

Improv experience promotes divergent thinking, uncertainty tolerance, and affective well-being

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Introduction

Since the 1960s, improvisational theater (*improv*) training has grown exponentially in popularity (Seham, 2001), and now nearly every major city in the United States has an improv theatre (Steitzer, 2011). Although Chicago is still a destination for improv students seeking training in the U.S., a developing international presence now shares many of its techniques (Seham, 2001), as evidenced by hundreds of improv theaters around the globe (for a list of improv theaters around the world, see “Improv Map of the World,” n.d.). Beyond celebrity actors and writers (e.g., Tina Fey; Fey, 2013) and business moguls (e.g., Dick Costolo, Twitter CEO; Bilton, 2012) who attribute their success in life to their improv training, many people believe that it has broad benefits for everyday living (Madson, 2005).

Improv is defined by unplanned collaborative performance (Halpern, Close, & Johnson, 1994) where process and product co-occur (Sawyer, 2000; Sowden, Clements, Redlich, & Lewis, 2015). This can be contrasted with scripted theatre, in which much of a play’s creative choices (e.g., writing a script, casting actors) are preplanned and may be made by designated individuals (e.g., the playwright) rather than collaboratively. The most widely cited lesson of improv training, “Yes, and...” (e.g., DeMichele, 2015; Hines, 2016), addresses the need for improvisers to agree on the reality of a scene in order to move forward in it (Besser, Roberts, Walsh, & Wengert, 2013). Each improviser accepts the information their partner offers (the “yes,”) and adds more to it (the “and”) (Hines, 2016; Jagodowski, Pasquesi, & Victor, 2015). Depending on stylistic preference (Arnett, 2017), different teachers may emphasize different lessons related to “Yes, and...,” such as behave and respond honestly (Jagodowski et al., 2015); find what is interesting or funny and explore that (Besser et al., 2013); or do something, notice what you did, and keep doing that while processing your partner’s choices through your character (Napier, 2004).

Applications of improv training abound. For example, arguably the most influential theater from which modern improv originates, Second City (Seham, 2001), now has a “Wellness Program” (n.d.), offering distinct improv courses for those with anxiety or autism, for seniors, for clinicians, and a “Professional Development Program” (n.d.), offering distinct improv courses for workplace innovation, for public speaking, and for teachers. The Applied Improvisation Network lists over 7000 global members interested in using improv in non-theatrical settings for personal development, team

building, creativity, innovation, and/or meaning-making Tint & Froerer, 2014).

Despite widespread applications, there is little experimental evidence for improv's benefits (e.g., Lewis & Lovatt, 2013; DeMichele, 2015; Sowden et al., 2015). Historically, much of the applied literature has either used improv concepts as a metaphor to describe how organizations and their members handle unexpected circumstances, or reported on case studies, interviews, and anecdotal evidence (for a review, see Hadida, Tarvainen, & Rose, 2015). There is some evidence for improv's usefulness in the domain of mental health from two notable pre-post studies: Felsman, Seifert, and Himle (2019) link participating in improv to reduced social anxiety in low-income teens, and Krueger, Murphy, and Bink (2017) link participating in improv to reduced generalized anxiety and depression and increased self-esteem among adult psychiatric patients.

There is also some evidence of improv's usefulness in the domain of creative thinking from recent quasi-experimental research (i.e., lacking random assignment). Creative teams involved in improv training (versus an inactive control) showed increased workplace playfulness and creativity (West, Hoff, & Carlsson, 2017). Middle school students participating in improv (versus sports) at lunchtime showed gains in creative flexibility and originality (Hainselin, Aubry, & Bourdin, 2018). High school students in an improv class (versus a writing class) showed increased word and sentence usage (DeMichele, 2015). And, college students in an improv (versus consumer behavior) class showed increased creative fluency and greater self-efficacy on a marketing task measure (Mourey, 2019).

However, to establish a causal relationship between improv and psychological benefits, evidence from experiments with random assignment is needed (Aronson, Carlsmith, & Ellsworth, 1990; Cook, Campbell, & Shadish, 2002). The randomized experiment (in which participants are assigned at random to treatment group) is the most compelling methodology for causal inference because group differences can be attributed to differences in the manipulated treatment rather than third variables such as the selection of participants (Aronson et al., 1990; Cook et al., 2002).

In the literature on specific benefits of improvisational theater, to our knowledge, only two randomized experiments have been published. They both concluded that even short sessions of improv cause increases in divergent thinking relative to a control condition with social interactions, among college students (Lewis & Lovatt, 2013), and among children (Sowden et al., 2015). Because brief social interactions can increase positive emotions and a sense of belonging (Argyle, 2013; Sandstrom & Dunn, 2014a, 2014b), it is important that these studies control for the non-specific effects of social interaction.

Divergent thinking, the ability to explore multiple solutions to a given problem, is often contrasted with convergent thinking, the ability to arrive at a single appropriate solution (Lubart, 2016). Divergent thinking processes occur in a spontaneous and non-linear manner, so that many unique ideas can be generated in a short amount of time (Carr & Borkowski, 1987) and in unexpected

combinations (Walton, 2003). Although creative problem solving includes both convergent and divergent thinking (Cromptley, 2006), divergent thinking ability is considered a reliable index of creative potential (Runco, 2017). Strategies to promote divergent thinking are important in part because creative thinking is increasingly valued in today's economy (Williams & McGuire, 2010).

Lewis and Lovatt (2013) argue that improv should increase divergent thinking compared to social interactions due to schemas; that is, everyday conversation draws heavily on preplanned social scripts and convergent thinking, whereas improv draws on a much wider variety of possible scripts and phrases, thereby engaging more creative, flexible and divergent processes. We add to this explanation the fact that the improv script is necessarily co-creative; as a result, the variety of available scripts and schemas are further combined in novel ways, increasing divergent thinking.

Lewis and Lovatt (2013) measured divergent thinking ability through the Alternate Uses Task (AUT) (Guilford, 1967), perhaps the most common measure of divergent thinking in psychology (Dumas & Dunbar, 2014). In Lewis and Lovatt's experiment (2013), participants completed the AUT by generating as many alternative uses as possible for a common object (e.g., a paperclip; a remote control) before and after engaging in 20 min of improv or a matched control condition with social interaction activities. Examining divergent thinking subscales – fluency (number of legal responses), flexibility (number of response categories in their response set), elaboration (additional details in responses), and originality (uniqueness among a sample, conventionally given by 5 % or fewer participants) – Lewis and Lovatt (2013) found that a short improv experience caused increased fluency, flexibility, and originality (but not elaboration) compared to a social interaction control condition.

That improv causes increases in divergent thinking (Lewis & Lovatt, 2013) helps explain the success of improv in creative fields such as business and entrepreneurship (Lubart, 2016). It also may help explain successful applications in mental health because flexible thinking is a goal of mainstream therapies (Clark & Beck, 1999), although creative performance has been historically associated with both career success and symptoms of psychopathology (e.g., Simonton, 2012).

The same features of improv training (moment-to-moment co-creative decisions) that may increase divergent thinking likely have other consequences. Of these, one that may distinguish improv experiences from everyday social interactions is that uncertainty about what will happen from one moment to the next is seen as desirable (Napier, 2004). Tolerance for uncertainty may have broad psychological benefits. To detect potential threats, uncertainty is often experienced as anxiety (Hirsh, Mar, & Peterson, 2012); however, even when no serious threat exists, uncertainty can lead to anxious behaviors such as avoidance and attentional biases (Herry et al., 2007). Indeed, intolerance of uncertainty has been recognized as a dispositional risk factor in anxiety and depression (e.g., Carleton et al., 2012; McEvoy & Mahoney, 2012), and thus a transdiagnostic target for mental health

treatments (e.g., Carleton, 2012).

From a behaviorist perspective, improv may promote uncertainty tolerance via exposure, a key ingredient in traditional therapies (Wolitzky-Taylor, Zimmermann, Arch, De Guzman, & Lagomasino, 2015). Each successive moment in improvisation is one of many (perhaps infinite) possibilities; as such, an improv encounter provides direct and repeated experience with social uncertainty. The underlying mechanism for exposure as an effective treatment may be learned habituation, initial fear activation followed by fear reduction, or inhibitory learning in emphasizing the development of new, non-threatening associations that become more accessible across time and context (Craske et al., 2008). Since improvisation involves encountering uncertainty in a non-judgmental, trusting and mutually supportive environment (Berk & Trieber, 2009), new associations developed through improv are likely non-threatening or even pleasant. Thus, if improv causes increases in uncertainty tolerance, such a relationship could provide a parsimonious explanation of its applications in broad domains of psychological health.

Section snippets

Experiment 1

No existing studies have tested whether engaging in improv causes increased uncertainty tolerance. Additionally, no experiment has replicated Lewis and Lovatt's (2013) finding that improv experience causes increases in divergent thinking in adults. To address these gaps, Study 1 aims to replicate the Lewis and Lovatt (2013) finding using the same outcome measure for divergent thinking while adding a measure of uncertainty tolerance. Since Lewis and Lovatt (2013) did not find any differences in

Experiment 2

We expected uncertainty tolerance would differ between our *improv* and *control* conditions in Experiment 1 because the *improv* tasks required students to generate ideas for what to say and do in the tasks on the spot. Typical social interactions (as in the control group) may include idea generation, but they are less like improv when following scripts, conventions and norms (e.g., ordering in a restaurant; Bower et al., 1979; Sawyer & Sawyer, 2003; Schank & Abelson, 1997). Even though the *control*

General discussion

Across two experiments, we found evidence that improvisational theater training (relative to a matched social interaction control) causes increases in divergent thinking, uncertainty tolerance, and affective well-being. Previous research has suggested ways to promote divergent thinking, often involving unhealthy behaviors (e.g. Jarosz, Gregory, & Wiley, 2012). Our replication of the impact of

improvisation on divergent thinking measures (Lewis & Lovatt, 2013; Sowden et al., 2015) suggests

Conclusions

Training in improvisational theater is widely available, and seen as a popular and entertaining activity. It is also believed to produce a variety of psychological benefits. It is associated with reductions in anxiety and depression in adult psychiatric patients (Krueger et al., 2017), as well as reductions in social anxiety among adolescent public-school students from a non-clinical sample (Felsman et al., 2019). However, research on its benefits has generally lacked the rigor of randomized

CRedit authorship contribution statement

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Declaration of Competing Interest

None.

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