

Advances in Research on Adolescent Loneliness

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Keywords: Adolescents; loneliness; review

Abstract: Loneliness, as a predictor of several psychological disorders, is an important research object in adolescent mental health. In this study, we reviewed the relevant studies on adolescent loneliness at home and abroad in the past ten years, and discussed the influencing factors and interventions of loneliness, and found that there is a lack of research on the influencing factors of loneliness, and there are fewer intervention studies and a lack of empirical studies based on different communities. Future research should further explore the generation and influence mechanism of adolescent loneliness, improve and develop the localization of loneliness intervention strategies, and provide support for reducing the level of adolescent loneliness and protecting adolescent mental health.

1. Introduction

The ecosystem theory proposed by Bronfenbrenner suggests that an individual's psychology and behavior are influenced by the environmental system in which they live. The ecosystems in which individuals live are categorized into five levels according to spatial and temporal dimensions: microsystems, mesosystems, exosystems, macrosystems, and ephemeral. Among them, the microsystem emphasizes the individual as a social system, which is considered to have biological, social, and psychological distinctive features. And microsystems such as family and school are closely connected to individual microsystems and can have the most direct impact on individuals[1] The family, school and other micro-systems are closely connected to the individual micro-systems and can have the most direct impact on the individual. Therefore, the ecological theory system has been applied to the study of adolescent mental health, with special emphasis on the influence of the family and school environments on the individual.[2] The family and school environments are particularly emphasized in the study of adolescent mental health.

2. Concept

The term loneliness was first used in the field of psychiatry by Sullivan[3] Suggested by Sullivan: "Loneliness is the unpleasant experience associated with the failure to fulfill human interpersonal needs". Although there is no unified standard for the definition of loneliness in the academic world, the integration of scholars' research has found that the concept of loneliness has the following three characteristics: first, loneliness is associated with negative interpersonal relationships, which often stems from the mismatch between an individual's real interpersonal relationships and his/her desired interpersonal relationships; second, loneliness is the subjective feeling and experience of an

individual's heart; third, loneliness is a kind of negative psychological feeling, often accompanied by a variety of negative and unpleasant emotional experiences and spiritual emptiness, based on which individuals will actively seek relief.

3. Impact factors

Based on Bronfen brenner's ecosystem theory, the development of an individual is influenced by the environment in which he or she lives[1] The development of loneliness, as a negative experience induced by poor interpersonal relationships, is influenced by both the external environment and the individual. And loneliness as a kind of negative experience induced by bad interpersonal relationship, its development is affected by both the external environment and the individual's own personality and cognitive development. Therefore, the influencing factors of loneliness can be discussed from the following aspects.

3.1 Demographic factors influencing loneliness

3.1.1 Gender

The results of some studies have shown that there is a significant difference in loneliness levels by gender, with females being significantly more lonely than males[4-6] The results of some studies have shown significant gender differences in loneliness levels, with women having significantly higher levels than men. While other studies have shown that males have significantly higher levels of loneliness than females[7] The results of some studies show that there is a significant difference in loneliness levels between genders. There are also studies that concluded that loneliness did not show significant differences in the levels of different genders.[8, 9] The study also suggests that there is no significant difference in loneliness levels between genders.

3.1.2 Educational level of parents

Research has shown that families with more educated parents have lower levels of child loneliness [5, 10].

3.1.3 Accounts

Research has shown that rural middle school students have higher levels of loneliness compared to urban middle school students [5].

3.1.4 Family structure

Children in two-parent families have lower levels of loneliness than those in single-parent families [5, 9]. And children of left-behind families have the highest level of loneliness [11].

3.2 Internal factors affecting loneliness

3.2.1 Personality factors

(1) Shyness

Shyness, as a stable personality trait, is a major cause of social difficulties for individuals, manifesting itself as a desperate attempt to reduce presence, avoidance and withdrawal from social behavior, and accompanied by some uncomfortable feelings. However, it can also be seen as a protective mechanism in its own right, allowing individuals to anticipate unhappy and uncontrollable

situations[12]. Several studies have shown that shyness positively predicts loneliness[13-15].

(2) Self-esteem

Self-esteem is an emotional evaluation of an individual's own abilities and values, which influences how the individual behaves. And there is not only a significant negative correlation between self-esteem and loneliness[15]. In addition, self-esteem is often involved as a mediating variable in theoretical models of loneliness, such as shyness and loneliness[15], interpersonal distress and loneliness[16] experience avoidance and loneliness[17] etc.

(3) Personality traits

Personality is a unique behavioral pattern that combines individual thoughts, behaviors, and emotions, and this behavioral pattern is a stable and unified psychological quality that helps individuals distinguish themselves from others. Ding Ying's study explored the relationship with loneliness from the perspective of personality's internal and external inclinations, and proved that personality's internal and external inclinations are significantly negatively correlated with the development of individual's loneliness[9] The study of This was supported by the study of Shuwen Bao et al. who also explored the positive predictive relationship between neuroticism and psychoticism dimensions and loneliness.[18] The positive predictive relationship between neuroticism and psychoticism dimensions and loneliness was also explored. Zhang Yun discussed the relationship between different personality traits and loneliness based on the Big Five classification of personality traits, and found that except for neuroticism, the other four personality traits were significantly negatively related to loneliness.[19] The relationship between these traits and loneliness was found to be significantly negative.

(4) Mental Toughness

Mental toughness influences adolescents' ability to adapt to their environment, cope with crises, and build and adjust mentally. Individuals with higher levels of mental toughness have lower levels of loneliness[20-22] The higher the level of mental toughness, the lower the level of loneliness. And mental toughness, as a protective factor, assumes the role of a mediating variable in the structural model of multiple attachment relationships and loneliness[20].

3.2.2 Cognitive factors

(1) Self-awareness

Self-consciousness is an individual's perception of his or her own physical and mental activities. Li Zihua conducted a relevant study on the group of left-behind junior high school students, which showed that left-behind junior high school students' self-consciousness can significantly negatively predict loneliness[23] The study shows that self-consciousness of left-behind junior high school students can significantly negatively predict loneliness. Qin Rui's study revealed the mediating role of self-consciousness in the relationship between family functioning and loneliness, while Qin Rui's study revealed the mediating role of self-consciousness in the relationship between family functioning and loneliness.[24] The study of Qin Rui revealed the mediating role of self-consciousness between family functioning and loneliness.

(2) Response

Coping styles are adaptive modes of regulation adopted by individuals in response to environmental changes and can be categorized into positive and negative coping styles. Positive coping styles significantly and positively predict loneliness, whereas negative coping styles lead to increased levels of loneliness in individuals[7]. Loneliness also predicts negative coping styles to some extent[25] Loneliness is also a predictor of negative coping styles.

(3) Empathy

Empathy is the ability to understand the feelings, beliefs and intentions of others from their perspective. And adolescence, as an important stage in the development of empathy, is more

susceptible to the emergence of interpersonal relationships, i.e., individuals with high levels of empathy are more likely to establish close relationships with others, thus reducing loneliness[11] The following is an example of a high level of empathy in adolescence.

(4) Low self-esteem

Low self-esteem is a negative psychological state caused by an individual's low opinion of self and is accompanied by helplessness, avoidance, fear and timidity. Therefore, individuals with high levels of low self-esteem tend to be afraid to take the initiative in interactions, which results in real social relationships indeed, thus inducing loneliness[26, 27] The following are some of the reasons for this.

(5) Empirical avoidance

Experiential avoidance refers to the individual's reluctance to entertain unpleasant thoughts and experiences and their efforts to avoid them[28]. Research has shown that experiential avoidance in adolescents positively predicts levels of loneliness[28].

3.2.3 Emotional factors

(1) Social anxiety

Social anxiety is an emotional experience of feeling nervous or even fearful in interpersonal situations, which is often accompanied by marked avoidance behaviors. The relationship between social anxiety and loneliness has been explored in both directions, with some studies suggesting that social anxiety significantly predicts multiple dimensions of loneliness[8, 29] and studies have also explored the impact of loneliness on social anxiety.[5, 26] and the impact of loneliness on social anxiety has also been explored.

(2) Depression

Depression is a negative emotion resulting from a feeling of inability to cope with external pressures and is accompanied by emotional experiences such as disgust, distress and low self-esteem. As with social anxiety, the relationship between depression and loneliness is similarly bidirectional. Depression can be both positively predicted by loneliness[30] and can also be predicted by multiple dimensions of loneliness[8, 29, 31].

3.3 External factors affecting loneliness

3.3.1 Family environment factors

The family environment, as the immediate environment for individual activities and interactions, is the first interpersonal environment experienced and faced by the individual, and has a profound impact on the development of the individual.

(1) Parenting

Parenting style is a stable behavioral style that can be differentiated into authoritative, authoritarian, and permissive based on the dimensions of "warmth" and "control".[32] Deng Lifang et al. Deng Lifang et al. showed that children with positive parenting styles have lower levels of loneliness; conversely, children with more negative parenting styles have higher levels of loneliness.[33, 34] On the contrary, the more negative the parenting style, the higher the level of loneliness of their children.

(2) Parent-child relationship

Parent-child relationship, as an interactive relationship between parents and children, is the first and most important intimate relationship that an individual has to experience in the course of development, which influences the development and adaptation of the individual. A good parent-child relationship is undoubtedly effective in reducing loneliness[20, 35, 36].

(3) Family economic factors

The family stress model suggests that low-income families are often forced to work harder and consume less to make ends meet, which can create intense stress that can induce a variety of undesirable problems in adolescents[37]. That is, family economic level[27] and family economic pressure can significantly and positively predict the level of individual loneliness[38].

(4) Parent-child attachment

Parent-child attachment is a strong and ongoing emotional bond that develops between an individual and his or her parents in the family. This bond leads to the formation and development of an internal working model, which influences the individual's emotional experience and ability development. That is to say, good parent-child attachment can effectively reduce loneliness in individuals [11, 39] The following is an example of a good parent-child attachment that can effectively reduce the generation of loneliness.

(5) Family functions

Family functioning mainly considers whether the family can provide certain environmental conditions for the healthy development of all its members in terms of physical, psychological and social aspects. If family functioning is not well realized, its family members will have various clinical problems. That is, family functioning can effectively predict the development of loneliness[24, 40, 41].

3.3.2 School environment factors

(1) Academic pressure

Academic stress is a learning-induced feeling of anxiety that can be influenced by both oneself and the outside world. According to the physiological-social-psychological theory, when stress is applied to an individual, the individual will evaluate it cognitively, and then produce corresponding physiological and emotional reactions.[42] The physiological-social-psychological theory suggests that when stress acts on an individual, the individual will make a cognitive evaluation of it and then produce corresponding physiological and emotional reactions. And academic stress, as the main source of stress borne by adolescents, its predictive effect on adolescents' loneliness is significant[21, 43] The effect of academic stress as a major source of stress on adolescents' loneliness is significant.

(2) Teacher-student relationship

In the school environment, teachers play an important role in the relationship with adolescents as the successor of the parental role. Teachers' attitudes and methods of dealing with things, etc. will have an impact on the behavior and psychology of adolescent students. High-quality teacher-student relationship can reduce adolescents' loneliness.[36] The quality of teacher-student relationship can reduce adolescents' sense of loneliness.

3.3.3 Socio-environmental factors

(1) Peer Attachment

Peer attachment refers to the special emotional connection that adolescents have to their own peers. Individuals shift or expand their attachment from parents to peer groups as they enter adolescence, and loneliness occurs when individuals fail to establish good peer attachments[20, 34, 44, 45].

(2) Interpersonal trust

Interpersonal trust is the degree to which an individual trusts the behavior and commitment of others. Song Dingying's study showed that interpersonal trust was significantly negatively correlated with loneliness[45]. This is consistent with the findings of Zhou Qian[46] and Fan Jiali[47] 's findings. In addition, peer attachment can also indirectly affect loneliness through the mediating effect of interpersonal trust[45] and loneliness through the mediating effect of interpersonal trust.

(3) Social support

Based on the questionnaire survey, foreign scholars have found that loneliness is also significantly negatively correlated with the level of social support for individual comprehension.[48] This is consistent with the findings of domestic scholars. This is consistent with the findings of domestic scholars[4, 14, 25] Liu Wenwen's study explored social support from the perspectives of parental support and friendship support. Liu Wenwen's study, on the other hand, explored the predictive role of social support on loneliness from the perspectives of parental support and friendship support respectively[49] This is consistent with the findings of Li Xiu et al.[50] This is consistent with the findings of Li Xiu et al. The study by Jiang Xuemei et al. explored the mediating role of social support in gratitude and loneliness.[51] The study by Jiang Xuemei et al. Yana Deng discussed the network dimension of social support, and the results showed that network social support also showed a significant negative relationship with loneliness[52]. Li Ruoxuan et al. compared the effects of parental support and classroom teacher support on adolescents' loneliness, and confirmed that parental support better moderated the development of individual loneliness.[53] The study confirmed that parental support is more effective in regulating the development of individual loneliness.

(4) Peer relations

In Li Zihua's study, peer relationships of left-behind middle school students significantly negatively predicted loneliness[23]. This is consistent with the findings of Zhou Zixing's study[40]. In addition, this predictive effect can be attenuated by the regulation of self-consciousness[23].

(5) Peer acceptance

Peer acceptance reflects the attitudes of the peer group toward the individual and reflects the individual's popularity and social status[54] It is closely related to the experience of loneliness. It is strongly associated with the experience of loneliness, with individuals who are not accepted or have lower levels of acceptance being more likely to experience loneliness[11, 54] The following are some examples of how peer acceptance is related to the experience of loneliness

(6) Interpersonal distress

Interpersonal distress is an obstacle to interpersonal relationships or interpersonal communication that occurs in the course of people's interactions and is influenced by various factors. Such barriers often arise in interpersonal relationships and can produce a variety of negative psychological experiences, such as loneliness[16].

4. Intervention studies

4.1 Current state of research on loneliness interventions

By organizing previous research, it is known that foreign intervention theories for loneliness are mainly the six-stage individual therapy model[55] and three-stage theory[56]. It mainly adopts improving social skills, improving cognitive style, enhancing social support and other intervention methods [57] and other intervention methods.

4.1.1 Improvement of social skills

Considering that the conceptual definition and measurement of loneliness in the academic world tends to be developed from the perspective of social relationships, improving an individual's social skills so that he or she has the ability to align the level of realistic socialization with the desired level of socialization can have the effect of reducing his or her level of loneliness. The design of interventions from this perspective has some feasibility. For example, Murphy and Kupshik used Rook's Social Skills Training (SST) and role-playing methods in their intervention study to help visitors improve their social skills and socialization, thereby reducing loneliness.[58] SST mainly uses behavioral techniques including imitation, role-playing, feedback, and homework to develop

measures to be completed in groups over a period of 10-12 weeks.[55]. Although research has proven that methods to improve social skills can be an effective intervention for loneliness[59]. However, Perlman argues that people with high levels of loneliness tend to have low social skills and have extreme difficulty developing close relationships with others[57] and that evidence exists from empirical research.

4.1.2 Improving cognitive styles

Based on cognitive-behavioral therapy and clinical experience, Rook proposed a six-phase individual therapy model, which is to overcome anxiety and sadness when being alone, try to make new friends, make self-disclosure with trustworthy friends, establish a stable and intimate relationship with friends, develop an interdependent relationship with friends, and maintain a long-term friendship.[55] Rook argues that loneliness is closely related to behavior and cognition, and that the best way to intervene in loneliness is to help individuals develop close interpersonal relationships by changing irrational cognitive styles.[55] Peplau and Perlman proposed a three-phase theory that involves changing the reality of an individual's interpersonal relationships, adjusting the individual's level of social expectations, and changing poor coping styles.[57] Peplau and Perlman, on the other hand, proposed a three-stage theory of changing the individual's real relationships, adjusting the individual's level of social expectations and changing poor coping styles. Although both emphasize the intervention effect of changing cognitive structure on loneliness, there is also evidence to confirm the significant benefits of cognitive-behavioral therapy.[60] However, some studies have suggested that cognitive-behavioral therapy only focuses on cognitive interventions and ignores the effects of emotion and personality on loneliness.[61] The effect of emotion and personality on loneliness has been neglected.

4.1.3 Enhancing social support

Studies by different scholars have shown that social support is a major influence on loneliness[4, 48, 49, 51, 52] and that increasing social support can effectively reduce loneliness[62] However, it is extremely difficult to directly influence social support as an external factor affecting loneliness. However, it is extremely difficult to directly influence social support as an external factor affecting loneliness.

4.1.4 Other interventions

Some scholars have intervened in the level of loneliness of patients by means of medication, thus reducing their suicidal ideation[63]. There are also individual cases that confirm that individual counseling [64] and family physician control[65] the feasibility of this approach. However, these methods are either difficult to realize or lack of practicality.

5. Conclusion

By integrating domestic and international studies on loneliness in the past decade, this study found that there is a lack of research on the influencing factors of loneliness, fewer intervention studies and a lack of empirical studies based on different communities.

6. Shortcomings and prospects

Compared with foreign countries, domestic research on loneliness started later, and although a lot of results and conclusions have been achieved, there is still room for improvement.

First of all, there is still no unified and clear definition of loneliness, and there are controversies between the views of various scholars, which have not been well integrated and improved.

Secondly, research on the factors affecting loneliness has focused more on network, social, and personality factors, and less on family functioning and self-consciousness, and lacks systematic research on different cultural communities.

Third, there are limitations in the research tools used to measure loneliness; the UCLA Loneliness Scale is commonly used in the academic community to measure subjects' loneliness, but less research has been done on specialized measurement tools for adolescent populations. At the same time, there may be discrepancies between the loneliness levels derived from the measurements and the actual perceived loneliness levels of the individuals.

Fourth, most of the studies focus on empirical evidence, only considering the interaction between loneliness and other different variables, but ignoring the current situation of loneliness and intervention and countermeasure studies. At present, the intervention methods for loneliness adopted in China are still mainly group-assisted, and there is a lack of localized relevant research.

Based on these shortcomings, this study concluded that future research on adolescent loneliness could be dug deeper in the following areas:

First, on the basis of a large number of related and intermediary studies in China, we broaden our research ideas and deeply explore the mechanism of generation and influence of adolescent loneliness. Explore and integrate the protective factors that can effectively prevent and inhibit adolescent loneliness, so as to clear the obstacles for the maintenance of adolescent mental health.

Secondly, we will fully compare the loneliness levels of adolescents among different cultural communities, conduct quantitative studies to explore the influence mechanism of geo-cultural factors on loneliness, and discuss the influence of different cultural communities on loneliness, so as to make up for the shortcomings of the relevant studies in the country.

Thirdly, the scope of loneliness research should be broadened and the research on students and special groups should be strengthened.

Acknowledgement

Fundings: This work was supported by [Provincial Teaching and Research Project of Hubei Province Colleges and Universities] (Grant numbers [2023298]).

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