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Intervention of Emotion Recognition for Children with High-functioning Autism: A Case Study

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Abstract: Objective: To explore intervention approaches of emotional recognition on children with high-functioning autistic spectrum disorder (ASD) and examine the effect of the whole interventional program this study adopted. **Methods:** Design an interventional program, which contains five links of 'Let's learn', 'Let's recognize', 'Let's find out', 'Let's match' and 'Let's say it'. Through a single-subject experimental design, use visual multimedia materials (including pictures of human facial expression, pictures of cartoon facial expression, situational micro-video) to intervene the recognition of emotion to a seven-year-old child with high-functional ASD for four weeks and record it. **Results:** There was a significant instant improvement of six basic emotion, sustaining improvement slightly decreased compared with instant. **Conclusion:** The interventional program of emotion recognition this study proposed can effectively improve the ability of emotion recognition in the children with high-function ASD.

Keywords: High-functioning autism, emotion recognition, case study

1. Introduction

Facial emotion recognition is a social skill developed at early stage. Autistic children will never communicate with others actively or establish social relationships with others. They do not pay attention to emotional clues; will not make a proper judgment and feedback according to the emotions of others. Thus, it is hard to explore and understand the further meaning of other's expressions and behavior, resulting in inappropriate behavior. In Baron-Cohen's study (1997), an experiment was described to test whether children with autism understand some causes of 2 basic emotions (happiness and sadness). The causes of emotion tested were situations, desires, and beliefs. Results showed that, children with autism showed severe deficits in comprehension of emotion caused by beliefs, especially fear, anxiety, pain and other negative emotions (Sigman, Kasari & Kwon, 1992). Their understanding of emotion caused by situations and desires was no different than the non-autistic mentally handicapped group. Thus, difficulties in understanding emotion by children with autism are most apparent when emotion interacts with false belief (Baron-Cohen, 1991). Deficits in comprehension of facial expressions and emotion directly affect the social skills of children with autism (Baron-Cohen, 1991; Tardif, Laine, Rodriguez & Gepner, 2007); Law Smith, Montagne, Perrett, Gill & Gallagher, 2010).

2. Methods

General information of participants: boy with 7 years, diagnosed with ASD when 3 yrs. His clinical symptoms include:(1)serious stereotyped behavior;(2)unstable emotion apt to lose control ;(3)being destructive, usually damaging to something;(4)an extraordinary retentive memory, especially gifted with remembering maps.

Experiment is divided into three phases: baseline, intervention and maintenance. In baseline phase, participant took an emotional recognition test which is self-compiled by researchers, without any extra didactical activities. Emotion recognition training and teaching is implemented in intervention

phase. The training process is that teach two kinds of emotion, that is a unit; end of the each intervention, take a test immediately; only the accuracy is above 80% can participant enter into next unit. After leaving intervention phase, it is maintenance phase when researchers retest participant's ability of emotion recognition every other week. The whole experiment process is provided in Fig2-3.

3. Results

Figure 1 presents an overview that participant did better with happiness and sadness than other four emotions in baseline phase. With three-week intervention, there was a significant immediate improvement on anger, fear, astonishment and disgust. While the ability decreased as a result of less daily use.

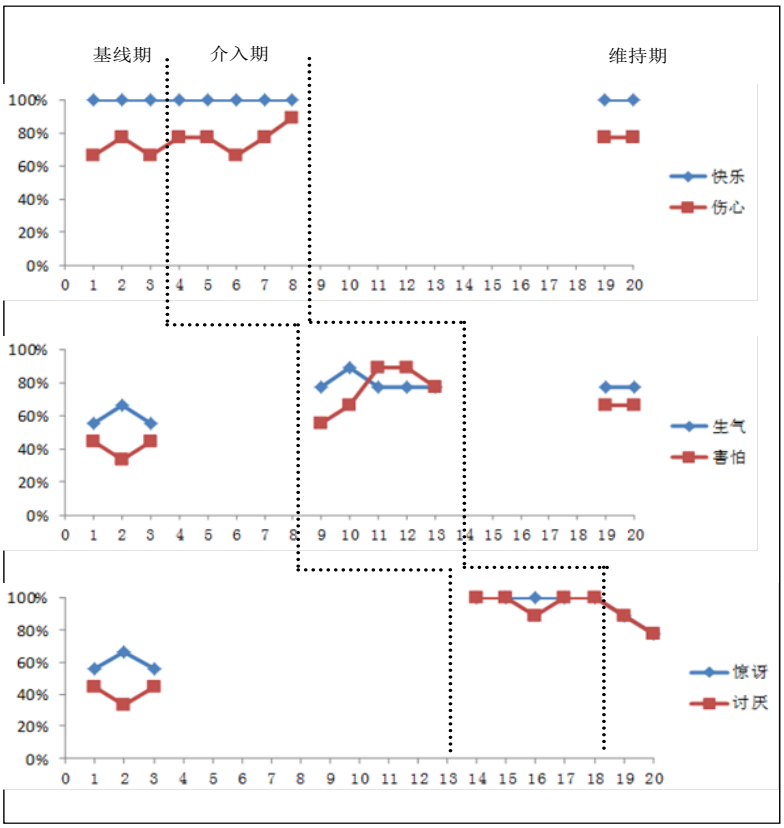

Fig 1. Accuracy of emotional recognition tests.

Through the study, this study will be analyzed from following three aspects:

(1) From the tests in baseline phase, participant has obstacle of recognition of emotion, and the recognition of happiness, sadness and anger is better than fear, astonishment and disgust. According to observation, participant has some difficulties in recognition of emotion: the understanding of emotion is still in a baby state; simply understanding emotions is "laughing" or "crying", for example, they will think that anger, fear and such negative emotions is "crying". They cannot understand information contained in situation, including emotion.

(2) After five interventions, the curve chart of emotion recognition tests shows the progress. Especially in intervention phase, immediate effect of recognition of situational video is significant, which proves that situational video is helpful to understand emotion in real situation. The results show that interventional program of emotion recognition can effectively improve the ability of emotion recognition in the children ASD.

(3) From the tests in maintenance phase, the recognition of human facial expression and cartoon facial expression is good in spite of a little decline in situational video. Because of stereotyped memory, it is convenient to memorize human facial expression and cartoon facial expression. However, over

time, their ability of understanding decline because of situational video including so much information, which shows that autistic children are with the obstacles of large capacity processing.

4. Discussions

The present study designed has determined the effect of emotion recognition intervention program for high-functioning autistic children is obvious, integrating feedbacks from experimental data, teachers of rehabilitation school and parents. With regard to laws and problems found during the testing process are discussed from the following aspects.

4.1 The Effect of Situational Micro-video

Static human facial expressions are widely used in previous training, causing that autistic children can only recognize static facial expressions rather than use it in daily life. Micro-video is added into this study, which is all actual filming and close to real life to assist autistic children to understand emotions based on real life. On account of poor capacity of information integration, autistic children will gain immediate success with assistance of micro-video. However, it will decline in maintenance phase. This phenomenon exactly proves that autistic children has poor generalization ability, and reflects shortage of micro-video. It is so huge information micro-video contains that disturb participant' information process and judgment. It is suggested that something disturbed should be reduced in micro-video. And another point is simplification, that is to say, it should be easy to modify and conduct in daily life.

4.2 Difficulty in Recall Corresponding Experiences

Verbal hints are massively used at intervention phase, helping autism understand situations and recall corresponding experiences. And combine emotional concepts and daily experiences gradually, promoting the generalization of emotion understanding. However, experimental results are not as expected; participants lack of emotional experiences. Verbal teaching approach is more difficult to attract autistic children, compared with computer-based approaches. Participants always answer in two or three words and ask to go to next expression.

There two reasons can explain why teaching approach of recalling corresponding experiences has no effects: Firstly, children lack of similar experience accumulation. Second, there still exists the problem that it is hard to apply skills got from videos to natural situations.

4.3 Strengths and weaknesses of training process

The training process ('Let's learn', 'Let's recognize', 'Let's find out', 'Let's match' and 'Let's say it') accords with cognitive development of typical children. Section 'Let's learn' aims to learn targeted emotion and remember it, while it is found that static emotional expressions are too simple and dull to stereotyped remember. Section 'Let's recognize' aims to strengthen what has learn in last section and develop intelligent memory. According to memory characteristics of autism, it only displays targeted emotion without other disturbed emotion. Section 'Let's find out' presents three pictures of facial expressions (targeted, disturbed and neural). Targeted expression should be found out. It is flexible with training stages, for instance, it can only identify two pictures during the first training. Since too much extra choices will impact the effect of training. Section 'Let's match' is a little difficult that requests secondary operation to information and match targeted emotion with others. Verbal hints are necessary in the process. Section 'Let's say it' asks to name targeted emotion to strengthen memory.

Future research should optimize weaknesses of present study; break limitations of validity and participant's ability. Thus, implement effective intervention to all kinds of autistic children and improve their emotion recognition ability.