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Dance/Movement Therapy as a Tool to Improve Social Skills in Children and Adolescents with Autism Spectrum Disorder: A Literature Review

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Dance/Movement Therapy as a Tool to Improve Social Skills in Children and Adolescents with

Autism Spectrum Disorder: A Literature Review

Capstone Thesis

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Dance Movement Therapy

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Abstract

Autism spectrum disorder is a neurodevelopmental disorder diagnosed by the presence of social communication and interaction deficits present in their day to day. The deficits present in this disorder appear within the first three years of life and lead to problems with connecting and interacting with other individuals including their own family members. As a result, children and adolescents with Autism spectrum disorder often experience negative self-image and lack the proper skills to interact with others. Autism spectrum disorder is becoming more commonly diagnosed and yet there remains a gap in interventions and treatment due to the individualized appearance of this disorder. Applied behavioral analysis is a very popular-evidence based intervention commonly used with this population because of its repetitive and targeted interventions. Dance/movement therapy is another intervention that has shown to be effective with this population because of its body centered approach. The implementation of mirroring, Kestenberg movement profile, and play are common tools used in dance/movement therapy that aid in the improvement of social skills. The goal of this literature review is to review the existing literature surrounding the use of dance/movement therapy as a tool to improve social skills in children and adolescents with Autism spectrum disorder and identify where further research should focus.

Dance/Movement Therapy as a Tool to Improve Social Skills in Children and Adolescents with
Autism Spectrum Disorder: A Literature Review.

Introduction

The purpose of this research is to develop a greater understanding of current interventions used to develop social skills and where gaps existed. According to the Centers for Disease Control and Prevention (CDC) 1 in 59 children has been identified with ASD (CDC, 2014). As a result, interventions focused on improving social skills remain valuable to early intervention and treatment.

Dance/movement therapy is “the psychotherapeutic use of movement to promote emotional, social, cognitive and physical integration of the individual for the purpose of improving health and well-being” (Welling, 2014). Dance/movement therapy allows for the clinician to move with the client and develop an understanding of the client’s needs. A common DMT intervention is mirroring, where the dance/movement therapist mirrors the movement of their client back to them allowing for attunement to occur between client and therapist. Kestenberg movement profile (KMP)

“is often used in children from the autism spectrum to (a) assess their stage of development, (b) to know the next steps on all dimensions of movement, and on this basis (c) appropriate movement and socioeconomic responses to plan interventions” (Koch, 2017, p 372).

Developing a common rhythm with this population allows for the movement language to develop; therefore, improving the mirroring responses within this population.

Autism spectrum disorder (ASD) is a neurodevelopmental disorder diagnosed by the presence of social communication and interaction deficits present in their day to day functioning.

The diagnosis can range from mild to severe manifesting in various aspects of their daily interactions. The symptoms included deficits in social communication, repetitive or restrictive movements that must occur in early development and significantly affect their social, occupational and other areas of function (American Psychiatric Association, 2013). Although the symptoms present early on, individuals can go undiagnosed for many years due to the variety of presentations and cultural backgrounds. Autism spectrum disorder manifests differently in each individual calling for a more individualized treatment approach.

Early intervention in children with ASD can be vital to improving their ability to communicate and function later in life. Although there are other interventions dance/movement therapy allows for non-verbal communication to develop based on the child's individual needs.

“Because DMT provides a holistic approach that integrates the body and mind, and because it can thrive in a non-verbal realm of communication this type of therapy is extremely appropriate for the early intervention of children on the autism spectrum” (Martin, 2014, p 548).

By gaining an understanding of the effectiveness of interventions dance/movement therapists can begin to form a treatment outline to aid in the development of social skills in children and adolescents with ASD.

Literature Review

The purpose of this literature review is to provide the readers with a clear understanding of Autism spectrum disorder (ASD), dance/movement therapy (DMT), and development of social skills utilizing movement as an intervention tool. Since Autism spectrum disorder symptoms manifest in many ways children are often not diagnosed early on, which can result in

more significant social deficits throughout development. The literature provided below reviewed how cultural background and acculturation can affect a parent's ability to receive treatment and assessment. It examined the use of evidence-based interventions with children diagnosed with ASD as well as the use of expressive inventions such as music or yoga to increase social skills. Finally, it reviewed the current literature and research provided regarding the use of dance/movement therapy to increase social skills in children diagnosed with ASD.

La Roche (2018) reviewed the current literature regarding cultural sensitivity in diagnosing and treatment of individuals with ASD and provided steps to better clinicians' awareness when working with cultural minorities. The author used the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013) definition of Autism spectrum disorder and defined culture as "a set of distinctive patterns of behaviors that shared by a group of people that serve to regulate their daily living" (La Roche, 2018, p 108). The author stated that many individuals from cultural minorities received a diagnosis much later than many Caucasian Americans, often because of the presence of disruptive behaviors in the individual. La Roche (2018) developed an understanding of cultural variables that could be used to refine the assessment and treatment of ASD through the review of current literature.

The Cultural Formulation Interview (CFI) was introduced for providers to use to develop a greater understanding of cultural variables that were present. They identified the importance of using an interpreter when working with a family who does not speak English as their first language. Acculturation of the cultural minority may also affect their ability to seek out treatment because the lower the level of acculturation, the less likely the individual is to be aware of ASD and their ability to receive services. This article also presented the need to raise

awareness regarding ASD and variables related to culture in general practitioners to avoid unnecessary referrals to autism treatment centers.

La Roche (2018) discussed the current instruments used for diagnosing ASD “were developed and standardized [using] predominantly White American samples and were not designed to consider cultural influences” (La Roche, 2018, p 111) making them less valid when working with cultural minorities. The common evidence-based treatment interventions, such as ABA, also faced limitations when working with cultural minorities due to their limited population samples in validation research, which may decrease their effectiveness. They also stressed the importance of being aware of whether the client’s culture is individualistic, focused on self, or collectivistic, focused on the family, and how that may affect treatment goals. When working with cultural minorities it is important to consider their cultural views and how they may affect treatment. La Roche (2018) reminded clinicians to continue to explore their own privileges, power and biases they held and continue to work on them. Throughout the articles reviewed it became very apparent that La Roche’s (2018) recommendations should be followed.

Barnett (2018) examined the use of scripts, video modeling and embedding choice as part of classroom activities to help develop play skills and improve interactions with peers. Barnett (2018) discussed that children diagnosed with ASD were often taught in a segregated setting separating them from their typically developing peers. However, social communication was an important instructional target for children with ASD to work on from an early age.

The first evidence-based strategy was the use of scripts when teaching a child with ASD to interact with peers. “Scripts are explicit written scenarios, skits, or examples and/or visual prompts used to facilitate participation (i.e., starting and continuing) an interaction or conversation and are implemented in classroom activities wherein children with ASD would be

expected to display language” (Barnett, 2018, p 666). The scripts were built to align with the child’s interests and verbal skill level and are most effective when implemented before the social interaction or play opportunity. Teachers should keep in mind phasing out the use of scripts to allow the child to engage with the natural stimulus and provide longer segments of natural language. The author stated that the use of scripts had been shown to help children with ASD “increase the duration of time spent playing appropriately in preferred and non-preferred play situations” (Barnett, 2018, p 667).

The second evidence-based strategy discussed was video modeling which helped children with ASD accrue new social and interpersonal skills. Video modeling involved the child with ASD repeatedly watching a video of a peer or self-model correctly performing a target skill. The videos were short in length usually ranging from 30 seconds to 4 minutes and can show the expected language in certain social situations such as taking turns during play. “Video modeling increases spontaneous requests (Were and Neisworth 2003), social initiations (Buggey 2005; Nikopoulos and Keenan 2007), social interactions (Sansosti and Powell-Smith 2008) and play (D’Ateno et al. 2003; Nikopoulos and Keenan 2007)” (Barnett, 2018, p 667). The use of video modeling exemplified the expected social behavior for the child with ASD. This prepared the child for social interactions later on.

The third evidence-based strategy discussed was embedding choices, which allowed children to take some control in the classroom and was a good strategy to use with children who exhibited problem behaviors around interacting with others. The use of visuals was often paired with this method to help the child understand the choice they made. The visuals usually represented the activities the child could choose from. An important piece of embedding choice was to provide the child with their selection in a “timely manner to reinforce choice-making

behavior and allow the child to experience the outcome of the choice” (Hart, 2012, p 26). The purpose of this intervention was to positively reinforce the choice making behavior.

Barnett (2018) emphasized the importance of including typically developing peers to aid in the development and use of the social skills. The author provided good insight into evidenced based strategies that allowed for the development of communication for children diagnosed with ASD; however, it did not expand on the research behind these strategies.

Following the same path as Barnett (2018), Makrygianni (2018) examined 29 research studies to determine if applied behavior analytic (ABA) interventions were effective in improving IQ scores, receptive and expressive language, and adaptive behavior for children diagnosed with ASD. The meta-analytic research format allowed the authors to transform the results from various studies into a common measurement and determine the statistical relationships between the characteristics and the findings of the studies (Makrygianni, 2018). This allowed Makrygianni (2018) to develop a baseline measurement of the effectiveness of ABA interventions on children with ASD. Overall, a total of 29 studies met the inclusion criterion and were used in this meta-analysis.

Since Makrygianni (2018) used a meta-analysis of existing research the limitation of the sample sizes and biases provided from those articles affected this study. As mentioned by La Roche (2018), the demographics included in the research of ASD thus far had been extremely skewed and not representative of the true ASD population. The results of the study implied that ABA interventions varied between domains. Analysis of the sample studies showed that ABA was

“very effective in improving the intellectual abilities; moderately to very effective in improving communication skills and expressive and receptive language skills;

moderately effective in improving IQ scores yielded by non-verbal tests, adaptive behavior (in total), socialization and receptive language skills” (Makrygianni, 2018, p 28).

These findings furthered the support of ABA methodologies as an effective treatment for children diagnosed with ASD.

Conversely, Qi (2012) examined the effectiveness of video modeling (VM) to improve social and communication skills. Key terms used by Qi (2012) were video modeling (VM), effect size (ES), and improvement rate difference (IRD) that was determined by the improvement rate – the improvement baseline. The author reviewed multiple peer reviewed journals between 1985 and September 2011, which contained at least one autistic participant aged 2 to 8 that utilized a single-case design including a graphic display of outcomes with readable X & Y axes. The journals also had to have “investigated the VM-only or VM with additional components (e.g., self-management or reinforcement) as an independent variable, and utilized outcome measures that target[ed] social and communication skills as the primary dependent variables” (Qi, 2012, p. 4519). The inclusion of these allowed Qi (2012) to understand how video modeling changed the social and communication skills for children diagnosed with ASD.

Twenty-six single case design studies containing 59 participants were included in this study. Qi found that from baseline to intervention the mean IRD for the ES was 0.53 suggesting that VM had a 53% improvement from baseline to intervention phrases (2012). This means that of the 26 studies included by Qi (2012) 53% of the participants showed improvement after the implementation of video modeling. Some limitations to this article were that a few of the included studies were too old to be reliable, potential publication bias, and the IRD scores were only calculated for a small number of studies that met the inclusion criteria. An apparent gap in

this article was the lack of educational background of the clients which could have made video modeling more applicable to some than to others.

Golubchik (2012) moved into a more movement-based approach, which discussed the association of proper handshaking skills and Autism spectrum disorder. The author had a sample size of 60 children and adolescents (ages 9- 18) split into three separate groups; patients with ASD, patients with attention deficit/ hyperactivity disorder (ADHD), and patients with mild mental retardation (MR) (IQ 60- 70). Golubchik (2012) utilized an 8 item Handshaking Assessment Scale (HAS) that used yes/no as the measurements yes meaning an abnormal response and no meaning a normal response. A score of 4 or more Yes' was considered poor handshaking ability. The author indicated that poor handshaking skills, meaning they had a score of 4 or more on the HAS, were found more commonly in participants with ASD than those with ADHD & MR. This indicated that children and adolescents with ASD struggled more with handshaking, a common social skill, than the other participants with neurodevelopmental disorders.

A few limitations this article encountered were that the sample size of ASD participants was smaller than the ADHD/MR participants, the exclusion of females in the sample sizes, and the narrow IQ range used for the MR sample size. Although this article offered informative data about social responsiveness in the children and adolescents with ASD, the terminology used is no longer appropriate according to the DSM-5 Mental retardation was diagnosed as an intellectual developmental disorder and should be revised to remain relevant.

Likewise, Lee (2016) reported on the effectiveness of the use of movement-based interventions with children diagnosed with ASD to increase psychosocial outcomes. Movement-based interventions (MBIs) were defined as "interventions that focused on intentional full body

movement of the child through space in which the movement was child-directed, proposed by adult, or guided, but not imposed” (Lee, 2016, p 55). Fourteen articles met the inclusion criteria set by Lee (2016) and were further analyzed to determine the effectiveness of movement-based interventions to increase psychosocial outcomes in children with ASD.

There were four MBIs identified in the 14 articles; role play, physical activity, imitation, and the Ayres sensory integration (ASI). Each MBI resulted in different psychosocial outcomes. Role play showed an increase in session and at follow up in the use of emotional facial and body language expression. Physical activity suggested an improvement in social skills as a result of improved self-confidence. The findings analyzed showed an improvement in joint attention and social-emotional functioning following the application of imitation. Lastly, ASI showed the most variance in the studies analyzed, showing improvement in sensory motor organization, sense of belonging, changes of behavior, and increased independence in completing functional tasks.

The psychosocial outcomes from the identified MBIs were separated into five categories: “(i) functional behaviors, (ii) social behaviors and interaction, (iii) expressive language, (iv) sensory-focused, and (v) comprehensive/global” (Lee, 2016, p 62). These psychosocial outcomes were measured differently based on the MBI used. The analysis conducted by Lee (2016) had the limitation of possible bias because of the various articles used. Also because of the different analysis styles used in the literature that was reviewed and analyzed, the results of Lee’s (2016) review could be skewed. The findings from this review found that research in this area continued to expand but preliminarily, the use of MBIs appeared effective in increasing psychosocial outcomes for children with ASD. However, there was no direct link connecting

MBIs to psychosocial outcomes. Since the direct link could not be proven it was unknown whether the MBIs were responsible for the improvement in psychosocial outcomes.

Comparably, Radhakrishna (2010) investigated the use of integrated approach to yoga therapy (IAYT) to increase imitative skills in children with ASD. Children with ASD showed significant deficits in imitation skills which impeded the acquisition of more complex behaviors and socialization. The participants in this study were trained observers', parents, and 5 boys and 1 girl aged 8-14 from similar socioeconomic backgrounds with mild to moderate range of ASD. The limitation presented was that there wasn't a diverse enough population being tested. More children from various ethnicities, cultures, gender, and socioeconomic background would have to be tested to increase validity.

Data was collected at three separate points throughout the study to measure how their imitation skills were changing. The separate points were the pre (1-12 sessions), mid (60th, 80th and 100th sessions) and post (180th- 182nd sessions). The data was collected using questionnaires, observers' comments, and interviews. The data showed that the children went from never imitating gross motor actions, two phase complex movements, adult breathing in and out model and rarely imitating vocalization and oral facial movements to showing a significant improvement in all five areas by the post sessions. They also found that the children's language, social and cognitive skills improved as a result of improved imitation skills. These results supported the use of IAYT to increase imitation skills in children with ASD. In order to increase validity for future research, the sample size be more diverse as discussed earlier and the teachers' observations should be included.

Eren (2015) discussed the use of music therapy activities to improve social interaction and communication skills in the adolescents with ASD. The participants included 6 adolescents

diagnosed with ASD, 2 special education specialists, 1 student assistant, and the music therapist. The interventions happened for 90 minutes, twice a month, over the span of 4 months for the total of 8 sessions. All the sessions were videotaped and analyzed using a qualitative descriptive analysis method. Following the analysis, the improvements in social interaction and communication behaviors of the adolescents diagnosed with ASD in an integrated group music therapy setting were reported.

Each session was comprised of a warm-up and greeting, a rhythm game, a creative movement and dances that encouraged communication and social interaction between individuals. They found that the videos demonstrated a forward progression following each session. A limitation of this study was its small sample size of 6 adolescents who all attended the same private special education program. Another limitation was that the two special education specialists and the student assistant had previously worked with these students for a year. Throughout the music therapy sessions improvements in areas of eye contact, taking turns, listening, self-expression, coordinated movements in the group, decision making with others, and the acceptance of other differences were observed in the adolescents with ASD (Eren, 2015). The music therapy group provided opportunities for the adolescents with ASD to safely attempt social interactions with others without risk of judgement.

Koch (2017) continued this path of study and reviewed three separate case studies that investigated how the rhythms and mirroring in both music and dance/movement therapy affected individuals diagnosed with Autism spectrum disorder. The author investigated how the individuals in these case studies self-efficacy and self-regulation changed. The Kestenberg Movement profile (KMP) was used throughout to notate the different subject's movement rhythms and developed movement-based interventions as a result.

The first case study examined Rashid; a five-year-old boy diagnosed with ASD who was in constant free flow rhythm on the KMP rhythm curve, meaning his movement was very loose and uncontrolled. The dance/movement therapist implemented interventions focusing on bound movement and targeted use of force rather than staying in free flow. This intervention helped Rashid to be more in control of his movements and in turn strengthened Rashid's ability to self-regulate.

The second case study examined Mia; a four-year-old girl diagnosed with ASD who approached individuals only from the back. As Mia participated in individual dance/movement therapy her dance/movement therapist began to utilize mirroring with her, meaning she reflected Mia's movements back to her. After the span of three months Mia began to approach individuals from the front and speak with the dance/movement therapist. This behavior was also observed in her day to day life by educators and other children. The use of mirroring with this client resulted in more social flexibility.

The third case study examined Janina; diagnosed with a moderate mental disability and ASD, her age was not identified. Janina engaged in repetitive behaviors and speech, particularly in the bathroom. In music therapy Janina engaged in playing a drum with the music therapist. The music therapist began by mirroring the beat that Janina set and then changed the rhythm slightly which led Janina to adjust and change the beat she was playing. The music therapist noted that her eye contact, movements, and facial expressions changed throughout their interactional play. "Janina show[ed] her flexibility, directness and socio-emotional ability to interact, which she fail[ed] to achieve on a verbal communicative level" (Koch, 2017, p 375).

The limitations Koch (2017) faced was that there was no background information regarding the case studies, and there was no way of knowing the different participants

racial/cultural backgrounds. Although the studies appeared to support the use of rhythm interventions and the KMP notation as an intervention planning tool there is not enough information provided in the case studies to truly support this notion.

Conversely, Samaritter (2017) discussed the use of dance/movement therapy to inventory changes in interpersonal movement behaviors in young children with Autism spectrum disorder. The author observed interactions between participant and therapist to identify the specific interactional movement behaviors used by participants. The study explored four cases from the available video materials because of their similarity in duration of therapy and available video vignettes throughout their sessions. The participants for the study were two boys and two girls, who all attended a school for children with special needs and a mean age of 12.2.

Data collection used an open-coding procedure, which selected scenes where changes in interactions between therapist and clients were detected. The collected scenes were analyzed using Laban Movement Analysis based observations. Laban Movement Analysis, like KMP, was another notation used to describe and understand the body movements of an individual. "Movement actions were grouped into categories of movement direction, facial orientation, body/body part direction, weight engagement individually, weight engagement with a partner, weight regulation with a partner, synchronization in rhythm and synchronization in phrasing." (Samaritter, 2017, p 6) These eight movements shaped three categories: spatial orientation, weight engagement, and synchronization in time.

The results were summarized into a movement observation scale in which the term Social Engagement and Attunement Movement (SEAM) was used. It was found from time point 1 to time point 4 there was significant increase in SEAM behaviors as was supported by interviews with parents and caregivers. The increase in SEAM behaviors contributed to the idea that

dance/movement therapy improved interpersonal movement behaviors in young children with ASD in this study. A limitation Samaritter (2017) encountered was the sample size was too small. The validity was also a major concern in the development of the new observational values and further research is needed for the SEAM observational scale. Overall, Samaritter (2017) linked improvement in social attunement to dance/movement therapy using the SEAM observational scale.

Similarly, Devereaux (2017) examined the educator perspective of the effect of group dance/movement therapy sessions on the student's behaviors, symptoms, and academic engagement in their classroom (Devereaux, 2017). The participants were made up of three teachers and ten teachers' aides/assistants aged 30-50 years old who worked in a special education classroom and have observed/participated in the DMT sessions. Twelve of these participants were Caucasian and one was Hispanic which was a narrow scope and was a limitation this study faced.

Data collection was done through person to person semi-structured interviews. Each interview was conducted for a maximum of 30 minutes in which all the same questions were asked however, follow-up questions may have varied within each interview. This time constraint was another limitation because it could have affected the depth of response from the participant. The questions focused on their role in the classroom and in participation in the DMT sessions, their understanding of the purpose of DMT with their students, the observations of the inclusion of DMT and its influence on behavior, symptom and academic gains.

The group DMT sessions done with the children influenced their behaviors following the sessions and improved their functioning not only academically but socially. The primary diagnosis of the students in this study was Autism spectrum disorder, which further proved the

connection between DMT and changes in social attunement behaviors for children on the spectrum. The educators expressed a desire for DMT to happen more often during the school week because of the improvement in regulatory behaviors, the influence on the student's sensory systems, and DMT's ability to meet individual needs within the group session (Devereaux, 2017).

Nelson (2017) went one step further and evaluated "the effectiveness of an intervention package that included priming of social play and more complex use of preferred toys within creative dance activities on increasing quantity and quality of engaged play of young children with ASD within subsequent free-choice play or "learning" centers. This study took place in three metropolitan public preschool classrooms, which contained children ages 3 to 5 with and without disabilities. The participants were the interventionist, a licensed early childhood special education teacher with experience as a creative dance educator, three preschool aged children, 1 girl and 2 boys, with a formal diagnosis of ASD, and two observers, an assistant professor in early childhood special education, and a doctoral student in early childhood special education. The children were selected for this study for having shown difficulty engaging in free choice play in the preschool learning centers.

A multiple baseline probe design was used to evaluate the effects of the intervention strategy on the participants' social play in the free choice learning centers. The various probes measured the baseline data, daily interventions probes, and intermittent probes of post intervention behaviors i.e. maintenance. There were three dependent measures which measured

"(a) percent of engaged time participants engaged in social play as measured in 15 second intervals, (b) percent of engaged time participating children were involved in the various social levels of play as measured in 15 seconds intervals, and (c) percent of engaged time

participating children were involved in various levels of complexity of play as measured in 15 second intervals” (Nelson, 2017, p174).

Data collection was done on a tablet computer-based data collection system, which used a custom software application. The creative dance intervention was introduced during circle time as to not disrupt the daily schedule and consisted of a warm up, rug time and large motor activities throughout the classroom. Priming, which is where the teacher models the play for the child with a high reward, was inserted after five days of the intervention. The toys and activities selected were based on answers from the parent and teacher interviews.

The results showed that the intervention resulted in an increase in social play where the child with ASD was aware of their class members playing near them. It also showed a marked increase in play complexity during the intervention. Two of the children also showed an increase in dramatic play during the priming phase of the intervention. The small sample size was not representative of the population of children with ASD or inclusive public preschool classrooms, and the social validity was not measured, which created limitations for this study. Overall, this article linked an increase in social play following a creative dance intervention.

Relatedly, Hildebrandt (2016) investigated the use of dance/movement therapy on negative symptoms (social deficits) in participants with ASD over the span of two years. The participants of this study were sourced from their separate therapeutic/rehabilitative facilities specializing in ASD, with ages ranging from 14 –65. They must have attended German schools from elementary school age or spoke German and were diagnosed with ASD, which resulted in a total of 78 participants. They were then randomly divided into three groups, one of which was the control group.

The participants not in the control group received ten weekly sessions of dance/movement therapy versus the control group who continued with their individual daily routines. The intervention sessions happened weekly, during the same time frame and lasted for approximately 60 minutes. Each session contained a Chacian circle as the opening followed by three mirroring interventions as well as one verbal processing piece. A Chacian circle was a common dance/movement therapy intervention where the dance/movement therapist mirrored each participants movement and incorporated them into the group movements.

The data assessment used the Scale for the Assessment of Negative Symptoms (SANS) and was completed by medical doctors, psychologists and psychology students. The SANS scale contained five subsets and exhibited an acceptable internal consistency and external validity. The five subsets were blunted affect (lack of emotional response), alogia (difficulty speaking), abulia/avolition (lack of motivation), anhedonia (inability to feel pleasure), and diminished attention (lack of eye contact), which represented the negative symptoms commonly seen in children diagnosed with Autism spectrum disorder. Due to missing data from 35 participants listwise deletion and multiple imputation were applied as to not produce biased results. Some limitations this study faced were the drop out of participants due to the length of the study and the sample size was comprised of mostly male participants. Baseline results found that there was no significant difference between the baseline of the treatment and control groups.

The effect found in this study was significant at the 0.10 level, however, Hildebrandt (2016) observed an overall trend toward a stronger symptom reduction in almost all subtypes of negatives symptoms (social deficits) and a small, yet clinically substantial effect size equaling 15.27% of symptom reduction in overall negative symptoms. (Hildebrandt, 2016). These results

supported the notion that dance/movement therapy was effective in reducing the negative symptoms of Autism spectrum disorder, therefore improving their social skills.

Martin (2014) discussed a theoretical treatment framework and application of dance/movement therapy that could be used as an early intervention tool to strengthen the early developmental connections between early motor development and social/communication challenges in young children diagnosed with ASD. This provided a possible intervention framework for dance/movement therapists to use based off previously conducted research. The theoretical framework was comprised of four phases each building upon the last. The four phases were establishing safety and regulation, building connection and encouraging engagement, body awareness and motor coordination, and rhythm and timing.

In phase one, establishing safety and regulation, Martin (2014) discussed adjusting the space to meet the client's sensory needs and movement range. Mirroring was used in building connection and encouraging engagement, because of the interventions ability to connect and engage the client into their own movements as well as the movements of the therapist. To increase body awareness and motor coordination Martin discussed the use of the Bartenieff Fundamentals and the Ways of Seeing approach both of which organized the body's movements into categories therefore, helping the client develop coordination between different body parts. These tools also helped the therapist "in assessing a child with ASD in abilities and deficits as related to developmental movement, body awareness and self-other awareness" (Martin, 2014, p 550). Rhythm and timing not only helped the child diagnosed with ASD to develop an internal rhythm but also increased their ability to match rhythms with others therefore furthering their development of communication and social interaction (Martin, 2014).

A limitation faced by this article was that this theoretical framework was based off a limited scope of research. The author discussed the use of previous DMT research but did not provide the full outcomes of that research. The theoretical framework provided offered an expanded view of early intervention for motor and social/communication skill development to aid children with ASD. Although this framework had not been implemented it offered good insight into the needs of children diagnosed with Autism spectrum disorder as well as dance/movement therapy's ability to address those needs.

Similarly, Emck (2014) focused on "clinical movement features, gross motor problems, neurodevelopmental aspects, and movement interventions for children with emotional, behavioral and Autism spectrum disorder" (Emck, 2014, p 214). The author began by exploring movement characteristics in emotional disorders, behavioral disorders and Autism spectrum disorder because of the individualized approach needed when working with these clients. Emck (2014) identified that children diagnosed with emotional, behavioral or Autism spectrum disorder were all categorized by distinctive clinical movement features as provided in the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition.

The author continued by reviewing a study that tested the gross motor performance and physical fitness abilities of 100 children in the Netherlands diagnosed with psychiatric disorders (Emck, 2014). They found that the children with psychiatric disorders gross motor performance for both locomotion and object control showed an approximate three-year developmental delay and their neuromotor and aerobic fitness was very poor. The children with Autism spectrum disorder had low scores for their neuromotor and aerobic fitness and showed the greatest impairments in both locomotion and object control with the most significant correlation between the two.

The author also reviewed another study that explored emotional/behavioral problems in elementary school age children who were referred to a movement program for gross motor problems (Emck, 2014). It was found using parent and self-reports, that many of the children in the study (65%) met criteria for at least one psychiatric condition and suffered from substantial social impairments. 45% of the children met criteria for anxiety disorders and 23% of the children met criteria for Autism spectrum disorder. These findings supported the notion that the focus for gross motor interventions should include psychosocial factors, such as social impairments, to determine deficits that could have been present.

The author also discussed the PsyMot a tool which aimed to “decide if a child is indicated for movement and body-oriented therapy, and to formulate personalized treatment goals (Emck, 2014, p 218). This tool was meant to help broaden treatment goals to include experiential, behavioral and social goals. The PsyMot was still being investigated for reliability and validity although there were different versions being developed.

Emck (2014) faced multiple limitations since there was no background information regarding sample size, cultural considerations, bias, or methods for the studies provided. This article also used the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition when discussing diagnostic features of different disorders which is no longer appropriate since the publication of the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition. Emck (2014) implicated that a wide assessment of movement behaviors is recommended in the diagnostic process of child psychiatry. Based on the research provided, Emck (2014) recommended the use of dance/movement therapy as the standard treatment for children with neurodevelopmental disorders and psychiatric symptoms because of the variety of treatment goals in DMT and the ability to individualize treatment to each client.

Similarly, Scharoun (2014) performed a narrative review of literature, which discussed the effects and benefits of DMT for children with ASD. The author discussed the pioneering work of Kalish-Weiss, Costonis, Siegel and Loman as unique approaches that all reflected the aim “to assess movement in children with ASD and incorporate an intervention that is suited to the child’s needs” (Scharoun, 2014, p 215). The author also discussed the use of mirroring a significant component in dance/movement therapy which “promotes the development of an emotional, meaningful, and healthy relationship between therapist and child.” (Scharoun, 2014, p 216). Mirroring also aided in the development of social skills, body image, body visualization, and progress of movements from dyssynchronous to synchronous throughout interventions.

Scharoun (2014) reviewed a few separate case studies beginning with a few from Costonis’s book, *Therapy in Motion*. Scharoun discussed the case of Patricia, a five-year-old girl diagnosed with ASD. The synchronous movement profile was implemented and tracked Patricia’s synchronous movements with the therapist. The study found that after four months of working together Patricia showed a “60.5% increase in synchronous movement with the therapist and a 40% decrease in time to establish synchrony” (Scharoun, 2014, p 217). These findings supported the notion that dance/movement therapy increased Patricia’s ability to engage with others and decreased the amount of time it took for her to engage.

The author also reviewed a case study of a four-year-old girl with ASD who met with a dance/movement therapist for thirty minutes, three times a week, over the span of eight weeks. The girl showcased an increased tolerance for physical touch and eye contact, moved synchronously with the therapist and exhibited less behavior characteristics of ASD (Scharoun, 2014). The therapist also saw a progression in developmental phases and the child’s ability to

explore movement. This case supported the idea that dance/movement therapy could be utilized to help increase social skills such as eye contact.

In another case study that was reviewed Kestenberg Movement Profile (KMP) was used to determine the developmental stage the child was physically and cognitively functioning. Loman (1995) worked with a four-year-old boy with ASD who functioned at the same developmental stage as an 18-month old infant. Loman (1995) worked with the child to review developmental stages that had already occurred and helped him continue forward as the child was ready to do so. Through this approach the child was able to move forward to the developmental stage of a three-year-old, positively affirming the implementation of the KMP. Scharoun (2014) found that each case study she reviewed highlighted similar observations about the use of DMT with children with ASD.

Scharoun (2014) then discussed the use of DMT with children who had not been formally diagnosed but displayed the behavioral characteristics of ASD. The case study showed how trauma can sometimes mimic the behavioral symptoms of ASD but through the implementation of DMT the child was able to communicate her story, which allowed her to move forward. The article stated that DMT does not simply focus on the symptoms but rather the client as a whole, which in the case of a wrongful diagnosis was very helpful.

Scharoun (2014) then discussed the use of group dance/movement therapy interventions for ASD. In the Parteli case study, KMP was implemented with two boys to assess and observe their movement throughout their participation in DMT, which helped in increasing the boys motor and psychosocial skills. In the Hartshorn case study 38 children with ASD received thirty-minute sessions, twice a week, for two months. The characteristic behaviors were measured in the first and last session and the results showed an increase in attentive behaviors and a decrease

in stress behaviors (Scharoun, 2014). Another group case study found an increase in group cohesion, turn taking, and fewer violent outbursts (Scharoun, 2014). The author also discussed the use of DMT in the special education curriculum in Franklin Square, NY which had become a partially school district funded program and continued to work with children on a regular basis.

The new interventions discussed were Tortora's Ways of Seeing Approach, which linked "movement with emotional development based on Piaget's theory of sensory-motor development" (Scharoun, 2014, p 221), which had not yet been proven effective with children with special needs. Another approach mentioned was Ramachandran and Seckel's idea that the mirror neuron system (MNS) in children with ASD was simply dormant and through synchronous dance movements which mimicked others they could attempt to revive the MNS (Scharoun, 2014). The last intervention was from a recent study that proposed using moving in synchrony and imitation to fulfill outlined goals. The hope of this theoretical intervention was that the DMT intervention would impact the MNS and facilitate an empathetic response in the individual with ASD. Scharoun (2014) stated that at the time there was no knowledge of the results of this study being published.

Scharoun (2014) provided a great number of cases and interventions that offered a great insight into the literature regarding the use of DMT with children diagnosed with ASD. The literature showed many successful individual and group interventions which provided great insight into relevant interventions. The case studies provided varied in size, duration and implementation but each found a positive response to the use of DMT. Overall though, there remained a great scarcity of research to fully validate these cases and interventions.

Discussion

The purpose of this capstone thesis was to gain a deeper understanding of the existing literature surrounding the improvement of social skills in children and adolescents diagnosed with Autism spectrum disorder. Through reviewing the literature, it appeared that there were many interventions that could work with this population to improve social skills. Applied behavioral analysis along with dance/movement therapy offer individualized approaches, which allowed the teacher or therapist to truly target the needs of the client. Many interventions emphasized the importance of early intervention when working with this population. However, it became apparent that often a lot of the research that had been conducted contained small sample sizes that were not representative of the true population especially when considering that cultural considerations were often not made.

Applied behavioral analysis was seen as the most effective evidence-based intervention with this population because of its ability to target specific goals with the individual. Makrygianni (2018) explained that ABA was most effective when

“implemented specifically following the principles of applied behavioral analysis; (b) are applied as early as possible in the child’s life, preferably before the age of 3 years; (c) are usually provided in a student-teacher ratio of one-to-one before generalization procedures are used; (c) are individualized, comprehensive, and target a great number of skills; (d) incorporate skills that are targeted following a hierarchy based on typical development; and (d) are used in conjunction with parent-education services” (Healy & Lydon, 2013; Virues-Ortega, 2010).

Applied behavioral analysis was proven to be very to moderately effective in increasing communication skills and expressive and receptive language in children with ASD in the meta-analytic study done by Makrygianni (2018). Applied behavioral analysis also used video

modeling, scripts, and embedding choice to help increase communication in this population. Scripts and video models were a great way to integrate typically developing children into these interventions because they provided a great example. Video modeling was also a great way to model social skills to this population since most children with ASD often choose watching videos as a preferred activity. The use of choice with this population also proved to be a great way to prevent disruptive behaviors and allowed the individual to control a portion of the day.

Dance/movement therapy interventions with this population also appeared effective in the literature provided. Dance/movement therapy's ability to connect with the client on a body level allowed the dance/movement therapists to connect with the clients in a way that was comfortable for them. In the literature reviewed dance/movement therapists often used mirroring to reflect the client's experience to them and allowed the therapist to truly meet the client where they are. The use of mirroring was another intervention that helped improve or awaken the mirror neuron system in children and adolescents diagnosed with ASD. Another benefit of the use of dance/movement therapy with this population was the increase in social attunement. Social attunement was shown to increase following dance/movement therapy interventions however, due to the expressive nature of dance/movement therapy it was hard to develop evidence-based practices as seen in ABA.

Dance/movement therapy showed great potential in working with this population because of its body centered approach and the ability to attune with the client using the body. Also dance/movement therapists don't often follow a specific plan in session because of the need to stay present with the client. Dance/movement therapists were also knowledgeable in Kestenberg movement profile which used body rhythms to categorize the client's developmental age. By

implementing KMP the dance/movement therapist could individualize their interventions to the developmental needs of their clients.

Due to the expressive nature of dance/movement therapy a great deal of the literature was case studies and as a result, theoretical frameworks were developed. The case studies reviewed did vary in size, population and intervention but the embodied approach of DMT received positive responses. In most of the interventions, the authors found that after the dance/movement therapy intervention had been completed the child's ability to maintain eye contact, attune to others and engage in socially appropriate behaviors had improved. Since most of the current literature reviewed was case studies there was not much quantitative evidence supporting the use of dance/movement therapy as an evidence-based intervention. Further research should explore the effectiveness of the current theoretical frameworks and continue to develop quantitative/qualitative studies to provide information around the development of social skills as a result of DMT interventions with children diagnosed with ASD.

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THESIS APPROVAL FORM

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Student's Name: Holly Berlandy

Type of Project: Thesis

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In the judgment of the following signatory this thesis meets the academic standards that have been established for the above degree.

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