

A Review of Adolescent Emotion Regulation Ability

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Abstract: Emotion regulation plays an important role in adolescents' mental health and social adaptation. This review focuses on the classification of emotion regulation strategies, influencing factors, evaluation methods, development mechanism of emotion regulation ability and its relationship with non-suicidal self-injury (NSSI). The purpose of this paper is to comprehensively understand the current research status of adolescent Emotion regulation ability, and make suggestions for future research direction.

Keywords: Adolescent; Mental Health; Emotion Regulation.

1. Introduction

Emotion regulation is an important aspect of early human social development and a key mechanism for individuals to adapt to social life. Emotion regulation strategy is a purposeful emotion regulation method and means, which affects the ability and level of individual emotion regulation. Emotion regulation refers to the process in which individuals use specific strategies to regulate their emotional responses when facing emotional events[1]. In short, emotion regulation is the process by which individuals exert influence on the occurrence, experience and expression of emotions. Emotion regulation occurs throughout the process of emotion production and may be conscious (such as ending a frustrating topic) or unconscious (such as looking away from something uncomfortable). Emotion regulation affects how we experience and express emotions, and many studies have shown that the inability to use Emotion regulation flexibly can reduce happiness in life and even increase negative emotions such as depression and anxiety. Adolescence is a key stage of individual emotional and psychological development, and the effective development of Emotion regulation ability is helpful for adolescents to cope with various challenges in life, and promote mental health and social adaptability. Based on the types, influencing factors, evaluation methods of emotion regulation strategies and their relationship with non-suicidal self-injury (NSSI), understanding the theoretical model and development mechanism of adolescent emotion regulation is helpful to improve adolescents' Emotion regulation ability, provide reference for preventing and intervening psychological problems caused by difficulty in Emotion regulation, and improve adolescents' mental health level.

2. Emotion Regulation Strategies and Emotion Regulation Ability

Although psychology has been concerned about Emotion regulation for a long time, different scholars have their own opinions on how to define "Emotion regulation". After a long period of development, the current definition of Puggross is accepted by most researchers. Gross believes that emotion regulation refers to the process by which individuals influence the emotions they have, when they have these emotions, and how they experience and express these emotions[1]. The emotion regulation process can be automatic or controlled,

conscious or unconscious, and can have an impact at one or more points in the emotion generation process. To some extent, it emphasizes the adaptability, functionality, characteristics and process of emotion regulation.

2.1. Classification of Emotion Regulation Strategies

In Gross follow-up of a series of studies, he put forward and gradually perfected the "emotion regulation process model" (Process Model of Emotion Regulation), that individual in the process of emotion generated can be adjusted using five aspects of strategy, Namely, situational selection, situational change, attention allocation, cognitive change, and response regulation [2]. Gross divided emotion regulation into antecedent focused emotion regulation strategiad es reward-focused emotion regulation strategies according to the stage at which emotion regulation occurs[3]. The former refers to what is done before the emotional response tendency is fully activated and changes the behavioral and peripheral physiological responses, the most common example being cognitive reappraisal. Cognitive reappraisal is a cognitive language strategy that alters the trajectory of an emotional response by rerepresenting the meaning of a situation (e.g., changing the perspective on a problem). The latter refers to what is done after the emotion has already started, and the most common example is expression suppression. Expression inhibition is a strategy aimed at suppressing lines associated with emotional responses (e.g., expressions, gestures, etc.)[4].

2.1.1. Cognitive Reassessment

Cognitive reappraisal is a positive regulatory strategy to regulate emotional responses by changing perceptions of emotional events[1]. Cognitive reappraisal is one of the most commonly used emotion regulation strategies for adults by redescribing the meaning of the situation to change the trajectory of emotional response, which can intervene in the process of emotion generation at an earlier time point, and thus effectively downregulate emotional experience. Research shows that good cognitive reappraisal can maintain the mental health level of adolescents.

2.1.2. Expression Inhibition

Expression suppression is a relatively negative strategy for regulating emotions by controlling their expression [5]. In a comparative study of Chinese and American adolescents, the expression inhibition score of Chinese adolescents in the Emotion regulation questionnaire was significantly higher

than that of American adolescents, which may be related to cultural background and social expectations [6]. Harris [7] took 21 female college students and 15 male college students as subjects and recorded the scene of them singing the American national anthem in the form of video in front of the experimenter. Then they were randomly assigned to watch their own videos in front of the experimenter under two conditions, in which the "suppression group" was asked to suppress awkward emotional expression while watching. The "no inhibition group" did not have to do any behavior. Blood pressure and heart rate were measured before viewing (baseline), during viewing (awkward task) and after viewing (recovery period), and they were asked to report their subjective feelings during the awkward task during recovery period. The results showed that when embarrassing emotions were suppressed, not only the subjective embarrassment experience was still strong, but also the blood pressure was increased. In other words, this strategy only suppressed the expression of embarrassing emotions, but did not inhibit the corresponding emotional experience, and even triggered stronger physiological reactions. In addition, expression suppression strategies may have a negative impact on the physiological health of adolescents. Sigrist et al. found that adolescents who frequently used expression suppression strategies were more likely to develop physiological stress responses, such as increased heart rate and elevated blood pressure[8]. And physical reactions can further exacerbate mental health problems.

In addition, different scholars have put forward corresponding theories from the perspective of structural view. From the perspective of functionalism, Gratz proposed a structural model of emotion regulation including six dimensions[9], which were respectively: (1) acceptance of emotional response: Be receptive to your own emotional reactions; (2) goal-directed behavior: the ability to act and act according to predetermined goals even when experiencing negative emotions; (3) impulse control: the ability to effectively control the impulse response when feeling negative emotions; (4) emotional awareness: the ability to pay attention to and be aware of one's own emotional reactions; (5) emotion regulation strategies: ability to use effective emotion regulation strategies; (6) emotional clarity: the ability to clearly understand their own emotional responses. On the basis of this model, Gratz et al. constructed Difficulties in Emotion Regulation Scale (DERS) and applied it to clinical population. At present, DERS scale has also been introduced into China, translated, revised and applied.

2.2. Multidimensional Research on Emotion Regulation Ability

Although the current assessment of emotion regulation ability mainly starts from the two dimensions of cognitive reappraisal and expression inhibition, many researchers have proposed that emotion regulation ability is actually a multidimensional complex structure, which covers many aspects such as emotion recognition, emotion understanding, emotion expression and emotion regulation. Future research is needed to explore in more detail the relationship between these dimensions and mental health, and how they interact to influence the overall well-being of adolescents.

Emotion recognition refers to an individual's ability to accurately identify their own emotions and those of others, while emotion understanding refers to a deep understanding of the causes and meanings behind emotions. Adolescents'

ability to develop in these two dimensions is critical to the overall effect of their Emotion regulation. For example, if adolescents are able to accurately identify and understand their own emotions, they may adopt positive emotion regulation strategies to alleviate negative emotions, rather than resorting to extreme behaviors such as self-harming behaviors.

Emotional expression and regulation The ability to identify and describe emotions is a stable personality trait. Emotional expression refers to how individuals express their emotions in an appropriate way, while Emotion regulation refers to how individuals manage and control their emotional responses. Good emotional expression and regulation ability is closely related to individual mental health and interpersonal communication. If adolescents are defective in recognizing and expressing their emotions, they will have difficulty regulating their emotions through words and actions, and they will not be able to have reasonable contacts and interactions with others. Studies have found that almost all adolescents with NSSI have varying degrees of alexithymia, and 60% have emotional disorders[2].

2.3. Development Rules of Emotion Regulation Ability

2.3.1. Changes at Different Ages

Studies have shown that there are significant differences in the use and effect of emotion regulation strategies in different age groups. With the increase of age, the emotion regulation strategies of adolescents are gradually complicated. As adolescents grow older, their Emotion regulation strategies become more diverse and more effective in coping with emotional distress[8]. At the same time, adolescents of different ages also have significant differences in the frequency and effect of using emotion regulation strategies, and older adolescents are more inclined to use complex emotion regulation strategies such as cognitive rerating[10].

Children's Emotion regulation strategies are classified into six categories: cognitive reconstruction, problem solving, alternative activities, venting, passive coping and self-comforting. Cognitive reconstruction is the process by which a child perceives a setback or other negative event in a positive way and rethinks or reinterprets the parameters of a negative situation. Problem solving means that children actively face problems, adopt all possible adaptive behaviors and means through their own strength to eliminate the source of frustration, get rid of the difficulties they face, and reduce or eliminate negative emotions. Venting refers to children's intention to express and vent their negative emotions by using destructive or hurtful behaviors. Passive coping is when the child does not actively take any positive action to solve the problem they are facing, but instead moves away from or avoids situations that trigger negative emotions. A surrogate activity is one that takes the attention away from the situation that causes frustration or negative emotions and puts it into other observable activities. Self-consolation refers to children using some words to comfort themselves or repeating the same, meaningless body movements in behavior [10].

Moore et al. proposed that adolescence is a stage of significant development of Emotion regulation ability. As the brain develops and social experience increases, adolescents gradually learn to use more complex and effective strategies for Emotion regulation[11]. While early adolescents often rely on basic behavioral strategies such as avoidance or suppression of emotional expression, as they age, they begin

to use more cognitive strategies such as cognitive reappraisal and emotional acceptance.

2.3.2. Gender Difference

Gender plays an important role in the development of Emotion regulation. Tamas and Szabo found that girls are more likely than boys to improve their emotional state through emotion regulation strategies, and the gender difference is reflected in the choice of emotion regulation strategies and the effect of emotion regulation [12]. Girls used emotion regulation strategies more frequently than boys, and were more inclined to seek support and express emotions when dealing with emotional distress. According to Radman et al. , the frequency and effect of Emotion regulation strategies used by female students are higher than that of male students, which may be related to the socialization process of gender roles [13]. In addition, there are significant gender differences in how children express anger, with girls being better at regulating anger and boys exhibiting more destructive behaviors. According to the researchers, boys seem to feel less restricted in how they choose to express their anger, so they think more about what makes them feel better. Girls' ability to regulate negative emotions is more obviously influenced by parents and socialization, and it is also a cultural custom to manage and control girls' anger [14].] Lu Fang explained this from the perspective of social roles and believed that gender differences in children's Emotion regulation strategies were caused by different social expectations for men and women. In China, boys are expected to be manly from an early age, which is associated with qualities that encourage risk-taking such as independence, courage, and responsibility, so that the character is more courageous, the courage to express their emotions, and the influence of external environment is less concerned. Boys' thinking mode is more self-centered, and it is their strongest psychological need to use venting strategies to quickly calm emotions when angry. Under the influence of social and cultural rules, parents or society have a totally different social roles for women, the girl asked more docile obedient, and weak, inside collect, introspection, self-love, moderate such associated repressed self demands, thus more easily affected by external environment, on the basis of others expect to regulate their own behavior, less natural venting strategy [15].

3. Influencing Factors of Emotion Regulation Ability

3.1. Family Environment

Family environment is an important factor affecting the Emotion regulation ability of adolescents. Parents' parenting style, emotional response mode and their attention to children's psychology are closely related to the development of individual Emotion regulation ability. The Emotion regulation ability of adolescents whose fathers show supportive and balanced emotional socializing behaviors is significantly higher than that of adolescents whose fathers show disengaged and severe behaviors [16]. Qian et al. point out that parents' psychological control behaviors also hinder the development of adolescents' Emotion regulation ability, which leads to their social adjustment problems[17]. Fosco et al. studied the relationship between family function and adolescents' Emotion regulation and found that family conflict and low family cohesion are related to adolescents' Emotion regulation difficulties[18]. In addition, maternal emotional support plays an important role in adolescent

Emotion regulation. Gao et al. found that adolescents who received more emotional support from their mothers as they grew up had higher Emotion regulation and fewer internalization and externalization problems[19].

In the family environment, parental affective neglect has been involved in many studies. Parental affective neglect is probably related to adolescent depression, anxiety, personality disorder and non-suicidal self-injury through the mediation of Emotion regulation. The study found that even individuals who experienced only emotional neglect in childhood and no significant trauma such as emotional or physical abuse were less likely to use cognitive reappraisal strategies in daily Emotion regulation than individuals who did not experience childhood trauma. The frequency of cognitive reappraisal strategies was negatively correlated with the intensity of depressive symptoms, and the use of cognitive reappraisal strategies played a mediating role between childhood traumatic experiences and depressive symptoms [20].

3.2. Social Support

Social support is also an important factor affecting the ability to regulate emotions. Studies have found that when adolescents face emotional distress, the support of peers and family members has a positive promoting effect on the development of Emotion regulation ability [21]. Nielsen et al. studied the impact of adolescents' peer relationships on their Emotion regulation and found that positive peer relationships can help enhance Emotion regulation. Another study on adolescents' social networks found that adolescents' interpersonal Emotion regulation ability is closely related to their social support and mental health [22]. In addition, the mental health support services provided by schools and communities can also help adolescents gain better Emotion regulation ability and improve their mental health [24].

3.3. Individual Characteristics

Individual traits, such as personality traits and mental resilience, also influence adolescents' ability to regulate emotions. The ability to regulate emotions is developmental and occurs in infancy, and an individual's innate temperament determines how they respond to emotions. For example, some babies are more likely to show anger and cry. In addition, the development of emotion regulation ability is also affected by language ability. Early in life, girls' language skills develop earlier than boys', which may be an important reason for the gender difference. For individuals, with the development of language ability, their ability to express and understand their emotions also develops. Liu et al. found that neuroticism, depressive symptoms and Emotion regulation difficulties in adolescents are significantly correlated, and Emotion regulation strategies play a partial mediating role in this relationship, and individuals with positive personality traits such as openness and conscientiousness tend to have better Emotion regulation abilities [25]. Studies have also shown that adolescents with strong psychological resilience can use emotion regulation strategies more effectively in the face of emotional distress, thus reducing the impact of negative emotions [26].

4. Emotion Regulation Theory

4.1. Coping Model of Emotion Regulation

People's attention to emotion regulation has existed since

ancient times, but as a relatively independent research field, it originated from developmental psychology research [27]. In the study of stress process, Lazarus and Folkman put forward the coping model of emotion regulation. The model divides Emotion regulation into two types: problem-centered coping and emotion-centered coping. Problem focused coping means that individuals try to change situations or remove stressors by using problem-solving strategies, including redefining problems, considering alternative solutions, measuring the importance of different choices, and coping with stressors in the face of problem situations. Thus reducing individual emotional tension or pressure; Coping coping using emotion-focused coping refers to the situations when individuals use behavioral or cognitive adjustment strategies to reduce emotional stress, such as avoiding actions, shifting attention and looking at problems from a different Angle, etc. Individuals mainly pay attention to their own Emotion regulation instead of the actual problems.

4.2. Process Model of Emotion Regulation

4.2.1. Gross of Emotion Regulation Process Model

Based on a series of studies, Gross proposed the emotion regulation process model, which is one of the most widely used theoretical models at present, and believes that individuals can use five strategies to regulate the emotion generation process: The five stages of situation selection, situation correction, attention allocation, cognitive change, and response regulation are arranged in chronological order according to the emotional generation process [1].

Situational choice: Approach or avoid situations that trigger emotions, such as events, people, and situations. Individuals using this strategy need to have a clear understanding of and anticipate the near-term and long-term characteristics of approaching and avoiding situations, and can make trade-offs and trade-offs between the benefits and inputs of different situations .

Situation modification: Initial adjustment and control of situations that trigger emotions in order to cope with problems and improve mood. In addition to their own conditions, the individual using this strategy may also need the help of external partners, and the individual needs to realize that situational correction can be generated by internal and external support as well as external and internal environment intervention.

Attention allocation: Change the allocation of attention resources to situations that trigger emotions. Attention allocation can take various forms, such as physiological shielding (blocking sensory pathways, closing eyes, covering ears, covering nose, etc.), attention reorientation (concentration or distraction), and reorientation in response to others' attention to oneself.

Cognitive change: Reinterpreting the meaning of situations that trigger emotions. The meaning of the situation is closely related to the physiological response, psychological experience and behavioral performance of emotion. Cognitive adjustment can not only change the intensity of emotion, but even change the nature of emotion .

Response regulation: Response regulation. Ameliorating emotions by directly influencing trends in emotional responses (mainly by adjusting the degree of behavioral responses) after the emotion has already occurred.

Aldao et al. systematically reviewed the relationship between different emotion regulation strategies and mental health problems, supporting the theoretical framework of

Gross model [28].

4.2.2. Dual Process Model

In the Gross model of emotion regulation process, the researchers found that emotion regulation can occur either actively at the conscious level or automatically at the unconscious level. Automatic emotion regulation and active emotion regulation both belong to a continuum, that is, from subjective effort and active regulation to no subjective effort and automatic regulation. Therefore, in many cases, the specific emotion regulation strategies adopted by individuals may fall between two conceptual prototypes or occur simultaneously at two levels [27], which is the dual process model. The dual process model emphasizes the emotional automatic and controlled process, think that emotion regulation can be realized through two main mechanisms [1].

Autoregulation: requires no conscious effort and is usually a rapid and unconscious process. This type of adjustment depends on habit and experience.

Controlled regulation: requires conscious effort and cognitive resources, and is usually a slow and conscious process. This mode of regulation relies on the individual's cognitive control abilities, such as inhibiting impulses and reevaluating situations.

Gyuraketal. explored the role of automatic and controlled emotion regulation processes in different situations and found that controlled regulation was more effective in high-stress situations [29]. Braunstein et al. systematically reviewed the neural basis of emotion regulation and supported the theoretical framework of the dual process model [30].

However, both the coping model and the process model only emphasize the emotion regulation process or the content of emotion regulation itself, and regard emotion regulation as a situational behavior or process. Once the situation is over, everything is over, without considering that in reality, emotion regulation is sometimes a continuous process, which may last a long time. The theory of the duration of Emotion regulation makes up for this omission.

4.3. Duration Theory of Emotion Regulation

Studies have found that the longer the duration of negative emotion regulation, the positive correlation with its negative health status. Researchers use Psychological resilience to explain this phenomenon, which refers to an individual's effective coping and adaptation in the face of loss, difficulties or bad luck. The psychological resilience to certain events is just like the resilience of metal. If some metals are hard and easy to break, it means that the elasticity is small, while some metals are soft, flexible, and not easy to break, it means that their elasticity is large. Human psychological resilience is similar. In the face of negative events or situations, individuals will produce negative emotions while also producing psychological resilience against the negative emotions [31]. Fredrickson proposed a theory of mental resilience: broaden and build theory, which emphasizes the positive role of positive emotions in the regulation of negative emotions [32]. Studies have found that when individuals experience positive emotions, their thinking patterns are more flexible, effective and creative, and they are more likely to take a variety of possible behaviors [32]. Negative emotions make individuals narrow thinking and short-sightedness. Therefore, if an individual encounters a negative emotional situation, he can improve his positive emotional experience through positive emotion regulation strategies, reduce the pressure brought by negative emotions, and thus eliminate

negative emotions. Therefore, the main task of emotion regulation is to enable individuals to increase the experience of positive emotions by using various emotion regulation strategies in the face of negative events, so as to improve individual mental health while improving mental resilience.

4.4. Development Mechanism of Adolescents' Emotion Regulation Ability

4.4.1. Cognitive Development and Emotion Regulation

The progress of cognitive development is a key factor in the development of adolescents' Emotion regulation ability. As cognitive abilities mature, adolescents become more sophisticated and efficient in selecting and applying Emotion regulation strategies.

Enhancement of cognitive control: A study by Silvers et al. showed that adolescents' cognitive control improved significantly with increasing age. They can employ more complex emotion-regulation strategies, such as cognitive reappraisal, to more effectively suppress impulsive responses[33].

Working memory and Emotion regulation: Schmeichel and Tang pointed out that with the enhancement of working memory ability, adolescents can simultaneously process and adjust multiple emotional information in the process of Emotion regulation[34].

4.4.2. Neurophysiological Mechanism

Neurophysiological mechanisms play an important role in the development of Emotion regulation. Studies have shown that changes in the development and function of brain regions such as the prefrontal cortex and the amygdala have an important impact on the Emotion regulation ability of adolescents. Teicher et al. proposed a model of the brain's "threat detection and response circuit" based on a systematic summary and collation of relevant research results. In this model, the Amygdala is at the core, which receives and outputs information and is influenced by other brain regions to regulate, produce and alter emotional responses[35].

Reception: Sensory information (such as vision and hearing) reaches the amygdala via the upper hypothalamus and the medial and lateral geniculate bodies, triggering the amygdala's response to emotional stimuli.

Regulation: The Dorsolateral Anterior Cingulate Cortex (dACC) and Ventromedial Prefrontal Cortex (vmPFC) were involved in enhancing or weakening the amygdala response, respectively. The Dorsomedial Prefrontal Cortex (dmPFC) was responsible for regulating dACC and vmPFC participation, while the hippocampus was responsible for providing the amygdala with background information for emotional stimuli.

Output: Signals from the amygdala will be projected to the paraventricular nucleus of Thalamus (PVNT), Anterior pituitary, Adrenal cortex and other regions. Thus affecting individual physiological responses.

Studies have shown that the prefrontal cortex continues to develop during adolescence, and this brain region is closely related to cognitive control and executive function, and the development of the prefrontal cortex is positively correlated with the Emotion regulation ability of adolescents[36]. On the other hand, the amygdala is highly reactive during adolescence, which makes adolescents prone to strong emotional responses when faced with emotionally stimulating situations[37]. The prefrontal lobe plays an important role in regulating the amygdala. Researchers found that the use of cognitive reappraisal strategies was positively correlated with

the volume of gray matter in the dorsal anterior cingulate gyrus, and the use of expression inhibition strategies was positively correlated with the volume of gray matter in the anterior insula.

5. Evaluation Method of Emotion Regulation Ability

Accurate assessment of adolescents' Emotion regulation ability is of great significance for both research and intervention. In recent years, researchers have developed a variety of assessment tools to validate their applicability in different cultural contexts. Questionnaire survey is one of the common methods to evaluate the ability of emotion regulation. The following are several commonly used Emotion regulation assessment questionnaire tools, including the author of each questionnaire, the year, the number of items in the questionnaire, the scoring method, the norm, the dimension, etc.

5.1. Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ) was developed by Gross and John in 2003 [38] to assess the two main emotion-regulation strategies that individuals use in their daily lives: cognitive reappraisal and expression suppression. Number of items: 10. There were two dimensions: cognitive reappraisal (6 items) and expression inhibition (4 items). Likert was scored on a 7-point scale (1= strongly disagree, 7= strongly agree). Each item is scored on a scale of 1 to 7, and the total score is the average of each score. The norm of the questionnaire is different in different cultural backgrounds and needs to be adjusted according to the specific research background. ERQ is widely used in a variety of Emotion regulation and mental health studies for adolescents and adults.

5.2. Child and Adolescent Emotion Regulation Questionnaire (ERQ-CA)

Erq-ca was developed based on ERQ specifically to assess Emotion regulation strategies in children and adolescents[39]. It included 10 items with two dimensions: cognitive reappraisal (6 items) and expression inhibition (4 items). Likert was scored on a 5-point scale (1= strongly disagree, 5= strongly agree). Each item is scored on a scale of 1 to 5, and the total score is the average of each score. ERQ-CA has been validated in adolescent samples from several countries and regions, showing good reliability and validity. ERQ-CA is suitable for assessing the Emotion regulation ability of children and adolescents, and is widely used in school psychology and clinical psychology research.

5.3. Adolescent Emotion Regulation Strategies Questionnaire (AERSQ)

AERSQ was developed by Zhou et al for a comprehensive assessment of multiple emotion regulation strategies used by adolescents in response to everyday emotional events[40]. The questionnaire consisted of 20 items in four dimensions: cognitive reappraisal (5 items), expression inhibition (5 items), distraction (5 items), and seeking support (5 items). Use a Likert 5-point score (1= never, 5= always). Each item is scored on a scale of 1 to 5, and the total score is the average of each score. The questionnaire was verified in a sample of Chinese adolescents and showed good reliability and validity. AERSQ is suitable for evaluating a variety of Emotion

regulation strategies in adolescents and is particularly suitable for school and community mental health programs.

5.4. Cognitive Emotion Regulation Questionnaire (CERQ)

CERQ was used to assess cognitive emotion regulation strategies used by individuals in the face of negative events. This questionnaire is widely used in studies of emotion regulation at all ages[41]. There are 36 items, 4 items in each dimension, and 9 dimensions of work: self-blame, acceptance, rumination, positive re-focus, planning re-focus, positive re-evaluation, looking at the positive side of things, catastrophising, blaming others. Use a Likert 5-point scale (1= almost never, 5= almost always). Each item is scored on a scale of 1 to 5, and the total score is the average of each score. CERQ was validated in samples from multiple countries, showing good reliability and validity. CERQ is suitable for assessing individuals' cognitive emotion regulation strategies in the face of negative events, and is widely used in clinical psychology and educational psychology research.

6. Emotion Regulation Methods

The ability of Emotion regulation is closely related to the mental health level of adolescents. However, most research on improving Emotion regulation doesn't just focus on improving Emotion regulation. Such as Cognitive Behavioral Therapy (CBT), Dialectical Behavior Therapy (Dialectical Behavior Therapy), Acceptance and Commitment Therapy (DBT) and ACT [42-44]. These therapies include all aspects of mood regulation as part of a broader treatment regimen, but also include other components, so it is not possible to determine which part of the intervention has an impact on mood regulation or general clinical or functional improvement. When mood regulation is measured in different ways, these interventions do seem to be effective in improving mood regulation. Other interventions targeting emotion regulation have been discovered and developed to improve emotion regulation, such as emotional diagnostic interventions and group therapy for emotion regulation[45]. Due to the high time and economic cost of the above intervention methods, some researchers extract the effective factors as short-term Emotion regulation methods when using them. Among the more commonly used well-adapted strategies are cognitive reappraisal strategies (the core technique of CBT) and mindfulness (or acceptance). In addition, Morthorst et al. studied the influence of Internet emotion regulation intervention on adolescents and found that providing Emotion regulation training through online platforms can significantly improve adolescents' Emotion regulation ability and mental health level[46].

7. Future Research Direction

Although the current research on the Emotion regulation ability of adolescents has made many achievements, there are still some important areas that need to be further explored.

The influence of cultural background on emotion regulation: under different cultural backgrounds, the social and family environment in which individuals grow up is greatly different, and the characteristics of emotion regulation strategies of adolescents may be different, including the selection and use effects of emotion regulation strategies. Future studies should focus on the influence of different

cultural backgrounds on emotion regulation, and develop Emotion regulation assessment tools and intervention means suitable for different cultural backgrounds.

The development mechanism of emotion regulation ability: At present, few studies directly discuss the occurrence and development of Emotion regulation ability, and most studies on Emotion regulation take it as an influencing factor of mental health problems. Emotion regulation ability is only a minor supporting role in the study, rather than the protagonist. It is necessary for future studies to explore the development law of individual Emotion regulation ability as the main research goal. At the same time, most current studies on Emotion regulation ability are cross-sectional studies, and future studies should pay more attention to longitudinal research design, explore the development track of Emotion regulation ability, understand the characteristics of Emotion regulation at different stages of development and its impact on mental health, and master the development mechanism of Emotion regulation ability, so as to better understand the characteristics of Emotion regulation of adolescents.

Intervention studies on Emotion regulation ability: at present, there are not many interventions on the Emotion regulation ability of adolescents. Although there are studies that try to use CBT and acceptance commitment therapy to improve the Emotion regulation ability of adolescents, the specific effects still need to be further verified. In addition, there is a lack of comprehensive, systematic and prospective interventions based on the characteristics of adolescent emotional ability development. In the future, there is still a broad space for the development of intervention research on emotion regulation ability.

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