

# *A study on the current situation, influencing factors and intervention of social anxiety among middle school students*

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**Abstract:** Social anxiety is an important part of mental health literacy for all people. This study used the literature method to sort out the research on middle school students' social anxiety in China Knowledge Network and Web of Science in the past 10 years, which mainly included three aspects: the current status of the survey on middle school students' social anxiety, factors affecting middle school students' social anxiety, and interventions for social anxiety. (1) The current status of the survey: middle school students' social anxiety has a wide range, and at the same time, students' transition from elementary school to middle school shows an increasing trend. (2) Influencing factors contain two aspects, which are internal factors (physiology, genetics, personal traits and cognition) and external factors (family and school environments). (3) Interventions for social anxiety include: psychotherapy, physical exercise, and modern technology.

Social anxiety is an important part of the mental health literacy of the whole population, and in 2019, the CPC Central Committee and State Council issued the Healthy China Action (2019-2030), which mentions improving the mental health literacy of the whole population. It strengthens the intervention of common mental disorders and mental behavioral problems such as depression and anxiety, and emphasizes the importance of education in the mental health service system. Thus, in the field of education and teaching, it is important to regulate depression, anxiety and other emotions in adolescents, including the alleviation of social anxiety in adolescents.

Based on this, this paper combed the relevant literature at home and abroad in the past 10 years, aiming to summarize the current situation of junior high school students' social anxiety survey, factors affecting junior high school students' social anxiety and related interventions, and this study mainly used the literature resources of China Knowledge and Web of Science. A fuzzy search was conducted from 2014 to 2024 with the keywords "social anxiety", and 63 Chinese and English documents including journal articles and dissertations were initially screened. After further screening, duplicated texts and texts with low relevance were excluded, and 35 texts were finally identified as matching the research themes.

## 1. Definition of social anxiety

Social anxiety is inextricably linked to social anxiety disorder, which is defined in the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM), Fifth Edition, as an individual's significant fear or anxiety when confronted with one or more social situations in which he or she is likely to be scrutinized by others. In terms of definitional precision, social anxiety is distinct from social anxiety disorder<sup>[1]</sup>. Rapee and Spence consider the varying degrees of social anxiety to be a continuum ranging from the lowest degree of no social anxiety at all, to the normal degree of social anxiety in which expectations of others' appraisals do not inhibit behaviors or lead to excessive anxiety, to varying degrees of social fear and avoidance, with the highest degrees being diagnosed as social anxiety, and the highest levels of social anxiety being diagnosed as social anxiety disorder<sup>[2]</sup>. The highest degree of social anxiety can be diagnosed as social anxiety disorder<sup>[2]</sup>.

## 2. The Current Situation of Social Anxiety in Middle School Students

Social anxiety in middle school students is pervasive, while students show an increase from elementary to middle school.

A survey of seven countries around the world found that the prevalence of social anxiety symptoms in younger age groups ranged from 23% to 58%<sup>[3]</sup>. A survey by the World Health Organization showed that the lifetime prevalence of social anxiety disorder in different regions of the world ranged from 1.2% to 6.4%<sup>[4]</sup>. Chinese scholars also first support this view, Tang Xinfeng conducted a meta-analysis of Chinese children, adolescents and young adults, the results show that the total prevalence of social anxiety disorder is 2.1%, and the prevalence of social anxiety symptoms in is 23.5%<sup>[5]</sup>. Social anxiety is prevalent.

Large-scale research studies in China show that social anxiety in junior high school students is widespread. For example, Li Xia conducted a large-scale study on the degree of social anxiety by taking the first and second year students in Bengbu City as the research subjects, and the results showed that the students with high social anxiety symptoms were 16.8%<sup>[6]</sup>; Li Chaoxia's survey study showed that the rate of students with high social anxiety symptoms was 13.6%<sup>[7]</sup>.

Domestic longitudinal studies have shown an increasing trend of social anxiety among students entering middle school in China: a four-year follow-up study by Su Shuge in Harbin showed that the detection rate of social anxiety among students increased from 23.5% to 28.1%<sup>[8]</sup>. In another follow-up study, Wu Yile conducted a 2-year longitudinal study among primary and secondary school populations in Anhui Province, China, and the detection rate of social anxiety in children increased from 15.2% to 16.4% after entering junior high school<sup>[9]</sup>, and the situation of social anxiety in junior high school students needs to be urgently addressed.

## 3. Influential Factors of Social Anxiety in Middle School Students

Factors influencing social anxiety in middle school students. Factors affecting social anxiety can be viewed in terms of internal and external factors.

### 3.1 External factors

Among the external factors, the home and school environments are those in which middle school students directly live and grow.

Family environment factors are mainly reflected in parental control, family conflict and parenting style. First, Zu Liya conducted a study on the social anxiety of junior high school students in Wuhan and found that the more control and strictness parents have over their children, the higher the

children's social anxiety level<sup>[10]</sup>; second, Wang Mingzhong's study showed that the frequency and nature of conflicts between the nurturers in the family environment also have an impact on the social anxiety level of adolescents<sup>[11]</sup>. Finally, negative parenting styles were significantly associated with children's social anxiety<sup>[12][13]</sup>. Yang Hanshu's study showed that parental overprotection and spoiling can make individuals lack of independence, timidity, behavioral avoidance and over-reliance on peers upon entering school, and increase social anxiety<sup>[14]</sup>. On the contrary, Shenghua Jin showed that children who grow up with positive parenting attitudes have optimal personality structure, which is characterized by independence, collaboration, affection, and sociability<sup>[15]</sup>.

The school environment factor is mainly reflected in the level of social welcome, for example, Xin Ziqiang's study found that students who were welcomed by everyone had lower levels of social anxiety compared to other students, which suggests that the level of individual social anxiety can be affected by different social status in school<sup>[16]</sup>. A study by Zeng Chengwei et al. demonstrated the negative predictive effect of school connectedness on social anxiety<sup>[17]</sup>.

### 3.2 Internal factors

Among the internal factors, physiology, genetics, personal traits and cognition have a greater influence on social anxiety.

Physiological factors focus on the amygdala (AMYG), a key structure in the "fear circuit" that directs defense mechanisms to respond to threat, and social anxiety with fearful emotions is influenced by the amygdala<sup>[18]</sup>.

Genetically there is evidence of a strong familial association of social anxiety severe to social anxiety disorder (SAD), with children of parents with SAD having a significantly increased risk of developing the disorder<sup>[19]</sup>.

Personal trait factors are mainly: autistic traits, behavioral inhibition, perfectionism, etc. e.g. Trilla suggested that autistic traits can better explain the effects of social anxiety production<sup>[20]</sup>. In a longitudinal study, inhibited behaviors in preschool were found to increase the likelihood of social anxiety in adolescence<sup>[21]</sup>. A meta-analysis also showed that socially prescribed perfectionism, skepticism about behavior, concern about mistakes, discrepancy, and self-expression perfectionism were associated with social anxiety<sup>[22]</sup>.

Finally cognitive aspects also Peng Shun on junior high school students negative evaluation of fear and social anxiety related research, the results of the study showed that there is a significant correlation between the two<sup>[23]</sup>, Peng Shuna's survey of junior high school students in Meizhou City, pointed out that the perceived increase in academic pressure and changes in social needs brought about by the decline in the quality of life<sup>[24]</sup>.

## 4. Intervention Studies on Social Anxiety in Middle School Students

Domestic and foreign scholars attach great importance to the intervention research on social anxiety, the last 10 years of research shows that: the intervention research on social anxiety to have psychotherapy: including cognitive behavioral therapy, acceptance and commitment therapy, positive thinking therapy, etc.; physical exercise: such as aerobic, strength training, etc; and at the same time a large number of emerging modern technologies: such as network therapy, mobile applications and AI, virtual reality exposure therapy, etc., including the following specific content.

## 4.1 Psychotherapy

### 4.1.1 Cognitive Behavioral Therapy

Cognitive-behavioral therapy is a mainstream intervention for social anxiety, which covers the key elements of psychoeducation, exposure therapy, cognitive restructuring and social skills training<sup>[25][26]</sup>. Psychoeducation helps patients to understand the mechanisms of social anxiety; exposure therapy helps patients to face their fearful social situations and reduce fearful and avoidant behaviors; cognitive restructuring corrects negative thinking; and social skills training compensates for shortcomings in social competence. Heimberg et al. showed that cognitive-behavioral therapy was significantly more effective than control, and follow-up surveys showed solid efficacy<sup>[27]</sup>.

### 4.1.2 Acceptance and commitment therapy

ACCEPTANCE AND COMMITMENT THERAPY is part of an emerging "third wave" of therapies that focuses on increasing psychological flexibility, accepting negative experiences, and acting on values<sup>[28]</sup>. Craske's randomized controlled trial showed that ACCEPTANCE AND COMMITMENT THERAPY is similar to cognitive-behavioral therapy in the treatment of social phobia, and is superior to cognitive-behavioral therapy in improving attentional bias, self-awareness, emotion regulation, and safety behavior<sup>[29]</sup>. Caletti's study showed that ACT helped patients to accept their anxiety, increase their willingness to engage in social interaction, reduce avoidance, and improve their social functioning<sup>[30]</sup>.

### 4.1.3 Orthopedic therapy

Positive Thought Therapy emphasizes reshaping the individual's relationship with anxiety and alleviating social anxiety symptoms through conscious awareness of the present moment and acceptance of internal and external experiences without judgment<sup>[31]</sup>. Goldin et al. conducted a randomized controlled trial comparing the efficacy of Positive Thought Stress Reduction Therapy with group CBT in patients with social anxiety disorder. The results showed that both improved mood states and the effects were sustained at follow-up. Meanwhile, Positive Mindfulness Therapy performed better on some indicators such as self-compassion enhancement, suggesting that it has advantages over cognitive behavioral therapy in enhancing self-acceptance and fostering positive self-perceptions<sup>[32]</sup>.

## 4.2 Physical exercise

Physical exercise can stimulate the synergistic effect of different sports, activate the physical function and improve the psychological quality in an all-round way. At the same time, multiple exercise scenarios can increase social interaction opportunities, improve social skills, help patients adapt to social interaction in dynamic environments, rebuild self-confidence, and thus alleviate social anxiety<sup>[33]</sup>. Zika et al. searched multiple databases of the literature before June 2020 through meta-analysis, and included a variety of physical activity interventions, such as aerobic, strength training, etc. The results showed that physical activity interventions can assist in the treatment of social anxiety disorder and reduce social anxiety. The results suggest that physical activity interventions can assist in the treatment of social anxiety disorder and reduce social anxiety<sup>[34]</sup>.

## 4.3 Modern technology

### 4.3.1 Network therapy

The Internet-based approach breaks through traditional spatial and temporal limitations to broaden the therapeutic avenues for social anxiety. Several studies have confirmed its comparable efficacy with traditional treatment, combining short-term relief and long-term maintenance effects, as well as low cost and high accessibility<sup>[36]</sup>. For example, Hedman et al. showed that online cognitive behavioral therapy is comparable to face-to-face cognitive behavioral therapy with significant cost advantages<sup>[35]</sup>. Some studies have also shown positive results with online acceptance of commitments and other therapies<sup>[37]</sup>.

### 4.3.2 Mobile Apps and AI

Both mobile apps and social robots can be important in the alleviation of social anxiety, with mobile apps having the advantage of lower cost and difficulty of user engagement, and social robots having the advantage in increasing engagement, building relationships, and driving treatment effectiveness.

Mobile app lends smartphone features to innovate for social anxiety treatment. These include real-time location awareness, notifications, anonymous social interactions, personalization and gamification settings<sup>[38]</sup>. The gamification element stimulates user motivation and engagement through goal setting and reward mechanisms, and the self-selected goal function enhances the accuracy and effectiveness of the intervention by customizing it to individual needs.

Social robots are capable of emotional expression, verbal communication, and other capabilities, and their modes of operation range from remotely controlled to semi-autonomous and autonomous. Ideally, social robots can be adapted to the needs of different individuals<sup>[39][40]</sup>. Current research suggests that its functions include: (1) Robotic interviewing: robots as interviewers can relieve anxiety and help individuals, especially children and adolescents, to express themselves more freely in early counseling<sup>[41]</sup>. (2) Robotic coaching: social robots can enable users to complete relevant tasks through personalized supervision, which can be used in the treatment of social anxiety to target a variety of skills, such as social skills, cognitive restructuring, positive thinking and relaxation training, etc. and relaxation training, etc<sup>[42]</sup>. (3) Interactive playmates: People with social anxiety can familiarize themselves with social skills by interacting with robots, which can create rich interactive environments, provide opportunities for repetitive practice, and customize activities according to the individual to enhance social confidence<sup>[43][44]</sup>.

### 4.3.3 Virtual reality exposure therapy

Virtual reality technology can construct virtual social situations to help desensitize social anxiety. Bouchard et al. found that cognitive-behavioral therapy combined with virtual displays outperformed traditional in vivo exposure on some measures, and that the effects were long-lasting and easy to use<sup>[45]</sup>. Safir et al. and Anderson et al. demonstrated that VR was effective in the subtype of public-speaking anxiety, and that the improvement was sustained for up to 1 year<sup>[46]</sup>. Current research focuses on optimizing VR social interaction scenarios and feedback mechanisms to improve treatment outcomes<sup>[47]</sup>.

## 5. Discussion

According to the above research, it can be concluded that the current situation of social anxiety in junior high school students in China, firstly, junior high school students' social anxiety has a wide

range, from elementary school into junior high school stage is an increasing trend. Second, at the level of influencing factors, internal and external factors interact. In the external environment, parental control, family conflict and parenting style are crucial. Among the internal factors, physiologically, the amygdala dominates the fear response, which is the physiological basis of anxiety; genetics shows a tendency of family aggregation; traits such as autism, inhibition, and perfectionism are the triggers of anxiety; and cognitively, negative evaluative fear and academic and social pressure are strongly correlated with it. Finally, in the field of intervention research, multiple methods are synergized. Psychotherapy as the core means, physical exercise through a variety of sports to enhance psychological quality, relieve social anxiety. Modern technological innovation path can be synthesized and applied to modern psychotherapy.

Although existing studies have provided us with rich theoretical and practical guidance, there are still some shortcomings. First, most of the studies are macro-group analyses, which do not fully take into account the diversity of junior high school students' individual traits and growth backgrounds. Anxiety manifestation under the differences of gender, personality, and cultural background. Second, most of the studies are cross-sectional or short-term longitudinal studies, lacking long-term follow-up. The dynamic evolution of junior high school students' social anxiety with the dramatic physical and mental changes during adolescence, the great increase in academic demands, and the expansion of the social circle is unknown, and it is difficult to grasp the key developmental nodes and long-term patterns, so that the intervention programs and planning lack of foresight. In addition, some of the causal links have not been deeply explored. For example, it is known that parenting style has a close relationship with social anxiety, but the synergistic mechanism of various factors within the family system is unknown, and it is difficult to accurately measure the weight of each factor.

Meanwhile, for the future development, this paper puts forward the following prospects. First of all, we will increase the research on stratification and categorization, grouping and controlling according to gender, personality and culture, and digging into the root causes and manifestations of the differences. Personalized assessment tools are developed to accurately analyze the causes of individual social anxiety, customize the intervention plan based on the assessment, and integrate multiple therapies to meet individual needs and preferences, so as to enhance the accuracy of the intervention. At the same time, a long-term follow-up research framework should be constructed to monitor the social anxiety of junior high school students in multiple time periods and dimensions, and to understand the characteristics of each stage of adolescence, so as to provide a basis for optimizing intervention strategies. In addition, the follow-up study should synthesize multidisciplinary theoretical approaches to analyze the causal chain of family, school, physiological and psychological factors. Advanced neuroimaging technology should be used to quantify the neural pathways of family parenting styles affecting social anxiety, so as to construct an accurate theoretical model.

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