

Review on the Emotional Regulation of Autistic individuals

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Abstract. Autism Spectrum Disorder (ASD) is increasingly becoming prevalent among both children and adults. Because individuals with ASD often present comorbid symptoms such as depression and anxiety, research on ASD has become increasingly essential. This paper review a range of studies to examine the emotional regulation characteristics of individuals with ASD. Based on this foundational understanding of ASD, this paper aims to explore the mechanisms in greater depth and suggest improvements to existing interventions. According to all of the studies from different perspectives, this paper summerizes that ASD is such a sophisticated neurodevelopmental disorder which requires combined therapeutic interventions to effectively cure. This paper relatively deeply discusses different characteristics of emotional regulation of ASD with distinct perspectives from biological, psychological, and social aspects, providing researchers with some inspirations about possible drawbacks or shortcomings of existing therapeutic interventions, improvements on existing therapeutic interventions, and some effective new therapeutic interventions with specific targets. Cognitive Behavioral Therapy (CBT), Mindfulness-based Interventions (MBTs), and Social Skill Training (SST) are effective interventions separately but limited to some specific aspects. Thus, combing those interventions enhances efficacy to some extent. However, there are still some shortcomings of combing those interventions.

Keywords: Emotion regulation, autistic spectrum disorder, interventions for ASD.

1. Introduction

Autism Spectrum Disorder is increasingly becoming a prevalent neurodevelopmental disorder affecting both children and adults. Importantly, core symptoms in Autism Spectrum Disorder (ASD) always appear cormorbid with other neurological and psychiatric disorders [1]. With the increasing spread of ASD among populations, the understanding and therapies of ASD become more crucial nowadays.

Autism Spectrum Disorder is a neurodevelopmental disorder that affects social communication and interaction, as well as repetitive patterns of behavior, with heterogeneity across populations [2]. Significantly, individuals with ASD frequently have characteristics of emotion dysregulations because they always use maladaptive strategies [3].

This paper focus deeply on problems of emotion regulation in ASD to improve interventions to ASD through methods of reviewing.

According to the report of Kuroda and his colleagues, cognitive behaviroal therapy have some positive influences on overall emotiaonal regulations of individuals with ASD [4]. However, the sample size used in this study is 60, which is relatively small and cannot lead to a relatively well-rounded and stable conclusion. Additionally, the sample only contains Japaneses, which means this conclusion may not be applied to people with ASD from other countries. Moreover, allocating participants based only on sex factors is not convincing, since there are still some other more critical factors influencing emotional regulations of ASD. What's more, Some other researches only consider one age group and do not contain participants from Asia or other places except Europe and the U.S.A.

2. The Profile of Emotional Regulation (ER) in ASD

2.1. Overall Introduction

Impaired emotional regulation is one of the most common characteristics observed in individuals with ASD. This low-level ability always leads to some behavioral problems, which eventually incurs social problems and communication problems in ASD patients.

2.2. Suppression

In neurotypical populations, effective emotional regulation involves appraising stimuli and using adaptive strategies to manage affective responses to up-regulate positive emotions and down-regulate negative emotions. Appropriate usage of up-regulations of positive emotions is always associated with increased positive effects [5]. But ASD patients inherently have poor emotional regulation and they generally use more maladaptive strategies to regulate emotions [5]. In this situation, such pattern may lead to paradoxical results: suppression of positive emotions and increasing of negative emotions. These accumulated negative emotions may bring depression symptoms, feeling of hopelessness, decreased social ability and poor communication skill.

Additionally, ASD patients use expressive suppression from maladaptive strategies [5]. Based on their poor ER ability and inappropriate usage of maladaptive strategies, they may use unsuitable amount of expressive suppression in some situations, which incurs some social problems because of the wrong facial expressions and gesture usages.

Moreover, ASD patients may have problems of their extrinsic ER which refers to situations that emotions are regulated by an external person [6]. Emotions of ASD patients may be difficult to regulate, since their poor extrinsic ER ability makes their emotions less influenced by others. These almost unadjusted emotions also incur some behavioral problems.

3. Underlying Mechanisms of ER Difficulties in ASD

3.1. Psychological Mechanisms of ER Difficulties in ASD

Psychological factors, particularly comorbid psychiatric conditions such as anxiety and depression, exacerbate emotional regulation difficulties by distorting cognitive appraisals and increasing maladaptive coping tendencies.

Many ASD patients experience co-occurrence of psychiatric disorders that accounts for inadequate emotional regulation [7]. A significant characteristic of other psychiatric disorders is interfering with healthy and adaptive emotional regulation strategies. [7]. For example, anxiety and depression always interact with ASD and these conditions are linked with maladaptive strategies, such as rumination, avoidance, and emotional hyperarousal, used in ASD [3,7]. As a result, the interaction between ASD and its comorbid conditions produces a synergistic effect that amplifies emotional dysregulation through mutual reinforcement of stress responses because they interfere with healthy ER strategies and also have their own emotional regulation difficulties.

3.2. Neurobiology Mechanisms of ER Difficulties in ASD

Biological aspects like brain structures and nerve impulses also play an influential role in ER difficulties in ASD patients.

Individuals with ASD exhibit atypical functioning in the amygdala, a brain region crucial for emotion processing and regulation. Amygdala cannot be activated when ASD patients are making mentalistic inferences from the eyes, indicating that ASD patients may lose parts of emotional perception and emotional regulation from eye gaze [8]. Additionally, ER in ASD patients lacks some motivational components, which results in poor emotional insights and self-monitoring skills [7].

Significantly, ASD patients have problems of cognitive flexibility and both hypoactivation and hyperactivation of amygdala. Problems with cognitive flexibility incur usage of maladaptive

strategies, hypoactivation of amygdala is associated with disruptive and dysregulated behaviors, and hyperactivation of amygdala makes triggering emotional responses more easily and intensely. [7]. Because of these problems, patients with ASD always have difficulty in correctly perceiving emotions, reasonably regulating emotions, and responding appropriately.

ASD patients always show imbalance of excitatory and inhibitory neural transmissions. These imbalanced distributions of neurotransmitters make the frontal-parietal regions overactivated or posterior brain regions under-activated during visual detection. Such increasing activity of occipital regions makes individual stimuli more prominent, enhancing visual processing [9]. Importantly, ASD patients utilize mental imagery to compare complex signed shape and they have lower order of cognitive processing. This suggests that they may have problems of receiving correct information of emotions and have difficulty in using the appropriate strategies to regulate emotions because of their poor cognitive control.

4. Therapeutic Interventions for Emotional Regulation

4.1. Cognitive Behavioral Therapy (CBT)

Cognitive Behavioral Therapy always shows positive consequences on curing ASD patients with difficulties in emotional regulations.

Cognitive Behavioral Therapy contains effective procedures, including assessment, planning, decision-making, and usages of behavioral techniques, aiming to help patients to deal, patterns adaptive [10].

CBT is originally considered an effective treatment for anxiety in ASD patients [11]. Kuroda and his colleagues aim to test the effectiveness of CBT designed to address emotion regulation skills in autistic adults. They use a single-blinded clinical trial to randomize 60 participants to test the utility. Significantly, their clinical trial shows that CBT has improvements on patients' attitudes toward ASD, difficulties in describing feelings, and usages of maladaptive strategies [4]. It is presumable that increasing positive feelings of ASD helps patients with ASD better understand their emotions, which improves the ability to describe and feel emotions. Then the correct perceiving of emotions stimulates patients to use adaptive strategies to regulate their emotions. Moreover, the reduction of symptoms of anxiety and depression also helps improve emotional regulation.

However, the positive attitude toward ASD does not sustain 12 weeks later, indicating that the effectiveness of CBT on improving positive feeling remains limited. Additionally, although CBT to some degree helps individuals to correctly describe feelings, it is still insufficient to alleviate alexithymia generally, inferring that CBT program cannot cure the negative consequences of ASD completely.

4.2. Mindfulness-based Interventions (MBTs)

Mindfulness-based Interventions effectively enhance positive attitudes and overall well-being among individuals with ASD.

Mindfulness-based Interventions are a set of interventions that teach a variety of meditation techniques, aiming to contain continuous redirection of attention toward present moment experience [12]. In Pangni and his colleagues' report, Cachia, and his colleagues use a variety of paradigms and comparative groups, which contains the first group uses mindfulness-based therapy to cure adult participants with depression and anxiety and the second group uses mindfulness-based stress reduction to cure the same participant to test the effectiveness of MBTs to treat depression and anxiety in adults with ASD. Their study shows that the primary efficacy of MBTs is reducing symptoms of depression and anxiety by promoting present moment awareness and cognitive flexibility with increasing a wide range of psychological, emotional, and cognitive dimensions of well-being of ASD patients. Importantly, MBTs also has improvements in inadequacy in thinking, agoraphobia, interpersonal distrust and sensitivity, and autism symptoms [12]. It is reasonable that utilizing their minds to control continuous redirection of attention helps patients with ASD increase the cognitive

flexibility, which makes the thinking process adequate. Additionally, the reduction of symptoms of depression and anxiety greatly improves the emotional perceptions and regulations.

However, although other studies also prove the utility of MBTs on depression and anxiety symptoms in autistic adults, the results offered by Cachia RL. and his colleagues are from a small sampled clinical trial. This drawback indicates that the truly effectiveness of MBTs to cure depression and anxiety in autistic adults should be explored thoroughly through some larger sampled trials with more accurate design of using MBTs.

4.3. Social Skill Training (SST)

Social Skill Training shows effectiveness of social abilities in ASD patients in their childhood by creating successful relationships with their families, friends, and peers [13].

Social Skill Training is a program that provides specific guidance into and knowledge of the social world for the patients in order to remedy the gap that they have impaired social skills and social abnormalities [13]. SST greatly helps ameliorate social skills deficits in ASD by teaching patients behaviors that enable them to function completely in various social tasks [13]. Through structured role-playing and feedback, SST enhances individuals' capacity for extrinsic emotional regulation by improving their recognition of others' emotional expressions, reaching reasonable level of emotional perception and then using appropriate strategies to regulate emotions.

Despite these positive results, the density and quality of evidence within the highlighted developmental groups from various studies vary, indicating that the effectiveness of SST in improving extrinsic emotional regulation is unstable and needs more future exploration. Moreover, the results from most of studies at later developmental stages are less clear, indicating that the duration of utility of SST in individuals with ASD is unclear.

5. Conclusion

In conclusion, Autism Spectrum Disorder is a complex neurodevelopmental disorder with a lot of comorbidity symptoms. And using CBT, MBTs, and SST can bring positive consequences on ASD patients. But complicated features of ASD push therapeutic interventions to focus more on diverse combinations. This paper merely summarizes limited number of papers, which limits the focus to emotional regulation on ASD and makes the understanding of therapeutic interventions one-sided. Additionally, each clinical trial has its own limitations and insufficiency. Researchers should focus on more other aspects of ASD like etiology, social features, and combination therapy methods and limitations of three therapeutic interventions, helping people get an in-depth understanding of ASD and bringing more authoritative therapeutic intervention and making more impressive improvements on CBT, MBTs, and SST in the future exploration based on advantages of existing clinical trails.

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