



Intrinsic Mechanisms of Facial Expression Recognition Defects in Children with Autism

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Abstract: The difficulty of facial expression recognition in autistic children mainly includes the inability to accurately understand the emotions and intentions of others, and shows the lack of facial expression response in social interaction. This defect has caused problems with their adaptation and understanding of others in social communication. Multiple hypotheses have been proposed about the intrinsic mechanism of facial expression recognition defects in children with autism. Children with autism may lack the development of psychological theory, causing them to correctly interpret and understand facial expressions with emotional[1]. Neurobiological factors may influence the areas of facial expression processing in the brain of autistic children, leading to their abnormalities in the transmission of neural circuits. In addition, children with autism may have abnormalities in brain function, making it difficult for them to effectively process and interpret information about facial expressions. Therefore, it is very important to further investigate the intrinsic mechanism of facial expression recognition defects in autistic children and the development of related treatments, which can help to improve the social communication ability and improve their quality of life of autistic children.

Keywords: autism, children, facial expression, recognition defect, intrinsic mechanism

1. Introduction

Autism is a neurodevelopmental disorder that affects children's social interaction and communication abilities, while also involving functional development in other domains. In social communication, facial expression recognition plays a crucial role, and it is an important channel for people to understand the emotions and intentions of others. However, children with autism often have deficits in facial expression recognition, which causes them to interact with others and establish effective interpersonal relationships. The intrinsic mechanism of facial expression recognition deficit in autistic children is a field of great interest. Understanding the intrinsic mechanisms underlying the difficulties in facial expression recognition in autistic children can not only deepen the understanding of autism itself, but also provide guidance for the development of interventions and treatments for this problem. In this paper, we will explore the intrinsic mechanism of facial expression recognition deficits in children with autism.

2. Introduction to autism

2.1 Definition of autism

Autism is defined as a neurodevelopmental disorder that affects a person's social interaction, communication skills, and behavioral patterns. Autism is a spectrum disorder (spectrum disorder) with various forms and severity.

2.2 Characteristics of autism

(1) Social interaction difficulties: Children with autism often show a lack of interest, lack of adaptability and confusion in their communication with others.

(2) Communication disorders: Children with autism may have difficulties in language development, communication skills, and understanding the intentions of others.

2.3 Performance of social communication disorder in autistic children

(1) Social avoidance: Children with autism lack interest in interacting with others and may be more inclined to play alone.

(2) Eye contact difficulties: They often avoid direct eye contact with others and lack attention and understanding of others' emotions.

3. The role of facial expressions

Facial expression is a very important way of expression in human social communication, which conveys rich emotion and meaning [2]. Facial expressions convey emotional states and inner experience to others through the movement and configuration of facial muscles and by changing the expressions of the eyes, lips, eyebrows and other parts. Facial expressions can express various emotions, such as joy, sadness, anger, and surprise, as well as interpersonal relationships, social meanings, and intentions.

4. The importance of facial expression recognition for social communication

First, through facial expressions, we can accurately identify and understand the emotional state of others. This helps us to have a better understanding of others' motives, intentions and needs, thus enhancing the quality of interpersonal relationships. Facial expression recognition also provides opportunities for empathy, helping us to develop emotional resonance and emotional connection with others. Secondly, facial expression is a non-verbal way of communication, which can convey rich information, including emotion, intention, attitude and so on. By identifying and interpreting other facial expressions, we are able to understand the information they convey and respond accordingly as needed. Accurate recognition of facial expressions helps to establish good communication and interaction and promote accurate communication and understanding of information. Finally, facial expression recognition is critical for social cognition and adaptation. In children with autism, facial expression recognition defects pose certain challenges to the development of social communication skills. Due to the importance of facial expressions in social communication, understanding the intrinsic mechanisms of facial expression recognition deficit in autistic children becomes particularly critical to help them overcome difficulties, improve social skills, and improve their quality of life.

5. Performance and influence of facial expression recognition defects in autistic children

5.1 Difficulties in facial expression recognition in autistic children

(1) Failure to accurately understand the emotions and intentions of others: Children with autism often have difficulty to correctly interpret the emotions conveyed by others' facial expressions, including joy, sadness, anger, surprise, etc. They may have delayed or incorrect responses in interpreting the affective states of others.[3]

(2) Lack of facial expression response: children with autism may lack appropriate facial expression response in social interaction. They may not respond appropriately to others' smiles, eye contact, or other emotional expressions, making it difficult for others to understand their emotional state.

5.2 Effect of facial expression recognition defect on social communication

(1) Social communication difficulties: facial expressions are an important part of social communication. The defects in facial expression recognition may lead to confusion, misunderstanding or inability to adapt to the emotional state of others in social interaction, so that they can encounter difficulties in normal social communication with others.

(2) Limited emotional resonance and empathy: the recognition defect of facial expressions may make it difficult for autistic children to feel and understand the emotions of others, and limit their ability to have emotional resonance with others. This may affect their ability to establish emotional connections and emotional communication with others. [4]

6. Current research progress and treatment methods

6.1 Neuroscientific research on facial expression recognition

In recent years, neuroscience research has provided an important breakthrough in understanding the mechanism of facial expression recognition defect in autistic children. Using functional magnetic resonance imaging (fMRI) and other neuroimaging techniques, the researchers were able to observe abnormal patterns of brain activity in autistic children during the processing of facial expressions. These studies provide important clues to further explore the reasons for the difficulty in facial expression recognition in children with autism.

6.2 Research on the efficacy of Cognitive intervention training

Cognitive intervention training is a common treatment method that aims to help autistic children improve their facial expression recognition skills. This training usually involves a facial expression recognition task, which trains children with autism to observe, interpret, and distinguish between different facial expressions. Several studies have shown that

cognitive intervention training has a positive effect on the improvement of facial expression recognition skills and social communication skills in children with autism.[5]

7. Conclusion

Neurobiological factors play an important role in the formation of facial expression recognition difficulties in autistic children, including the possible lack of psychological theory development, which causes them to correctly interpret and understand facial expressions with emotional color. Abnormal neural connectivity in the brain and functional abnormalities in specific brain regions. Moreover, abnormal brain functions, such as problems with attention, emotion regulation and social cognition, are also associated with facial expression recognition defects. Difficulties in managing cognitive loading, such as gaze attention and emotional decoding ability, further influence the processing and recognition of facial expressions in children with autism. Intensive investigation of these intrinsic mechanisms provides important clues to better understand facial expression recognition defects in children with autism, while providing a rationale for the design and implementation of targeted interventions and treatments. Through the development of neuroscience research, research on cognitive intervention training, and the application of technology-assisted treatments, we can expect to improve facial expression recognition in children with autism, improve their ability to socially communicate socially with others, and improve their quality of life. Future research and continued development of therapeutic measures will further advance our knowledge and help of facial expression recognition deficits in children with autism.

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