakened immune system, memory loss and mood swings<sup>[30]</sup>.

## 6. Conclusion

The relationship between psychological stress and eating behavior of children and adolescents is a complex and important research field. Through the review and analysis of related studies in recent years, psychological stress has a significant effect on eating behavior, and reasonable eating behavior can also alleviate psychological stress to a certain extent. Future research can be carried out in the following aspects:

- (1) Strengthen the scientific and standardized research methodology and improve the reliability and validity of the research results;
- (2) Expand the diversity and representativeness of the samples to have a more comprehensive and in-depth understanding of the relationship between children and adolescents psychological stress and dietary behaviors;

- (3) Pay attention to the influence of cultural and social backgrounds on the results of the research to explain and predict the related phenomena more accurately;
- (4) Strengthen interdisciplinary cooperation and communication to jointly promote the development of research on children's and adolescents' mental health and eating behaviors.

At the practical level, parents, educators and the community should pay more attention to the mental health problems of children and adolescents and help them alleviate psychological stress and establish healthy eating behaviors by providing effective psychological support and nutritional guidance. At the same time, relevant policies and regulations should also strengthen the attention and protection of children's and adolescents' mental health and eating behaviors to create a more favorable environment for their healthy growth.

## Funding

- (1) Shaanxi Provincial People's Hospital Science and Technology Development Incubation Fund (2023HL-11)
- (2) Shaanxi Provincial People's Hospital Science and Technology Development Incubation Fund (2023HL-34)
- (3) Shaanxi Provincial People's Hospital Internal Incubation Fund (2022HL-08)

## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Huang H, Wang H, Du W, et al., 2023, Research Progress on the Effects of Perceived Stress on Eating Behavior. *China Food and Nutrition*, 29(1): 77–80.
- [2] Jiang J, Liu J, Zhang J, et al., 2002, Effects of Academic Stress, Sleep and Physical Activity on Eating Behavior of Primary School Students. *China School Health*, 2002(4): 321–322.
- [3] Jin Y, 2023, Early Identification and Treatment of Mood-Related Mental Disorders in Children and Adolescents. *Chinese Journal of Child Health*, 31(12): 1280–1285.
- [4] Liu W, Cai T, Zhu H, et al., 2016, Relationships Between Depression, Anxiety, and Stress and Emotional Eating in Adolescents: The Mediating Role of Self-Control. *Chinese Journal of Clinical Psychology*, 24(5): 841–843.
- [5] Wang Y, 2020, Analysis of the Importance of Children and Adolescents' Mental Health and Intervention Countermeasures. *Electronic Journal of Modern Medicine and Health Research*, 4(9): 113–115.
- [6] Wang C, Li W, Qin H, 2023, Positive Coping with Academic Stress: Natural Associations and Adolescent Academic Burnout. *Chinese Journal of Clinical Psychology*, 31(3): 709–713 + 629.
- [7] Seed D, Xiao W, 2020, Effects of Stressful Life Events on Adolescents' Academic Achievement: The Mediating Role of Self-Compassion and Psychological Resilience. *Psychological Research*, 13(1): 82–88.
- [8] Zhang H, Zhou Y, 2017, An Introduction to the Impact of Stressful Life Events on Adolescent Mental Health and Countermeasures. *Academic Weekly*, 2017(4): 187–188.
- [9] Chu Y, Jiang Y, Mao Z, 2022, Stress Perception and Problematic Smartphone Use in Adolescents: The Chain-Mediated Roles of Rumination Thinking and Emotion Regulation. *Psychological Technology and Applications*, 10(12): 731–739.
- [10] Bai X, Jiang Y, 2020, The Relationship Between Social Adaptability and Adolescent Social Network Use: The Chain Mediating Role of Stress Perception and Social Network Immersion. *Psychological Research*, 13(3): 255–261.
- [11] Xie A, Cai T, He J, et al., 2016, The Effects of Negative Emotions on Emotional Eating in College Students: The Mediating Role of Negative Coping Styles. *Chinese Journal of Clinical Psychology*, 24(2): 298–301.

- [12] Lian Y, Zhang D, Liu S, et al., 2024, Network Analysis of Subclinical States of Eating Disorders in College Students. *Chinese Journal of Clinical Psychology*, 32(1): 39–45.
- [13] Lu X, Zhang N, 2010, Concept and Diagnosis of Subclinical States of Eating Disorders. *Medicine and Philosophy (Humanities and Social Medicine)*, 31(1): 56–57 + 62.
- [14] Li D, Liu Y, Lu Y, et al., 2022, Relationship Between Stress Perception, Social Support and Emotional Eating in Rural Left-Behind Children. *China Health Education*, 38(5): 453–456.
- [15] Wang Y, 2020, Effects of Psychological Stress on Abnormal Eating Behavior in Adolescents, thesis, Wuhan Institute of Physical Education.
- [16] Lu J, Jin Z, Zhang Z, 2019, Effects of Emotion Regulation Strategies on Medical Students' Stress Perception and Abnormal Eating Behavior. *China School Health*, 40(6): 850–853.
- [17] Xue M, Liu Q, Mo D, 2022, Analysis of Psychological Characteristics and Psychological Nursing Effect of Eating Disorder Patients. *Psychology Monthly*, 17(9): 177–179.
- [18] Zhou S, Wei B, 2023, A Study of Eating Disorder Tendency Among College Students. *China Public Health Management*, 39(2): 206–209.
- [19] Hu B, Bao S, Feng C, 2012, Implicit Food Attitudes of Female College Students with Subclinical Eating Disorders. *Chinese Journal of Health Psychology*, 20(6): 835–839.
- [20] Massi M, Amalia MA, Loredana L, et al., 2004, Malnutrition and Dysfunctional Mother-Child Feeding Interactions: Clinical Assessment and Research Implications. *Journal of the American College of Nutrition*, 23(3): 259–271.
- [21] Fan Y, Duan Y, Hao L, et al., 2009, Prevalence of Eating Disorders Among Secondary School Students in Seven Cities in China. *China Health Education*, 25(9): 657–659.
- [22] Zhang J, Chen H, 2021, Developmental Trajectory of Eating Behavior Problems Among College Students in a University in Jiangsu Province. *China School Health*, 42(9): 1356–1358 + 1363.
- [23] Liu X, Yang K, Liu Y, et al., 2023, Cross-Lagged Analysis of Adolescents' Body Shame and Abnormal Eating Behavior with Eating Disorder Tendency. *China School Health*, 44(1): 76–80.
- [24] Jebeile H, Lister NB, Baur LA, et al., 2021, Eating Disorder Risk in Adolescents with Obesity. *Obesity Reviews*, 22(5): e13173.
- [25] Cui Y, 2022, A Study on the Correlation Between Psychological Abuse, Self-Control and Eating Disorders in Childhood, thesis, Yanbian University.
- [26] Chen G, Guo G, Xiao S, et al., 2015, Negative Emotions and Eating Disorder Tendencies in Overweight/Obese Adolescents. *Chinese Journal of Mental Health*, 29(1): 16–21.
- [27] Li C, Hu Y, Lai H, 2010, Assessment and Treatment of Eating Difficulties in Children. *Chinese Journal of Child Health*, 18(7): 575–577.
- [28] Xu C, Chen H, Qin J, et al., 2013, Eating Behavior Under Emotional Arousal in Different Subcategories of Restrictive Dieters. *Chinese Journal of Clinical Psychology*, 21(5): 697–702.
- [29] Torres SJ, Nowson CA, 2007, Relationship Between Stress, Eating Behavior, and Obesity. *Nutrition*, 23(11–12): 887–894.
- [30] Michels N, Sioen I, Braet C, et al., 2013, Relation Between Salivary Cortisol as Stress Biomarker and Dietary Pattern in Children. *Psychoneuroendocrinology*, 38(9): 1512–1520.

**Publisher's note**

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.