Stakeholder Perceptions of the Effects of a Public School-Based Theatre Program for Children with ASD

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Acknowledgements

Abstract

Arts programs are often credited with helping children with autism spectrum disorders (ASD) gain cognitive and social skills. As with all claims of transfer from experience in the arts to abilities in non-arts domains, empirical evidence is mixed, and often criticized for both imprecise methodologies and a lack of connection back to the art form itself. As a first step to investigate what is actually occurring within a program that may lead to change, we focused on stakeholders' perspectives of how a theater program may be affecting children's competencies. We completed a systematic study of adult stakeholders of a large school-based, successful musical theater program, measuring: 1) their beliefs about the useful strategies within a theater experience that may be causing change in students; 2) their perceptions of what kinds of student outcomes may change as a result of the program; and 3) whether experience and role of stakeholders affected these beliefs. We found stakeholders emphasized modeling, routines, and relaxation as useful strategies, and perceived that the program built imitation, motor abilities and turn-taking skills. These observations raise questions for standard theories of the effects of arts focused on only higher order social and emotional or academic skills and emphasize the importance of including stakeholders in theorizing and measuring the effects of arts programs for all populations.

Theater programs are often credited with helping both typically and atypically developing children develop stronger social and academic skills (Corbett et al., 2010, 2014; Fleming, Merrell, & Tymms, 2004; Kardash & Wright, 1987). Such claims of the efficacy and positive effects of theater programs are wide-ranging, but research shows inconsistent levels and strength of supporting evidence. Hence, these claims often come under scrutiny and criticism from researchers for poor methodology or overblown conclusions (Winner & Cooper, 2000; Winner & Hetland, 2000; Vaughn & Winner, 2000). At the same time, theater practitioners and educators criticize such research and researchers for reductionism or disconnection from the actual practice of theatrical activities in schools (Omasta & Snyder-Young, 2014). One way to create an interdisciplinary connection between researchers and practitioners is through careful study of these questions with stakeholders as a way to merge practice and research.

Few studies attempt to understand what stakeholders—teachers, administrators, and paraprofessionals—think are the central components and outcomes of drama programs. Stakeholders develop programs and then work within them and thus may have unique and informed ideas that researchers can use as a basis for further work. Stakeholders can also provide insights into what actually occurs in the classroom or on the stage. Often, when evidence of the effects of theater is found, little to no actual description of classroom experiences is provided (Fleming, Merrell, & Tymms, 2004; Mages, 2006). It is thus difficult to draw conclusions about the

key ingredients of the programming. As research on the effects of theater continues to advance, it is critical to measure stakeholders' views about what happens in these programs and their perceptions of what effects students may experience from participating.

Claims about the relationship between theater and development are particularly touted for specialized programs designed to use theater to benefit youth populations with challenges (e.g. Davies, 2004; Schneider & Attwood, 2007). One such population is youth with autism spectrum disorders (ASD), for whom theater may offer a unique venue to catalyze social development (Goldstein, Lerner, & Winner, 2017). Youth with ASD are characterized by deficits in social functioning and friendship-making, particularly in school-age and teenage youth (Mendelson et al., 2016; Picci & Scherf, 2014). As such, interventions and contexts that can enhance social development are particularly needed, particularly those that can be delivered in naturalistic, accessible contexts.

Here we focus on stakeholders' perceptions of the relationship between theater and development for ASD children specifically by examining the: 1) perceptions of elements of the program that may be useful for student learning; 2) perceptions of student outcomes that may be changed as a result of engaging in the program; and 3) whether the position and training of the stakeholder predicts differences in perceptions of strategies and outcomes. We take the previous evidence in support of each of these elements in turn, below.

Program Elements and Strategies

Activities called "theater" or "drama" are broadly construed. A number of candidate elements *within* drama lessons, theatrical rehearsals, or performance preparations could affect student outcomes. Yet, there is little consensus as to what these core ingredients may be. It is also possible that multiple elements of the theater experience interact to produce the purported effects or that the holistic set of activities is what is important. In one effort to organize the possibilities, Mages (2006) postulates *13* separate hypotheses about which activities in drama could cause changes specifically in narrative and verbal outcomes. These include elements such as the rehearsal and explanation of complex language through performance of scripts or the use of imagery during theatrical exercises to explain, clarify, and contextualize complex concepts, such as the passage of time. Upon reflection, most of these hypothesized causal activities could also affect social - emotional skills or other non-linguistic cognitive outcomes. For example, theater could teach language through using the body to create the physical shapes of letters, but this activity could also engage skills such as emotion regulation and the integration of physical states into mental concepts (Mages, 2006).

Beyond theory, a few studies have directly investigated how teachers think about transfer and learning in theater education. Work investigating teachers' beliefs about important aspects of drama-based instruction has found that teachers endorse physical movement, verbal interaction with the

teacher and other students, and group work as primary mechanisms of change (without necessarily specifying what those changes are (Cawthon & Dawson, 2009; 2011). Other work has explored high school teachers' classroom discussion of concepts of physical movement, motivation, and theory of mind as primary topics emphasized within acting classes (Goldstein & Winner, 2012). Overall, however, little consensus has been achieved in terms of understanding which elements and strategies are mechanistically important for supporting learning outcomes (e.g., collaborative co-creation of a scene; rehearsal process itself; opportunities for improvised response (Gabriel, Angevin, Rosen, & Lerner, 2015) – particularly with respect to the view of the practitioners and educators delivering them. And no known study has investigated these questions with an ASD student population.

Student Outcomes

In contrast, most of the work on student engagement in drama has focused not on the elements of drama and theater programs that could be causing change, but rather on student outcomes affected by participation, for both typically and atypically developing populations. For typically developing populations, these outcomes are spread across social (Goldstein & Winner, 2012), emotional (Goldstein & Lerner, 2017), narrative (Nicolopoulou, Cortina, Ilgaz, Cates, & de Sá, 2015), verbal (Podlozny, 2000), and academic skills (Hsu & Sandford, 2007; Kerns et al., 2018). Most of these previous studies focused on student outcomes directly rather than investigating teachers' beliefs and perceptions, but one nationally

representative sample of drama teachers noted a range of behaviors thought to change through exposure to acting classes and participation in drama. High school drama teachers throughout the United States perceived skills, such as interpersonal skills, creativity, collaboration, communication, self-discipline, self-understanding, and self-confidence changing as a result of engaging in theater. (Omasta et al 2012). However, this study focused only on teachers of typically developing students.

Theater programs with ASD populations.

For individuals with ASD specifically, a large (and growing) number of theater-based programs across the globe tout advancing skills as a result of participation in drama. Numerous books, news stories, and even movies, trumpet the positive effects of theater on daily functioning in individuals with ASD, including improvements in communication and social interaction (Davies, 2004; McKenna, 2016; Schneider & Attwood, 2007). These programs are varied and individualized by location and practitioner (though they are often delivered in school-based and after-school contexts). They usually target youth and adolescent populations and include elements such as creating a play or movie from scratch, performing an existing musical theater production, engaging in free-form improvised movement actions, and using structured improvisational techniques as a venue for learning about form and function of social behavior.

The proliferation of such programs parallels emerging theory and research regarding the ways in which youth with ASD may benefit from

experiences in theater. Specifically, researchers and theorists argue that the *goals* of social skills interventions--a primary treatment modality for core social challenges among youth with ASD (Gates et al., 2017)-- are virtually identical to those that come naturally in theater training programs (Corbett et al., 2010; Guli, Semrud-Clikeman, Lerner, & Britton, 2013; Lerner & Levine, 2007). Understanding the motivations of one's character, internalizing and embodying their emotions through physical action and voice, and integrating many levels of information about a scene to inform action have large overlap with traditional treatment targets such as perspective-taking, emotion recognition, emotion expression, social pragmatics, and global focus (Gabriel, Angevin, Rosen, & Lerner, 2015). These effects are thought to cut across populations of youth with ASD (i.e., across levels of language ability) as a function of the specific outcome of interest; anecdotal evidence for this range of outcomes is offered below. Thus, these elements of theater posited to be mechanisms by which positive student outcomes may be achieved via participation in theater-based programming.

Among these emergent programs, different interventions utilize varied elements of theater training to affect these outcomes. For instance, several interventions employ theater games and improvisation (Lerner & Levine, 2007; Guli et al., 2004) as primary elements of their program, targeting outcomes such as perspective taking, self-regulation, and motivation. Others focus on elements within the process of creating a work of theater such as

collaborative co-creation, rehearsal, and performance (Corbett et al., 2011; Mehling, 2017) to promote these same outcomes, as well as mood regulation, social knowledge, and executive function. Many approaches integrate both improvisational and scripted activities in their interventions.

Anecdotal evidence supports effects of theater programs on the outcomes of interest. For example, leaders in the field often note improvements in spontaneous eye contact both in-session and as reported by parents at home as a result of participation in improvisation activities focused on social attention, even in the absence of explicit instruction to "look at someone's eyes." School teachers often report more prosocial engagement among such program participants, even when unaware of the specific content of the intervention. Indeed, school districts will often provide funding to support participation in such programs because of these observed effects. Even among youth with ASD with a wider range of cognitive abilities, effects of free improvisation on spontaneous language generation and flexible response to uncertain scenarios are often reported (Beadle-Brown et al., 2018; Shaughnessy & Trimingham, 2016). A growing number of researchers have also directly evaluated the efficacy of such approaches for student outcomes. For instance, previous theater-based programs for atypically developing children have been found to positively affect outcomes such as social behavior (Lerner et al., 2011), emotional recognition and peer interaction (Corbett et al., 2016; Guli et al., 2013; Lerner & Mikami, 2012;

Mehling, 2017), theory of mind (Corbett et al., 2013; 2016), and anxiety (Lerner et al., 2012).

However, little is known about the operative mechanisms and "ingredients" involved in those programs (Lerner, White, & McPartland, 2012). It is therefore valuable for such investigations to step away from theorized processes stemming from lab-based findings in psychological science on the development of social and emotional skills in childhood, to the community-driven insights of real-world stakeholders who administer such programs every day. In addition to this is the consideration that different stakeholders at different levels may thus have different perspectives, ideas and knowledge about the ingredients of interest and probable outcomes from these programs. Consequently, we focus on adult stakeholder perceptions to build a foundation for more exact and complete measurement of the effects and mechanisms of a musical theater program for middle school students with ASD. We also look to the experience and amount of time these stakeholders have spent with these programs. Training, time in the program, and other demographic variables may change what stakeholders believe, perceive, or pay attention to, allowing for multiple perspectives of a single activity, all of which could be valuable to researchers.

The Current Study

Given the wide variety of previous studies with both typically and atypically developing populations, the importance and lack of systematic

investigation into stakeholders' perceptions of programs before direct testing, we present and then apply a hybrid qualitative/quantitative method to engage and study stakeholder perceptions of a musical theater program developed to serve children with ASD. This study is necessarily exploratory. As far as we know, no previous work has examined stakeholder perceptions, propelling us to build questions from previous work and theory with theater programs for non ASD populations. Our stance as researchers was fundamentally empirical in nature. We looked to uncover otherwise inaccessible, latent information about the perceptions of key stakeholders by giving them a forum in which to report and generate consensus around their beliefs. The current study, therefore, sought to respect stakeholders' unique knowledge while systematically investigating: 1) the elements of the program perceived as useful core ingredients; 2) the outcomes perceived to be affected by participation; and 3) individual differences in stakeholder demographics and experience that may alter perceptions of mechanisms and outcomes. We applied a mixed-method approach designed to seek consensus among a group of expert stakeholders (see below; Hsu & Sandford, 2007; Kerns et al., 2017).

The Program

Here we investigate is a musical theater program for children with ASD enrolled in a specialized public school in Manhattan for children with special educational needs in grades K to 12. Children follow a sequential curriculum of 40 sessions of musical theater classes during the school year. The classes

are part of the regular school day for all students and are taught by a visiting artist with a theater arts teacher, as well as support from the students' aides. In these classes students are exposed to both performance and design aspects of theater. They build sets, make costumes, and learn lines and dance moves in order to put on a performance at the end of the semester.

For example, in kindergarten, children may perform a song revue, whereas children in sixth to eighth grades perform a short (e.g., one hour) musical. The curriculum is tied closely to the New York State Department of Education standards for arts education (see

https://www.nyartsstandards.org) and aims to improve independence, communication, and social skills. The program has been well-received in the community and is thought to *cause* improvements in children's social behavior and communication skills. To wit, a documentary was created about the program showing the meaning it had for participants, parents and school stakeholders (see *https://www.mtishows.com/spectrumofhopemovie*). An arts nonprofit, Arts Connection, in conjunction with the school administrators and teaching artists, developed the program to be taught during the school day. It is taught by teaching artists from the arts nonprofit, as well as arts teachers at each school site (although there is one "school", it has multiple buildings and locations), and has been in this school for 5 years. We worked with this school and theater program because of its anecdotal success, and because, in our preliminary meetings, the school showed great interest in participating in a systematic documentation of stakeholders' perceptions.

Of note, this program has as one of its goals the creation, rehearsal, and performance of a theatrical work. This is distinct from versions and iterations of *drama based pedagogies,* in which dramatic techniques and theories are used to alter standard curricular lessons, integrate with standard teaching, or enhance nondramatic content (Lee, Patall, Cawthon, & Steingut, 2015). Unlike some interventions for youth with ASD (Guli et al., 2013; Lerner & Levine, 2007), but similar to others (Corbett et al., 2011, 2016; Gabriel et al., 2015), the goal of the program studied is not focused on content or specific social-emotional outcomes. Rather, it was developed without any particular theory or attention to gains in cognitive, social, or emotional skills. Therefore, the outcomes of interest (gains in social, self-regulatory, cognitive, or behavioral domains) are specific examples of "transfer" (Burton, Horowitz, & Abeles, 2000), where teachers do not focus on such outcomes, but nonetheless affect these outcomes during the experience of performance-directed theater. Likewise, teachers may or may not be predisposed to think about the psychological constructs that could be positively affected by engaging in this program, or alternatively, they may be entirely focused on outcomes, even though the program was not originally developed for this purpose.

Delphi Poll Methodology

To determine the active ingredients and effects of this musical theater program on children with ASD, as perceived by the teachers and administrators of this school's theater program, we conducted a Delphi Poll.

The Delphi Poll method enables researchers to both honor the knowledge and work of the teachers and other stakeholders and retain scientific validity. The Delphi Poll is designed as a group communication process, which aims to achieve a convergence of expert opinion on a specific issue (Hsu & Sandford, 2007). It can be used across a variety of fields, in any area in which expertise is needed to come to consensus around a particular issue.

In Delphi Poll methodology, participants first complete an initial survey. They also provide feedback about any items that should be added or clarified. At the end of a first round of participation, mean, median, and mode answers for each question are calculated. These averages are then included in a new version of the survey given to the same participants after each item, which also contains any adjustments or additional items based on the initial feedback. So, for example, after each survey option, data from the previous round is included. For the item, "How familiar are you with this strategy?" participants then saw: "Average= 2.83/ Not at all=15%/Very=27%." This indicates that on the four-point scale, the previous answer was 2.83/4.00, with 15% endorsing the low end of the scale, and 27% endorsing the high end of the scale. Participants are then asked to complete the survey again, taking into account the average ratings provided. This occurs in up to two additional rounds, taking place within one month of each other, as the research team was able to turn around the survey with the new numbers included. The repetitive feedback process allows participants to reassess their initial judgments and possibly change responses in the second

or third round based on feedback provided by the other participants (Hsu &

Sanford 2007). The goal is to build consensus in the same way that having a

group of experts together in the same room would allow discussion,

feedback, and eventual agreement (Hsu & Sandford, 2007; Kerns et al.,

2018). The ultimate goal of the Delphi Poll is for the participants to use both

their own expertise and also reflect on the expertise of others when thinking

about the questions at hand. Use of this methodology for theater education

and programs allows us to develop a refined list of outcomes and

mechanisms that can then be tested in a direct study of the program and its

students (Kerns et al., 2017; Wainer et al., 2017). To our knowledge, this is

the first time this methodology has been used in a theater education

context.

     We augmented the Delphi Poll methodology in two ways. First, before

we began the multiple rounds of Delphi Polls, we conducted an initial Think

Aloud study (Dillman et al., 2014), in which a small subsample of participants

from each category of stakeholder (i.e., administration, teaching artist,

classroom teachers and paraprofessionals) went through the survey carefully

with our researchers to point out anything that was difficult to understand so

that it could be phrased more clearly when distributed widely. These

stakeholders were hand chosen by the director of the program as being

particularly good candidates to provide open and honest feedback on our

survey. We then sent the survey to every teacher, artist, and administrator

of the program, asking them to complete two rounds of rating. In addition,

we asked about demographic variables, training, and participation with the program and the students, which allowed us to investigate how those individual difference variables would play a role in stakeholders' perceptions of the core teaching strategies of the program and their thoughts about which outcomes would be affected by program participation.

As is typical with Delphi Polls, we added items between rounds at the suggestion of stakeholders. We then looked at the highest rated strategies used in the program and the highest teacher-rated outcomes of the program. As mentioned above, three questions guided our research:

1. What do stakeholders believe are the most useful, key, or core elements and strategies used in the program?

2. What outcomes do stakeholders believe are changed as a result of children's participation in the program?

3. Do the endorsements of these strategies and outcomes vary by stakeholders' years of experience, position within the program, contact with students, or other demographic factors?

The Research Team

The research team consisted of academic researchers who study Autism Spectrum Disorders, the Psychology of Theater, and both of these topics. All researchers hold PhDs and were trained in Developmental and Clinical Psychology. The team has expertise in conducting quantitative program evaluation and intervention development and analysis research. Years of experience ranged from 10-30 years.

Method

We proceeded with three rounds of the Delphi Poll.

    1. A pilot think aloud, to ensure our survey was understandable by stakeholders from various areas of the program followed by adjustment of the survey to incorporate new items

    2. Round 1 survey sent to all stakeholders of the program, followed by a period in which we edited the survey to incorporate feedback and new items

    3. Round 2 survey sent to all previous participants in the Round 1 survey, which included both new items and scores from the Round 1 survey.

Pilot Think Aloud

To ensure that a wide range of stakeholders (e.g. teachers, teaching artists, classroom aides, administration) could both understand and complete our survey, nine participants, selected to provide a range of experience with the program and different positions within the program, completed an initial survey. These nine participants included special education teachers, teaching artists, and program and school administrators. We used a Think-Aloud and Retrospective Interview (Dillman et al., 2014) to test the questions included in the questionnaire and get an idea of how the questionnaire would be received by the participants. A member of the research team explained the procedure and the questionnaire to the participants and then helped them through the study. Participants were asked to fill out the survey while also speaking aloud about their thought processes as they answered each

question, stating their comments or questions, and explaining why they answered the questions in the way they did. Participants either completed the survey online or in paper form, while a research assistant recorded them on film to allow for transcription in a quiet room at their school, such as an administrator's office. Upon reviewing the films and transcriptions, the research team also reviewed the transcripts for items of potential confusion and misunderstanding. In a group meeting, they confirmed that all pilot participants understood the language and goals of the questionnaire and then moved on to the main phase of the study.

Participants

Thirty-six participants completed the first round of the survey and fourteen of those participants also completed the second round. Of note, this second round has a retention rate of 38%, relatively high for a Delphi Poll across rounds (Rowe & Wright, 1999). Individuals were divided into three groups based on their self-identified roles in the program. These were: 1) Leaders (n = 10 individuals with leadership involvement in planning of the theater program in at least one site); 2) teachers (n = *11* teachers running a class); and 3) specialists (n = 15 participants supporting children while in a class, including speech therapists, physical therapists, and classroom aides). Participant demographics are presented in Table 1.

Table 1. Participant Demographics

Sample Description	Round 1		Round 2	
	N	**%**	**N**	**%**
Total	26	100	14	100
Average number of hours worked with individuals with ASD				
1-10 hours	3	11.5	3	21.4
11-30 hours	4	15.3	1	7.1
Over 30 hours	19	73.0	10	71.4
Average number of hours worked in Program per week				
1-10 hours	10	38.5	4	28.6
11-30 hours	5	19.1	3	21.4
Over 30 hours	11	42.3	7	50.0
Years worked with individuals with ASD				
Less than 5	8	30.8	3	21.4
5-10 years	10	38.5	6	42.4

More than 10 years	8	30.8	5	35.7
Years worked in Program				
Up to 2 years	7	26.9	3	21.4
3 years	10	38.5	5	35.7
Over 3 Years	9	34.6	6	42.9
Role in the Program				
Leaders in Program	10	38.5	7	50.0
Teachers in theater program group	11	42.3	7	50.0
Specialists providing therapeautic or other individualized support	5	19.2	0	0.0
Level of training				
Master's Degree	22	84.6	13	92.9
Training with ASD focus	24	92.3	14	100.0

IRB approval was again given by the first author's previous institution, as well as the School Board's IRB. All participants completed informed consent before moving on to the questionnaire itself and completed the survey individually at their computers at location of their choosing. We did not record the locations where they took the survey. Table 1 shows the number of different types of stake holders taking the survey in each round.

Unfortunately, we could not control who chose to take the Round 2 survey after completing the Round 1 survey and therefore have missingness across the different types of stakeholders, including the absence of therapeutic specialists in Round 2.

Creating the Delphi Poll Questionnaire

Based on previous theory and findings in the drama, theater education, psychology of theater and drama intervention literature, we first developed a large list of 1) activities within the program that could be core strategies used by teachers and professionals; and 2) potential positive student outcomes of the program. Note that these were student outcomes the teachers did not necessarily think about, but that we considered through our review of the literature.

We began with a list of 24 different teaching "strategies" that participants *could* use in the program based on our own previous knowledge and areas studied in prior research on the effects of theater activities. For each strategy, we asked five questions:

1) how familiar participants were with each strategy;

2) how commonly they implemented the strategy;

3) how commonly others implemented the strategy;

4) how useful they believed the strategy to be;

5) how competent they felt to implement the strategy.

Participants rated each item on a 1 (not at all) to 4 (very) Likert scale. These questions were asked in a variety of ways based on other Delphi Polls (e.g.

Rowe & Wright, 1999), to ensure that participants considered all of the ways

in which a particular strategy could be used. The list of strategies can be

found in Table 2.

Table 2. Mean Scores and Consensus on the Usefulness of Teaching

Strategies Employed in Theater Program

Teaching Strategy	Chronbach's Alpha across question type in Round 1	Round 1 Rating of Usefulness		Round 2 Rating of Usefulness	
		Mean	Strong Agreement	Mean	Strong Agreement
Modeling/Imitation	.928	3.71	75%	3.93	93%
Use of routine*		-	-	3.86	86%
Small group work	.950	3.63	71%	3.79	79%
Vocal/Physical warm ups	.950	3.67	75%	3.71	86%
Relaxation/Deep breathing	.915	3.46	54%	3.71	71%
Incorporating special interests into activities	.923	3.44	68%	3.64	71%
Performing for an audience	.900	3.21	46%	3.64	64%
Use of song	.897	3.63	75%	3.57	71%

Video/Audio modeling	.939	3.38	50%	3.57	64%
Reflections	.971	2.92	29%	3.57	64%
Games and related activities that necessitate social interaction	.974	3.32	56%	3.50	57%
Students as audience	.932	3.25	42%	3.50	57%
Rehearsal process	.944	3.17	54%	3.43	57%
Peer modeling	.947	3.50	58%	3.43	50%
Involvement in theater in a non-performative way*		-	-	3.43	50%
Role play	.934	3.04	38%	3.21	50%
Helping each other with lines and blocking	.923	2.84	36%	3.14	50%
Working on lines	.936	2.79	42%	3.14	43%
Collaborative co-creation	.947	2.74	33%	3.14	43%
Games and activities that involve the use of nonverbal skills and perspective taking	.941	2.78	37%	3.14	36%
Self-awareness-bodily response	.934	3.08	38%	3.07	43%

Discussing/playing with characterization	.915	2.81	33%	3.00	29%
Acting vocabulary	.933	2.85	33%	2.93	29%
Physical games with spatial relationships	.925	2.75	21%	2.64	21%
Guided imagining	.951	2.32	20%	2.43	7%
Playing "Add on" games	.952	2.21	17%	2.36	7%

Note: *Item was added in round 2 as a result of round 1 participant feedback. *N* Round 1 = 26, *N* Round 2 = 14; Strong agreement are percentage of participants strongly agreeing on usefulness of teaching strategy; Teaching strategies have been sorted by highest mean score of usefulness in round 2.

Then, participants were given a list of 21 student behaviors or skills that could change as a result of engagement in the program. These are listed in Table 3.

Table 3. Mean Scores and Consensus on Child Behavior Outcomes as a Result of Participation in Theater Program

	Round 1		Round 2	
Outcome skills	Mean	Strong Agreement	Mean	Strong Agreement
Imitation skills	3.22	39%	3.31	46%
Gross motor skills	2.96	30%	3.23	38%

Communication skills	2.96	43%	3.15	54%
Emotion recognition and expression	2.96	35%	3.15	31%
Language comprehension	2.83	26%	3.15	38%
Turn taking in conversation	2.96	30%	3.15	38%
Expressive language	2.96	39%	3.08	38%
Matching of physical body (including face) to emotional state	2.83	22%	3.08	31%
Verbal Memory	3.00	39%	3.00	31%
Self-esteem	3.00	35%	3.00	31%
Stepping out of comfort zone	2.91	30%	3.00	23%
Emotion regulation	2.57	17%	2.92	38%
Peer relationships	3.00	35%	2.92	31%
Overcoming shyness*			2.92	31%
Creativity	2.78	30%	2.77	31%
Empathy	2.70	17%	2.77	23%
Physical control in relation to other people	2.61	17%	2.77	31%
Eye contact	2.70	17%	2.62	23%
Self-concept/self-understanding	2.43	9%	2.54	15%
Self-control and attention	2.70	13%	2.54	23%
Vocal control	2.70	13%	2.46	23%
Academic Performance	2.30	9%	2.15	8%

Note: *Item was added in round 2 as a result of round 1 participant feedback. *N* Round 1 = 26, *N* Round 2 = 14; Behaviors have been sorted by highest mean score in round 2; "Strong agreement" means the percentage of participants strongly agreeing that theater program influences behavioral skills in that area.

For each student behavior or skill, participants were asked to rate how much they believed it was changed by engaging in the program, on a 1 (not at all) to 4 (very) Likert-type scale. Finally, the survey included demographic items, including the participants' average number of contact hours with ASD individuals and number of hours in the program, as well as the number of individuals with ASD the participant had worked with. Other items captured the participants' amount and type of training, as well as amount and type of engagement in the program. These items were chosen so we could examine whether the amount of training or experience stakeholders had was related to any of their responses, based on preliminary conversations with administrators about the makeup of the program. The items are listed in Table 1.

Procedure

For the first round of the Delphi Poll, we sent our survey to every teacher, teaching artist, paraprofessional, and administrator who interacted with the program. This list was given to the researchers by the school's principal. Importantly, before data collection began, researchers visited multiple faculty meetings to discuss the survey and expectations with the

staff and faculty, including information regarding the anonymity and confidentiality of individual responses. The latter was critical to ensure that participants would answer truthfully without fear of judgment by their colleagues or bosses. Once we had collected data following Delphi Poll methodology, we calculated the mean response for each item, included it on the survey, revised and added items based on participant feedback, and sent the survey out for a second round of completion by the group of participants who had completed Round 1.

Results

Our analysis began with reliability analysis on the five questions on mechanistic strategy, in order to look for consistent responses across question type. Then, we turned to familiarity ratings to ensure face validity, looking at descriptive statistics for validity. We then looked at our main results of interest: descriptive statistics by strategy for the highest ranked mechanism and highest ranked outcomes. Finally, we looked at stakeholder differences, using ANOVA by stakeholder type to investigate group differences.

Program Elements and Strategies

To begin our Round 1 analysis, we investigated whether participants were giving different ratings to our five different questions on each strategy (i.e., familiarity, personal use, others' use, usefulness, competence). To do this, we conducted a reliability analysis for each strategy to determine a Cronbach's alpha for the five types of questions posed for each strategy That

did not include student behavior, as only one question asked for outcomes.

As seen in Table 1, the alphas ranged from a low of .897 (use of song) to a high of .952 (playing add on games). Therefore, the analysis of any individual question type about strategy is indicative of generalized responses to that strategy. Strategies that were scored highly on any one particular question were scored highly on all questions.

To ensure face validity of the participants' responses, we then looked at ratings of familiarity. The ratings here could range from "1-Not at all", "2-Somewhat" "3-Fairly" "4-Very."Participants' ratings varied from M= 3.71 for *Modeling and Imitation* to 2.38 for *Add-on Theater Games*. This indicates that all strategies proposed to the participants were at least "somewhat" or "fairly familiar,".

As our primary concern for this study was to investigate which elements of the theater program would be useful for program stakeholders, our remaining analyses focused on the endorsement of a strategy as "useful". Since the first round of the survey yielded the addition of two strategies (*Use of Routine* and *Taking Part in Theater* in a non-performative way), these items appear only in Round 2 results. We found that the strategies with the highest ratings for "usefulness" in Round 1 were *Modeling/ Imitation* (3.71), *Small Physical/Vocal Warm ups* (3.67), *Use of Song*, (3.63) *Small Group Work* (3.63), and *Relaxation/Deep Breathing* (3.46). In Round 2, the strategies with the highest ratings were *Modeling/Imitation* (3.93), *Use of Routine* (3.86), *Small Group work* (3.79), *Vocal/Physical Warm*

ups (3.71) and *Relaxation/Deep Breathing* (3.71). All results for the usefulness of each strategy can be found in Table 2. The perceived usefulness of all these strategies went up between Rounds 1 and 2, meaning scores increased. Table 4 presents the change in consensus for strategy use between Round 1 and Round 2.

Table 4. Round 1 and 2 Consensus on Strategy Use/ Mechanism

Name	Chronbach's Alpha across question type	Round 1: Useful	Round 1: Strong Agreement Useful	Round 2: Useful	Round 2: Strong Agreement Useful
Modeling/Imitation	.928	3.71	75%	3.93	93%
Small group work	.950	3.63	71%	3.79	79%
Vocal/Physical Warm Ups	.950	3.67	75%	3.71	86%
Relaxation/Deep breathing	.915	3.46	54%	3.71	71%
Incorporating special interests into activities	.923	3.44	68%	3.64	71%
Performance	.900	3.21	46%	3.64	64%
Helping each other with lines and blocking	.923	2.84	36%	3.64	0%
Use of song	.897	3.63	75%	3.57	71%

Video/Audio	.939				
Modeling		3.38	50%	3.57	64%
Reflections	.971	2.92	29%	3.57	64%
Games and related activities that necessitate social interaction	.974	3.32	56%	3.50	57%
Students as audience	.932	3.25	42%	3.50	57%
Peer Modeling	.947	3.50	58%	3.43	50%
Rehearsal Process	.944	3.17	54%	3.43	57%
Role play	.934	3.04	38%	3.21	50%
Working on lines	.936	2.79	42%	3.14	43%
Games and activities that involve the use of nonverbal skills and perspective taking	.941	2.78	37%	3.14	36%
Collaborative Co-Creation	.947	2.74	33%	3.14	43%
Self-awareness-bodily response	.934	3.08	38%	3.07	43%
Discussing/playing with characterization	.915	2.81	33%	3.00	29%
Acting Vocabulary	.933	2.85	33%	2.93	29%
Physical games with spatial	.925	2.75	21%	2.64	21%

relationships					
Guided Imagining	.951	2.32	20%	2.43	7%
Playing "Add on" games	.952	2.21	17%	2.36	7%

Finally, we looked at the percentage of participants who rated a strategy as "4-very useful," as an indicator of the strength of agreement that it is useful, as is typical with Delphi Poll Methodology (Hsu & Sandford, 2007; Kerns et al., 2017). Most strategies highly endorsed in Round 1 were similarly endorsed in Round 2. Unsurprisingly, those strategies endorsed as "very" useful (i.e. "Strong Agreement") by more than 70% of the participants in Round 1 (*Modeling, Vocal Warm ups, Song, and Small group work*) were similarly endorsed by more than 70% of participants in Round 2 (with the addition of relaxation and use of special interests).

Student Outcomes

The first round of the survey yielded the addition of one item (overcoming shyness) between Rounds 1 and 2, so this item appears in round 2 results only. In contrast to stakeholders' agreement on the strategies that are most useful in the program, stakeholders were less in agreement in Round 2 about the behaviors that may be changed as a result of engaging in the program. The highest rated behaviors on a 1-4 Likert scale were *Imitation Skills* (3.31), *Motor Skills* (3.23), *Communication Skills* (3.15), *Emotion Recognition and Expression* (3.15), *Language Understanding* (3.15), and *Turn Taking* (3.15). However, the percentage of participants who indicated that these skills were "very" affected by the program were lower

than in the strategies, with the top level of agreement on change in *Communication Skills* (54%), *Imitation Skills* (46%), *Motor Skills, Language understanding, Turn taking, Expressive Language and Emotion Regulation* (all 38%). All results for endorsement of behavioral change and the percentage of participants in agreement that a given outcome is "very" affected can be found in Table 3. Table 5 presents the Round 2 consensus scores for change in outcomes.

Table 5. Round 2 Consensus and Scores for Change in Outcomes

Skill	Mean Score	Percentage "Strong Agreement"
Imitation skills	3.31	46%
Motor skills	3.23	38%
Communication skills	3.15	54%
Emotion recognition and expression	3.15	31%
Language understanding	3.15	38%
Turn taking	3.15	38%
Expressive language	3.08	38%
Matching of physical body (including face) to emotional state	3.08	31%
Memory	3.00	31%
Self-esteem	3.00	31%
Stepping out of comfort zone	3.00	23%
Emotion regulation	2.92	38%
Peer relationships	2.92	31%
Overcoming shyness	2.92	31%
Creativity	2.77	31%
Empathy	2.77	23%
Physical control in relation to other people	2.77	31%
Eye contact	2.62	23%
Self-concept/self-understanding	2.54	15%

Self-control and attention	2.54	23%
Vocal control	2.46	23%
Academic performance	2.15	8%

Individual Stakeholder Differences.

We examined differences in the endorsement of both strategies used and behavior change in students as a function of the stakeholders' levels of experience and their role in the program. There were no significant differences seen among groups for opinions about the usefulness of strategies. However, endorsement of the impact of the program on certain behaviors varied. For example, ANOVA indicated that the Leaders rated turn taking to be an important outcome of the program with a *mean* of 3.57(*sd* = .535) versus 2.67 (*sd* = .816) in the Teachers' group, $F (1,12) = 5.76$, p<.035. The Leaders also believed imitation skills to be more important (*M*= 3.71, *sd* = .488) than did the Teachers (*M*= 2.85, *sd* = .753); an ANOVA showed this to be a significant difference by group $F(1,12) = 6.47$, *p*<.027. In addition, the number of years participants had worked in the field of autism had an impact on their endorsement of emotion recognition. Those stakeholders who had worked longer with children with autism believed emotion recognition and expression was more highly impacted (*M* = 3.80, *sd* =.477) by the program than what was reported by less experienced respondents (*M* =2.67, *sd* = .577), ANOVA $F (2,12) =7.56$, *p*<.01.

Discussion

Taken together, our results show that participants were in high agreement around four to five strategies that may be useful in this musical

theater program, but showed less agreement around which behaviors may change as a result of children's engagement in the program. Importantly, none of the strategies deemed most useful by stakeholders are particularly specific to theater. Modeling, imitation, small group work and vocal and physical warm ups are often used individually in other situations. Yet, critically, we believe these are all activities that coalesce in one context, theater, that may not coalesce in any other activity that children, particularly children with ASD, are motivated to participate in. Combined with children's enjoyment and intrinsic motivation to participate in theater, acting and drama classes may be the best way to have children both learn these skills and gain the outcomes from participating in an activity with these skills.

As for behaviors that stakeholders believe are most affected by program participation, *Imitation* and *Motor Skills* specifically are impaired in young children with ASD (Estes et al., 2015; Bhat, Landa & Galloway, 2011; Vivanti & Hamilton, 2014), so improvements in these skills through this program would be beneficial. In addition, emotion recognition and turn-taking have clear implications for succeeding in social interaction, which is also impacted in ASD (Gates et al 2017). This again provides evidence for the importance of using this methodology to investigate the stakeholders of any theater program. Of note, while we did find individual differences in endorsement of strategies and behaviors across participants with different roles in the program, these results require replication and further

investigation, as our numbers of respondents were relatively low within any given group.

There is a growing literature on the positive effects of drama and drama based pedagogies on child development, for both typically (Freeman, Sullivan, & Fulton, 2003; Goldstein & Winner, 2012; Goldstein & Lerner, 2017; Lee et al., 2015) and atypically (Corbett et al., 2016; D'Amico, Lalonde, & Snow, 2015; Lerner & Levine, 2007) developing populations. As this body of work goes forward, it is critically important both to conduct the research rigorously and to connect back to the actual experience of teachers and students in the classroom-- the context in which the programs are delivered. Often, the interests of arts researchers and the work and beliefs of teachers run in parallel. Although they may have similar goals, they make very little contact or collaboration with each other, making this study particularly worthy of attention. By integrating teacher perceptions and researcher theory, both groups could gain knowledge on the effects of their work. Both groups are largely concerned with the same outcomes even if they use different vocabulary (Goldstein et al., 2017). When teachers and administrators are given the opportunity to weigh in, new variables that matter may come to light that illuminate the use of an arts curriculum or activity. Conducting a Delphi Poll of the stakeholders directly, as we did here, can reveal new ways to look at what happens in such a program.

Future work should investigate how stakeholders may use these types of findings, as a limitation of our study is that stakeholders did not review the

findings, nor did they have a chance to implement the findings in the program. Further, future work should investigate in greater depth the individual differences that may arise in stakeholder's perceptions and beliefs about programs they are involved in. A limitation of this study is that we did not have enough variance in stakeholder category to conduct a full statistical analysis of individual differences in perceptions and beliefs, a question of interest for researchers and stakeholders alike when thinking about program evaluation.

In general, this study, involving three rounds of stakeholder participation, shows that individuals involved in a theater program for children with ASD can reach consensus, meaning there are knowable systematic and systematic elements to drama programs, and identifiable outcomes of such programs. The Delphi Poll methodology is an appropriate way to inform theory-building based on the experience and expertise established by the stakeholders engaged in the program. It also offers descriptive data of what is happening on the ground in these programs, whether intentional or implicit.

Further, we believe these results can be generalized to programs that are performance oriented, beyond programs that use theatrical techniques in service of broader psychological and academic skills. Even when it is not outcome oriented, theater provides a coordinated suite of activities requiring coordinated skills that allow children, both typically and atypically developing, to use and practice abilities that can later be transferred to new

contexts (e.g. Corbett et al 2014). Several key aspects of theater training might afford this advantage. It is a low stakes and fun environment, where children can make mistakes and try out different activities without negative consequences. It may be that teachers are particularly motivated to engage in the arts more than in specific and silo-ed pedagogical approaches to these skills. Indeed, the very fact that the skills are integrated in one context rather than spread across classes or contexts would be an advantage, such as in "real world" imitation, when turn taking and motor skills are often coordinated with language and social skills (Ingersoll, 2008; McDuffie et al., 2007; West, Leezenbaum, Northrup & Iverson, 2017).

However, there may also be reasons to expect the potential strategies and outcomes of this program to be more specific to the individual atypical children under investigation. First, this particular program might engage students differently than other theater programs, because the stakeholders in the program work with a special population- children with Autism Spectrum Disorders. For example, imitation might prove particularly important for children with ASD and less important for children who are typically developing. Second, theories built on the effects of theater programs are often specific for theater with typically developing children, and theater programs developed for children with ASD contain different elements and different foci (e.g. Corbett et all 2013; 2014; Guli et al 2007). As in the example above, when imitation is highly valued for children with ASD, then a program might choose experiences that promote more imitation.

Third, this program was also developed by professional theater makers in conjunction with teaching artists and classroom teachers. Theories on the effects of drama often focus on integrated dramatic activities, developed with teachers, teaching artists, and researchers together, rather than coming primarily from professional artists.

This research demonstrates the utility of asking the stakeholders--administrators, specialists, teachers, artists, and others--about the very programs that we research. Their responses are invaluable, as they often prioritize activities and outcomes different from the researchers. These data allow an understanding not only of what guides practitioners, but also of what questions researchers could and should be asking. As a result, rigorous research can be aligned with what is occurring in classrooms and rehearsals, and with students.

Conclusion

This study is among the first to study, from the vantage point of stakeholders who work with children on the autism spectrum, how theater might affect atypical development. By eliciting teacher perspectives of the skills thought to be affected by theater programming, researchers and stakeholders can then begin to evaluate whether a program is imbued with the values and beliefs thought to promote positive strategies and transfer for special populations. Such work will inform further research on the mechanistic variables in theater that impact children with ASD. By investigating stakeholder beliefs about programs, researchers also ensure

face validity of surveys, think aloud protocols, and measurement that can be used with other programs and that can be used to assess the efficacy of the programs under observation.

One additional major limitation of this study is that we are focused on stakeholder perceptions of both activities in the classroom and proposed behavioral changes as a result of engaging in theater, while we did not measure actual activities nor look at actual behavioral outcomes as a result of the program for this study. As researchers test the actual value of learning through the arts, it will be important to have detailed descriptive evidence about what goes on in the classroom during these programs. Future research will help determine whether previous findings of the effects of researcher-developed theater programs can be replicated with a successful in-school program. While Randomized Control Trials of learning through the arts are a critical step in providing evidence for the effectiveness of drama for children with ASD, beginning with this study's first steps of stakeholder perceptions allows researchers to build an RCT in a participatory and authentic way.

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