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Research Article

The use of improvisational theater training to reduce social anxiety in adolescents

Peter Felsman[a,b,*], Colleen M. Seifert[a,c], Joseph A. Himle[b,d]

[a] Department of Psychology, University of Michigan, United States
[b] School of Social Work, University of Michigan, United States
[c] Institute for Social Research, University of Michigan, United States
[d] Department of Psychiatry, University of Michigan, United States

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ABSTRACT

Adolescents who have Social Anxiety Disorder do not receive the support they need. Improvisational theater involves regular exposure to social performance situations, and is recognized as a potential psycho-social support to enhance well-being and symptom reduction. The current study examines whether participating in a school-based improvisational theater program predicts reductions in symptoms of social anxiety. A total of 268 middle and high school students who participated in a ten-week school-based improvisational theater program completed surveys in a single group pre/post design. Adolescents who screened positive for social phobia at the beginning of class reported reduced symptoms of social anxiety at post-test. This change predicts increases in social skills, hope, creative self-efficacy, comfort performing for others, and willingness to make mistakes, along with marginal decreases in symptoms of depression. Given that no prior study has examined school-based improvisational theater training and its relationship to social anxiety, this work offers an important early contribution to the empirical literature on improvisation and mental health. School-based improvisational theater training offers an accessible, non-clinical alternative for addressing social anxiety problems among adolescents.

Introduction

Social anxiety and the need for alternative treatments

Social phobia (also Social Anxiety Disorder – SAD), describes an individual who is "fearful or anxious about or avoidant of social interactions and situations that involve the possibility of being scrutinized" (American Psychiatric Association, 2013), and is among the most common functionally impairing psychological conditions in adolescents (Bandelow & Michaelis, 2015; Costello, He, Sampson, Kessler, & Merikangas, 2014).

In adolescence, peer-related socializing becomes increasingly important (Crockett, Losoff, & Petersen, 1984), and pressure to secure social status mounts (Corsaro & Eder, 1990; Li & Wright, 2014); consequently, teens are particularly vulnerable to experiencing social phobia (Albano, 1996; Knappe, Sasagawa, & Creswell, 2015). Indeed, onset for social phobia is most often during adolescence (Kessler, Chiu, Demler, & Walters, 2005; Bandelow & Michaelis, 2015; Knappe et al., 2015), often persisting into adulthood (Schneier, Bruce, & Heimberg, 2014).

Compared with a healthy population, those who meet criteria for social phobia are likely to have higher levels of drug dependency, drug problems, and unemployment, and lower levels of socioeconomic class, household income, quality of life, and educational achievement (Patel, Knapp, Henderson, & Baldwin, 2002; Asher, Asnaani, & Aderka, 2017). In addition to the evidence suggesting SAD is comorbid with a variety of mental and physical disorders, there is evidence that it is a causal risk factor for depression, substance abuse and even psychosis (Knappe et al., 2015).

The best-documented evidence-based practice for treating social phobia is cognitive-behavioral therapy (CBT). CBT includes cognitive restructuring and exposure to social situations (Schneier et al., 2014), typically delivered in a variety of formats (e.g., for individuals or groups), settings (e.g., outpatient clinics, inpatient services, community clinics, schools) and durations (9–20 sessions) (James, James, Cowdrey, Soler, & Choke, 2015).

The exposure component of CBT for SAD consists of graduated exercises targeting SAD concerns (e.g., public speaking and performance), and helping people encounter previously avoided experiences. The underlying mechanism of effectiveness may include learned

* Corresponding author at: 3213 East Hall, Department of Psychology, University of Michigan, 530 Church Street, Ann Arbor, MI, 48109-1043, United States.
E-mail address: pfelsman@umich.edu (P. Felsman).

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habituation, initial fear activation followed by fear reduction, or inhibitory learning, emphasizing the development of new, non-threat associations that become more accessible across time and context (Craske et al., 2008). The cognitive restructuring component of CBT for SAD involves re-evaluating biased interpretations of social situations by considering additional relevant information (or acknowledging the absence of information). While studies have questioned the added benefit of restructuring over exposure alone, there is evidence that both methods effectively reduce symptoms (Hawley, Rector, & Laposa, 2016).

CBT is thus a well-established treatment for phobias and anxiety disorders (e.g. Norton & Price, 2007). However, it can be difficult to access, especially for those with social anxiety. In addition to under-recognition of social anxiety among adolescents (Coles et al., 2016), individual barriers to standard treatment include logistical inconvenience, financial costs, making informed decisions about services, social stigma, fear of medication, and a lack of motivation or other symptoms arising from the nature of phobia and anxiety disorders (Harvey & Gumport, 2015), such as behavioral avoidance in social phobia (Olfson et al., 2000; Yuen et al., 2013). Such issues of access are evidenced by low mental health service utilization rates among adolescents with mental health issues broadly (35%), and by even lower service utilization rates among persons with social anxiety (25%) compared to most other disorders (Costello et al., 2014).

Due to the barriers to accessing standard CBT, alternative treatments that are easier to access and less stigmatizing are needed. For several reasons, a school-based intervention that includes students with and without social anxiety may be helpful in promoting psychological health and reducing social phobia:

1) Group therapy may be as effective as individual therapy for social anxiety disorder (Powers, Sigmarsson, & Emmelkamp, 2008), and provides a relatively cost-effective and readily accessible exposure context.
2) A major goal of standard therapy – to help patients transfer practices from therapy into their daily lives (Beck, 1979, p. 5) – is facilitated by intervening within a naturalistic setting (e.g., school-based class).
3) Requiring no selection criteria eliminates the possibility of stigma becoming associated with participation.
4) Including group members with varying levels of social functioning allows participants to act as models, a valuable feature in an intervention context that promotes intra-group cooperation and mutual support.

Improvisational theater as a context for treating anxiety

One form of programming with great promise for addressing social anxiety is improvisational theater training. Improvisation stresses the co-occurrence of process and product (Sowden, Clements, Redlich, & Lewis, 2015), including "performing without any preparation or planning" (Halpern, Close, & Johnson, 1994). It is a highly interactive social activity that rewards the development of skills such as attentive listening, acceptance, nonverbal communication, interpersonal trust, and peer support (Berk & Trieber, 2009).

Although improvisational theater training has become a popular training method for talk and sketch show actors and writers (e.g., Saturday Night Live), its historical roots lay in a social intervention designed to help immigrant children with personal development and social skills (Spolin, 1983). In recent years, improvisational theater has gained attention in clinical science as an activity that overlaps substantially with applied therapies that promote well-being, such as mindfulness, positive psychology interventions, and person-centered psychotherapy (Bermant, 2013). Practitioners suggest that improvisation is, "…not just good for performance, it's good for life" (e.g., Madson, 2005).

The number one goal of an improviser is "to be of most use to one's scene partner", meaning that each improviser should be "identifying things [they] can do to help the moment, the scene, the show…behaving attentively, with [their] last thought being about [themselves]" (Jagodowski, Pasquesi, & Victor, 2015), succeeding to the extent that they are supporting one another's performance (e.g., Fotis, 2014). Across traditions of improvisation, there is a strong emphasis on *group* process as a superordinate goal (Jagodowski et al., 2015; Johnstone, 1999; Spolin, 1983). Understanding that each group member is supporting one another builds trust, and helps group members feel safer taking risks. Classes oscillate between active learning (or "playing") and reflection, and these two components can serve as non-stigmatizing behavioral exposure and cognitive restructuring. A key feature of improvisation is that what happens moment to moment is intentionally uncertain (Besser, Roberts, Walsh, & Wengert, 2013), such that "Honest discovery, observation, and reaction is better than contrived invention" (Halpern et al., 1994). While improvisational theater has been used for promoting psychological health broadly, its potential to reduce levels of social anxiety is likely because it offers exposure to social performance experiences in the face of intentional uncertainty.

Improvisational theater has been used to promote psychological health benefits since at least Jacob Moreno's development of psychodrama in the 1920s, involving the dramatization of personal experience using techniques such as role play and role reversal (Kedem-Tahar & Felix-Kellermann, 1996). In the 1960s, drama therapy developed out of psychodrama, embracing enactments with greater psychological distance than traditional psychodrama (Emunah, 1994), borrowing exercises from improvisational theater (e.g., from Viola Spolin), as well as non-improvisational exercises such as designing masks (Kedem-Tahar & Felix-Kellermann, 1996). There is a wealth of research on both drama therapy and psychodrama as intervention tools for social development (for review, see Fernández-Aguayo & Pino-Juste, 2018). While evidence of their effectiveness is emergent (Dunphy, Mullane, & Jacobsson, 2013), there have been calls for more rigor in research and clarity in intervention practice (Butler & Gaines, 2016; Dokter & Winn, 2010). In addition, studying theater outside a context that is explicitly "therapy" may be "therapeutic" (Butler, 2017).

More specifically, improvisational theater training to promote mental health has received strong theoretical support (e.g., Phillips Sheesley, Pfeffer, & Barish, 2016; Steitzer, 2011; Wiener, 1994). However, empirical research to document its usefulness is again limited. One recent study showed that *Thera-prov,* a program of four, two-hour sessions of improv plus homework targeting psychological outcomes, facilitated by a licensed clinical psychologist, reduced anxiety and depression and boosted self-esteem in a sample of 32 adult psychiatric patients (Krueger, Murphy, & Bink, 2017). However, no studies have examined whether improvisational theater training is linked to reduced social anxiety in a naturalistic setting such as a school.

The improv project

The Improv Project is a school-based intervention that teaches social skills and exposes students to social performance. Through a 10-week improvisational theater (also referred to as "improv") course at no cost to participating schools, the mission of the program is to empower young people to build confidence and develop a creative and collaborative approach to their lives. It was designed by alumni of Second City Detroit with input from classroom teachers and *The Improv Project* instructors.

The instructors are recruited and trained through the arts division at the YMCA of Metropolitan Detroit. The team of instructors meet each term for additional training and program refinement. They also share similar improvisational theater training backgrounds, drawing largely on the work of Viola Spolin and the tradition of Second City. To ensure consistency between sites, instructors use a standardized syllabus scheduling work on the same skills across classes. Weeks 1–8 include both improvisation and life skills (e.g., self-awareness, empathy, and

respect for others), as described in the syllabus (excerpted in Appendix A).

Week one of the program focuses on building confidence and trust in the ensemble, using exercises such as "Zip Zap Zop", in which students stand in a circle and pass the focus around using eye contact, a clap and point gesture, and a verbal cue). Week two focuses on accepting and building on each other's ideas with the "golden rule" "Yes, and" (Berk & Trieber, 2009), using exercises such as "One Word At a Time Story", in which students work as a group to tell a story as if it were written by a single author. Week three focuses on committing to an improvised environment, using exercises such as "Space Walk", in which students are guided through a series of suggestions about what their environment might be (e.g., a warm beach, a snowy field). Week four focuses on emotional choices, using exercises such as "Emotional Options", a scenic game (2–3 student participants) in which the instructor periodically pauses the scene and asks the audience for a suggestion for how a character feels about something before continuing the scene. Week five focuses on character and status, using exercises such as "Hitchhiker", in which two students are seated as if they are driving a car and periodically pick up a passenger, a student from offstage who enters with a clear character choice that then everyone in the car matches - when the driver finds a reason to exit, the students shift, a new driver takes over and the exercise continues with the next offstage student making a clear character choice. Week six focuses on justification, using exercises such as "Pillars", in which students in a scene will periodically turn to a student offstage to complete dialogue for them, usually a word or so at a time, and then continue the scene as if that dialogue were unsurprising. Week seven focuses on storytelling, using exercises such as "Conducted Story", in which students in a line on stage continue telling a story from a single perspective when they are pointed to by the instructor. Week eight focuses on recapping popular games. Weeks nine and 10 focus on continuing to review and preparing a show, which students may elect to participate in outside of school hours at the end of the term.

Middle and high schools in the Detroit area that participate in *The Improv Project* meet the following requirements: 1) they are willing to promote the project to their students, 2) they can offer a dedicated space for the class, 3) their class size will be 8–15 students per instructor (if a class size is greater than 15 students, a second improv instructor is added), 4) consistent student participation is scheduled week to week, 5) a classroom teacher acts as a point of contact at the school. Special preference is given to middle and high schools with 1) an interest in expanding limited arts programming, 2) a representative who is committed to the program, 3) a majority of students are considered economically disadvantaged by federal measures or eligible for free/reduced price meals and 4) low performance on the reading/writing sections of state and national tests.

Based on available demographic information on school websites, students at the schools included in the *The Improv Project* were mostly ethnic minorities (primarily Hispanic or Latino, Black or African American) who qualified for free or reduced lunch meal programs. From the 256 students who reported their gender, 43% were male (57% female).

Study overview

The current study examines the impact of a school-based 10-week multi-site improvisational theater course (*The Improv Project*) for groups of middle and high school students in a large Midwestern city, with a single group, pre/post design.

Specifically, this study investigates whether adolescents participating in an improvisational class who screen positive for social anxiety at the beginning of class experience reduced symptoms of social anxiety at post-test. Additionally, pre/post measures of confidence in social behavior and other relevant correlates are collected. We expected that reductions in social anxiety would correlate with 1) increases in self-reported social skills because people who believe they lack social skills are more anxious about self-presentational concerns in social situations (Leary & Jongman-Sereno, 2014), 2) decreases in symptoms of depression because it is highly comorbid with social anxiety and even anxiety-specific treatments have been shown to reduce depression (Craske, 2012), 3); increases in hope and creative self-efficacy because one of the hallmarks of social anxiety is brooding, defined by negative and unproductive perseveration (Brozovich et al., 2015) and associated with poor problem-solving (e.g., Burwell & Shirk, 2007). Finally, we test whether the improv program impacts all participants (including those who did not screen positive for social phobia).

Table 1
Students surveyed by school and time.

School	Time of day	Week 1	Week 10	Pre & Post	Students Surveyed	Grade Levels
A	Afternoon	29	24	24	29	9-12
B	Morning	22	17	17	22	12
C	Rotating In-School Schedule	29	16	16	29	8th only
D	Morning	19	3	3	19	9-12
E	After School	12	8	8	12	8-12
F	Afternoon	22	22	21	23	8-10
G	Morning	49	18	19	48	9-12
H	Afternoon	13	0	0	13	9-12
I	Morning	54	24	23	55	11-12
J	Afternoon	17	14	14	17	12
Total		266	147*	145	268	8-12

Note. *Total includes 1 student whose school was unspecified.

Method

Participants

Across 10 schools, 266 students completed pre-test surveys on the first day of class, and 147 students completed posttest surveys on the last day of class (See Table 1) during a single fall term. Students' grade level ranged from 8th through 12th. All students provided written consent to participate in this research. The Human Subjects Review Board at the University of Michigan determined this project to be exempt and not regulated based on Exemption #1 of the 45 CFR 46.101 (b): "Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods."

Procedure

The instructors or program staff collected paper and pencil measures during weeks 1 and 10 of the program. The pre/post surveys were matched using unique identifiers to keep each student's responses anonymous. Each time, students were told that the questionnaire would be used to help evaluate the course, to answer honestly, and that the survey should take about 15 min.

Materials

The pre- and post-course survey was designed in collaboration with the improvisation training instructors, as well as board members of The Detroit Creativity Project. The pre-test instrument included five established psychological measures, including a widely-used measure of social anxiety, five additional questions to gauge response to the class, a question asking about experience with improvisation (pre-test only), and an item to capture grade level. The pre-course item asking about

previous experience was replaced with an item to capture usefulness of training outside of class post-course. Finally, the post-course measurement included an additional 6 items from previous program evaluation materials and a single-item engagement measure.

Social skills

To measure of social skills, we used an 8-item shortened version of the Adolescent Social Self-Efficacy Scale (Connolly, 1989). The items on this measure describe commonly occurring social events that may be challenging for teens. Its construct validity was previously demonstrated by positive correlations with relevant constructs such as perceived social acceptance, self-esteem, social engagement, social competence; among psychiatric samples, it correlates with higher staff ratings of social adjustment and lower levels of withdrawal (Connolly, 1989). Pilot data of the 25-item version revealed good internal consistency (an alpha of greater than .90); a single-factor solution for all items; and, good test-retest reliability, $r(85) = 0.84$, $p < 0.001$. The 8 items loading highest onto the single factor solution were used to create the shortened scale. This version consisted of original items such as, "Start a conversation with a boy or girl you don't know very well," and "Attend an event where you are sure you won't know any of the kids." Participants rated how difficult it would be for them to do each of the actions on a 7-point scale, from 1 (*Extremely Easy*) to 7 (*Impossible*). Items were reverse-scored and averaged for each student, with a higher score indicating greater self-confidence in their social skills. Cronbach's alphas for this 8-item measure at pre and post were .880 and .864, respectively, revealing adequate internal consistency (Tavakol & Dennick, 2011).

Social anxiety

The 3-item Generalized Social Anxiety Disorder measure, the MINI-SPIN, is a widely used measure of social anxiety (Connor, Kobak, Churchill, Katzelnick, & Davidson, 2001). Participants rated "how true" each item was about themselves (e.g., "Fear of embarrassment causes me to avoid doing things or speaking to people.") on a 5-point scale from 0 (*Not at all*) to 4 (*Extremely*). Scores were summed for each student, with higher scores indicating a higher level of social anxiety. In our use of the measure as a screener, we used the recommended cutoff of 6, which has been shown to have good sensitivity and specificity for detecting social phobia in adults (Connor et al., 2001) as well as adolescents (Ranta, Kaltiala-Heino, Rantanen, & Marttunen, 2012). Cronbach's alphas for this 3-item measure at pre and post were .780 and .708, respectively, revealing adequate internal consistency (Tavakol & Dennick, 2011).

Depression

The Patient Health Questionnaire-2 (PHQ-2) measured depression (Richardson et al., 2010). Participants were instructed to rate how frequently they'd been bothered by 1) lack of interest or pleasure in doing things, and 2) feeling down, depressed, or hopeless, on a 4-point scale (*Not at all [0], Several Days [1], More than one-half the days [2],* or *Nearly every day [3]*). Here, scores were summed for each student, with higher scores indicating higher levels of depression. Cronbach's alphas for this 2-item measure at pre and post were .455 and .580, respectively, revealing inadequate internal consistency (Tavakol & Dennick, 2011). We note that an alpha coefficient for a 2-item scale almost always underestimates true reliability, sometimes greatly (Eisinga, Te Grotenhuis, & Pelzer, 2013).

Hope

The 6-item Children's Hope Scale was designed and validated within a sample of children ages 8–16, to capture confidence in one's ability to figure out ways to achieve goals and to initiate and sustain action towards those goals (Snyder et al., 1997). It has been shown to have acceptable internal consistency and test-retest reliability in adolescents, and convergent validity demonstrated by a positive correlation with parent judgments of children's hope, as well as self-reported perceived competency and self-worth, and a negative correlation with depression (Snyder et al., 1997). An average score was computed for each student, with higher scores indicating a greater sense of hope. Cronbach's alphas for this 6-item measure at pre and post were .764 and .848, respectively, revealing adequate internal consistency (Tavakol & Dennick, 2011).

Creativity

The 3-item Creative Self-efficacy Scale has been shown to correlate with mastery- and performance-approach beliefs, holding positive beliefs about academic abilities, and teacher feedback on creative ability (Beghetto, 2006). It included items such as, "I am good at coming up with new ideas," and participants were asked to indicate their belief that each statement was true for them, from 1 (*Not True*) to 5 (*Very True*). Here, the average score was computed for each student, with high scores indicating greater creative self-efficacy. Cronbach's alphas for this 3-item measure at pre and post were .839 and .882, respectively.

Additional items

Five items such as, "I am comfortable performing for others," and "I am willing to make mistakes," were included based on *The Detroit Project's* program goals. Students rated their agreement with each item, from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Six program evaluation items were added to the post-survey only, such as, "I know what 'Yes, and' means," and, "I would recommend this class to a friend." Students rated how true each item was for them, from 1 (*Not at all*) to 5 (*Extremely*). On the post-survey only, participants were also asked whether they applied their improvisation training outside of class, and how to make the class better for future students.

Engagement

A single item measured program engagement ("I was fully engaged in this program when I was in class"), assessed at post-test only. Students were instructed to rate how true this item was for them, on a scale from 1 (*Not at all*) to 5 (*Extremely*). Pilot data indicated that students' self-reported engagement correlates with classroom teacher-reported engagement on a 5-point scale, $r(108) = 0.425$, $p < 0.001$, offering some convergent validity for the self-report item. Of the 47 students who reported that they were "very much" or "extremely" engaged in the program, 98% (all but one) were rated by their teachers as at least "somewhat" engaged.

Results

Changes among participants screening positive for social phobia

To answer our research questions about the relationship between improvisational theater training and social anxiety, we used the Mini-SPIN to screen participants for social anxiety at week one of the program. For those who screened positive at week 1 (46.2% of the adolescents who completed surveys at weeks 1 and 10), we then fit a multilevel model to the Mini-SPIN change scores. The model included a fixed overall intercept, representing the mean overall change from Time 1 to Time 2, in addition to random school effects (to account for any within-school correlation in the change scores), and random errors associated with the individual change scores. The variance of the random school effects divided by the total variance (the variance of the random school effects plus the variance of the within-school errors) yields an estimate of the within-school correlation.

We found that the estimate of the fixed overall intercept was -2.41 ($SE = 0.51$, $p = 0.003$), suggesting a significant decrease in anxiety scores over time (accounting for the random school effects). The estimated within-school correlation for these change scores was 0.04.

Of the 67 who screened positive for social phobia at week 1 and

were surveyed again at week 10, 29 no longer screened positive. Notably, the effect size of social anxiety reduction among this group is large, $d = 0.952$.

For convergent validity, we next computed correlations with other available change scores. Among the students who screened positive for social phobia at week 1, we found that change in social anxiety from week 1 to week 10 negatively correlated with changes in self-reported social skills, $r(67) = -0.592$, $p < .001$; hope, $r(66) = -0.343$, $p = 0.005$; creative self-efficacy, $r(65) = -0.298$, $p = 0.016$; and agreement with the statements, "I am comfortable performing for others," $r(66) = -0.509$, $p < 0.001$, and "I am willing to make mistakes," $r(66) = -0.263$, $p = 0.033$. These findings show that reductions in social anxiety were related to increased confidence in social skills, ability to figure out how to achieve goals and take action to do so (hope), creative ability, increased comfort performing for others, and greater willingness to make mistakes. Change in social anxiety score was marginally correlated with change in PHQ-2 score, $r(67) = 0.229$, $p = 0.063$, and did not correlate significantly with change in agreement to the statements, "I feel accepted by my classmates," or "I pay attention to how others are behaving."

Attendance and social anxiety

Attendance at the first and last class periods was inconsistent, so that only 54.5% of the surveyed students enrolled in the program at week 1 completed surveys at week 10. To consider the potential self-selection bias, the pre/post sample ($n = 145$) was compared to students attending only in Week 1 ($n = 124$). The results show that students present for week 1 (and not week 10) did not differ from students who completed both surveys, with one exception: The students who were present only for week 1 agreed less with the statement, "I am excited to take this class," $t(243.70) = 2.53$, $p = 0.012$.

Changes in the overall sample

To test whether social anxiety was reduced among the full sample of students (i.e., whether benefits occur for all students), we repeated our main analysis with all available pre- and post- program survey data.

We found that the estimate of the fixed overall intercept in this case was -0.369 ($SE = 0.30$, $p = 0.225$), suggesting no change in the overall social anxiety scores over time (accounting for the random school effects).

At the end of the program, 69.4% of students agreed (at least somewhat) that improvisation training had been helpful to them outside of class ($n = 147$). In general, students felt they had learned about improvisation from the class, found the lessons to be valuable outside of class, and would recommend it (see Table 2). For all 7 post-survey items, at least 62.8% ($n = 147$) of students agreed "very much" or "extremely," and over 87.6% agreed at least "somewhat" with all 7 statements regarding the program's impact.

Engagement as a predictor

To examine the potential impact of engagement on overall outcomes, we correlated self-reported engagement with the nine measures we collected over time (See Table 3). We found that students' engagement positively predicted self-reported increases in social skills, hope, creative self-efficacy, comfort performing for others, willingness to make mistakes, and outward social attention, as well as a decrease in symptoms of social anxiety.

Table 3
Engagement predicting change over time.

Measure	*r*	*p*	*n*
Social Skills	.260**	.002	144
Mini-SPIN	−.189*	.023	144
PHQ-2	−.021	.803	143
Hope	.234*	.005	143
Creative Self-Efficacy	.250**	.003	142
Feeling Accepted	.130	.122	143
Comfort Performing	.277**	.001	143
Willingness to Make Mistakes	.240**	.004	143
Attention to Others	.249**	.003	142

Note. * = statistically significant at $p < .05$, ** = statistically significant at $p < .01$.

Discussion

This study is the first to test the efficacy of a school-based improvisational theater program as a mental health intervention, and it offers positive results. Following the ten-week improvisation training program, students who initially screened positive for social phobia problems showed significant decreases in social anxiety in the final week. 43% of students who screened positive for social phobia at week 1 no longer screened positive in the final week of the program. This change was correlated with increases in social skills, hope, creative self-efficacy, comfort performing for others, willingness to make mistakes, and decreases in symptoms of depression. Though the program dropout rate was high, students surveyed only at week 1 did not differ in social anxiety scores from students completing the program; though often a barrier to standard treatments, we found no evidence that social anxiety problems were a barrier to participating in this program.

Nevertheless, it is worth noting here other barriers to participation. One potential barrier to participation was chronic absenteeism, which is particularly problematic across Detroit public schools, where rates the year preceding this study were at 58%, meaning that most students miss 10 or more days of school for any reason (Lenhoff & Pogodzinski, 2018). Another explanation of our apparent dropout is that there were logistical issues getting week 10 surveys administered at some of our schools during class time due to end of the term field trips and assemblies. A scheduling conflict at one school, School H, meant that no week 10 surveys were collected (see Table 1).

Across all students in the program, there was no observed change in social anxiety symptoms, but a majority of students thought the course had been valuable to them: On the week 10 survey, students endorsed the course as useful to them in other areas of life, and said they would take another class and recommend the class to a friend; They thought they had learned to value teamwork more, became more comfortable

Table 2
Week 10 Agreement Statement Response Frequencies.

Statement	Not at all	A little bit	Somewhat	Very much	Extremely
I know what "yes and" means.	1	9	25	40	71
This class helped me become more comfortable performing for others.	2	15	33	43	54
I learned to value teamwork in this class.	4	7	29	51	56
I would take another improv class.	7	11	36	27	64
I would recommend improv class to a friend.	6	10	25	39	61
I can use what I learned in improv in other parts of my life.	6	11	28	43	57
I was fully engaged in this program when I was in class.	2	6	36	47	56

performing for others, and finally, reported that they had learned the "golden rule" of improv, "Yes, And…" (Berk & Trieber, 2009). Students who expressed the most engagement in the course also had greater increases in social skills, hope, and willingness to make mistakes (among other self-report measures), suggesting the program led to feelings of increased self-efficacy.

These findings are promising because adolescents often fail to receive the mental health treatment they need, especially treatment for Social Anxiety Disorder (Costello et al., 2014), to which teens are particularly vulnerable (Albano, 1996; Bandelow & Michaelis, 2015; Kessler et al., 2005). Adolescents identify barriers to accessing mental health treatment including embarrassment, not wanting to talk about mental health problems, and not trusting clinicians (Chandra & Minkovitz, 2006; Lavik, Veseth, Frøysa, Binder, & Moltu, 2018). The school-based improvisation program evaluated in this study overcame these barriers through; 1) its setting within a school- without the need to identify those *in need of treatment*, 2) only indirectly targeting psychological health by using improvisational theater to reward behaviors known to reduce social anxiety, and 3) using theater instructors rather than professional psychologists or counselors to lead the course. Additionally, the program in the current study primarily engaged students in low socioeconomic and minority groups, two demographic predictors of decreased access to, and use of, mental health services (Zarger & Rich, 2016).

Limitations

Several limitations are evident in the study's design. First, although the pre-post test design does track changes over time, the study is by design correlational. A replication with an appropriate control group is needed to rule out confounds such as a placebo effect. Note that in this study, a placebo effect may be less likely to influence reported social anxiety symptoms than in traditional mental health intervention research because this program is offered as an arts education effort. Finally, there was high attrition (45.5%) in our study. While we found evidence that social anxiety did not influence attrition, we were unable to test whether these attrition issues were unique to the program we evaluated or more general issues at the schools in which this program took place. In the future, it would be useful to compare attendance of program participants with students from their same schools, or compare attrition with a control or comparison group. Finally, while it is a strength of this paper that the participants come from poorer, lower performing schools where barriers to accessing standard treatments for social anxiety are greater than in better resourced contexts, we acknowledge that there may be a selection bias here – that is, for adolescents at wealthier, higher performing schools with access to more traditional treatments, participating in improvisational theater training may predict different outcomes. Future research should examine this further.

Concluding comment

Given that there are many challenges to standard treatment (Harvey & Gumport, 2015) and growing theoretical justification for using improvisational theater to promote psychological health (Phillips Sheesley et al., 2016; Wiener, 1994), this work offers an important early contribution to the empirical literature on improvisation and mental health, showing that for adolescents with social anxiety problems, participating in a school-based improvisational theater program may offer a low stigma, low cost, more accessible context for reducing those symptoms.

Declarations of interest

None.

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Appendix A

Overview of The Improv Project syllabus, which is shared across classes and reviewed by the instructional team each term. Each class session is designed to run approximately 45 min, meeting once per week for 10 weeks. More information on this program is available at http://detroitcreativityproject.org/.

Week	Topic	Improv Skills	Life Skills
1	Ensemble, Confidence, Trust	Improvisation is a group art form. It's about connection to the whole, group mind, and building trust in your ensemble and confidence within you.	Improvisation teaches the value of working together, having the confidence to take risks, and the importance of learning to see mistakes as an opportunity to learn something new.
2	Yes, and	In improvisation we always accept what has been given from our scene partners and build on it.	Improvisation is built on a basic tenet of agreement and collaboration: "Yes, and."
3	Environment	In improvisation there are no sets, props or costumes. We work together to create these elements for the audience.	Improvisation develops observational and interpretation skills that are useful for problem solving and for our personal and professional relationships.
4	Emotion	Emotional range is important to all performers because it allows them to connect with scene partners and the audience.	Improvisation develops specific skills related to social and emotional learning, including self-awareness, empathy, and respect for others.
5	Character and Status	In improvisation we create characters in the moment. Being able to create and play diverse characters makes scenes richer and more interesting.	Developing a character in improvisation is about expressing a point of view and exploring how that relates to the scene and to others' viewpoints.
6	Justification	In improvisation anything can be thrown at us at anytime. We can justify new information in the scene we are creating by using the tool of "Yes, and" and working with our scene partners.	Being an effective improviser means identifying and taking on challenges, and accepting that mistakes are opportunities to learn. This approach builds problem-solving skills. It also helps students learn that practice and perseverance can lead to progress over time.
7	Storytelling	In improvisation each of us contributes to the whole by telling one piece of the story.	Improvisation develops storytelling skills for understanding the elements of story structure and communicating a point of view. Through group storytelling improvisers also learn to collaborate and build on others' ideas.

8	Popular Games	In improvisation we share the stage with our scene partners and work for the group. Our goal is that the team and the overall performance shine.	Improvising is a collaborative process that involves trust: trusting your instincts and your scene partners as you create characters and stories. During weeks 9 and 10, students work together to build a showcase. This is an opportunity for students to gain confidence, hone communication skills, and practice group work.
9	Create Showcase	Review improv principles.	Review specific life skills.
10	Run the Showcase	Review	Review

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