Theater in School to Promote Youth with ASD (THESPY-A)
Study Project Summary

Executive Summary:

Several recent reports hint that musical theater might offer promise for children on the autism spectrum, who often suffer from a lack of social connectedness. Research evaluating this claim, however, has been scant. This project, involving a team of psychologists from Stony Brook, George Mason, and Temple Universities differs from prior work in three important ways.

1) This study takes advantage of the STAARS program that exists **in a public school** in New York that is open to all children, rather than only select children, as is often the case.
2) The STAARS program is **organically developed by the teachers** who adapt their program to the children. Therefore, this study looks both at *process* and *outcome* for the *teachers and students*, rather than being based on assumptions.
3) This study asks whether a theater based, public school program, can enhance precisely those skills known to foster social connectedness – imitation.

Results from 76 participants (74% male) ages 8 to 18 and their teachers were promising.

- Teachers believed the theater intervention was effective and provided a strong context for learning.
- Students showed significant improvement in imitation from the start of the academic year to the end.
- Higher imitation scores predicted overall positive change on a test of social-emotional understanding.

In short, through engaging in a musical theater program, autistic students at a public school with engaged and involved teachers, showed gains in a foundational skill for social development.

Project Background

Theory and previous work proposes that theater is related to the academic, social, and innovation skills required for 21st century success. Recent studies provide evidence that musical theater might offer promise for children with autism spectrum disorders (ASD) who experience foundational challenges in social connectedness. Research evaluating this claim, particularly in existing settings where programs are already being delivered, has been scarce.

The STAARS (Sequential Teaching in Arts, Action, Research, and Scholarship) program in New York, developed by a public school in conjunction with an arts nonprofit, offers a unique test of the role of theatre in social, emotional, and academic outcomes for youth on the autism spectrum. The goal of this program is for students to create, rehearse, and perform theatrical pieces with the help of visiting artists at each school. The program is integrated into the regular curriculum and is available to all students, not just those who sign up for an after-school program, as happens for many arts interventions. The program is well-received by the community, and stakeholders anecdotally report that the program causes improvements in both social and communication skills in many of their students. Therefore, STAARS is not only a great test case for describing specific links between theatre experiences and other skills, but could also serve as a model for delivering sustainable programming and consequent improvements in these skills for youth on the autism spectrum.

The research reported here, conducted by researchers at Temple University, George Mason University, and Stony Brook University in collaboration with New York City Public Schools and the STAARS program, aimed to identify specific qualities of the program that contributed to long-term impact with input from the program's teachers, administrators, and other stakeholders and what impact the program may be currently having for its students.

Research Questions and Rationale

This project included two main goals and research questions:

Aim 1: Which elements of STAARS are related to social and academic outcomes for its participants? This was addressed by receiving input from stakeholders via interviews and a two-part survey. The elements and outcomes identified by this part of the research were then applied to the second part of the program to identify how the elements contribute to measured student outcomes.

Aim 2: Are elements identified by stakeholders related to children's outcomes in social, communication, and imitation skills? This was addressed by a longitudinal study of children's social communication skills over the course of the STAARS program with standardized neuropsychological measures frequently used in research and assessment. These assessments were then correlated with behaviors of children in the program, as assessed by observational coding.

Summary of Aim 1: Identifying Program Elements and Possible Outcomes

Survey Process- The survey took place in multiple steps:

1) Creation of the survey based on informal conversations with STAARS stakeholders, and previous surveys used by researchers.
2) Interviews with nine stakeholders (e.g., teachers, teaching artists, classroom aides, administrators), hand-picked by the director of STAARS, using a "think-aloud" session. Participants where they took the survey while speaking out loud about their thought process, comments or questions they had, and why they answered question the way they did.
3) Survey was fine-tuned based on this feedback and multiple rounds of the final survey were sent to every teacher, artist, and administrator in the program.
4) Survey was sent broadly to every teacher, administrator, teaching aide and staff member involved in STAARS. Thirty-four participants completed the first round of the survey. 10 participants were leaders (involved in planning the theatre program in at least one site), 11 were teachers (involved in running a class), and 15 were specialists (involved in supporting children while in class, which includes speech therapists, physical therapists, and classroom aides).
5) Using the initial results, items were added to survey to reflect all possible activities in the STAARS program that could be changing kids, and all outcomes that could be resultant change.
6) Amended survey was send to the same 34 participants who completed round 1. From there, 14 of those same participants completed the second round of the survey. In Round 2 of the survey, 7 participants were leaders and 7 were teachers.

Survey questions: Participants were asked about their familiarity with and implementation of 24 different teaching strategies (list generated based on theatre research), as well as how useful they thought these strategies were. Then, participants saw a list of 19 student behaviors or skills, generated by previous research on drama, psychology, and theatre, and were asked how much they believed each skill or behavior was changed by engaging in the program. Lastly, participants answered questions about background information such as how much time they spent with individuals with ASD, and the amount, and type of training they have had.

Findings: Participants agreed that *modeling, imitation, small group work*, and *vocal and physical warm ups* were useful teaching strategies. In theatre, all of these strategies unite within one activity that children, and particularly children with ASD, enjoy and are interested in. Stakeholders ranked *imitation skills, motor skills, communication skills, emotion recognition and expression, language understanding,* and *turn taking* as the most likely to change, although there was less overall agreement in ratings of behavior change than there were for teaching strategies. Stakeholders did not differ in their responses about the usefulness of strategies based on their role in the program or level of experience.

When looking in more detail at the differences among the participants, Program Leaders rated *turn taking* and *imitation skills* as more important student outcomes than Teachers. Stakeholders who had worked *longer* with children with ASD believed *emotion recognition* and *expression* were more highly impacted by the program than those who were less experienced.

In sum, the survey revealed that modeling, imitation, small group work, and warm ups are teaching strategies that may be useful for students to improve behavior in the areas of imitation, motor skills, communication, emotion recognition and expression, language, or turn taking.

Summary of Aim 2: Assessing Student Outcomes

Direct Student Assessment: Measures were then chosen based on input from program stakeholders during the Aim 1 research and by a review of the literature. *Imitation, social skills, communication, emotion recognition, and self-control* were assessed, using well validated measures from the field of psychology and autism research. Participants were 76 children (74% male), aged 5-18, participating in STAARS. *Imitation skills*, specifically imitating the hand positions modeled by a research assistant, improved from the beginning to the end of the year. This result reflects stakeholders' perception that imitation skills are important outcomes of the STAARS program.

Higher imitation scores also predicted overall positive change on a test of social-emotional understanding, which is a key focus for children with ASD. Additionally, children who had been in the program longer had better theory of mind (a perspective taking skill important for social interactions) and greater overall social-emotional skills.

Direct student assessments supported stakeholders' perceptions that ***imitation*** **and** ***social skills*** **are improved by program participation**.

Classroom Observations: In addition to assessing students' skills directly, we also observed and recorded their behavior during their theatre arts classes. We coded for imitation activities (both vocal and physical) and students' motor movements (both gross and fine), both thought to be important agents of change by stakeholders during the Aim 1 research. Videotapes were only coded from those students whose parents had provided permission for videotaping, so the number of participants was smaller (55 students).

Findings: Children who engaged in more imitation in the classroom had higher scores on one of the imitation tasks overall, but there was no change from pre- to post-test predicted by engagement in more imitation during STAARS. Children who were in classrooms with more opportunities for motor movements improved their imitation skills over time on two separate measures of this skill. Children who were more engaged in motor movements in the classroom had higher scores on imitation overall.

Observations of students in the classroom support the findings from direct student assessments that ***imitation skills*** **are the most prominent student behavior supported by the program**.

Project Highlights

This evaluation of the STAARS program is unique: teachers and administrators in the program were able to weigh in on the skills and program elements that were assessed, connecting the research back to the context in which the program is delivered. This study is among the first to evaluate how theater might affect development of children with autism spectrum disorders from the perspective of stakeholders who work within the program. Equally important are our overall findings: The STAARS program impacts children's imitation skills--a foundational ability for more complex social skills, particularly for children with ASD. **Imitation was highlighted by stakeholders in the survey as a skill likely to change as a result of participating in STAARS and this research supports that intuition.** This evaluation suggests that engaging in theatrical activities can **improve functioning and skills in real-world settings for youth with ASD**.

Deliverables and Presentations:

1. Aim 1 Academic Paper:
    a. Goldstein, T.R. Lerner, M.D., Paterson, S., Jaggi, L., Toub, T.S., Hirsh-Pasek, K., Golinkoff, R.M. **Stakeholder Perceptions of the Effects of a Public School-Based Theatre Program for Children with ASD.** *Journal of Learning Through the Arts.*
    b. **Current Status:** In revision for publication.
2. Aim 2 Academic Paper:
    a. Paterson, S., Goldstein, T.R. Lerner, M.D., Thompson, B., Jaggi, L., Toub, T.S., Hirsh-Pasek, K., Golinkoff, R.M. **Positive Effects of a Musical Theater Program on Imitation Skills in Children with ASD.**
    b. **Current Status:** Writing for first submission
3. Academic Conference Presentations:
    a. Goldstein, T.R., Paterson, S. J., Lerner, M. D., Thompson, B., Weber, R.J., Sommer, S.L., Toub, T. S., Hirsh-Pasek, K., & Golinkoff, R.. (*under review*). An In-school Theatrical Intervention for Children with ASD. In M.D. Lerner (Chair). *Act Well Your Part: Using Theater to Disseminate Evidence-based Practices to Treat Core Deficits in Autism Spectrum Disorder*. Symposium at the 53rd Annual Convention of the Association for Behavioral and Cognitive Therapies, Atlanta, GA, November 21 - 24.
    b. Paterson, S. J., Lerner, M. D., Goldstein, T. R., Toub, T. S., Golinkoff, R., & Hirsh-Pasek, K. (2018, May). Acting out in Public School: How a Theatre Program Can Impact Imitation Skills in Children with ASD. Poster presented at the *International Society for Autism Research Annual Meeting*, Rotterdam, Netherlands.

c. Goldstein, T. R., Lerner, M. D., & Paterson, S. Roth, I., Shaughnessy, N., & Trimingham, M. (2017, June). *Levels of Engagement: Imagination, Drama and Children.* Symposium. Cognitive Futures in the Arts and Humanities. Stony Brook, NY.
d. Goldstein, T.R., Lerner, M.D., Paterson, S., Toub, T.S., Hirsh-Pasek, K., & Golinkoff, R. (2017, May). Stakeholder perceptions of the effects of a theatre program for children with ASD. Poster presented at the *Association for Psychological Science Annual Convention.* Boston, MA.

Recommended Next Steps

Replication and further investigation of the results of the Aim 1 study should be pursued, with a goal of obtaining a higher response rate from participants. This is especially important for the survey of possible student outcomes from participating in the program because there was more disagreement among stakeholders in the behaviors endorsed as possibly changing as a result of program participation. Future research should include a control group that is not in the STAARS program to rule out the effects of other interventions that may occur simultaneously to the program. This will help to isolate the unique effects of the STAARS program and provide further evidence for the program elements that contribute to improved student outcomes.