

# The Effectiveness of Using Sensory Materials in Art Therapy in Special Elementary Schools in Guangdong Province, China

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## Abstract

As society's concern for children with Autism Spectrum Disorder (ASD) grows, finding effective treatments has become an important issue. In Guangdong Province, China, special education elementary schools provide diverse educational and therapeutic services for children with ASD, in which the use of sensory materials plays an important role in art therapy. This study investigated the use of sensory materials to enhance therapeutic effects in art therapy for children with ASD in special elementary schools in Guangdong Province, China, focusing on hand muscles, fine motor and hand-eye coordination. In addition, the introduction of sensory materials provided additional stimulation and feedback to children with ASD, enhancing their perceptual abilities and concentration. The literature review addressed art therapy, sensory integration theory, and educational challenges for children with ASD. Twenty-four children with ASD aged 6-9 years old with different severities in Guangdong Province were selected for the study to evaluate the effectiveness of sensory materials in enhancing finger fine motor movements in conjunction with questionnaires, interviews, and observational assessments by 24 parents and 10 teachers. In summary, the use of sensory materials in art therapy in special elementary school in Guangdong Province showed positive effects on children with ASD, providing new perspectives and methods for special education.

**Keywords:** Art Therapy, Sensory Materials, ASD, Special Education

## 1. Introduction

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder that affects an individual's social interactions, communication skills, and behavioral patterns. The number of children with ASD is increasing every year as the level of diagnosis and public awareness

increases. These children face many challenges as they grow up, including social impairment, delayed language development, repetitive behaviors, and sensory sensitivities. Therefore, it is particularly important to provide them with effective interventions. Art therapy is a powerful and versatile therapeutic modality that has a clear role in maintaining children's psychological and mental health. Sensory materials are materials such as colors, textures, oil sticks, clay, and fabrics that have been recognized as valuable tools for enhancing the therapeutic potential of art therapy sessions (Fiona, 2021). According to recent research, there are a number of functional materials that can be squeezed, shaped and moulded by children with ASD in special education. These multifunctional materials will promote fine motor skills and hand-eye coordination.

This study focuses on evaluating the effectiveness of sensory materials on fine motor movements of the fingers of students with autism. Art therapy in China, especially when using sensory materials, can play an important role in the intellectual and emotional development of children with special needs. Therefore, the significance of this study is to address the self-care as well as social attributes of children with autism's ability to fine-move their fingers, and to explore how their educational and developmental outcomes can be improved through tailored interventions. Understanding the impact and effectiveness of these materials can provide educators, therapists, and policymakers with valuable insights to help them improve practices and support systems in the field of special education.

### **Research Objective**

This research aims to study the use of sensory media in art therapy for children with ASD in special primary schools in Guangdong Province, China.

## **2. Literature Review**

This study investigates the use of sensory media in art therapy for children with ASD and study the problems and effects of using sensory materials in art therapy for children with autism spectrum disorder (ASD) on hand muscle strength, fine motor skills and hand-eye coordination in special primary schools in Guangdong Province, China. The basic information to achieve the following objectives by collecting and studying relevant documents and literatures:

### **1. Art Therapy for Special Education**

Children with special educational needs (SEN) face unique challenges in communication, socialization and learning. Traditional interventions such as specialist teaching and therapy play a vital role in supporting their development. However, these approaches often focus on specific skills and may not fully meet the emotional and sensory needs of these children. In this context, art therapy emerges as a valuable complementary therapy that offers a unique pathway for self-expression, fostering development and promoting wellness. Art therapy utilizes the art-making process as a therapeutic tool. It goes beyond mere art instruction; it

provides a safe and supportive environment for children to explore their inner world, express their emotions, and develop a variety of skills (American Art Therapy Association, 2023).

## **2. Background on Art Therapy for Children with Autism Spectrum Disorders (ASD)**

The history of art therapy as a means of psychotherapy can be traced back to the 1940s in Europe and America. It is an emerging fringe discipline involving art, medicine and psychology. Art therapy helps individuals express their inner thoughts, feelings and experiences through the process of art creation, and has significant therapeutic effects on children with special needs, including those with ASD.

Traditional interventions for ASD, like Applied Behavior Analysis (ABA), often rely on structured learning environments and positive reinforcement to teach specific skills. While this approach can be highly beneficial for improving communication and reducing challenging behaviors (Ingersoll, 2008). It can also be perceived as rigid and may struggle to capture the unique needs and interests of each child. Additionally, these interventions often require significant therapist time and expertise, limiting their accessibility for some families (Wong, Kopelke, & Koegel, 2015). Speech therapy plays a crucial role in improving verbal communication skills for children with ASD. However, for some children who struggle with verbal expression, traditional speech therapy techniques may not be the most effective way to access their inner world. These challenges highlight the need for interventions that offer alternative communication channels and cater to a broader range of developmental needs.

Art therapy stands out as a promising complementary therapy for children with ASD. Unlike traditional interventions, art therapy uses creative expression as a primary communication tool. Children with ASD who struggle with verbal communication can utilize art materials like paints, clay, and drawing tools to express their emotions, experiences, and inner world in a non-verbal way (Wilshire, 2008). This creative outlet allows therapists to gain deeper insights into the child's thoughts and feelings, facilitating the development of more effective intervention strategies. Furthermore, art therapy offers opportunities for sensory exploration. Many children with ASD experience sensory sensitivities or seek out specific sensory experiences. The use of various textures, materials, and sensory tools during art therapy sessions can promote sensory integration and provide a calming environment for children to express themselves (Talusán-Dunn, 2012). Additionally, art therapy can promote social interaction and communication by providing a shared activity for children to participate in, encouraging collaboration and turn-taking (Ashby, 2013).

## **3. Sensory materials in art therapy**

While traditional interventions for autism spectrum disorder (ASD) offer valuable support, they often prioritize skill development in structured environments. This approach may not fully address the unique needs of children with ASD, who often experience sensory sensitivities and struggle with traditional modes of communication. Art therapy emerges as a powerful complementary therapy, offering a non-verbal avenue for expression and fostering development through a captivating medium: sensory materials. Sensory materials in art

therapy go beyond mere art supplies. They become tools for engagement, exploration, and self-expression, catering to the distinct sensory preferences of children with ASD. These materials, encompassing textures, sounds, smells, and visual elements, provide a safe and inviting environment for children to explore their sensory world. For instance, a child who craves tactile stimulation might find solace in manipulating clay or molding dough, while another who seeks visual calmness might be drawn to light boxes or textured paints (Dunn, 2007). This exploration through sensory materials goes beyond mere self-soothing. It serves as a bridge for communication and emotional expression.

### 3.1 Integration of Sensory Materials

The incorporation of sensory materials into art therapy sessions creates a multisensory dimension, enhancing the therapeutic process and promoting healing for participants. Tactile experiences, in particular, play a crucial role in this multisensory approach. Studies have explored the power of touch in art therapy, highlighting its ability to awaken memories and emotions. Talwar, 2007 research with individuals experiencing dementia demonstrates how manipulating art materials can trigger emotional responses and resurface forgotten memories. Similarly, Hogan (2001) delves into the tactile and emotional impact of art materials, emphasizing the potential of these sensory-rich interactions to promote healing and self-discovery.

### 3.2 Impact on Emotional Expression and Self-Awareness

Sensory materials have the capacity to unlock emotional expression and enhance self-awareness among children. The act of manipulating and interacting with these materials provides a safe and non-verbal outlet for children to explore and express their emotions (Malchiodi, 2012). This can be particularly beneficial for children who struggle with verbal communication. Research suggests that sensory experiences can evoke a wide range of emotions in children. For instance, using clay in art therapy facilitated the expression of anger and frustration in children with behavioral problems. Additionally, the sensory feedback received from manipulating materials can contribute to self-awareness and a better understanding of one's emotional state (Gam, Kim, & Jeon, 2016). This heightened self-awareness can empower children to identify and manage their emotions more effectively.

Moreover, the sensory feedback received from manipulating materials can contribute to self-awareness and a better understanding of one's emotional state. As children engage with different textures and materials, they may begin to recognize how these interactions influence their feelings. For example, the calming effect of soft fabrics might help a child identify feelings of anxiety, while the energizing nature of vibrant paints might lead to expressions of joy or excitement. This heightened self-awareness empowers children to identify and manage their emotions more effectively.

## 4. The Role of Sensory Materials in Art Therapy

Art therapy is a specialized therapeutic approach that centers on facilitating emotional expression, self-discovery, and psychotherapy through the creative process (Oakley, 2013).

This approach not only focuses on the creation of art itself, but also involves a combination of psychological theories and artistic techniques to meet individualized therapeutic needs (Wolkoff & Getz, 2010).

Research has shown that art materials and therapist instruction have a significant impact on therapeutic outcomes. In particular, the strategic integration of sensory materials enhances therapeutic outcomes by activating multiple sensory modalities and providing patients with new avenues of exploration and communication (Rubin, 2000). Additionally, the incorporation of sensory materials not only expands the scope of art therapy, but also promotes sensory integration, which is critical for emotional regulation and overall individual development (Watkins & Bailes, 2018).

Especially in art therapy, sensory materials are particularly important for children with special needs. This is deeply rooted in theories of sensory and perceptual development. For example, Jean Ayers' theory of sensory integration emphasizes the importance of sensory integration for the brain's organization and interpretation of sensory information, as well as adaptive behavior and effective functioning (Roley, 2006). Art therapy promotes the development of sensory integration skills by incorporating materials such as textured paints and sensory boxes to help children improve their sensory processing abilities.

Additionally, multisensory integration theory further explains, and emphasizes, how the brain combines information from different senses to create a coherent perceptual experience (Calvert & Thesen, 2004). In art therapy, the use of multisensory materials such as scented or textured paint can increase patient engagement and support more complex sensory processing. Meanwhile, Esther Tran's Dynamic Systems Theory, which emphasizes the nonlinear and interactive nature of sensory and motor development, provides a theoretical basis for the use of materials that promote dynamic interactions, such as clay sculptures that combine sensory experiences with motor skills (Chua, 2022).

In terms of children's perceptual development, Jean Piaget's Stages of Cognitive Development theory states that children go through stages of perceptual abilities ranging from sensory-motor exploration to more complex cognitive processes (Ramesh, 2022). Art therapy can tailor activities to these developmental stages to match children's evolving perceptual and cognitive skills. Lev Vygotsky's sociocultural theory further emphasizes the role of social interaction and cultural tools in perceptual development, suggesting that art therapy should incorporate culturally relevant materials and collaborative activities to support social and cognitive learning (Haught, 2018).

In summary, by integrating these theoretical perspectives, art therapy can more effectively utilize sensory materials to enhance the developmental and therapeutic outcomes for children in special education settings. This integration is not only grounded in theory, but has been proven through practice to provide children with a more comprehensive and in-depth intervention experience.

### **3. Methodology**

This study aims to investigate the impact of sensory materials in art therapy for children with autism spectrum disorder (ASD) on hand muscle strength, fine motor skills, and hand-eye coordination in special primary schools in Guangdong Province, China. To achieve a comprehensive understanding of these effects, a mixed-methods research design will be employed, incorporating both qualitative and quantitative methodologies.

#### **1. Literature Review**

**Objective:** To gather insights from existing empirical studies on the use of sensory materials in art therapy for children with ASD.

**Outcome:** This analysis will inform the theoretical framework and guide the selection of relevant research variables and methodologies.

#### **2. Quantitative Data Collection**

**Standardized Assessments:** Scale instruments that measure the enjoyment of different sensory materials by children with autism.

**Observation Checklist:** Used before and after an intervention to assess specific skills.

**Data Collection Process:** Comparison of pre- and post-intervention data to determine if sensory materials have a positive impact on children with autism (e.g., motivation to participate in art therapy, concentration, and emotional stability).

#### **3. Qualitative Data Collection**

**Semi-structured interviews:** Interviews with art therapists, teachers and parents to understand the impact of the therapy.

**Observational Methods:** Direct observation of art therapy sessions to document children's interactions with sensory materials.

**Data Analysis:** Thematic analysis will be used to identify recurring themes and patterns in the interview transcripts and observation notes.

#### **4. Triangulation of Data**

**Purpose:** To enhance the validity and reliability of findings by combining quantitative and qualitative data.

**Method:** Cross-reference quantitative outcomes (e.g., skill assessments) with qualitative insights (e.g., parent and therapist interviews) for a holistic understanding of the therapy's effectiveness.

#### **5. Ethical Considerations**

Informed consent will be obtained from parents and guardians. Participant confidentiality and data anonymity will be prioritized throughout the research process.

## Research Instrument

In order to collect comprehensive data on the efficacy, use, and effectiveness of sensory materials in art therapy for children with autism spectrum disorders (ASD) in special education primary schools in Guangdong Province, a variety of research instruments will be used. These tools are designed to obtain both qualitative and quantitative data in order to gain a comprehensive understanding of the research questions. The following research tools will be used:

**1. Observation:** Observations will take place during the art therapy sessions over a six-month period, focusing on capturing the children's behaviour, level of participation and interaction with the various sensory materials. This approach will provide a detailed understanding of their experiences during the therapy sessions. And data will be recorded through field notes, providing descriptive details of children's behaviour and interactions. Video recordings may also be used to supplement observational data for further analysis and review.

**2. Interviews:** Another important research tool for this study is a set of child-friendly interview questions tailored for participants aged 6 to 9 years, their parents or carers and the art therapists involved in the sessions. These interviews will provide a complementary method of data collection that will allow triangulation of the findings.

**3. Additional Checklist for Sensory Media:** A separate checklist will be developed to assess the effectiveness of sensory media used in art therapy sessions. This checklist will include:

3.1 Sensory Features: Items related to the sensory characteristics of the media (e.g., texture, color, auditory stimuli).

3.2 Engagement Levels: Observations regarding children's engagement levels with the sensory materials.

3.3 Observable Behaviors: Indicators of sensory processing difficulties and any adaptive strategies employed by children or therapists.











By employing these structured observational checklists, the study aims to gather comprehensive data on the fine motor skills, hand-eye coordination, and overall engagement of children with ASD in art therapy, thereby enhancing the validity and reliability of the findings.

## 4. Results

The results of this study, from the types of sensory materials and interviews with teachers and parents, show that art therapy combined with sensory materials is effective for children with autism spectrum disorders (ASD) in special elementary school in Guangdong Province.

1. Five sensory materials frequently used in art therapy activities were derived by visiting five different special schools in Guangdong Province to derive their functional effects on children with autism.

Table 1: 5 Sensory materials that are used more often

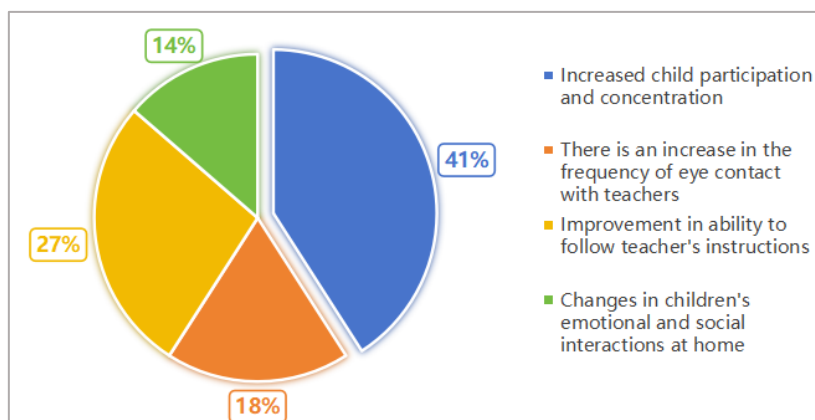
Clay	Paint	Collage Painting	Sensory Bins	Light-emitting materials
				
				
Clay material is soft and can be kneaded to make different things (Children with autism love to make noodles, peas, etc.)	Bright colors of paint will improve concentration in children with autism	The physical act of cutting, gluing and layering materials helps children improve dexterity and coordination	Sensory bins are usually filled with materials such as rice, sand, beads or beans, which help children with autism improve their sensory processing skills	Children with ASD show a high sensitivity to visual stimuli, and the dynamic effects produced by light-emitting materials are particularly appealing to them.

Source: Author

2. Interviews with art therapists emphasized the increased participation and emotional expression of children with ASD in art therapy sessions. Teachers reported noting an increase in children's ability to follow directions and participate in group activities, which they attributed to the multisensory nature of art therapy. Parents expressed satisfaction with the program, noting observable changes in their children's emotional and social interactions at home.



Figure 1: The impact of sensory materials used in art therapy activities on children with autism



Source: Author (2024)

Observational data supported these findings, with children demonstrating higher levels of engagement and interaction with sensory materials. The use of materials such as clay, paint, and sensory boxes were observed to contribute to children's calming effect and increased concentration.

### 3. Ethical Considerations

Ethical considerations were crucial throughout the study. Informed consent was obtained from parents and guardians, and participant confidentiality and data anonymity were strictly maintained.

### 5. Conclusion

The purpose of this study was to systematically evaluate the effects of art therapy combined with sensory materials on children with autism spectrum disorders (ASD) in special elementary school in Guangdong Province. From the data obtained so far, art therapy combined with sensory material intervention has a significant positive impact on improving social communication skills, emotional expression and self-regulation of children with ASD. This study enriches the research in the field of special education, especially in the effectiveness of art therapy and sensory material application, and provides a new direction for future educational practice and research. Children with ASD are provided with a multi-sensory learning environment, which helps them to better understand and express their feelings and also enhances their interaction with the outside world.

Here for the current study, the authors recommend that educators and therapists continue to explore and optimize this intervention to better meet the needs of children with ASD and promote their holistic development. Future research could further develop the specific effects of different sensory materials on children with ASD, as well as how art therapy can be more

effectively integrated into daily teaching and therapy programs to achieve more comprehensive support and intervention for children with ASD.

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