

Full-Length Article

The Influence of Music Therapy on Prosocial Behaviors of Adults with DisabilitiesHaley Rochelle Baumgarten¹, Barbara L. Wheeler²¹Molloy College; Opportunities for Positive Growth, Long Island, New York, USA.²Professor Emerita, Montclair State University, New Jersey, USA.**Abstract**

This pilot study investigated the use of music therapy to increase three specific prosocial behaviors in adults with disabilities attending a day habilitation program. The social skills addressed were (a) initiating conversation, (b) participating in reciprocal exchanges, and (c) expressing emotions. Fifteen participants between 21 and 46 years of age were selected through purposive sampling. Participants attended biweekly music therapy sessions for 30-45 minutes over a 6-week period. Sessions included interventions that encouraged learning about and using socially appropriate prosocial behaviors. These interventions consisted of musical interplay between therapist and participants, as well as interactive play among the participants. The parents and/or legal guardians of the participants were asked to assess the participants' social behaviors prior to and following music therapy, using the Home and Community Social Behavior Scales (HCSBS). Data were collected from the participants using pre- and post-HCSBS assessments, and from the researcher and day program staff using a Likert scale designed specifically for this study. Participants who engaged in music therapy demonstrated an increase in prosocial behaviors, suggesting that participation in music therapy increased social skill development in adults with disabilities.

Keywords: *music therapy, adults with disabilities, prosocial behaviors, social skills.*

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Adequate integration into society is a constant struggle for the majority of adults with disabilities, especially when a disability inhibits typical development of prosocial behaviors. The intent of this study was to analyze the outcomes of a music therapy social skills program developed for adults with developmental disabilities.

Governmental studies show that the prevalence of individuals with disabilities in the United States is increasing. From 1997 to 2008 the prevalence of developmental disabilities has increased 17.1% and the prevalence of autism increased approximately threefold [1]. The percentage of individuals living with a developmental disability is approximately 1.5%-2.8% of the general public [2, 3], or about 4.6-7.7 million Americans [2, 3, 4, 5]. However, U.S. Census Bureau surveys do not include individuals living in group

homes with five or more residents, so any adult with a disability who lives in a group home is not accounted for in the census. Information on individuals with disabilities tends to come from research on children [2, 6].

Developmental disabilities begin before the age of 22 and typically last throughout a person's entire life and impact day-to-day functioning [1, 4, 7]. Disabilities that result in social deficits affect an individual's ability to function or adapt to "environmental demands and age-appropriate societal expectations [8]. Developmental disabilities may affect the ability to reason, plan, solve problems, learn quickly and from one's experiences, and think abstractly. Many people with these disabilities function at an intelligence quotient (IQ) of approximately 70 or lower [4].

Adaptive behaviors encompass three primary skill sets: (a) conceptual skills, which involve receptive and expressive language, self-direction, and reading, writing, and money skills [4]; (b) social skills, which consist of a repertoire of verbal and nonverbal abilities [9] and include interpersonal skills, acceptance by peers, teachers, and parents, development of friendships, school adjustment [8], ability to recognize social cues and respond appropriately to different situations or contexts [9, 10], and ability to follow rules and obey laws [4]; and (c) practical skills, such as personal daily living tasks [4].

Autism spectrum disorders (ASDs) fall under the umbrella of developmental disabilities. ASDs cause

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Haley Rochelle Baumgarten, MS, MT-BC. E-mail: hbaumgarten0289@gmail.com | COI statement: The authors declared that no financial support was given for the writing of this article. The authors have no conflict of interest to declare.

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“substantial impairments in social interaction and communication” [7]. Individuals with ASD often experience challenges with social, emotional, and communication skills that cause serious problems in their everyday lives [11].

Limited adaptive behaviors impact an individual’s daily life and affect his or her ability to cope with particular situations or environments [4]. Reducing such deficits has the potential to improve quality of life and enable greater independence.

Social Skill Programs for Individuals with Disabilities

Gresham [8] states, “the ability to interact effectively with peers and adults is one of the most important aspects of a child’s development” (p. 51). The impact a deficit in social skills has on functioning and integration in society varies with the type of disability. Hooper [12] suggests that this is because many people with disabilities find it “difficult to establish and sustain social contact” (p. 121), in part because the abnormal behavioral patterns they exhibit create added challenges for them in social situations and limit their interactions to staff and peers. Hooper continues by stating, “the outcome is that challenging behavior(s) may emerge as they become frustrated by a lack of social contact and seek attention” (p. 121).

Research has shown that the opportunity for individuals with disabilities to develop friendships and other relationships within their daily environment is necessary for improving social and communication skill [13]. Playful teasing and shared social moments between individuals with disabilities and paid staff members has been seen to strengthen working relationships [14]. Social inclusion improves physical and psychological health by increasing self-esteem, self-confidence, and overall quality of life for individuals with disabilities [13, 15]. However, this need is not always met; Emerson and McVilly [13] found that adults with disabilities have very few opportunities to engage in friendship activities.

The use of observations and practice through role play [16] and the use of video-assisted training tools [17, 18] have been found to increase problem solving skills, employment related skills, and independent living skills for adults living with developmental disabilities.

Social programs, such as Special Olympics, have been found effective in teaching social skills, including the ability to make eye contact, contribute relevant information, and take turns [19]. Dating programs have also been found to be an effective method for teaching the development of healthy and meaningful relationships and minimizing aggression within these relationships [20].

Researchers have examined the use of Theory of Mind interventions when teaching social skills to individuals with autism [21, 22]. Theory of Mind refers to our capacity to infer the mental states of others and to appreciate that these may differ from our own beliefs, feelings, desires, intentions, and goals [22, 23]. It is thought that Theory of Mind deficits could

explain impairments in social and communication skills commonly found in individuals on the autism spectrum [24, 25]. While the research on teaching social skills to adults with disabilities is limited, results from studies based on children present interventions that can inform future investigations with adults. These interventions, which include data to support their effectiveness, can be adapted to be age appropriate for adults through adjusted vocabulary and age appropriate content.

Music Therapy and Disabilities

There has been an increase in the number of studies about the use of music therapy to address the core problems experienced by individuals on the autism spectrum and with intellectual and developmental disabilities. Music therapy is effective in enabling individuals on the autism spectrum to communicate and express feelings [26] can be used as a motivator for individuals with disabilities [27], and can “meet the client at their own level and allow them to grow from there” [28] due to its malleability; it can be adapted to each individual’s specific needs. Music therapy interventions can “facilitate motivation, communication skills and social interactions” [29] (p. 535), develop and sustain joint attention, increase self-esteem, lower anxiety, and improve attitudes towards peers among individuals with disabilities [30, 31], help individuals “develop a tangible tool they can access when needed” [32] (p. 91) when working on developing personal care skills, social skills, and managing emotions, as well as develop new ways of processing and responding to external stimuli [32]. All of these are necessary when attempting to engage in social interaction with another individual.

Music therapists work on a variety of goals with adults with disabilities and “by clearly designing and implementing specific protocols for team targeted areas, music therapists can contribute to the overall development of an individual” [33] (p. 84). Music therapists interviewed by Lee [34] felt that the role of the music therapist working with adults with disabilities was to maximize the clients’ potential abilities and improve their quality of life, provide another form of attentions that is not personal care, and provide “human interaction and socialization” (p. 69). Watson [35] suggests bringing carers and staff members into music therapy and sensory interaction groups to show them what the individuals are capable of and that care staff are then able to take some of the attitudes and approaches they observe during the session to develop authentic relationships with the individuals.

Music Therapy and Social Skill Programming

Adults with disabilities often find it very difficult to integrate themselves into society [36]. Due to music’s ability to promote interactions and socialization in a nonthreatening way [37], many music therapists have begun to look further

into therapeutic techniques and programs that will help adults with disabilities develop social understanding and abilities.

Researchers often study the effectiveness of music therapy programming on the development of social skills in children with intellectual disabilities [38, 39, 40]. Results may provide information about which techniques are useful for teaching social skills to adults with disabilities. Music can be used to promote interpersonal relatedness and can guide individuals smoothly into new developmental stages [41]. Music therapy has also been seen to be effective in promoting social skills and the emotional and motivational development of children with disabilities [31]. Furthermore, a meta-analysis by Whipple [42] revealed an increase in appropriate social behaviors, increased attention to task, improved vocalizations, more expressive gestures and better vocabulary comprehension when music was used with children and adolescents with developmental disabilities. It appears from reviewing the literature that researchers are increasingly studying the effects of music on the development of social skills for adults with disabilities.

A number of music therapists have studied and worked with adults with developmental disabilities, including those on the autism spectrum. Hooper [12] studied the number of prompted and unprompted social interactions between four adults while engaging in musical activities and structured ball games. He found that the level of unprompted social interactions increased during both activities, confirming that “using non-threatening, non-verbal music activities to structure interactions increase the frequency of successful interactions” (p. 126). Turry and Marcus [37] used action methods of improvisation with a group of individuals on the autism spectrum. After participating in the group, parents and guardians reported observing the group members exhibiting increased tolerance and functioning in social situations, increased ability to cooperate and play with others, and more interest and willingness to communicate.

Fillingham [36] looked at the use of music therapy to help adults with learning disabilities explore relationship difficulties and how this in turn affected the individuals’ quality of life. Fillingham concluded that the real challenge for adults with learning disabilities is social inclusion, and that music therapists could be the key to empowering them to be more active in the community. Watson [43] worked with a group of adults with learning disabilities using music therapy experiences to develop social skills, confidence, and coping skills, that could be used to make the transition into the community less intimidating and anxiety provoking. Music played a key role in assisting the participants make this transition by providing them with a safe environment to explore the issues and challenges of becoming more involved in the community. Curtis and Mercado [44] also saw the importance of fostering “community engagement and friendship building among those with disabilities” (n.p.). They developed a performing arts program that included both

people with and without disabilities. Through the use of community music therapy techniques participants with disabilities began to develop positive relationships with other members of the performing arts program.

This study addressed the need to implement music therapy social skills training programs in services provided to adults with disabilities. The aim of the study was to gather information to help to understand whether, through music therapy social skills programming, adults with disabilities can develop the necessary skills to be active and productive members of society. Hypotheses were that, through music therapy social skills training, participants would:

- Increase initiation of conversations as observed by staff members in and outside of music therapy sessions,
- Increase initiation of conversations as observed by the music therapist in music therapy sessions,
- Increase engagement of reciprocal play as observed by staff members in and outside of music therapy sessions,
- Increase engagement of reciprocal play as observed by the music therapist in music therapy sessions,
- Express increased range of emotions as observed by staff members in and outside of music therapy sessions,
- Express increased range of emotions as observed by the music therapist in music therapy sessions.

Method

Participants

15 adults with developmental and intellectual disabilities attending a day habilitation program participated in the study. All were volunteers from among those enrolled in the program. Participants, including 9 females and 6 males, ranged in age from 21 to 46 years ($M = 26.53$, $SD = 6.545$). They had a variety of diagnoses including autism spectrum disorders, pervasive developmental disorder - not otherwise specified, Down syndrome, and cerebral palsy.

Design

This pilot study was conducted using a pre-post design, focusing on the development of the prosocial behaviors of interest: (a) initiating conversation, (b) participating in reciprocal exchanges, and (c) expressing emotions. The prosocial behaviors were studied during music therapy sessions and in the individuals’ regular day habilitation program. The three social skills were taught in progression, so that each skill added to and built upon the one previously taught. Two of the three groups focused on initiating conversations first, then explored reciprocal exchanges, and concluded with expressing emotions. The third group began with reciprocal exchanges, then progressed to initiating conversations, and concluded with expressing emotions. This ordering reflects the likelihood that initiating conversations and participating in reciprocal exchanges draw on similar cognitive skills, while expressing emotions is a more nuanced

skill that requires trust within the therapeutic alliance. Placing the emotional expression skill at the end of the progression provided the group with time to develop a trusting working relationship.

Measurement

Data were collected from three sources: the researcher, day program staff, and participants' parents or legal guardian. Measurements by the therapist and day program staff used a Likert scale, while the parent or legal guardian measurements used the Home and Community Social Behavior Scales (HCSBS). Parents also completed a questionnaire intended to provide background information for each participant.

Likert scale. The therapist and day program staff used the Likert scale after each session. Day program staff then completed the scale a second time, based on observations during day program activities on a different day. The Social Behavior Frequency Likert Scale was developed for this study. It used a 7-point scale to assess behaviors in three areas: initiating conversations, participating in reciprocal play, and expressing emotions. From 14 to 20 specific behaviors were listed under each area. For example, under initiating conversations, behaviors included: independently approaches peers, independently approaches therapist, independently greets peers, independently greets therapist, independently introduces self to peers, independently introduces self to therapist, looks at peers when talking, looks at therapist with talking, and so forth.

HCSBS. The parents or legal guardians were asked to complete the HCSBS at the beginning and the end of the study in order to assess their perception of the participant's prosocial growth in the home environment. The HCSBS is a 64-item rating scale for parents or other home-based raters such as legal guardians or group home supervisors. The purposes of the scales are to: (a) screen for individuals who exhibit at-risk behavior patterns, (b) determine eligibility for special services, (c) develop appropriate interventions for social skill deficits or observed antisocial behavioral problems, (d) evaluate the effectiveness of interventions on behaviors, and (e) study social behaviors. The authors report an internal reliability of 0.94-0.97, a test-retest reliability of 0.82-0.91, and an inter-rater reliability of 0.85-0.86 for the social competence scales and 0.64-0.73 for the antisocial scales [45]. The HCSBS is divided into two primary subscales, social competence and antisocial behavior. The social competence scale has two subscales of its own: the peer relations subscale, which measures positive peer interactions, and one for self-management/compliance, which measures how participants respond to social expectations. The antisocial scale measures oppositional, irritating or challenging behaviors using the defiant/disruptive subscale, and dangerous, destructive, coercive behaviors, with the antisocial/aggressive subscale [45]. When completing the HCSBS, parents or other home-based raters are to rate the frequency of the specific prosocial

behaviors and antisocial behaviors exhibited by the individual within the past 3 months.

Procedure

Participants attended biweekly music therapy sessions for approximately 30-45 minutes over a 6-week period. An identical session format was used with all three groups to ensure that all participants received the same opportunities in therapy. The sessions included the use of interventions that encouraged the education and use of appropriate social skills. Interventions used included, but were not limited to: (a) receptive music therapy activities such as listening to music, music assisted relaxation, and movement to music; (b) improvisational music therapy activities to facilitate the individual's awareness, engagement, and communication with each other and the therapist; (c) re-creative music therapy activities such as songs with instrumental and vocal responses, musical song-games; and (d) songwriting [46]. Precomposed music used during sessions consisted of popular contemporary music heard on the radio, oldies, R&B, hip hop, and other songs or music requested by the group members.

A typical session started with a greeting song to help the group members transition into the music therapy environment. The body of the sessions consisted of approximately three to four interventions targeted towards the development of the social skill currently being focused on (initiating conversations, participating in reciprocal conversations, or expressing emotions). Sessions concluded with a goodbye song to aid in the transition out of music and back into the day program or to work.

Each music therapy session was video recorded. The researcher completed the Likert scale devised for this study while viewing the video recorded session. This allowed a more accurate assessment of each participant's growth than if the Likert scale were to be completed purely from memory of the session.

Staff members from the day program participated in the study by assisting in sessions. Each day support professional received an in-service training from the researcher before the first session to ensure understanding of how to appropriately help participants during music therapy. This training included an explanation of types of behaviors that are considered acceptable during sessions, such as playing an instrument in an aggressive way, which might be viewed as inappropriate in other situations. The researcher also described physical, verbal, and gestural cuing that can be used to motivate and gently encourage participation without distracting the participants or taking away the freedom to make decisions.

Music therapy process. Participants attended biweekly music therapy sessions for approximately 30-45 minutes, over a 6-week period. An identical session format was used with all three groups to ensure that all participants received the same opportunities in therapy. The sessions included the use of

interventions that encouraged the education and use of (socially) appropriate social skills. Interventions used included, but were not limited to, (a) receptive music therapy activities such as listening to music, music assisted relaxation, and movement to music, (b) improvisational music therapy activities to facilitate the individual's awareness, engagement, and communication with each other and the therapist, (c) recreative music therapy activities such as songs with instrumental and vocal responses, musical song-games, (d) songwriting [46]. Precomposed music used during sessions consisted of popular contemporary music heard on the radio, oldies, R&B, hip hop, and other songs or music requested by the group members.

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Staff's role in the music therapy session. Staff members from the day program participated in the study by assisting in sessions. Each day support professional received an in-service training from the researcher before the first session to ensure understanding of how to appropriately help participants during music therapy. This training included an explanation of types of behaviors that are considered acceptable during sessions, such as playing an instrument in an aggressive way, which might be viewed as inappropriate in other situations. The researcher also described physical, verbal, and gestural cuing that can be used to motivate and gently encourage participation without distracting the participants or taking away the freedom to make decisions.

Data Analysis

At the end of treatment all data were examined to see if there were changes the prosocial behaviors being studied: (a) initiating conversations, (b) participating in reciprocal play, and (c) expressing emotions.

To assess the data collected from the Likert scales completed by the staff members during music therapy, staff members during the typical day program activities, and the music therapist a linear mixed model with a first-order autoregressive covariance structure that took into account the correlated scores within participants across sessions was

performed. This test took into account that correlations of measure within participants decay exponentially over time and the closer in time sets of scores are gathered, the more correlated they will be.

A paired *t* test was used to compare the pre- and post-test scores for each of the six subscales from the HCSBS assessment completed by the participants' parents or legal guardians. The researcher also calculated interrater reliability for the therapist's observations in music and after viewing the video of each session by computing an average-measures intraclass correlation coefficient (ICC) for absolute agreement, with a two-way mixed model where rater effects were random and item effects were fixed.

Results

Correlations Between Therapist's Ratings

The therapist completed the Likert scale immediately following each session and then again after viewing the videotape of the session a day later, in order to assess consistency of ratings. An interrater reliability test was run on the two sets of data by computing an average-measures intraclass correlation (ICC) for absolute agreement, with a two-way mixed model in which rater effects were random and item effects were fixed. The correlation between the therapist's two ratings for each of the three skills with ICC scores ranged from 0.87 to 0.98 ($p < .001$). Correlations of ratings for each skill are shown in Table 1.

Skill	ICC Agreement
Initiating Conversations	0.96
Participating in Reciprocal Exchanges	0.87
Expressing Emotions	0.98

Table 1. Intraclass Correlation Coefficient for Therapist's Ratings of Each Skill

Home and Community Social Behavior Scale

Parents or guardians of 11 of 15 participants returned the HCSBS both before beginning music therapy and after completion of therapy. A statistically significant change was found for the Self-Management/Compliance subscale ($t = 2.2514$, $df = 10$, $p < 0.05$), indicating that the participants complied better with appropriate expectations of adults and showed appropriate self-restraint and self-management skills [50]. None of the other scales showed a significant change. Results are summarized in Table 2.

HCSBS Scale	Paired <i>t</i> -test Results	
	<i>t</i> (10)	Sig.
Scale A: Social Competence - Peer Relations	0.24	0.82
Scale A: Social Competence - Self-Management/Compliance	2.25	0.05
Scale A: Social Competence Total	1.46	0.17
Scale B: Antisocial Behavior - Defiant/Disruptive	0.48	0.64
Scale B: Antisocial Behavior - Antisocial/Aggressive	0.18	0.86
Scale B: Antisocial Behavior Total	0.33	0.75

Table 2. HCBS

The Social Competence Total subscale did not show an overall significant change, but 8 of the 11 participants showed improvement in social competence. The Antisocial Behavior Total subscale, which measures a combination of overt and covert behaviors that are considered antisocial because they are directed at others, may lead to delinquency, or are likely to result in negative social consequences such as strained relationships with others [50] did not show an overall significant change in abilities either. However, all individuals had post-test scores in the 80th percentile or higher, indicating that all participants who submitted both the pre- and post-test evaluation were exhibiting average social functioning skills on this subscale, as observed by the participants parents and/or legal guardians in the home environment.

Effects of Treatment

A linear mixed model with a first order autoregressive covariance structure was conducted to test for the effects of session, rater, and group on each of the different skills: (a) initiating conversations, (b) participating in reciprocal exchanges, and (c) expressing emotions. The autoregressive covariance structure was selected in order to account for the fact that participants’ scores in sessions were expected to decrease exponentially depending upon the length of time between sessions. As described below, a significant three-way interaction was found: The effects of sessions on conversation, exchanges, and emotions were moderated by group and rater. Results are summarized in Table 3 and presented below.

	Group 1	Group 2	Group 3	Overall
Initiating Conversations				
Staff observations - session	---	---	---	Yes
Staff observations - day program	Yes	---	---	---
Music therapist observations	---	Yes	Yes	Yes
Participating in Reciprocal Exchanges				
Staff observations - session	Yes	Yes	---	---
Staff observations - day program	---	Yes	---	---
Music therapist observations	Yes	---	---	Yes
Expressing Emotions				
Staff observations - session	---	---	---	---
Staff observations - day program	---	---	Yes	---
Music therapist observations	---	---	---	---

Table 3. Significant Changes by Group, Environment, and Observer

Initiating conversation. Each of the three hypotheses regarding initiating conversation received some support. They suggested that through music therapy social skills training participants would:

- Increase initiation of conversations as observed by staff members in and outside of music therapy sessions;

- Increase initiation of conversations as observed by the music therapist in music therapy sessions.

There was a significant main effect for session ($F(11,342) = 7.66, p < .001$), rater ($F(2,342) = 223.99, p < .001$), and group ($F(2,342) = 13.6, p < .001$). A significant three-way interaction was found; the effects of sessions were dependent on group

and rater ($F(36,342) = 5.67, p < .001$). Overall, participants scored 1.04 ($p < .05$) points higher on measurements of ability to initiate conversations in session 12 ($M = 5.573, SD = 0.57$) than in session 1 ($M = 4.54, SD = 0.73$).

A pairwise comparison based on staff observations of participants during music therapy sessions indicated an overall significant change in scores on initiating conversations ($M_D = .74, SD = 1.08, p = .009$). Observations made during the typical day program activities showed significant change for Group 1 ($M_D = 1.69, SD = .97, p < .001$).

Analysis of ratings made by the music therapist revealed significant changes in the participants' level of ability to initiate conversations in Group 2 ($M_D = 1.67, SD = .96, p < .001$, and Group 3 ($M_D = 2.14, SD = .93, p < .001$). No significant change was found for Group 1 ($M_D = .38, SD = .96, p > .05$). However, the therapist's scores did indicate an overall significant change in participants' scores for this skill ($M_D = 2.04, SD = 1.06, p < .001$).

Participating in reciprocal exchanges. All three hypotheses concerning participating in reciprocal exchanges received some support. They suggested that through music therapy social skills training participants would:

- Increase engagement of reciprocal play experiences as observed by staff members in and outside of music therapy sessions,
- Increase engagement in reciprocal play experiences as observed by the music therapist in music therapy sessions.

There was a significant main effect for session ($F(11,303) = 12.37, p < .001$), rater ($F(2,303) = 138.15, p < .001$), and group ($F(2,303) = 15.34, p < .001$). There was a significant three-way interaction between group and rater on session scores, $F(28,303) = 8.4, p < .001$. However, the pairwise comparison did not yield a significant difference between the average score in session 1 ($M = 4.92, SD = 0.98$) and session 12 ($M = 5.11, SD = 0.57, p > .05$).

Analysis of ratings made based on staff observations during the music therapy session revealed significant changes for Group 1 ($M_D = 0.82, SD = 0.92$) and Group 2 ($M_D = 0.99, SD = 0.97, p < .05$). The pairwise comparison of the participants' scores and each rater was not significant. Ratings of participants' reciprocal exchanges made by staff during the typical day program activities did not exhibit a significant change over the 12 sessions. However, a significant change was indicated in the pairwise comparison for rater to group for Group 2 ($M_D = 0.93, SD = 0.96, p < .05$).

For Group 1, a significant change was seen in reciprocal exchange scores over the course of the 12 sessions, based on observations by the therapist ($M_D = 1.07, SD = 0.92, p = .01$). The pairwise comparison of the therapist's observations also indicated an overall significant change for all participants ($M_D = 0.99, SD = 1.3, p < .05$).

Expressing emotions. There was little change and thus little support of the hypotheses that suggested that, through music therapy social skills training, participants would:

- Express increased range of emotions as observed by staff members in and outside of music therapy sessions;
- Express increased range of emotions as observed by the music therapist in music therapy sessions.

There was a statistically significant main effect for rater ($F(2, 132) = 13.06, p < .001$), and group ($F(2,132) = 6.63, p < .01$). However, the main effect for sessions did not change significantly ($F(3, 132) = 0.59, p > .05$). There was a statistically significant interaction between group and rater on session, $F(12,132) = 2.79, p = .002$. A pairwise comparison did not yield a statistically significant difference between average scores in the first session focused on this skill (session 8) ($M = 4.26, SD = 0.91$) and the last session (session 12) ($M = 4.63, SD = 0.86, p > .05$).

For staff observations, a pairwise comparison showed that Group 3's scores on the Likert scale during the typical day program significantly improved ($M_D = 2.26, SD = 1.45, p = .001$). Observation scores during music therapy sessions did not change significantly for any of the participants over the four sessions focused on this skill ($M_D = 0.3, SD = 1.43, p > .05$).

The pairwise comparison based on the therapist's observation scores did not show a significant change in abilities for all participants ($M_D = 0.19, SD = 1.43, p > .05$).

Discussion

This study and others like it suggest that music therapy is an effective intervention for improving social skills for individuals with disabilities [31, 40, 47]. Music therapy provides a motivating and rewarding social experience, which is embedded in human culture, making it easily accessible to the individual [39]. The researcher investigated three separate skills: (a) initiating conversations, (b) participating in reciprocal exchanges, and (c) expressing emotions. Participants' growth in these skill areas was assessed in and out of music therapy sessions by staff members and the therapist over the 6-week treatment period.

An overall change in participants' ability to initiate conversations during music therapy was observed by the staff members and the music therapist. Participants' ability to independently introduce themselves and greet others increased. They also started treating each other and staff with more respect, which allowed them to develop strong and trusting relationship with their group members. Along with this, participants became more open to the ideas of others in the group; this change allowed the group to become a place where participants felt comfortable sharing both good and bad experiences musically and verbally. As the groups progressed, the participants started offering each other advice based on the

issues brought into group. There was a noticeable change in the amount of friendly teasing that occurred both in and out of the session. Participants appeared to struggle with independently engaging in call-and-response experiences, but as sessions progressed they became more comfortable responding as part of a group. Some individuals took on more leadership within the music therapy session, possibly resulting from the development of trust among group members.

It was also observed that participants were taking more risks and sharing more personal thoughts and feelings with the group. This is of interest, because while there were no overall significant changes in the participants' scores on the portion of the Likert scale pertaining to expressing emotions, increased sharing of emotions was observed by the therapist and staff in and out of sessions. Furthermore, while the scale did not show a statistically significant change, participants appeared to improve their ability to support each other through sympathetic verbal, physical, and affective responses. Participants seemed to become more comfortable characterizing and verbalizing internal feelings and emotions, and were able to sympathize appropriately with their peers' emotional expressions. This discrepancy could have occurred because the Likert scale measured specific skills, but the way emotions were expressed, particularly through the music, were more nuanced. If the expressing emotions scale had included more measures of empathy and responsiveness to the feelings of others, instead of concrete emotional understanding, the Likert scale might have been a better representation of the participants' overall emotional growth.

Competence in social skills is typically associated with social acceptance, while a lack of social competence can lead to increased bullying and feelings of being neglected or rejected by peers [48, 49]. The results of the HCSBS showed significant changes in social function in the home environment for many of the participants. Changes were seen primarily in the participants' ability to self-manage and comply appropriately with the social expectations of others in their lives. These changes included the ability to follow directions, complete tasks without being reminded, and respond appropriately when corrected by others.

Parents and caregivers also saw a reduction in antisocial behaviors such as getting into fights, teasing others in an unkind manner, destroying or damaging property, arguing, being disruptive, or being physically aggressive [50]. All 11 participants who submitted the pre- and post-test HCSBS had post-test scores that showed average social function on the antisocial behavior scale. This may be related to the change in the Self-Management/Compliance subscale, because once the participants were able to manage their impulses more effectively and remain calm in tough situations, they were more likely to become more aware of their antisocial behaviors. For example, the amount of inappropriate physical and verbal aggression decreased, showing a heightened level of self-control. This demonstrates that over the 6-week

treatment period participants were able to develop a better understanding of their own behavior and of how those behaviors affect the people around them and the relationships they develop [49].

This study did not include a control group or control conditions, so changes that occurred cannot be conclusively attributed to the music therapy treatments. They may have been due to the music therapy—and evidence from other research and the information acquired in this study suggest that this is the case—but, without control, this cannot be determined. Future studies should include control conditions to assess cause and effect.

Changes in each of the three skills (initiating conversations, participating in reciprocal exchanges, and expressing emotions) were moderated by the group and the rater. Groups were created based on when the participants would be able to meet for sessions. Group 1 had sessions in the morning due to group members leaving the day habilitation program to attend job sites, Group 2 had one morning session and one afternoon session to facilitate members of the group who went to work 1 or 2 days each week, and Group 3 had two afternoon sessions each week because none of these participants attended job sites. This resulted in Group 1 being comprised of primarily high functioning individuals who spent the majority of their days in the community at work sites while the other two groups consisted of individuals who spent less time in the community and had lower levels of functioning. In addition, there were many different staff raters used throughout the study. Participating as a rater in the study added to staff members' workloads. Several of the staff members did not mind this, while others found it to be a burden and did not put as much effort into completing the Likert scale as others. Furthermore, despite being trained by the researcher on how to interact during sessions and how to complete the Likert scale during music therapy sessions, each staff member was different and interpreted the researchers' trainings differently. Future studies should consider providing staffing with more uniformed and comprehensive training on filling out the Likert scales as well as conduct reliability checks to insure higher levels of agreement throughout the study. If participants had been randomly assigned to groups and staffing had been more consistent, results may have been more consistent across the three groups.

In addition to the lack of control, there were three major limitations within this study. First, it was not possible to have the same staff with the groups for both sessions each week, with the result that two different staff members assessed each individual's progress instead of having one staff member assessing each group. Second was that the assessment used to assess social skills during music therapy and in the typical day program setting was not a standardized assessment. Third, the work schedules of the participants introduced two confounding variables: (a) cognitive functioning level of the

group members, and (b) the time of day when the music therapy sessions could be held.

The purpose of this particular day habilitation program is to provide individuals with work experience and training. Increases in the Self-Management/Compliance subscale indicate growth in skills that are important for a good employee to possess. It is necessary for an employee to be able to follow directions, complete tasks without being reminded, and take corrections well. Another goal of the day habilitation program is to help adults with mild to moderate disabilities integrate into society. A decrease in aggressive and antisocial behavior, an increase in self-control, and the ability to adjust to new situations are all vital to the participants' success. A comparison of the pre- and post-test scores for the Antisocial Behavior Total subscale indicates that these are areas that the parents and or legal guardians felt improved over the course of the 6-week treatment. This should ultimately help the participants become better employees, providing them with more opportunities to contribute to society.

Conclusion

In conclusion, results suggest that the inclusion of music therapy in the typical day habilitation programming of adults with disabilities was related to the number of prosocial behaviors observed by the therapist, the day habilitation staff, and the participant's parents and/or legal guardians. These findings suggest that there is potential for the use of music therapy to improve prosocial behaviors in adults with disabilities, however, further investigation is necessary.

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References

1. Key findings: Trends in the prevalence of developmental disabilities in U.S. children. Centers for Disease Control and Prevention Web site. Available at: www.cdc.gov/ncbddd/features/birthdefects-dd-keyfindings.html. Accessed November 4, 2015.
2. Morstad D. How prevalent are intellectual and developmental disabilities in the United States? 2012. Available at: <http://bethesdaainstitute.org/document.doc?id=413>. Accessed November 4, 2013.
3. Basic facts: People with disabilities. National Service Inclusion Project Web site. Available at: <http://www.serviceandinclusion.org/index.php?page=basic>. Accessed November 4, 2013.
4. Introduction to intellectual disabilities. The Arc Web site. Available at: <http://www.thearc.org/page.aspx?pid=2448>. Accessed August 2, 2013.
5. Larson SA, Lakin KC, Anderson L, Lee NK, Lee JH, Anderson D. Prevalence of mental retardation and developmental disabilities: Estimates from the 1994/1995 National Health Interview Survey Disability Supplements. *Am J Ment Retard*. 2001; 106(3): 231-252.
6. Matson JL, Fodstad JC, Rivet TT. The relationship of social skills and problem behaviors in adults with intellectual disability and autism or PDD-NOS. *Res Autism Spectr Disord*. 2009; 3(1) 258-268.
7. Facts about developmental disabilities. NYS Office for People with Developmental Disabilities Web site. Available at: <http://www.opwdd.ny.gov/node/396>. Accessed July 25, 2015.
8. Gresham FM. Assessment of social skills in students with emotional and behavioral disorders. *Assess Eff Interv*, 2000; 26(1): 51-58. doi: 10.1177/073724770002600107.
9. Smith KRM, Matson JL. Social skills: Differences among adults with intellectual disabilities, co-morbid autism spectrum disorders and epilepsy. *Res Dev Disabil*. 2010; 31(6): 1366-1372. doi: 10.1016/j.ridd.2010.04.003.
10. Matson JL, Dempsey T, LoVullo SV. Characteristics of social skills for adults with intellectual disability, autism and PDD-NOS. *Res Autism Spectr Disord*. 2009; 3(1): 207-213.
11. Autism spectrum disorder: Signs and symptoms. Centers for Disease Control and Prevention Web site. Available at: www.cdc.gov/ncbddd/autism/signs.html. Accessed November 4, 2015.
12. Hooper J. Overcoming the problems of deinstitutionalization: Using music activities to encourage interactions between four adults with a developmental disability. *Music Ther Perspect*. 2001; 19(2): 121-127. doi: 10.1093/mtp/19.2.121.
13. Emerson E, McVilly K. Friendship activities of adults with intellectual disabilities in supported accommodation in Northern England. *J Appl Res Intellect Disabil*. 2004; 17(3): 191-197.
14. Johnson H, Douglas D, Bigby C, Iacono T. Social interaction with adults with severe intellectual disabilities: Having fun and hanging out. *J Appl Res Intellect Disabil*. 2012; 25(4): 329-341.
15. Hall SA. The social inclusion of young adult with intellectual disabilities: A phenomenology of their experiences. *J Ethnogr Qual Res*. 2009; 4(1): 24-40.
16. O'Reilly MF, Lancioni GE, Sigafoos JS, O'Donoghue D, Lacey C, Edrisinha C. Teaching social skills to adult with intellectual disabilities: A comparison of external control and problem-solving interventions. *Res Devel Disabil*. 2004; 25(5): 399-312.
17. Graves TB, Collins BC, Schuster JW, Kleinert H. Using video prompting to teach cooking skills to secondary students with moderate disabilities. *Educ Train Dev Disabil*. 2005; 40(1): 34-46.
18. Van Laarhoven T, Van Laarhoven-Myers T. Comparison of three video-based instructional procedures for teaching daily living skills to persons with developmental disabilities. *Educ Train Dev Disabil*. 2006; 41(4): 365-381.
19. Alexander GF, Dummer GM, Smeltzer A, Denton SJ. Developing the social skills of young adult Special Olympics athletes. *Educ Train Autism Dev Disabil*. 2011; 46(2): 297-310.
20. Ward KM, Atkinson JP, Smith CA, Windsor R. A friendships and dating program for adults with intellectual and developmental disabilities: A formative evaluation. *Intellect Dev Disabil*. 2013; 51(1): 22-32. doi: 10.1352/1934-9556-51.01.022.
21. McAfee JL. *Navigating the Social World: A Curriculum for Individuals with Asperger's Syndrome, High Functioning Autism and Related Disorders*. Arlington, TX: Futures Horizons; 2002.
22. Ozonoff S, Miller JN. Teaching theory of mind: A new approach to social skills training for individuals with autism. *J Autism Dev Disord*. 1995; 25(4): 415-433.
23. Henry JD, Phillips LH, Ruffman T, Bailey PE. A meta-analytic review of age differences in theory of mind. *Psychol Aging*. 2013; 28(3): 826-839. doi: 10.1037/a0030677.

24. Baron-Cohen S. *Mindblindness: An essay on autism and theory of mind*. Cambridge, MA: MIT Press; 1997.
25. Lantz J. Theory of Mind in autism: Development, implications, and interventions. *The Reporter*. 2002; 7(3): 18-25.
26. Geretsegger M, Elefant C, Mössler KA, Gold C. Music therapy for people with autism spectrum disorder. *Cochrane Database of Systematic Reviews*. 2014(3). doi:10.1002/14651858.CD004381.pub3
27. Oldfield A, Adams M. The effects of music therapy on a group of profoundly mentally handicapped adults. *J Ment Defic Res*. 1990; 34(2): 107-125.
28. Music therapy as a treatment modality for autism spectrum disorders. American Music Therapy Association Web site. Available at: http://www.musictherapy.org/assets/1/7/MT_Autism_2012.pdf. Accessed June 2012.
29. Wigram T, Gold C. Music therapy in the assessment and treatment of autistic spectrum disorder: Clinical application and research evidence. *Child Care Health Dev*. 2006; 32(5): 535-542.
30. Hiller A, Greher G, Poto N, Dougherty M. Positive outcomes following participation in a music intervention for adolescents and young adults on the autism spectrum. *Psychol Music*. 2012; 40(2): 201-215.
31. Kim J, Wigram T, Gold C. Emotional, motivational and interpersonal responsiveness of children with autism in improvisational music therapy. *Autism*, 2009; 13(4): 389-409.
32. Wheeler BL, Shultis CL, Polen DW. *Clinical Training Guide for the Student Music Therapist*. Gilsum, NH: Barcelona; 2005.
33. Farnan LA. Music therapy and developmental disabilities: A glance back and a look forward. *Music Ther Perspect*. 2007; 25(2): 80-85.
34. Lee J. A phenomenological study of the interpersonal relationships between five music therapists and adults with profound intellectual and multiple disabilities. *Qualitative Inquiries in Music Therapy*, 2014; 9: 42-86.
35. Watson T. Relationship and communication in music therapy: A response to North (2014). *Psychol Music*. 2014; 42(6): 800-808.
36. Fillingham CL. Friendship and group work. In: Watson T, ed. *Music Therapy with Adults with Learning Disabilities*. New York, NY: Routledge; 2007: 71-84.
37. Turry A, Marcus D. Using the Nordoff-Robbins approach to music therapy with adults diagnosed with autism. In Wiener DJ, Oxford KL, eds. *Action therapy with families and groups: Using creative arts improvisation in clinical practice*. Washington, DC: American Psychological Association; 2003:197-228.
38. Brownell MD. Musically adapted social stories to modify behaviors in students with autism: Four case studies. *J Music Ther*. 2002; 39(2): 117-144.
39. Duffy B, Fuller R. Role of music therapy in social skills development in children with moderate intellectual disabilities. *J Appl Res Intellect Disabil*. 2000; 13(1): 77-89.
40. Gooding LF. The effects of a music therapy social skills training program on improving social competence in children and adolescents with social skills deficits. *J Music Ther*. 2001; 48(4): 440-462.
41. Kim S, Kverno K, Lee EM, Park JH, Lee HH, Kim HL. Development of a music group psychotherapy intervention for the primary prevention of adjustment difficulties in Korean adolescent girls. *J Child Adolesc Psychiatr Nurs*. 2006; 19(3): 103-111.
42. Whipple J. Music in intervention for children and adolescents with autism: A meta-analysis. *J Music Ther*. 2004; 41(2): 90-106.
43. Watson T. Community, culture and group work. In: Watson T, ed. *Music Therapy with Adults with Learning Disabilities*. New York, NY: Routledge; 2007:85-97.
44. Curtis SL, Mercado CS. Community music therapy for citizens with developmental disabilities. *Voices: A World Forum for Music Therapy*. 2004; 4(3). Available at: <https://voices.no/index.php/voices/article/view/185>. Accessed January 30, 2016.
45. Coladarci T. Test review of the Home and Community Social Behavior Scales. In Spies RA, Plake BS, eds. *The sixteenth mental measurements yearbook* [electronic versions]. Lincoln, NB; Buros Institute's mental measurement yearbook, University of Nebraska-Lincoln; 2005.
46. Wheeler BL. Individuals with severe and multiple disabilities. In: Hintz M, ed. *Guidelines for Music Therapy Practice in Developmental Health*. Gilsum, NH: Barcelona; 2013: 399-440.
47. Rickson DJ, Watkins WG. Music therapy to promote prosocial behaviors in aggressive adolescent boys: A pilot study. *J Music Ther*. 2003; 40(4): 283-301.
48. Carman SN, Chapparo CJ. Children who experience difficulties with learning: Mother and child perceptions of social competence. *Aust Occup Ther J*. 2012; 59(5): 339-346.
49. Nowicki EA. A meta-analysis of the social competence of children with learning disabilities compared to classmates of low and average to high achievement. *Learn Disabil Q*. 2003; 26(3): 171-188.
50. Merrell KW, Caldarella P. *Home & Community Social Behavior Scales: User's guide*. Baltimore, MD: Paul H Brookes; 2002.

Biographical Statements

Haley Rochelle Baumgarten, MS, MT-BC is a full time music therapist with Opportunities for Positive Growth working with children and adults with developmental disabilities. She received her Masters of Science in Music Therapy from Molloy College and her Bachelors of Music in Music Therapy and Psychology from East Carolina University.

Barbara L. Wheeler, PhD, MT-BC is Adjunct Professor at Molloy College, Professor Emerita at Montclair State University. She is active as an educator, presenter, editor and author.