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# *Special Education for Developmentally Disordered Children*

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***Abstract:*** Recently, many new methods have been proposed, analyzed, and tested for special education. This article selected and summarized some journals on this topic to provide a general view. This article summarizes the recent studies on developmental disorders in children and their causes and primary education accessible to these special children, including educational drama based on illustration books, Ceritasosial, music, Lego play and drawing. In this article, the former researchers' experiments and their results are summarized to provide a more comprehensive view of the newly developed interventions in special education. Children in these experiments are selected based on the fact that they are already officially diagnosed. The article aims to show the importance and effectiveness of education for unique children's recovery and psychological development and their current educational condition. The article also provides an overview of the innovative methods used in special education and their effectiveness. All the data used in the article comes from previous studies on related research topics and fields.

***Keywords:*** attention deficit and hyperactivity disorder, autism, special education, developmental disorder

## 1. Introduction

Special education usually describes the education that targets children with particular difficulty adapting to education in regular schools. For over 50 years, as people's knowledge of mental disorders developed, the technology used to diagnose these diseases, such as attention deficit and hyperactivity disorder (ADHD) and autism spectrum disorder (ASD), was highly improved. This improvement is the main force that makes it much more accessible but also much more often to detect the presence of this kind of developmental disorder. Moreover, as the population grows, more intensive competitions for limited resources are presented, which leads to more need for education. Given the increasing need for special education caused by this larger targeted population and for education caused by intensive competition, special education becomes more in need. Therefore, special education develops unprecedentedly quickly with the impetus provided by newly established laws and policies to fulfil the needs. Also, considering that the younger the patients are when they start behavioural training, the more likely it is for them to recover to a better state, many educational methods are required to intrigue children's interests. Some new methods are also invented and used in special education, including educational drama based on illustration books, ceritasosial, music in the Sounds of Intent framework, Lego play and drawing.

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The primary aim of this article is to review the previous studies on special education and summarize the recently developed methods. In this way, future researchers can have a basic knowledge of previous studies, and it will be more convenient for them to do further research.

## 2. Literature Review

Exceptional children have learning difficulties or other physiological diseases that make attending traditional schools unsuitable. Special children include children with developmental disorders and other disabilities, such as blind and deaf. This article mainly focuses on those with developmental disorders, to name some of them, ADHD and ASD [1].

### 2.1. Developmental Disorders

The two primary kinds of developmental disorders are ADHD and ASD. This article will introduce these two diseases separately to provide a more in-depth review.

#### 2.1.1. Attention Deficit and Hyperactivity Disorder (ADHD)

To begin with, ADHD refers to attention deficit and hyperactivity disorder. It is one of the most common disorders among children, with an incidence rate of 1.4%~3.0% around the globe [2]. The disorder mainly affects children's attention, activity, and impulsivity levels. Children with ADHD are reported to be more uneasy about focusing on what they are doing, to stop small actions when they are in silence and controlling their moods. This lack of attention and symptom of hyperactivity and impulsivity cause difficulty in learning for almost all ADHD children, making it hard for them to stick with the teacher during classes and complete homework patiently.

The cause of ADHD has not yet been precisely targeted, but some significant factors have already been figured out. The most critical factor for ADHD is genetic factors. Studies show an apparently increased incidence rate in twin studies with a heritability estimated to be around 77%~80% [2, 3]. Another critical factor for ADHD is environmental factors. Alcohol and other eating habits during pregnancy can lead to a higher ADHD rate. Food dyes or preservatives may also expose children to more chances of being diagnosed with ADHD [4].

Considering the complex cause of ADHD, curing methods of ADHD are also complicated and comprehensive. Recently, the therapy method for ADHD includes medications, behavioural therapies, counselling, exercise and diet. The most widely used medicine is stimulants such as methylphenidate. Serotonin-norepinephrine reuptake inhibitors (SNRI) are the first medicine allowed to be used in curing ADHD. Behavioural therapies involving special education will be discussed later in this article.

#### 2.1.2. Autism Spectrum Disorder (ASD)

Another kind of developmental disorder, ASD, refers to autism spectrum disorder. ASD is a broader concept often used to describe a spectrum of disorders with similar symptoms of difficulties in social interaction and communication, restricted or repetitive behaviours (stimming), and resistance to changes or restricted interests [5]. The lack of social ability and resistance to changes the critical factor of ASD children's difficulty in learning.

It is commonly suspected that genetics and the environment play a crucial role in ASD. Although it is not yet confirmed a specific chromosome or gene is responsible for ASD, twin studies of autism that show a 90% increase in incidence rate can prove that genes, indeed, are a crucial factor for ASD [6]. Several studies in the early life of ASD patients show that pregnancy age, bleeding,

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and maternal medicine intake during pregnancy are all factors for ASD. Parenting methods are also responsible, according to studies of siblings with different mental states.

The principle used in treating ASD is that the earlier the therapy begins, the better the effect of the therapy. There is no efficient medicine used to treat ASD. The most widely used method for curing ASD is behavioural therapy which involves methods to improve the children's social behaviour, such as floor time and relationship development intervention (RDI), and methods to improve the living skills of ASD children, such as picture exchange communication system (PECS) and discrete trial training (DTT).

## 2.2. Recent Educational Methods Used

Considering the particular mental state of ADHD and ASD children, many unique educational methods are used to foster their recovery and improve the efficiency of education for these children. The methods recently studied include educational drama based on illustration books, ceritasosial (Ceso), music, Lego play and drawing.

### 2.2.1. An Educational Drama Based on Illustration Books

The term educational drama refers to using drama as a teaching tool. It was first proposed by American doctor Leo Kanner in 1943 and is still being used recently around the globe. For ADHD children who have difficulty concentrating, using the unique and innovative method of educational drama can create a more immersive experience for them and help them concentrate during the plays. ASD children present a lack of social interaction ability and indifference toward all. Educational drama can link their real lives with some good imagination, which may improve their perception and expression of emotions. A study with 19 ASD children shows that through role-playing, ASD children can better realize and understand the expression of emotions.

In one study, the researchers used the design of the ABA experiment to discuss the effectiveness of using educational drama based on illustration books for ADHD children. The study mainly focuses on one child with and only with an official diagnosis of ADHD. The selected sample, L, is a ten-year-old boy in grade five in a regular primary school in Chengdu. In the cognitive aspect, L can understand teachers' orders and give reasonable responses, with an excellent ability to understand. In personality, L is relatively sentimental and introverted. L is eager to get close to others in social cases but lacks social techniques.

During the experiment, the researchers let the L and his classmates read ten illustration books and act the stories out. It turns out that the educational method in the experiment is quite effective. The data analyses show that the after the experiment, the social situation of L in school is highly improved. According to the interviews with the teacher, L formed a social circle and developed a more positive attitude toward school from the experiment.

### 2.2.2. Ceritasosial (Ceso)

CeSo is the abbreviation of ceritasosial, meaning social stories in English. According to Gray, autistic children can use social stories that are simple and short to learn specific social skills, events, concepts or behaviours. The active first-person pronoun sentences in the stories help these children easily detect and perceive the situations and emotions in the stories. Children can better understand the proper responses in certain situations by understanding particular events or activities and thus improve their social and mental states.

A particular study in this field includes three steps. The first is introducing a social story script called "My Turn". The second is introducing a microphone and its function. The third is using the

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script and microphone in teaching and learning. The researchers collect data on the effects of the three steps by recording field notes, a record of time sampling and a final interview [7, 8].

The experiment results show that all four students with ADHD and autism improved their positive behaviours by participating more actively in communicating. After using the intervention, the three teachers observing the experiment agree on the research result and the control. As a result, the valid results of the study can show the improving effect of social stories on the learning process of children with developmental disorders [9].

### 2.2.3. Music

Music is a form of intervention for special education for ASD children. The use of music or simply the integration of music in special education is confirmed to be effective in improving the performance of ASD children. One of the methods of using music in the classroom is successfully conducted using the Sounds of Intent (SoI) framework. This method is reported to have positive outcomes in meeting the unique needs of ASD children in the United Kingdom (UK).

The zygonic theory defines the effective use of the SoI framework in special education as causing special children to engage in music reactively, proactively and interactively. According to Ockelford's theory, music has the essence of imitation, consisting of a series of sounds imitating each other. As a result, music is considered a "cognitive phenomenon" as it presents in the human brain, invoking emotional reactions and causing human nature to recognize music patterns without the limitation of a person's educational background in music.

The study in this article measures the proactive musical engagement in the SoI, which means that ASD children need to create sounds and music independently to be recorded as responding to the SoI special education. There were 4 participants consisting of male children with autism aged between 5 and 7 years, all coming from a private autism centre and being selected based on purposive sampling.

The participants experienced six weeks, three times per week (total of 18 sessions), for 30 minutes each session. During each session, the activities were singing nursery rhymes and using five types of percussion instruments (egg shakers, bells, small drums, and tambourines). Every session was recorded by video and observation notes to ensure the accuracy and comprehensiveness of the research result.

It was found in this experiment that all the participants showed different levels of improvement in their performance. Using percussion instruments in the classroom enhances their proactive musical engagement and makes it easier for teachers to guide these special children throughout the sessions [10, 11].

### 2.2.4. Lego Play

Lego play therapy is a kind of training for social skills based on LEGO. Using LEGO as a form of therapy aims to use children's interests as a motivation for studying and improving children's behaviours. LEGO has a highly structural and systematic feature, which means attraction for ASD patients and thus can improve the inner motivation for their social behaviours. At the same time, Lego play therapy can change game roles based on the number of participants, with different game tasks for each role. While playing the game, participants are asked to cooperate to build the blocks, encouraging them to start and continue their communication and cooperation.

In a study, researchers selected two children diagnosed with autism from a kindergarten in Xi'an. The children were both 4-year-old girls. Researchers also selected a partner for each child. The two partners were outgoing girls with good communicating skills. The study consists of three periods:

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the baseline period before conducting therapy, the intervention period in which the therapy is conducted and the maintenance period after conducting therapy.
It turns out that both participants exhibit a more frequent rate of starting conversations and other interactions. The most change happens in the intervention period. In the maintenance period in which the therapy stopped, the participants showed a staring interaction rate between the baseline and intervention periods. Therefore, although the result of intervention is not concrete enough, it still is reported to be effective in improving the social behaviours of children with autism.

#### 2.2.5. Drawing

In drawing education in schools, children with autism usually don't exhibit a severe lack of skills in drawing ability. Considering that most ASD children base their thoughts on images, it is a good choice for them to use drawing to communicate and express their emotions. Another feature of ASD children is that they are not good at getting information as a whole but are more focused on details. This mechanical memorisation feature also makes it easier for ASD children to use pictures instead of words to communicate with the world around them. Drawing can also enable ASD children's ability of accurate movements, hand-eye coordination, imitation, and patience.

In a study, researchers selected three participants diagnosed with autism to complete sessions of educational drawing. The course consists of three parts: two tasks guided by teachers and two independent tasks. The drawings require imagination and control over the participants' hands movement. The design of the working sheets includes special instructions for ASD children to help keep their attention.

It turns out that drawing as a training tool to help ASD children improve their attention is effective for all three participants. This result shows the importance of intriguing ASD children's interest in behavioural therapies.

## 3. Discussion

It is shown from the studies that the use of images and stories are potential methods that can be used in special education for ADHD and ASD children. The use of educational drama, CeSo, music, Lego play and drawing can all improve ADHD and ASD children's performance in learning because of their nature of invoking special children's emotions connecting to the outer world and arousing their ideology of communicating.

However, the studies mentioned previously are relatively small, with no more than five children as the sample size in two studies. Thus, the result presented is accurate but not valid enough. Hopefully, researchers can do more studies with a larger sample size and provide a broader usage of these methods in the future. Considering these two's emotion-linked properties, a possible direction may also be other art or literature-linked educational methods.

## 4. Conclusion

The recently developed unique education methods have been chiefly confirmed to be helpful. By reviewing previous literature, people can see a lot of new intervention forms. The experiments conducted can provide details on the features of each creative and effective method. However, the lack of unique educational resources still exists in many places, and many children with special needs still can't get the appropriate education and therapy. Therefore, in the future, the methods in studies should be brought out to the real world and be used to help special children.

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