Neurodiversity on the Stage: The Effects of Inclusive Theatre on Youth with Autism[1]

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Abstract

This study investigates the impact of participation in theatre on youth with autism, and the possibilities this participation might yield in generating personal and interpersonal transformations. Specifically, the study explores the impact of inclusive theatre experiences involving the development, rehearsal, and performance of theatrical productions on youth with ASD. In the summer of 2014, 18 youth with autism and nine non-ASD peers participated in a five-week theatre conservatory held as an inclusive collaboration between The Miracle Project (TMP) and California State University, Northridge's Teenage Drama Workshop (TADW). It culminated in five public performances of an original musical, Joining the Spectrum (JTS). Using pre- and posttest questionnaires and structured observations, this study examines changes among youth in a number of conceptual areas: self-esteem, empathy, comfort with others, and trust. The conclusion summarizes findings and positively affirms the impact in these areas of inclusive theatre experience on youth with ASD.

Keywords: autism, ASD, theatre, intervention, inclusion, neurodiversity, liminality

1. Introduction

The use of theatre as an intervention has considerable promise in addressing the core deficits of individuals on the autism spectrum, namely those related to socialization and interpersonal interaction. Because theatre is a social and interpersonal art form that involves the rehearsal of coordinated interaction, it offers a promising avenue for increasing the interpersonal skills of youth with Autism Spectrum Disorder (ASD).

Anthropologist Victor Turner (1967, 1969, 1977) has suggested that theatre is unique in its ability to create a social context that promotes "liminality." In Turner's terms, liminality allows individuals a respite, or perhaps a refuge, from their ordinary existence, and permits them to reside "betwixt and between" the thresholds of the mundane and the imaginary, between reality and possibility. As a performing art, theatre has been widely celebrated for its ability to facilitate liminal experiences, generating a social space where previously consolidated norms and hierarchies can be suspended, and are often inverted, creating opportunities for personal and collective change (Hughes and Wilson, 2004; Schechner and Appel, 1990).

The present study is framed by Turner's work, the power of theatre to create liminal experiences, and the transformative possibilities of theatre in improving the socialization skills of individuals with ASD. The approach taken in this study investigates theatre as a liminal art, and its potential impact on the lives of youth with ASD, and the possibilities this participation might yield in generating personal and interpersonal transformations. Additionally, the study explores the impact of inclusive theatre experiences involving youth on the autism spectrum in collaboration with their neurotypical peers. Both youth with ASD and neurotypical youth worked collaboratively in the development, rehearsal, and performance of the theatrical productions examined in this study.

This study is also informed by the emerging, though small, literature on the use of theatre as a therapeutic intervention for individuals with ASD (for examples, see Corbett, et al., 2011; Corbett, et al., 2013). Specifically, this research is buttressed by the work of Elaine Hall (Hall and Isaacs, 2012) and her highly acclaimed theatre program for ASD individuals, *The Miracle Project* (*TMP*). While Hall's work, and TMP in particular, has been hailed for its successes in treating individuals with ASD (it is the subject of the Emmy Award winning documentary "AUTISM: The Musical"), systematic evidence-based outcomes documenting its effectiveness are lacking. In short, not much is known about how, for whom, and in what ways, theatre-based interventions can provide a therapeutic environment for individuals with ASD. The current study is predicated on an innovative collaboration among researchers and practitioners from theatre and social sciences to examine theatre as a creative intervention for youth with an ASD diagnosis.

The paper begins with an overview of the existing literature on theatre as an intervention for youth on the autism spectrum. Next, the methodological approach of this study is outlined. The results of the study are then presented followed by a discussion of their implications. Finally, a set of concluding remarks are presented complemented by an overview of the limitations of the study.

In focusing this study, the following research questions are raised: *What is the impact of participation in theatre on youth with ASD? How does theatre affect a youth with ASD's interpersonal and socialization skills?*

2. Literature Review

According to the U.S. Center for Disease Control, 1 in 68 children are diagnosed with ASD in the United States; this is up from 1 in 10,000 children 20 years ago (Blumberg, et al. 2013). Additionally, the cost of raising a child with special needs can be up to 6 times greater than that of raising a typically developing child (Peacock, et al., 2012; Shimabukuro, et al., 2008). Such socio-economic limitations create significant stressors and isolation for families affected by autism (Dunn, et al., 2001; Mandell and Salzer, 2007; Woodgate, et al., 2008). In fact, recent reports suggest that at the seven Los Angeles County Regional Centers (the geographic context for this study) that provide services for individuals with developmental disabilities, autism accounts for 34% of the entire caseload (Zarembo, 2011).

There are a number of social and economic barriers that constrain a family's ability to successfully receive support services for children with ASD. For example, families who live in lower-income communities have the fewest opportunities for specialized therapies needed for their children to access education and to promote social engagement (Bromley, et al., 2004; Mandell, et al. 2005). Affordable effective interventions are rare and, thus, families live in economic and social isolation as a result of having a child, or children, with ASD or other developmental challenges (Sharpe and Baker, 2007).

Isolation is an important outcome of the experience of autism, not only for the families who care for youth with ASD but, also, for young people who are on the autism spectrum (White, 2009). Research suggests that ostracism from peer groups results in decreased socialization skills, self-esteem, and feeling of belonging among youth with autism (Sebastian, Blakemore and Charman, 2009). Additionally, other studies (Orsmond, et al., 2004) have found that youth with autism participate less frequently in informal socializing activities, as well as report fewer friendships, and peer relationships. The stigma that often accompanies autism can trigger further isolation, as misinformation, misunderstanding, and lack of acceptance diminish community, family and peer group support (White, et al., 2009). Social isolation is also compounded by cultural factors that facilitate a lack of understanding and resultant fear about autism and its implications (Farrugia, 2009; Gray, 2002).

In addition to isolation creating limitations on opportunities for socialization it has been demonstrated that there are important differences in socioemotional, cognitive behavior, and socialization skills of individuals with ASD, specifically, related to the capacity for empathy (Auyeung, et al., 2009; Wheelwright, et al., 2006).

These studies have found that the emotional reactivity related to empathy is related to the willingness of an individual to express emotion rather than the ability to identify mental states and respond with the correct emotion. Although continued research in the area of empathy is needed, targeting emotional reactivity as to improve empathic wellbeing would hold particular significance for theater-based social interventions.

It follows from these results that inclusive theatre programming holds promise for youth with autism for its ability to naturally target impairments in social skills, while concurrently providing peer support when parent support would not be fiscally or sociologically possible for the family. Because of limitations in community capacity and infrastructure to help build awareness about autism, there is an absence of opportunities for inclusive educational, social, and creative expression that engage youth with ASD and provide support for their families. Young adults with ASD have few opportunities to explore their creative and social potential, and they have few chances to use these kinds of engagement to cultivate skills for future vocational opportunities. Creative interventions for individuals with ASD, like those that involve theatre, provide an important opportunity for youth and their families to receive innovative and affordable support services that serve to cultivate a sense of belonging which in turn promotes self-esteem, empathy, and more trusting relations with others. Such alternative treatment methods may also provide greater insight into autism and the scope of effective therapies.

While creative and arts-based interventions have been implemented for youth with ASD (e.g. particularly art therapy, see Evans and Dubowski, 2001), theatre-based interventions for autism are extremely rare. As described by many practitioners of drama therapy (Emunah, 1994; Landy, 1994), theatre provides a context where individuals can suspend the structures and norms of taken-for-granted social identities and realities and create imaginative transformations of self, other, and situation. Theatre allows for the creation of a liminal space where identity can be manipulated, and everyday social interaction can be modeled such that individuals can adopt, experiment with, and master new, challenging, and even fantastical social roles—all without the anxieties of conventional social pressure. Theatre is unique in that it is a visceral and multifaceted art form, where individuals are called upon to use the full range of their voices, bodies, minds, emotions, and senses. In theatre, individuals do not simply create something artistic; they perform, and become, art.

These aspect of theatre allow individuals to engage in socialization and communication skills—two of the primary areas of deficit for those with ASD (according to the DSM-5; see American Psychiatric Association, 2013)—where individuals can work toward the mastery of emotional awareness and display, interpersonal interaction, and empathetic role-taking. Theatre productions also create temporary communities—both fictional (on stage) and real (between the performers and the audience members), and help to reinforce and generalize newly developed social skills in ways often not possible in traditional, behavioral interventions.

2.1 Research Context – The Miracle Project & Teenage Drama Workshop

The collaboration of two youth theatre programs in Los Angeles, California – *The Miracle Project (TMP)* and *Teenage Drama Workshop (TADW)* – provides the context for this research study. Conceived in 2004, *TMP* is an innovative theater and socialization program for young people (primarily teens) diagnosed with ASD. *TADW* is a summer theatre conservatory for young people 12-18 years old (an age group that parallels those of participants in *TMP*), that recently celebrated its 58th year, making it one of the longest running programs of its kind in the United States.

The collaboration described in this study between *TMP* and *TADW* is the first time that participants and staff from these two programs have joined together to support a common, theatrical conservatory. This conservatory was inclusive, providing a common space for youth with ASD and their neurotypical counterparts to collaborate, create, and socialize in a cooperative and supportive environment. The *TMP-TADW* partnership created an inclusive setting where the participating young adults were trained in acting, dance, voice, playwriting, improvisation, and tech-design work. The outcome of this collaboration was the production of a new musical, *Joining the Spectrum (JTS)*.

The Miracle Project is a particularly unique program for a study of inclusive theatre for youth. As an intervention for youth with ASD, *TMP* is based upon the premise that the most effective opportunities for the personal growth for youth with ASD emerge from an environment where they can establish peer relationships with neurotypical individuals (Hall and Isaacs, 2011). Instead of teaching youth with ASD to follow conventional behavioral expectations, *TMP* encourages neurotypical individuals to "join the world," and thus follow the lead, of youth with ASD, all in the context of theatrical play, performance, and experimentation.

This process allows neurotypical individuals to identify with, and often celebrate, the experiences of youth with ASD on their own terms, and to engage others with openness, compassion, and empathy. Additionally, youth with ASD are able to develop relationships with neurotypical peers, which has been widely documented as having positive effects on the socialization and communication skills of those with ASD (Deater-Deckard, 2001; Orsmond, et al., 2004).

The present study examines the outcomes of the theatrical conservatory established between *TADW* and *TMP* and held during the summer of 2014. *TADW* and *TMP* youth participants and staff planned, scripted, rehearsed, and performed a series of five public performances. The methodology developed by Elaine Hall for *TMP* provided the pedagogical and creative framework for the *JTS* production, and was employed as a collaboration between staff and volunteers from *TMP* and *TADW*. The intended outcomes of this collaboration was not only a renewed appreciation regarding autism among neurotypical individuals, but also a growth in the socialization and communication abilities of youth with ASD, all cultivated through dramaturgical role-modeling, play, and experimentation.

3. Conceptual Framework and Hypotheses

The conceptual and organizational structure for this study is outlined in the logic model presented in Figure 1. As this model suggests, youth with autism and their neurotypical peers participated in an intensive theatre intervention organized around the inclusive pedagogy developed by Hall (Hall and Issacs, 2012). Following this method, individuals were invited to "join the world" of those on the autism spectrum, cultivating an inclusive environment of mutual peer-role modeling, experimentation, and empathetic awareness.

At the outset of the study, it was expected that an inclusive collaboration would create a specific set of short-term outcomes, each of which would be examined by this study. For example, if the program is effective, among youth with autism we would expect improvement to be found in youth self-esteem, relationships with others, and empathy; it is this set of outcomes that are examined in this study. It is also expected that long-term benefits of participating in an inclusive theatre conservatory would include increased social relationships and life transition skills for youth with ASD, although these outcomes are not examined in this study.

Following this conceptual model, five hypotheses are examined in this study:

> H1: Youth with ASD who participate in an inclusive theatre intervention will show significant and positive changes in self-esteem.
> H2: Youth with ASD who participate in an inclusive theatre intervention will show significant and positive changes in their ability to empathize with others.
> H3: Youth with ASD who participate in an inclusive theatre intervention will show significant and positive changes in their ability to trust others.
> H4: Youth with ASD who participate in an inclusive theatre intervention will show significant and positive changes in the comfort they experience with others.
> H5: Youth with ASD who participate in an inclusive theatre intervention will show significant and positive changes in their perceived support from others.

4. Methodology and Research Design

The methods, measures, and sampling criteria used in this study are outlined in the sections below.

4.1 Methods

The general, methodological structure of this study primarily follows a quasi-experimental, one-group, pretest–posttest design, commonly adopted when the random assignment of individuals to experimental groups is not possible (Shadish, et al., 2002). Pretests were administered to youth with ASD approximately one week prior to the start of the theatre conservatory. Posttest measures were administered to these same youth immediately following the completion of the program.

Data for the study were collected using two methodologies: questionnaires and structured observations. The first source of data collected during this study comes from face-to-face, pre- and posttest questionnaires administered to participating youth with autism. Specific efforts were made to work with aides of youth with ASD to ensure that the youth understood the questions posed; in some cases, youth responded to the questionnaires through tablet technologies or through the use of letterboards.

The second data source comes from structured, participant observations by a trained research team collected during rehearsals and performances. Data from these observations are used to examine and triangulate the research hypotheses for the questionnaire data.

4.2 Measures

The primary concepts examined in this study through pre- and posttest measures include: self-esteem, empathy, comfort with others, trust, and support from others. Each of these concepts were operationalized using items drawn from existing scales, assessments, and inventories with a record of demonstrated reliability and validity. The specific concepts measures are outlined in Table 1. In some cases for youth on the spectrum, scale items were modified for length, clarity, and appropriateness for a youth with ASD. (e.g. metaphoric language was eliminated, the number of words in an item was reduced, or negatively worded items were removed or rephrased).

Additionally, a modified version of the *Social Communication, Emotional Regulation, and Transactional Support Model* (*SCERTS*; see Prizant, et al., 2006) was used to collect structured observations of youth with ASD during theatre rehearsals and performances. *SCERTS* is an innovative and established observational system for assessing and enhancing communication skills among youth with ASD. The model emphasizes three core domains: social communication, emotional regulation, and transactional support. While *SCERTS* has primarily been used as a program for youth development in these three core areas, the research team adapted the model for use in making structured observations[2]. In utilizing *SCERTS*, three categories of growth areas were used: 1) Sense of Self; 2) Sense of Other; and 3) Group Engagement and Cooperation. The observational indicators for each area are presented below:

1) Sense of Self
   a. Removes self from over-stimulating or undesired activity
   b. Expresses feelings of success or confidence during interactions
   c. Demonstrates ability to inhibit actions and behaviors
   d. Secures attention to one's self prior to expressing intentions
2) Sense of Other
   a. Responds to bids for interaction
   b. Prefers to be engaged with partners during unstructured play
   c. Provides needed information based on knowledge of topic
   d. Monitors attentional focus of a social partner
3) Group Engagement and Cooperation
   a. Takes on a role and cooperates with peers in dramatic play
   b. Plays in a common activity with other children
   c. Persists during tasks (i.e., group activities) with reasonable demands
   d. Maintains interactions by requesting (questioning) or providing
   e. relevant information
   f. Responds to partners' use of behavioral strategies (during group activities)

Consistent with *SCERTS*, each growth area was observed and scored on a three-point scale (0 = Does not, or cannot, perform the behavior; 1 = Needs assistance; 2 = Independent). Each participant was observed for 30 minutes once per week in each area, totaling three observations per week per participant. A total score for each observational area was computed by averaging the scores for each set of items during each week.

4.3 Study Sample

The participants in this study were recruited from enrollees in the theatre conservatory. Each of these youth had a clinical diagnosis as being on the autism spectrum. The sample comprised 18 youth with autism (9 males, 9 females) averaging 15 years of age. Each youth participated in all five-weeks of the conservatory, five-days each week, for approximately four hours each day.

5. Results

Results of this study examine the pre- and posttest differences among youth with ASD.

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[2] SCERTS developer and author Barry Prizant served as a consultant on the project and was consulted regarding the possibility of adapting the model for observational data collection purposes. Dr. Prizant's consultation was invaluable, and any errors and/or limitations made in the adaption and use of the SCERTS Model belong entirely to the research team.

Additionally, the questionnaire results for youth with ASD are complemented with data collected through structured observations during rehearsals and performances. These results are presented in the discussion below. In Tables 3-8, mean scores, standard deviations (SD) for pre- and posttest measures, as well as percent change between pre- and posttest responses are presented. For items where there are statistically significant differences between pre- and posttest measures (with at least $p < 0.05$), the percent change is highlighted in yellow.

5.1 Questionnaire Results: Youth with Autism Spectrum Disorder

Before participating in *JTS*, youth with ASD were asked a series of pretest questions related to self-esteem, empathy, and resilience (trust, comfort with others, and support from others). These questions were complemented with posttest responses to the same items.

Youth with ASD indicated moderately strong pretest levels of self-esteem. After their participation in *JTS*, these same youth reported a positive growth in self-esteem on every measure. On the sole negatively worded measure, "I tend to think that I am a failure," these youth reported a change in responses between pre- and posttests in a negative direction, indicating a positive growth in self-esteem. As an example of these results, youth indicated significant and positive change in their perception of how happy they are with themselves, their perception of the number of good qualities they possess, and the respect they have for themselves. Both the increase in their perceived self-respect and the decrease in their tendency to see themselves as a failure yielded statistically significant results. These self-esteem results for youth with ASD are presented in Table 2.

Participating youth with autism were also asked a set of questions related to empathy, drawn from the Empathy/Systemizing Quotient for children (Auyeung, et al, 2009). These results are presented in Table 3. As these results indicate, participants reported a positive impact related to empathy on nearly every item. For example, they reported positive changes in their feelings about caring for other people, being upset at seeing an animal in pain, and their ability to tell if someone is hiding their emotions. Additionally, they reported, with statistical significance, that they were less likely to be upset when seeing someone cry or in pain on the news. This result can be interpreted not necessarily as a decline in empathetic ability but, perhaps, as a growth in their ability to understand another's perspective through sympathetic analysis and interpretation without becoming emotionally engaged, skills often cultivated by actors in studying a character they will enact. These youth also reported a small decline in their ability to predict what others are thinking, though this result was not statistically significant.

Participating youth with autism were also asked a series of questions drawn from a resiliency scale for adolescents (Prince-Embry, 2007) related to their relationships with others in three specific domains: trust, comfort with others, and perceived support from others. The results are presented in Tables 4-6. As these results suggest, youth with autism indicated positive changes in their trust of others on every item (see Table 4). Although these results did not show significance, participants reported that they were more likely to like others, trust others, perceive they are treated well by others, and believe that people accept them for who they are.

In addition to increases in trust, youth with ASD also reported increased comfort with others. As the results in Table 5 reveal, these youth indicated increased beliefs that people liked them, that they could make friends easily, meet new people easily, and feel calm around others, with these last two items having statistically significant increases.

While youth with ASD reported positive increases in both their trust in and comfort with other people, their responses were more muted relative to their perceptions of support received from others. As shown in Table 6, participants reported that they were generally less likely to feel support from others. While they indicated that they were more likely to feel they had a good friend, they were also slightly less likely to believe that there were people who cared about them, and significantly less likely to report that others were available to help them if something bad happened.

Composite measures were computed for each of the measures in the key areas discussed above: self-esteem, empathy, trust, comfort with others, and support from others. Factor analyses and reliability estimates using Cronbach's alpha were also computed and assisted in developing the composite measures. For the self-esteem measure, the pretest reliability was $\alpha = .652$ and the posttest was $\alpha = .774$. In computing the posttest reliability measure for self-esteem, the third item ("I am able to do things as well as most other people") was dropped due to its internal inconsistency with the rest of the items. For the empathy measure, pretest reliability was $\alpha = .732$ and the post-test was $\alpha = .700$.

We dropped the second item ("Seeing people cry doesn't really upset me") because of its low factor score. It's possible that the negative wording of the item was confusing to participants. We also dropped the sixth item ("I am good at predicting what other people are thinking") from the empathy measure for its low factor score. Participants may have had trouble understanding the word "predict" in the context of the item. For the trust measure, the pretest reliability was $\alpha = .779$ and the posttest was $\alpha = .769$. For the comfort with others measure, the pretest reliability was $\alpha = .722$ and the posttest was $\alpha = .682$. Finally, for the support from others measure, the pretest reliability was $\alpha = .674$ and the posttest was $\alpha = .694$. In sum, these estimates confirmed the reliability and validity of measures related to self-esteem, empathy, trust, comfort with others, and support from others. Items were removed to increase the reliability and validity of the composite measures to a satisfactory level.[3]

The results of Wilcoxon signed-rank tests comparing pre- and posttest outcomes of composite measures yield some notable and statistically significant results. Overall, youth with ASD report statistically significant increases in the areas of self-esteem, empathy, and comfort with others; they also report increases in trust in others, although this result is not statistically significant. In contrast to these positive results, participants report decreases in perceived support received from others, although this result is not statistically significant. These results are presented in Table 7.

5.2 Observation Results: Youth with Autism Spectrum Disorder

To complement the pre- and posttest questionnaire data, structured observations were made during rehearsals and performances. These observations were intended to complement data collected through questionnaires in areas related to sense of self, sense of others, and engagement in group and cooperative activities. While observations were made in all five weeks of the conservatory, the fifth was conducted during the performances, which occurred during the final week of the program. Because the context for this observation was unique, and different than that of the rehearsal observations, only the rehearsal observations are reported in this discussion. The results of these observations are presented in Figures 2–5.

Figure 2 depicts the average Sense of Self observations for each of the 18 youth across the four weeks of rehearsal (Times #1–4). As illustrated in this figure, these youth tended to increase or maintain their ability to cultivate a sense of self during the course of the rehearsals. In some cases, the growth in sense of self is dramatic, as reflected in the change over time of Participants #3, 4, 6, 7, 9, and 18. These increases in sense of self reflect, are consistent with, and support the increases in self-esteem reported by youth in questionnaires.

Like the results for sense of self, observational data for Sense of Other also illustrate growth for some youth with ASD during the course of their participation, although these results are more inconsistent. As depicted in Figure 3, Participants #2, 5, 6, 13 and 15 demonstrated overall increases in Sense of Other during the course of the conservatory. However, a parallel number of youth (Participants #3, 4, 7, 8, 9, 16 and 17) were found to decrease in Sense of Other during their rehearsal experiences. These inconsistent results are reflective of the slight decreases in perceived support from others found in questionnaire results.

Finally, the observational data for Group Engagement and Cooperation are illustrated in Figure 4. These data suggest generally positive increases in youth group engagement during their participation. For example, overall positive growth in group engagement is seen in Participants #5, 9, 10, 11, 13, 14, 15, and 18, with very few instances of overall declines. These results parallel and provide support for the questionnaire data indicating positive growth in both comfort with others and in trust of others.

The overall results of the observational data are summarized in Figure 5. As these results clearly illustrate, the observational data suggest that, in general, youth with ASD demonstrate notable increases in sense of self and group engagement, with more muted and slight declines in their sense of other.

6. Conclusion

To date, this study represents one of the few efforts to systematically examine the impact of theatre participation on youth with ASD, and provides an investigation of the interrelation of theatre and autism in an inclusive setting. Results of this study suggest that inclusive theatre experiences have important potential implications for improving the communication and socialization skills of youth with autism. As this study has revealed, theatre can have a significant and positive impact on youth with ASD, their self-esteem, empathetic abilities, and comfort with others; it also points to the potential for theatre to enhance levels of trust among young people with autism.

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[3] $\alpha > 0.6.5$ and only one factor with an eigen-value above 1.0.

In bringing together theatre practice and theory, this inquiry successfully engaged a multidisciplinary collaboration among disparate academic disciplines (Theatre, Sociology, Child and Adolescent Development, Recreation and Tourism Management, etc.), and involved experienced faculty researchers, as well as undergraduate and graduate research assistants from these various disciplines. Overall, the project raised awareness of autism as well as the social relevance of theater arts. However, due to budgetary and other logistical limitations, the current research did not fully inquire into what happens during participants' performance experience. Therefore, the theory of liminality remains a potential focus for future research inquiries.

Future research on the effectiveness of theatre arts on the autism spectrum should continue building upon the current research project's findings. The outcomes of this study can help to enhance the knowledge we have of autism, the potential efficacy of theatre as a multi-dimensional, intervention strategy, and the role of the performing arts in increasing autism awareness and acceptance. Such outcomes can have significant value to the scientific and the policy-making communities, and will also inform educators, performing artists, and families about the intersections of art and autism. This study may also inform the development of a model program for the ways that local community social science researchers and arts practitioners can partner to develop arts-based and evidence-based collaborations. Coupled together, these outcomes will shape an empirical system that will model the intersection of theory and practice, and will significantly increase the understanding of the value of art as a practical means to increase knowledge and understanding of our social world.
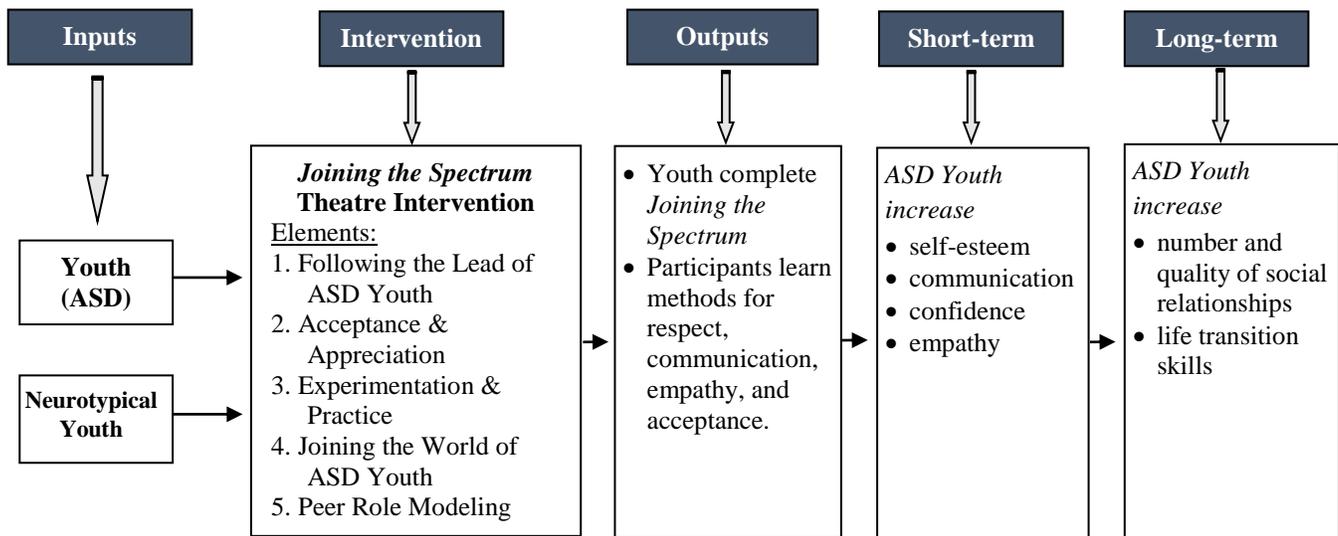
7. Acknowledgements

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| Inputs | Intervention | Outputs | Short-term | Long-term |

Joining the Spectrum
Theatre Intervention
Elements:
1. Following the Lead of ASD Youth
2. Acceptance & Appreciation
3. Experimentation & Practice
4. Joining the World of ASD Youth
5. Peer Role Modeling

Youth (ASD)

Neurotypical Youth

- Youth complete *Joining the Spectrum*
- Participants learn methods for respect, communication, empathy, and acceptance.

ASD Youth increase
- self-esteem
- communication
- confidence
- empathy

ASD Youth increase
- number and quality of social relationships
- life transition skills

Figures

Figure 1: Logic Model for Joining the Spectrum Study

Observation Measures "Self" by Participant, Over-time

Participant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Time 1	2	2	1	1.33	0.25	0.67	0.5		0.75	2		1.75	2	2	0.75	1.33	1.67	1.33
Time 2	2	1.75	1.33	0.67	1	1	0.5	0.75	1	2	0.67	1.5	2		1.5	1.67	1	1.67
Time 3	2	1.67	1.5	1.25	0.25	1	1	0.5	1.25	2	1	1.33	1.67	2		1.5	0.67	2
Time 4	2	1.33	1.5	2	0.33	1.67	1.67		1.33	2	0.75	1.33	1.75	2		1.5	1.67	2
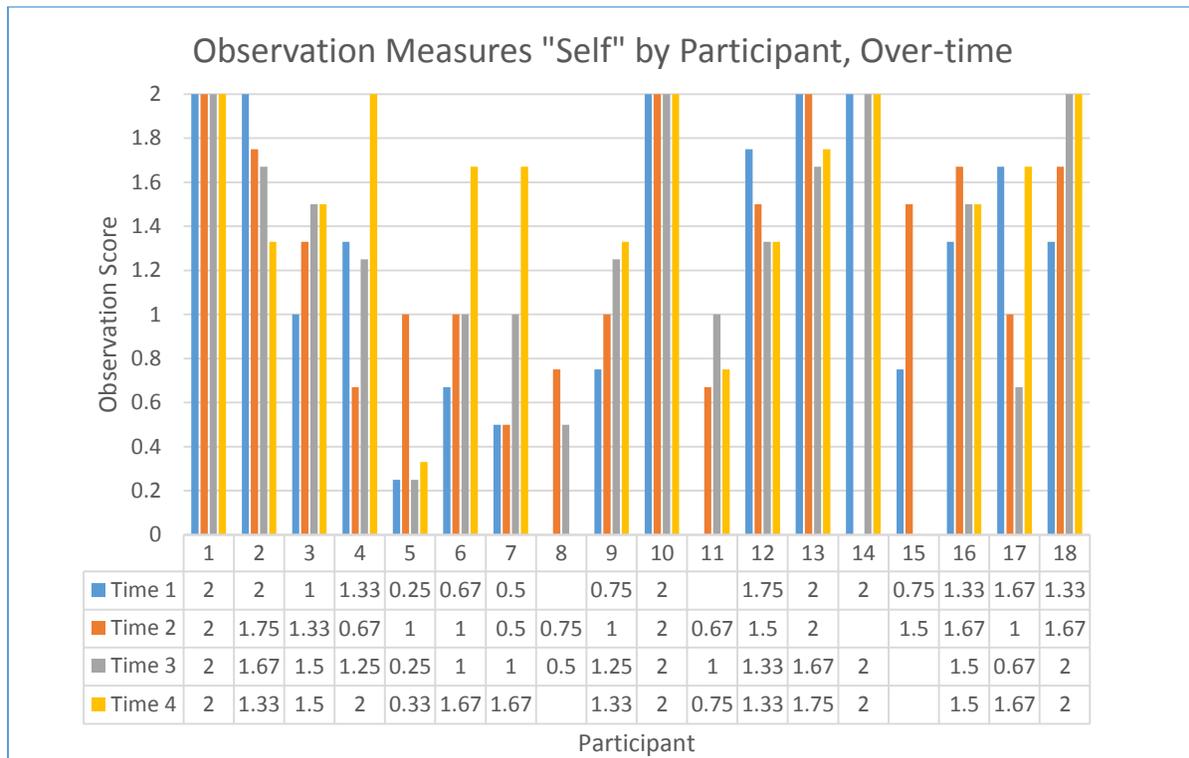
Figure 2: Sense of Self Observations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
■ Time 1	2	1.25	1.67	2	0.75	1	0.75		1.5	2		2	1.5	1.75	0.5	2	1.75	2
■ Time 2		1.67	1.5	1	1	1.25	0.75	0.75	2	2	0.75	1.33	1.5		1	2	2	2
■ Time 3	2	1.5	0.75	1.5	0.5	1.5	0.75	1.25	1	2	0.75	2	1.25	1.75		1.25	1.67	1.75
■ Time 4	2	1.5	1	1.75	1	1.33	0.5	0.25	1.5	2	0.75	2	1.67	2	1.5	1.5	1.5	2
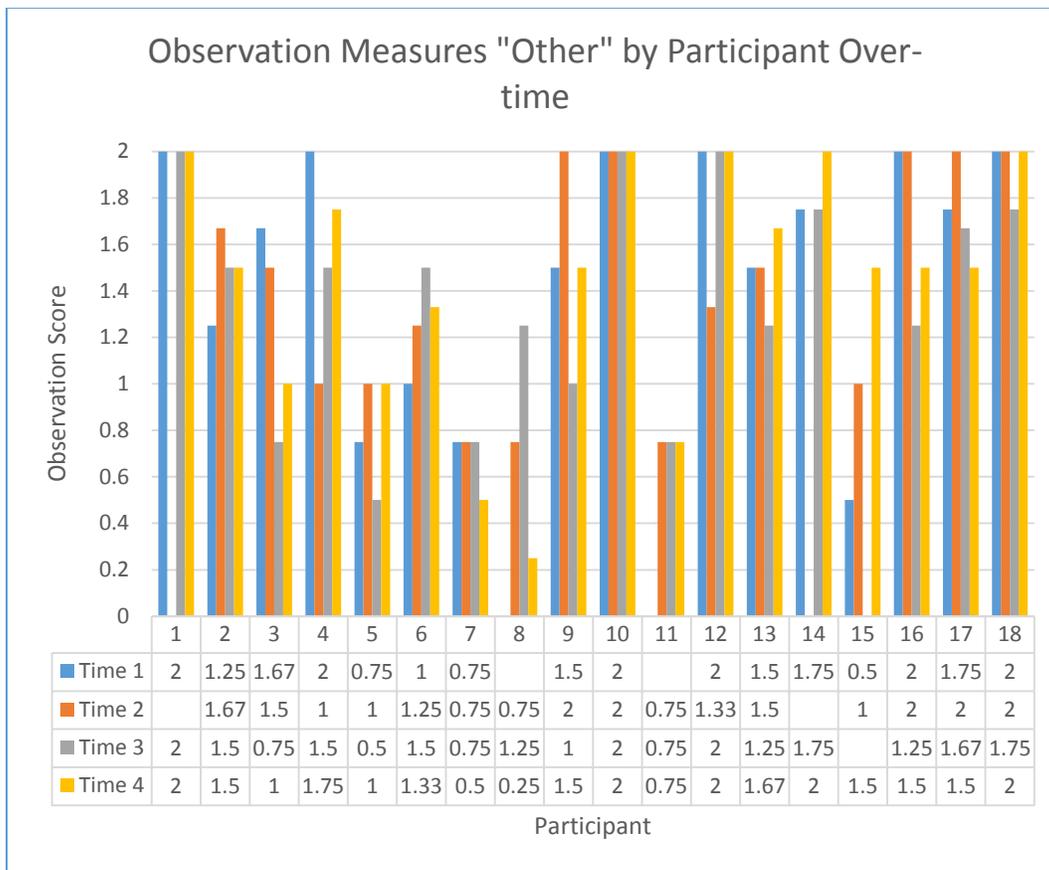
Figure 3: Sense of Other Observations

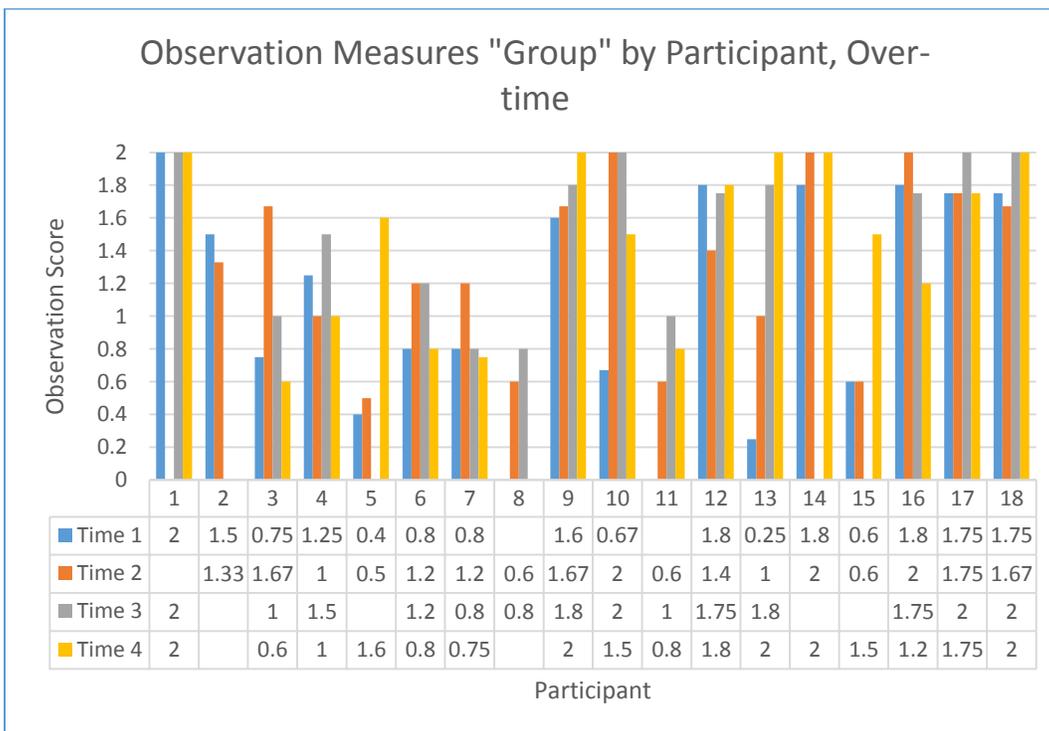|	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
■ Time 1	2	1.5	0.75	1.25	0.4	0.8	0.8		1.6	0.67		1.8	0.25	1.8	0.6	1.8	1.75	1.75
■ Time 2		1.33	1.67	1	0.5	1.2	1.2	0.6	1.67	2	0.6	1.4	1	2	0.6	2	1.75	1.67
■ Time 3	2		1	1.5		1.2	0.8	0.8	1.8	2	1	1.75	1.8			1.75	2	2
■ Time 4	2		0.6	1	1.6	0.8	0.75		2	1.5	0.8	1.8	2	2	1.5	1.2	1.75	2

Figure 4: Group Engagement Observations
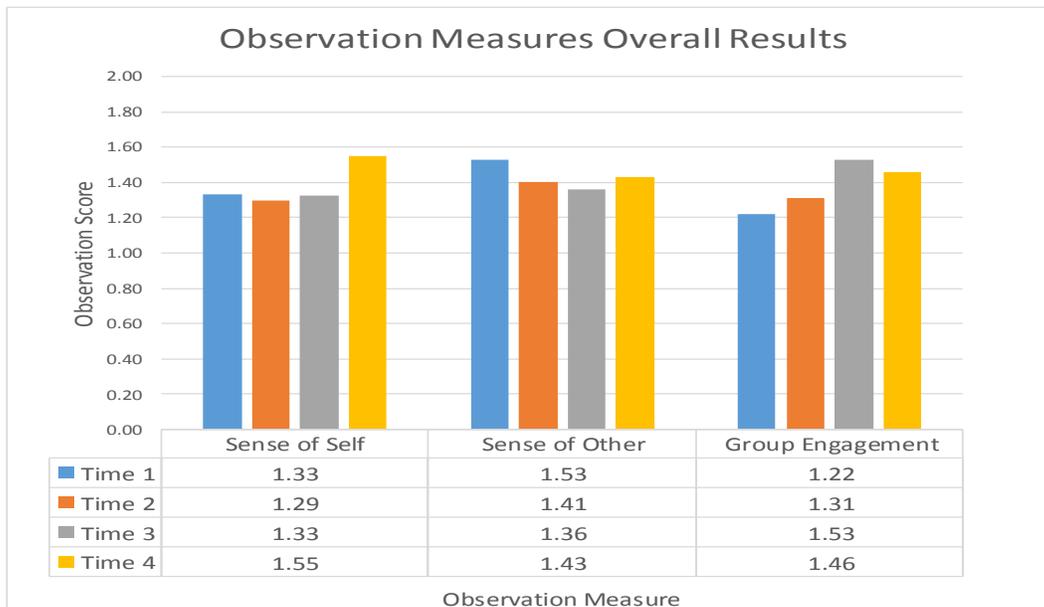
Figure 5: Overall Observation Results
Tables

Hypothesis	Concept(s) to be Tested	Operationalization
1)	*Self-Esteem*	*Rosenberg Self-Esteem Scale* is a ten-item Likert scale inventory designed to assess self-reports of self-esteem (Rosenberg, 1965). Five items were used.
2)	*Empathy*	*Empathy/Systemizing Quotient (EQ-SQ, Child)* is a 55-item inventory (27 items measure trust) that has been developed to assess empathy ("theory of mind") in young people diagnosed with Autism (Auyeung et al., 2009). Seven items were used.
3)	*Trust*	*Resiliency Scales for Children and Adolescents – Trust Subscale* is a seven-item scale that has been developed to assess trust in young people (Prince-Embury, 2007). Four items were used.
4)	*Comfort with Others*	*Resiliency Scales for Children and Adolescents – Comfort with Others Subscale* is a six item scale that has been developed to assess trust in young people (Prince-Embury, 2007). Four items were used.
5)	*Support from Others*	*Resiliency Scales for Children and Adolescents – Support from Others Subscale* is a four item scale that has been developed to assess trust in young people (Prince-Embury, 2007). Three items were used.

Table 1: Operationalization of Concepts

Self-Esteem	N	Pre		Post		% Change
		Mean	SD	Mean	SD	
I am happy with myself	18	3.17	0.71	3.50	0.71	10.5
I have a number of good qualities	17	3.24	0.75	3.39	0.61	4.7
I am able to do things as well as most other people	18	3.28	0.46	3.35	0.49	2.3
I have respect for myself	18	2.89	0.96	3.39	0.70	17.3
I tend to think that I am a failure	17	2.18	0.95	1.71	1.05	-21.6
1 = Strongly Disagree, 4 = Strongly Agree						

Table 2: Youth with ASD Pretest/Posttest Results – Self-esteem

Empathy	N	Pre		Post		% Change
		Mean	SD	Mean	SD	
I really enjoy caring for other people	17	3.00	0.87	3.28	0.89	9.3
Seeing people cry doesn't really upset me	18	2.17	1.04	2.61	0.98	20.5
It upsets me to see an animal in pain	16	2.94	1.00	3.11	1.08	5.9
I get upset if I see people in pain on the news	18	2.50	1.04	2.83	1.25	13.3
I can tell if someone is hiding their true emotion	18	2.61	1.09	2.83	0.99	8.5
I am good at predicting what other people are thinking	18	2.94	0.73	2.83	0.79	-3.8
1 = Strongly Disagree, 4 = Strongly Agree						

Table 3: Youth with ASD Pretest/Posttest Results – Empathy

Trust	N	Pre		Post		% Change
		Mean	SD	Mean	SD	
I like people	18	4.11	1.13	4.39	0.78	6.8
Other people treat me well	18	3.89	1.08	4.06	1.06	4.3
I can trust others	17	3.47	1.37	3.78	0.88	8.9
People accept me for who I really am	18	3.83	1.04	4.17	0.92	8.7
1 = Never, 5 = Almost Always						

Table 4: Youth with ASD Pretest/Posttest Results – Trust

Comfort with Others	N	Pre		Post		% Change
		Mean	SD	Mean	SD	
I feel calm with people	18	3.50	1.20	4.00	1.08	14.3
I can meet new people easily	18	3.33	1.14	4.22	1.00	26.7
I can make friends easily	18	3.94	1.21	4.17	0.71	5.6
People like me	18	4.11	0.90	4.44	0.62	8.1
1 = Never, 5 = Almost Always						

Table 5: Youth with ASD Pretest/Posttest Results – Comfort with Others

Support from Others	N	Pre		Post		% Change
		Mean	SD	Mean	SD	
I have a good friend	18	4.22	1.06	4.39	1.04	3.9
There are people who will help me if something bad happens	18	4.33	1.03	3.83	1.20	-11.5
There are people who care about me	18	4.50	1.04	4.44	1.04	-1.2
1 = Never, 5 = Almost Always						

Table 6: Youth with ASD Pretest/Posttest Results – Support from Others

Composite Measures	Pre		Post		% Change	Sig.
	Mean	SD	Mean	SD		
Self-esteem	3.25	0.64	3.64	0.60	12.0	0.003
Empathy	2.68	0.83	2.98	0.84	11.4	0.031
Comfort with others	3.72	0.83	4.21	0.63	13.1	0.036
Trust	3.82	0.90	4.10	0.70	7.3	0.197
Support	4.35	0.81	4.22	0.86	-3.0	0.574

Table 7: Youth with ASD Pretest/Posttest Results – Composite Measures