

2021

The Benefits of Creative Art Therapy for Youth with Autism Spectrum Disorder: A Review of the Literature

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THE BENEFITS OF CREATIVE ART THERAPY FOR YOUTH WITH
AUTISM SPECTRUM DISORDER: A REVIEW OF THE LITERATURE

by

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A thesis submitted in partial fulfillment of the requirements
for the degree of Bachelor of Science
In the Department of Health Science
in the College of Health Professions and Sciences
at the University of Central Florida
Orlando, Florida

Summer Term
2021

Thesis Chair: Jeanette Garcia

ABSTRACT

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder typically diagnosed during childhood. The primary symptoms of ASD include language impairments and deficits in social skills, which can negatively affect the overall quality of life. Traditional treatment for ASD includes medication, applied behavior analysis, physical therapy, and occupational therapy; however, these treatments may have unwanted side effects and fail to address the psychosocial challenges that may result from ASD symptoms. There has been increasing interest in alternative forms of therapy, such as creative art therapies; however, the types of creative art that have been used during therapy and their benefits are not well-established. This literature review examined the effects of creative art therapy interventions on psychosocial and behavioral outcomes in youth with ASD. A total of nine studies met the inclusion criteria. The majority of studies examined music or drama therapy, and all of the studies showed improvements in social skills outcomes. While more research is needed, there is promising evidence in the literature that creative art therapies can be effective in improving symptoms and helping promote positive behaviors.

ACKNOWLEDGMENTS

I would like to express my gratitude to Dr. Jeanette Garcia for her guidance and support in developing this thesis. I would also like to thank Dr. Cassie Odahowski for her assistance in reviewing this paper. Last but not least, I would like to thank my family for supporting and encouraging me along the journey.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental disorder typically diagnosed in childhood. (National Institution of Mental Health, 2018). Approximately, 1 in 54 children are estimated to develop ASD (Centers for Disease Control and Prevention, 2020); however, boys are four times more likely to be diagnosed with autism than girls. The primary characteristics of ASD include difficulties with social interaction and communication deficits (Bangerter et al., 2017). Additionally, individuals with ASD may display many unwanted behaviors like self-injury, unmanageable mood swings, hyperactivity, aggression, short attention span, sensory issues, temper tantrums, sleep problems, and obsessive/compulsive attributes (Bangerter et al., 2017; Center for Disease Control and Prevention, 2021). Although there is no cure for ASD, a variety of medications and therapeutic interventions may help improve symptoms. Applied behavior analysis (ABA), occupational therapy, social skills training, physical therapy, sensory integration therapy, and speech therapy are commonly practiced improving social skills and behavioral issues, while medications such as antidepressants and stimulants may be prescribed to treat co-occurring conditions such as Attention Deficit Hyperactivity Disorder (Edwards et al., 2020; National Institution of Mental Health, 2018).

Recently, there has been a shift in focus from treatment to reduce negative behaviors and impairment to the use of therapeutic interventions that may promote psychosocial well-being in youth with ASD (Edwards et al., 2020). There is growing interest in the use of creative arts as a therapy to improve mental health, self-awareness, and overall wellbeing in youth with ASD (University of Minnesota, n.d.). Although there have been many positive results of the use of creative arts therapy for conditions such as depression, dementia, PTSD, and cancer, the

effectiveness of the use of creative arts therapy in youth with ASD is not well-known. Thus, it is imperative to review the current literature on the different categories of creative arts therapy (e.g., dance therapy, art therapy) on youth with ASD to identify how creative arts are used as a therapeutic tool in this population and determine the effectiveness of each category on behavior and psychosocial health.

REVIEW OF THE LITERATURE

Autism Spectrum Disorder (ASD)

Definition & Characteristics

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition typically diagnosed during early childhood. The two primary characteristics of ASD are communication deficits and social interaction difficulties. These behaviors can make it difficult for them to learn in a traditional school setting. They may also display restrictive/repetitive behaviors like repeating words and getting upset by a routine change (National Institution of Mental Health,2021). Another symptom that may affect a person with ASD is sensory sensitivities. This includes being over or under-sensitive to light, sounds, smells, tastes, touch, balance, and body awareness (Autism Speaks, 2021). Although an individual with ASD can face numerous challenges, they may also possess a variety of strengths. This includes the ability to learn and maintain knowledge and be excellent in a variety of school subjects. (National Institution of Mental Health,2021)

Prevalence & Diagnosis

Despite the high prevalence of ASD, scientists have yet to determine the exact cause of this condition. Research is still being conducted, but the most significant influence in developing ASD is genes and environmental factors. Risk factors for ASD include parents who have children later in life, being born before 26 weeks, having other disabilities, and having siblings with ASD (Leyfer et al., 2006). ASD is diagnosed by a delay in developmental behaviors. According to the American Academy of Pediatrics, they recommend all babies between 18 and 24 months get a screening done for ASD (Autism Speaks,2021).

Co-occurring diagnoses

There are a variety of co-morbidities that are commonly seen in youth with ASD that cause multiple impairments. One of the most prevalent comorbidities is anxiety (Bellini 2006; Gadow et al.,2005; Hedley et al.,2017; Lopata et al., 2010). Anxiety can trigger a constant sense of fear and danger, which can stop everyday activities. Sleeping issues are another prevalent comorbidity in people with ASD. Sleep disorders and insomnia affect approximately 80% of individuals with ASD, which is also linked with increased anxiety (Baker and Richdale 2015; Hedley et al.2017; Richdale and Schreck, 2009). Sleep disturbances have been linked to behavioral issues and impaired cognitive function (Hedley et al.,2017; Richdale and Schreck,2009). Another significant comorbidity that affects individuals with ASD is depression (Hedley et al.,2017). In fact, a few studies have surmised that as much as 30% of individuals with ASD have had suicidal thoughts or attempted suicide at some point during their lifetime (Hedley et al.,2017). Other mental health issues that individuals with ASD tend to get are ADHD, schizophrenia, obsessive-compulsive disorder, and bipolar disorder. Along with having a higher prevalence of developing mental disorders, Adolescents with ASD are also more like to develop other health-related issues like diabetes, asthma, heart disease, cerebral palsy, epilepsy, tuberous sclerosis, eczema, food allergies, and gastrointestinal disorders (Spectrum,2021).

Daily Struggles and Difficulties Living with ASD

Learning skills, social life, work, mental health, and quality of life may be impacted by living with autism spectrum disorder (ASD) (Ahlström and Wentz, 2014). The inability to articulate oneself and communicate with others is a primary trait of ASD. Some individuals can be nonverbal, while others have limited communication skills. This can cause issues with

learning and making friends. Having ASD can also cause reading difficulties, problems with interpreting body language, and limited nonverbal communication skills (National Institution of Health, 2021).

Treatment Modalities

Pharmacological Therapy

Medication is often used to treat specific behavioral symptoms in individuals with ASD (Goel et al., 2018). Interestingly, these medications are most effective in treating the symptoms of common comorbidities often seen in individuals diagnosed with ASD, including Attention Deficit Hyperactivity Disorder (ADHD), anxiety disorders, and mood disorders. Anxiety disorders appear to be the most common comorbidities in individuals with ASD, with as many as 40 – 45% of individuals with ASD having a specific phobia, general anxiety disorder, or Obsessive Compulsive Disorder (OCD). To reduce anxiety and panic attacks, anti-anxiety medication is sometimes prescribed. ADHD, which is often treated with stimulant medications, is diagnosed in over 30% of youth with ASD (Leyfer et al., 2006). Finally, an estimated 10% of this population is thought to have to suffer from Major Depressive disorder, which is typically treated with antidepressant medications (Leyfer et al., 2006). The most commonly prescribed medications for youth with ASD include stimulants, antidepressants, anticonvulsants, and antianxiety medications. Unfortunately, such medications may have adverse physical side effects that can limit compliance in youth ASD populations (Headley et al., 2017). As these medications treat symptoms of these common comorbidities, medication is typically used in conjunction with other forms of treatment for individuals with ASD.

Applied Behavior Analysis (ABA)

Applied Behavior Analysis (ABA) is a behavior therapy that is based on learning and behavior science. It focuses on eliminating negative habits while increasing positive ones. ABA therapy has been shown to enhance communication skills, concentration, memory, and social skills and minimize negative behaviors. Positive reinforcement is used in ABA therapy to reward positive habits. This aids patients in achieving their desired behavioral goals. ABA therapy is successful for certain children as long as they are receiving intensive ABA principles and the therapy is ongoing (Autism Speaks, 2021).

Physical Therapy (PT)

Physical therapy is concerned with the movement, mobility, and function of the body. Physical therapy helps people with ASD learn motor skills, reinforce their posture, and improve their balance (Atun-Einy et al., 2014). Physical activity or exercise has also been gaining interest as an evidence-based treatment for individuals with ASD (Ash et al., 2017; Healy et al., 2018). In fact, several studies have found that participation in exercise may improve both communication and social skills in youth with ASD (Garcia et al., 2019). Unfortunately, a large percentage of youth with ASD do not participate in physical activity due to physical limitations or psychosocial factors, including low enjoyment of activity (Garcia et al., 2020).

Occupational Therapy (OT)

Occupational therapy (OT) focuses on motor skills, cognitive, physical, and social skills. Occupational therapy (OT) assists people with ASD in being more self-sufficient and improving their ability to complete daily life activities (Warren et al., 2011). An occupational therapist may also perform sensory integration therapy. This form of treatment helps the patient's brain adapt

to the stimuli and allows them to process and react to the sensation more appropriately (Myers 2009).

Speech Therapy

Speech therapy is used to assist in the development of verbal, nonverbal, and social contact. During a session, therapists will assist children with ASD to focus on making simple sounds, relating a photo to its context, responding to questions, interpreting body language, and other skills. A speech therapist can also help a person with ASD improve their feeding skills. For the best results, speech therapy should begin as soon as possible (Bolte & Diehl, 2013; Warren et al., 2011).

Social Skills Therapy

Social skill therapy takes place in a group environment. Here, individuals with ASD are allowed to interact with others. This helps them improve their overall social skills, foster self-awareness provides structure and helps them practice working in a group (Bolte & Diehl, 2013).

Creative Art Therapies

There has been growing interest in the use of creative arts as a form of treatment for individuals with developmental disabilities (Edwards et al., 2020). The term "creative art therapies " refers to a group of treatments that take a holistic approach to treating the body (Puig et al.,2016). Such treatments include art therapy, dance/movement therapy, drama therapy, music therapy, poetry therapy, and film therapy. This type of treatment shifts the focus away from impairment reduction to focus on promoting psychosocial well-being and overall quality of life

(Baldwin et al, 2013). Creative Art Therapies seek to enhance communication and expression as well as physical, mental, cognitive, and social functions (Edwards et al., 2020).

Art Therapy

Art therapy is a research-based treatment that focuses on personal experiences and expressions (Schweizer et al., 2014). These theories assume that the creative process of artistic self-expression aids people in dealing with their problems (Schweizer et al., 2014). Art therapy helps children express themselves safely and naturally by drawing, painting, playing with clay, and making items out of other art materials (Schweizer et al, 2014). Art therapy aims to improve self-esteem and self-awareness, minimize stress, improve interpersonal skills, and improve coping skills (American Art Therapy Association, 2014; Case & Dalley, 1992; Malchiodi, 2003; Schweizer et al., 2009, Schweizer et al.,2014; Schweizer et al.,2020). Art therapy also assists in the development of motor skills, cause-and-effect relationships, task orientation, spatial insight, shape perception, eye contact development, and the sense of self in relation to the world (Gilroy, 2006; Haeyen, 2011; Hinz, 2009; Malchiodi, 2003; Schweizer et al.,2014).

Dance Movement Therapy

Dance movement therapy is a mind-body intervention that incorporates physical activity with psychosocial therapy (T.H.Ho et al.,2020). Different regions of the brain associated with memory, executive functions, and motor skills are stimulated by the combination of physical and cognitive movement (Zhang et al.,2019). Dance movement therapy emphasizes the connection between the body and the mind, helping people express themselves through dance (T.H.Ho et al.,2016). This allows individuals to express themselves more freely, embrace and reconnect

with their body, cope with depression and anxiety, regain confidence, and strengthen personal resources (T.H.Ho et al.,2016; Zhang et al., 2019).

Music Therapy

Music therapy is a clinical and evidence-based therapy. In a therapeutic setting, it uses music experiences to achieve individual goals (Music Therapy.,2021; Pater et al.,2021). Music therapy decreases anxiety and discomfort while also enhancing the effectiveness of traditional medical treatments (Facchini et al.,2021). Music therapy also improves sensory integration, control, self-awareness, communication, and emotional sharing (Geretsegger et al., 2015. Mössler et al.,2020; Schumacher et al.,2019).

Drama Therapy

Drama therapy is the therapeutic application of theatrical methods such as role-playing, enactment, projection, and improvisation (Johnson, 1991, Wu et al., 2020). Drama therapy focuses on various interactions to help people achieve a more balanced mental state. Via imagination, all of this facilitates self-integration, better communication, awareness, and peer learning (Mastrominico et al., 2018; Wu et al.,2020).

Summary

ASD is a complex disorder that may require multiple treatment modalities to improve negative behaviors and symptoms. Due to the limited benefits and negative side effects of more traditional treatments, health professionals have begun taking alternative approaches, such as the use of creative arts as a form of treatment for this population. It is crucial to summarize the existing literature on the feasibility and efficacy of creative art therapies on psychosocial factors in youth with ASD

METHODS

Databases

This review will use the reporting guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement (Moher et al., 2009). The relevant databases searched will include CINAHL complete, MEDLINE, Psych INFO, PubMed, and Web of Science. The search terms we will use for the creative art therapy intervention include: “creative art therapies” OR “art therapy” OR “drama therapy” OR “dance therapy” OR “movement therapy” OR “dance/movement therapy” OR “music therapy.” The search terms we will use for the population include: “children” or “youth” or “adolescents” or “young adults”. The search terms we will use for the primary condition will include: “Autism Spectrum Disorder” OR “ASD” OR “Autism” OR “Developmental Disorders” OR “Asperger’s Syndrome”. A research librarian will assist with this search, and reference lists of relevant review articles will be searched to identify any additional articles.

Identification of Eligible Studies

The scope of this review will be limited to studies, in the English language, from 2010 through May 2021. To qualify for inclusion, studies will be required to report a quantitative analysis of the effects of a creative art (music, art, dance/movement, creative writing, acting) therapy intervention on at least 1 behavioral outcome or psychosocial outcome in participants under 21 years of age. There must be a formal diagnosis of Autism Spectrum Disorder by a clinician to be included in this study, however, studies using populations with comorbidities will be included, as long as the primary diagnosis was ASD. Case studies and qualitative studies, with no quantitative aspect, will also be excluded.

Table 1: Inclusion & Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Experimental design Primary diagnosis of ASD Participants under 21 years of age Quantitative data or mixed-methods Art therapy intervention ≥ 1 behavioral/psychosocial outcome measure Published before 2010 English language	Observational design Case study or review paper Qualitative data only No diagnosed ASD Sample including other types of disabilities Studies that include adult participants Only physical outcomes

Data Extraction

The following information was extracted from each of the included studies: study design and setting, description of sample, description of intervention, duration of study intervention and follow-up, analysis plan, primary and secondary outcome measures, and results. The Effective Public Health Practice Project’s Quality Assessment Tool for Quantitative Studies was used to assess study quality (Thomas et al.,2004). This tool provides a dictionary and scoring instructions in order to assign an overall quality rating for each study (Strong, Moderate, Weak). Each study is assessed on selection bias, study design, confounders, blinding, data collection methods, and withdrawals/dropouts. A study with no areas of weakness is classified as “Strong”; one area of weakness is classified as “Moderate”; and two or more areas of weakness is classified as “Weak”.

RESULTS

From the initial search of keywords in the selected databases (APA, Psych Info, CINAHL, Medline Academic Search Premiere), a total of 352 titles were listed. After deleting all duplicates, the list decreased to 264 titles. After reviewing the listed titles, a total of 57 selections remained. Two researchers independently reviewed all 57 abstracts, compared their list of included abstracts, and discussed any discrepancies. This led to a list of 19 full-text articles to review. Additionally, a review article was found in the search, and was viewed for additional articles that fit the inclusion criteria. One reference in the review appeared to meet the criteria and was included in the full-text articles to review. However, that article was excluded due to the wide age range examined in the study (ages 14 – 53 years). After all, 20 articles were reviewed, a total of 9 articles met the inclusion criteria. Figure 1 provides an outline of the review process, and reasons for exclusion.

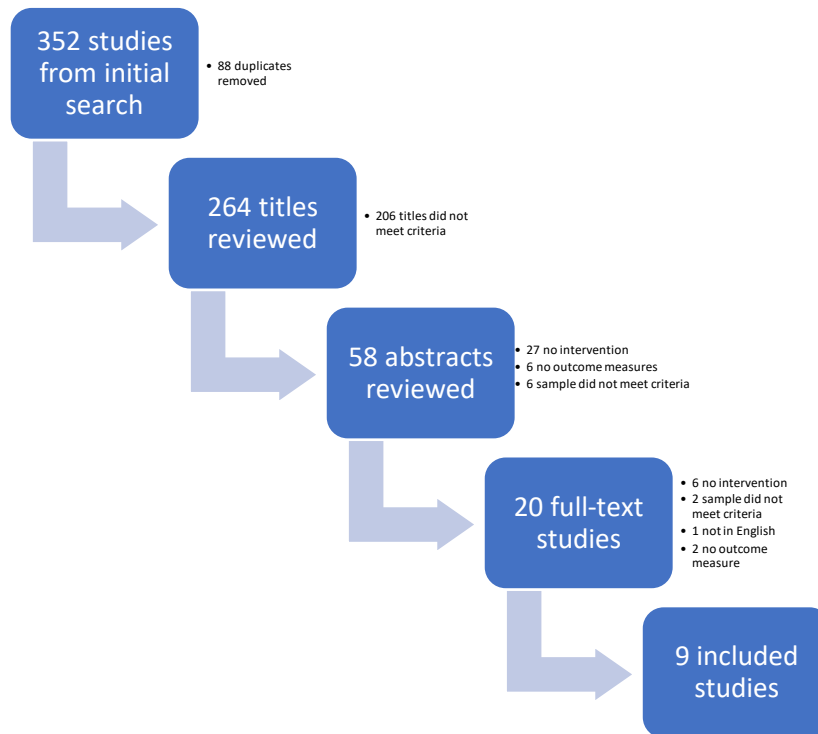


Figure 1: Illustration of Review Process

Summary of Included Studies

The nine included studies are summarized in Table 1. Overall, four studies conducted a music therapy intervention, four studies conducted a drama therapy intervention, and one study examined the effects of an art therapy intervention.

Table 2: Summary of Interventions

Author, date	Therapy	Study Design	Sample Description	Outcome Measures	Findings
Corbett et al., 2011	Drama	Non-randomized	8 ASD, 8 non-ASD, 6 – 17 years	ASD behaviors; Stress; Social Skills	↑ Social skills
Corbett et al., 2014	Drama	Pretest-posttest	12 ASD, 8 – 17 years, no control group	ASD behaviors; Social skills	↑ Social skills; 0 ASD behaviors

Corbett et al., 2017	Drama	RCT*	30, 8 – 14 years Experimental & waitlist control	Anxiety; Stress	↓ Anxiety; 0 stress**
Corbett et al., 2019	Drama	RCT	77, 8 – 16 years, Experimental & waitlist control	Social skills	↑ Social skills
Lagasse 2014	Music	RCT	17, 6 – 9 years, Experimental & social skill control	Social skills; ASD behaviors	↑ Social skills; 0 ASD behaviors
Pater et al. 2021	Music	Case series	10, 4 – 10 years, no control	Social skills	↑ Social skills
Rabeyron et al. 2020	Music	RCT	37, 4 – 7 years, Experimental & music listening control	Social skills	↑ Social skills
Schweizer et al 2020.	Art	Case series	12, 6 – 12 years, no control	Emotion regulation; Social skills	↑ Social skills
Sharda et al. 2018	Music	RCT	51, 6 – 12 years, music & no- music control	Social skills	↑ Social skills

*Randomized controlled trial

**0 denotes a null result

Summary of Participants

Demographic Information

The sample sizes in the nine studies ranged from eight participants (Corbett et al., 2011) to 77 participants (Corbett et al., 2019). Most of the interventions had more male participants than female participants. The youngest participants were four years old (Rabeyron et al., 2020; Pater et al., 2021), and the oldest being seventeen years old (Rabeyron et al., 2021; Corbett et al., 2014). While the majority of the studies did not mention race/ethnicity, two studies did. In the study (Corbett et al., 2014), they had three African Americans, seven Caucasians, and two Latinos/Hispanics. In another study conducted by (Corbett et al., 2017), there were two multiracial, one African American, two Asians, four Latinos/Hispanics, and 12 Caucasians. A

few studies did include nationality as well. Participants in two studies (Schweizer et al.,2020; Pater et al.,2021) were Dutch. Participants in (Rabeyron et al.,2020) study were French, and (Sharda et al.,2018; Lu et al.,2010) participants were Canadian.

ASD Diagnosis & Medication Use

Out of all the research, the Diagnostic and Statistical Manual of Mental Disorders was utilized the most to identify if the individuals had ASD (Corbett et al.,2014; Corbett et al.,2017; Sharada et al.,2018; Corbett et al.,2019). Participants in (Pater et al.,2021) research had to be diagnosed by a child psychiatrist or a clinical psychologist/remedial educationalist. The Childhood Autism Rating Scale was another tool used to determine ASD (Lagasse et al., 2014; Rabeyron et al., 2020). It's worth noting that some of the individuals in the study (Corbett et al.,2017) were on medication. Nineteen of the subjects were on psychotropic medication, and seven were taking two or more medications.

Study Designs

Five studies (Corbett et al.,2017; Corbett et al.,2019; Lagasse et al., 2014; Sharda et al., 2018; Rabeyron et al.,2020) were randomized controlled trials (RCTs), one study was a non-randomized experimental design (Corbett et al., 2011), one study was a pretest-posttest single group design (Corbett et al., 2014), and the remaining two studies had a multiple case series design (Pater et al., 2021; Schweizer et al., 2020). In terms of follow-up assessments, Schweizer et al (2020) followed up on the sustained effects of the art therapy intervention 15 weeks following the final session.

Description of Control Conditions

Six of the nine studies included control groups or conditions (Corbett et al., 2011; Corbett et al., 2017; Corbett et al., 2019; Lagasse et al., 2014; Sharda et al., 2018; Rabeyron et al., 2020). Five of these studies included a control group of children with ASD who did not partake in the creative art therapy intervention (Corbett et al., 2017; Corbett et al., 2019; Lagasse et al., 2014; Sharda et al., 2018; Rabeyron et al., 2020), while the study by Corbett et al. (2011) recruited neurotypical children as a comparison group that also participated in the intervention. The one study included a passive creative arts activity (music listening) as the control condition (Rabeyron et al., 2020). Two studies had a waitlist control condition where the control group participated in the drama therapy after the cessation of the study (Corbett et al., 2017; Corbett et al., 2019). One study included a passive creative arts activity (music listening) as the control condition to compare with the music therapy intervention (Rabeyron et al., 2020), while two other studies that examined music therapy had the control condition participate in a social skills activity (Lagasse et al., 2014), and a no-music play-based activity (Sharda et al., 2018).

Study settings

Intervention settings varied among the nine studies with one study taking place at each participant's home (Pater et al., 2021), five studies conducted in a clinic setting (Lagasse, 2014; Sharda et al., 2018; Schweizer et al., 2020), and the other four were conducted in community-based theater (Corbett et al., 2011; Corbett et al., 2014; Corbett et al., 2017; Corbett et al., 2019). Additionally, five of the studies occurred in group settings (Corbett et al., 2011; Corbett et al., 2014; Corbett et al., 2017; Corbett et al., 2019; Rabeyron et al., 2018) while four studies consisted

of solo sessions with participants (Pater et al., 2021; Lagasse et al., 2014; Sharda et al., 2018; Schweizer et al., 2020).

Intervention frequency & duration

The interventions lasted anywhere from two weeks (Corbett et al., 2014) to eight months (Rabeyron et al.,2020). Participants in most of the studies did the therapy once a week, while others were doing it three to four times a week (Corbett et al.,2011). Most sessions lasted 30-60 minutes, except for three trials (Corbett et al.,2011) which lasted for two hours and (Corbett et al.,2017; Corbett et al.,2019), whose sessions lasted for four hours.

Type of Therapy

Drama Therapy

Four of the nine articles examined drama therapy (Corbett et al.,2011; Corbett et al.,2014; Corbett et al., 2017; Corbett et al.,2019). As these studies were developed by the same research group, the activities performed by the groups were similar, although the study designs differed. For example, one study occurred over two weeks (Corbett et al., 2014), two studies occurred over a 10-week period (Corbett et al.,2017; Corbett et al.,2019), and another study occurred over 12 weeks (Corbett et al.,2011). The two later studies were also RCTs while the study conducted in 2011 was a quasi-experimental study, and the study in 2014 had a case series design. In all four studies, the participants took part in theater games, role-playing exercises, improvisation, and character-building over the first few weeks. After getting comfortable with the environment, they began rehearsing lines for the play and also doing play blocking. After each study, a play was performed for the community to see what the participants had learned.

Music therapy

The impact of music therapy on adolescence with ASD was investigated in four studies. While all four studies allowed participants to play with a variety of instruments, each intervention had its own set of characteristics. In the study (Shandra et al.,2018) they used songs and rhythmic cues to help target communication, turn-taking, sensorimotor integration, social appropriateness and musical interactions. The multiple case study done by (Pater et al.,2021), had the first three sessions, be a time for the therapist to observe the participant and also a time for the participant and therapist to build a relationship. In the sessions after that, the participants did active music therapy. Active music therapy consists of making of rhythms and melodies to obtain developmental improvement. After active music therapy, the therapist would have a conversation with the participant to see how the music making experiences was, and how it made them feel. The two music therapy studies with a control group were (Rabeyron et al., 2020; Lagasse,2014). In the (Rabeyron et al.,2020) study, at the beginning and end of each session, the participants listened to music for five min. The first five mins of music listening were instrumental music, and the closing five minutes of music listening was vocal music. In between those two activates, the participants were allowed to interact with other participants, therapist and instrument during the time called instrumental and vocal improvisation. In the music listening group the participants listened to music for 30 min without any interactions. In the final study, (Lagasse,2014) music engagement was used to practice social skills and rhythmic cues. Music structure was also used to help the children plan their response. Whereas, in the social skills group, they played games and interacted with one another.

Art therapy

Only a single study conducted an art therapy session (Schweizer et al.,2020). In this study, the participants were given a wide range of art supplies to produce art that provoked positive emotion. Participants were free to draw whatever they wanted for the first three weeks, to become us to the art materials and the surroundings. The following 12 sessions, however, they were exposed to a variety of experiences to help aid in the art-making process.

Outcome Measures

Behavioral symptoms

Five studies looked at behavioral outcomes when conducting their study. One study (Rabeyron et al.,2020) looked at autism symptoms severity and negative behaviors. They discovered that after the music therapy sessions, there was a decrease in negative behaviors. In the study conducted by (Shandra et al.,2018) they did a 20 min MRI to look at how music therapy might help brain connectivity. The results from the MRI showed that there was an increase in brain connectivity after the music therapy sessions. (Schweizer et al.,2020) study the effects that art therapy has on sense of self, emotional regulation, flexibility and social communication. They determined that there was an increase in all four of those behaviors. The last two studies (Corbett et al.,2011; Corbett et al.,2019) both looked at how theater therapy effects memory of face and theory of mind. They both showed an increase in both behaviors. The study (Corbett et al.,2011) also looked at expression of emotions and determined that it was null finding.

Table 3: ASD-related Behavior Outcomes

Author, Date	Outcomes	Assessment Measure	Type of Assessment
Rabeyron et al., 2020	Autism symptom severity; Negative behaviors	Clinical Global Impression (CGI); Childhood Autism Rating Scale (CARS), Aberrant Behavior Checklist (ABC)	Clinician report
Shandra et al., 2018	Brain connectivity	20 min MRI	Objective measure
Schweizer et al.,2020	Sense of self; Emotional regulation; Flexibility; Social communication	Behavior Rating Inventory of Executive Functioning (BRIEF); Children’s Social Behavior Questionnaire (CSBQ); Self-Perception Profile for Children (SPPC)	Clinician report; Self-reported
Corbett et al.,2011	Memory of face; Expression of emotions. Theory of mind	Other Developmental Delays (SSS); The Short Sensory Profile (SSP); Adaptive Behavior Assessment System (ABAS); NEPSY Memory for Face (MF); NEPSY Affect Recognition (AR); NEPSY Theory of Mind (TOM)	Clinician report
Corbett et al.,2019	Social cognition; Theory of Mind; Face memory	Event-related potentials (ERP); NEPSY Theory of Mind (TOM);	Clinician report

		NEPSY Memory for Face (MF)	
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Mental Health

Two studies examined mental health outcomes following a drama therapy intervention (Corbett et al., 2011; Corbett et al., 2017). Corbett et al. (2017) examined stress and anxiety using an objective measure (salivary cortisol) to assess stress, and a subjective measure (self-report state-and trait-anxiety surveys) to assess anxiety. There was a reduction in trait-anxiety following the intervention in the experimental group, however, there were no differences in salivary cortisol levels. No differences in anxiety or stress were observed in the control group. An earlier study on drama therapy by Corbett et al. (2011) examined stress through both parent surveys and salivary cortisol after the three-month drama therapy intervention.

Table 4: Mental Health Outcomes

Author, Date	Outcomes	Assessment Measure	Type of Assessment
Corbett et al., 2017	Stress; anxiety	Salivary cortisol; State & Trait Anxiety Scale	Objective measure (Stress); Self-report (Anxiety)
Corbett et al., 2011	Stress	Salivary cortisol	Objective measure

Social Skills

The impact of creative art therapies on social skills was the subject of six articles. Three of the studies were drama therapy (Corbett et al.,2011; Corbett et al.,2014; Corbett et al.,2019). Social bonding and social responsiveness were studied in (Corbett et al.,2011). To look at social bonding they used oxytocin levels, which was determined to be null in finding. In the study

(Corbett et al.,2014) evaluated social interactions with peers and social perceptions. It was determined that that there was an increase in the two outcomes. The last theater study (Corbett et al.,2019) looked at cooperative play, and showed an increase in it among participants. Three of the studies were music therapy (Lagasse 2014; Sharda et al.,2018; Pater et al. 2021). Eye gaze, joint attention and initiation of or response to communication were the outcomes measured in (Lagasse,2014). After the study it was determined that there was an increase in eye gaze and joint attention, but null findings for initiation of or response to communication. The RCT conducted by (Shandra et al.,2018) looked at communication and family quality of life among participants. The study determined that there was an increase in communication and family quality of life.

Table 5: Social Skills Outcomes

Author, Date	Outcomes	Assessment Measure	Type of Assessment
Corbett et al.,2011	Social bonding; Social responsiveness	The Social Responsiveness Scale (SRS); Oxytocin levels	Clinician report (Social responsiveness); Objective measure (Social bonding)
Lagasse,2014	Eye gaze; Joint attention. Initiation of or response to communication	Social Responsiveness Scale (SRS); Autism Treatment Evaluation Checklist (ATEC); behavioral observation from video recordings	Clinician report
Pater et al.,2021	Social adequate behaviors	Validated Questionnaire for the	Clinician report; self-report

		Inventory of Social Behavior of Children (VISK), Social Behavior Questionnaire	
Shandra et al., 2018	Communication; Family quality of life (FQoL)	Childhood Autism Rating Scale (CARS); parent-reported behavioral outcomes on Social Responsiveness Scale (SRS-II); the Children's Communication Checklist (CCC-2); maladaptive behavior subscale of the Vineland Adaptive Behavior Scales (VABS-MB0; Beach Family Quality of Life Scale (FQoL); Wechsler's Abbreviated Intelligence Scale (WASI-II); Clinical Evaluation of Language Fundamentals (CVELF-4); Peabody Picture Vocabulary Test (PPVT-4); Montreal Battery for Evaluation of Musical Abilities	Clinician report(communication); Self-reported (FQoL)

Corbett et al.,2014	Social interactions with peers; Social perception	Social Communication Questionnaire; Social Responsiveness Scale; Developmental Neuropsychological Assessment (NEPSY); Parenting Stress Index (PSI); Adaptive Behavior Assessment System (ABAS); Companionship Scale	Clinician report
Corbett et al.,2019	Cooperative play	Peer Interaction Paradigm (PIP)	Clinician report

Quality Assessment of Included Studies

After applying the Quality Assessment Tool to the included studies, three of the nine studies were rated as “strong” (Corbett et al., 2017; Corbett et al., 2019; Sharda et al., 2018), one study was rated as “moderate” (Rabeyron et al., 2020), and the remaining five studies were rated as “weak” (Corbett et al., 2011; Corbett et al., 2014; Lagasse et al., 2014; Pater et al., 2021; Schweizer et al., 2020). Table 6 summarizes the quality assessment of the included studies. The main limitations of the studies included convenience sampling, lack of a control group, and a lack of control over confounding variables.

Table 6: Quality Assessment of Included Studies

Author, date	Therapy	Quality	Areas of Weakness
Corbett et al., 2011	Drama	Weak	Convenience sample, lack of a control group
Corbett et al., 2014	Drama	Weak	Convenience sample; Lack of control group
Corbett et al., 2017	Drama	Strong	N/A
Corbett et al., 2019	Drama	Strong	N/A
Lagasse 2014	Music	Weak	Confounding variables; study design
Pater et al. 2021	Music	Weak	Lack of control group; confounding variables
Rabeyron et al. 2020	Music	Moderate	Low intervention integrity
Schweizer et al 2020.	Art	Weak	Convenience sample; lack of control group; low intervention integrity
Sharda et al. 2018	Music	Strong	N/A

DISCUSSION

The purpose of this review was to examine the effects of creative arts therapies on psychosocial outcomes in youth with Autism Spectrum Disorder (ASD). The findings of this review show that creative arts therapy interventions for youth with ASD have primarily consisted of music or drama therapy, and appear to focus on social skills outcomes. The results from these studies suggest that both music and drama therapy may improve social skills in children with ASD.

Drama therapy appeared to be beneficial for social skills and communication in children with ASD (Corbett et al., 2019). This finding is supported by prior literature that has shown drama techniques can be helpful in improving sociability and communication in children who had difficulty with emotional expression and language (Wright et al., 2006). It should be noted, however, that the four studies that examined this therapy were conducted by the same research group, and therefore, it would be important to determine whether these results could be replicated by different research groups.

Although the music therapy studies in this review examined behavioral and psychosocial outcomes, prior research on the therapeutic effects of music on children suggests that music may be most beneficial for improving focus and attention (Pasali 2014). It is important to note, however, that such previous studies did not focus specifically on ASD populations.

The lack of studies on dance therapy was surprising, given that prior research has suggested that movement and dance may improve ASD-related symptoms (Takahashi 2019). While there were observational studies that demonstrated the benefits of dance in this population, there was a lack of intervention research with the only articles focusing on dance

therapy either examined older populations or consisted of single-subject case studies (Hildebrandt, Koch, & Fuchs, 2016). It is clear that future work is needed to evaluate the effects of dance therapy on this population. Similarly, it was surprising that only a single art therapy study met the inclusion criteria for

According to the quality assessment conducted on all nine papers, only three of those papers could be categorized as “strong”. This is not surprising given that ASD intervention research often has challenges with executing randomized controlled trials, controlling for confounding variables, and recruiting samples that are representative of the population (Takahasi et al., 2019). However, given the potential benefits of this type of therapy, there is a need for high-quality, rigorous study designs that focus on the effects of different styles of creative arts therapy on psychosocial outcomes in children with ASD.

It is also important to distinguish the difference between simply participating in a creative art activity and creative art “therapy”. Only one study (Rabeyron et al., 2020) emphasized this difference by comparing listening to music and actual music therapy that is led by a trained therapist. Creative art therapy involves more of an active role in the program, while individuals taking part in a creative art activity can play more of a passive role (e.g. listening to music). All four of the studies that utilized a music therapy intervention had children create music through the use of both instruments and singing. Future work should further compare the creative art activities with creative art therapy to further determine the effective components of such interventions.

Although the prevalence of ASD has increased to 1 in 54 children in the past few years, it is not surprising that there were only a small number of creative arts therapy intervention studies for youth with ASD (Lerner et al., 2011). It has only been recently that there has been a deviation from more traditional forms of treatment for ASD symptoms, such as psychotropic medication, to more alternative treatments such as exercise or creative arts therapy (Hume et al., 2021). This further reiterates the importance of reviewing the evidence and quality of these intervention studies, so as to provide information to families of children with ASD of the potential benefits of creative arts therapy interventions.

Limitations and Future Directions

From this review, it is clear that the types of creative art therapy interventions have been limited, mainly focusing on music or drama therapy in children with ASD. Future research should examine creative art therapies, such as dance and art therapy for youth with ASD. It is also important to examine additional psychosocial outcomes, besides social skills, to determine which specific outcomes may benefit most by creative arts therapies.

Five of the nine studies took place in a group setting, and therefore, it is possible that the social aspect built into the intervention may have confounded or moderated the positive social outcomes. Therefore, future work should examine the independent effects of the different creative art therapies in individual vs group settings. However, this may not be feasible for creative arts, such as drama therapy, where interaction is part of the therapeutic process.

One area of concern is the lack of information regarding comorbidities, medication use, and ASD severity levels in these samples. Although several studies assessed ASD-related behaviors pre-and post- intervention, they did not provide information regarding diagnosed ASD

severity levels which would be critical when providing recommendations for families of children with lower functioning ASD.

While the scope of this review was limited to studies that only employed a single form of creative arts therapy, it would be interesting to examine the potential additive effects of a creative arts therapy paired with a more established treatment modality such as ABA, PT, and family-based therapy. A lack of social skills is a prominent feature in individuals with ASD, and some of the traditional therapies, such as PT, do not target this feature. Therefore, the addition of such creative arts therapies may be a welcomed addition to a treatment plan.

Conclusions

The current review demonstrated that music and drama therapy interventions may help to improve social skills in youth with ASD, however, more research is necessary to better understand whether other outcomes may benefit from these therapies. Furthermore, as the majority of creative arts therapy interventions have been limited to music or drama in this population, future studies should explore whether other creative arts, such as art or dance therapy, may demonstrate similar benefits.

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