

## ORIGINAL ARTICLE

# Exploring a brief medical improvisational performing arts intervention for genetic counseling graduate students

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## Abstract

Psychosocial counseling is the foundation of genetic counseling. Genetic counseling students are required to receive in-depth training on psychosocial counseling techniques. In other medical disciplines, “medical improv,” an educational method derived from improvisational theatre, has been used to allow trainees to practice clinical skills without also having to focus on medical knowledge they've not yet mastered. The present study aims to investigate the acceptability of medical improv as an educational tool for genetic counseling students. Fourteen genetic counseling students and new genetic counselors completed a 2-hr medical improv workshop and participated in follow-up interviews to discuss the workshop. Participants' responses to the intervention were positive, with 92.9% of participants responding that they would recommend medical improv training to other genetic counseling students. Participants described the medical improv workshop as helping build psychosocial skills in a safe environment, which may facilitate the use of more advanced counseling skills in clinical situations. By training students to practice psychosocial skills and building students' confidence, medical improv may help genetic counseling students and genetic counselors be more effective in challenging clinical situations, and to feel more comfortable in experimenting with new ideas and psychosocial techniques in their clinical practice.

## KEYWORDS

curriculum, education, genetic counseling students, medical improv, patient-centered communication, psychosocial

## 1 | INTRODUCTION

The optimal approach to genetic counseling is often viewed as a balance of teaching (i.e., information giving) and counseling (i.e., providing psychosocial support) (Biesecker & Peters, 2001; Kessler, 1997; Meiser et al., 2008). Contemporary perspectives promote a focus on psychosocial aspects of the encounter (e.g., psychological support, validation, facilitating decision-making;

McCarthy Veach et al., 2007), and are a component of the second domain of practice-based competencies that all entry-level genetic counselors must demonstrate prior to practicing as a genetic counselor (ACGC, 2019; Weil, 2003). Despite the importance of psychosocial counseling, reviews exploring genetic counseling processes found a large proportion focuses on information giving rather than psychosocial counseling (Meiser et al., 2008; Paul et al., 2015).

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Genetic counseling students often shy away from psychosocial counseling during their training, focusing more on fact-giving (Borders et al., 2006), which may hinder their ability to develop the necessary psychosocial skills to provide appropriate genetic counseling to patients. Identifying effective training approaches that allow genetic counseling students to practice psychosocial skills can improve clinical preparation and may ultimately improve practice.

The rate of genetic information discovery and integration into the genetic counseling curricula has the potential to shift a training program's focus toward medical and scientific information and away from preparing students to assess and address psychosocial concerns (Wicklund & Trepanier, 2014). In addition, some genetic counseling students may struggle to learn psychosocial techniques, especially techniques that are more advanced or relate to complex psychosocial situations such as those involving countertransference and emotional entanglement with the client (Borders et al., 2006; Shugar, 2017). Practicing psychosocial skills during training may help trainees transition to entry-level genetic counseling positions (Runyon et al., 2010).

Like genetic counseling, addressing patients' psychosocial concerns is central to healthcare practice more generally, and is included in the patient-centered aim of the six domains of health care quality set forth by the Institute of Medicine (IOM, 2001). To meet this aim, medical humanities courses involving painting, dance, music, or theater (Schwartz et al., 2009) have been adopted in medical schools to help students develop new skills, recognize the unique psychosocial dimensions of each patient, and embrace a creative mindset that helps them adapt their approach to patient care (AAMC, 2020; Doukas et al., 2012). Medical students who participate in theater-based humanities modules develop psychosocial skills such as communication and empathy, have increased confidence, are better able to handle stress and develop healthy coping skills, have enhanced student relationships with their cohort, and are better able to accept ambiguity inherent in medicine (Nagji et al., 2013; Shochet et al., 2013; Watson, 2011; Zelenski et al., 2020).

"Medical improv," is one specific form of theatre education in the medical humanities (Boesen et al., 2009; Sawyer et al., 2017; Watson, 2011). Distinct from traditional improvisation (improv) performance, learners participating in medical improv are working without an audience and are not attempting to create comedy. However, medical improv utilizes activities adapted from improv theatre to target specific psychosocial skills necessary to the practice of medicine, including communication, quick thinking, teamwork, creativity, and professionalism (Watson & Fu, 2016). For example, an activity where students are placed in non-medical, light-hearted scenes in which one character has to give another one bad news helped students break down the conceptual components of breaking bad news, practice these scenarios, and critically assess themselves in a safe environment (Kukora et al., 2020). Other activities that have been used include taking outside suggestions and building scenes out of them, and then breaking down the scenes to assess whether participants made any logical jumps or assumptions, to reveal how biases may unconsciously color decision-making (Cai et al., 2019). Following participation in such training, improvements in students' performance in clinical situations, their expression of empathy, and their

### What is known about this topic

Psychosocial counseling is an important part of genetic counseling education but is sometimes avoided by genetic counseling students. Medical improv is a curriculum that has been used in other health professional education programs to teach psychosocial counseling.

### What this paper adds to this topic

This paper demonstrates that a medical improv curriculum has the potential to be a successful and well-accepted way to teach genetic counseling students psychosocial skills.

ability to interpret non-verbal cues have been documented (Boesen et al., 2009; Cai et al., 2019; Sawyer et al., 2017; Watson, 2011).

Medical improv may also relieve stress and anxiety in students who participate in the activities (Mehta & Fessell, 2022; Watson, 2011). It has been previously noted that protective factors against burnout in graduate medical education include grit, resiliency, social support, and psychological flexibility (Wood et al., 2020). Implementing a medical improv curriculum in medical education has been suggested to improve uncertainty tolerance and create supportive and accepting environments (Felsman et al., 2020; Mehta et al., 2021). By encouraging students to develop skills that may protect them from burnout, improv training can allow students to better handle the stressors present in their training (Mehta & Fessell, 2022).

A dedicated improv course developed for genetic counseling students which uses improv techniques to teach psychosocial skills may help students feel more comfortable providing psychosocial counseling and improve students' performance in clinical rotations. In addition, this course could be helpful in addressing burnout associated with their education. However, medical improv is not currently offered in genetic counseling training programs, and no research to date has explored its potential. Although genetic counseling programs use clinical simulations through role-play and standardized patients for psychosocial skills training, these simulations still are centered on the clinical interaction and include information giving (Holt et al., 2013), rather than isolating individual psychosocial skills and focusing on them exclusively. The primary purpose of this study was to explore the acceptability of a medical improv workshop for genetic counseling students. Ultimately, such interventions may provide new opportunities to improve genetic counseling students' psychosocial skills while also reducing the chance of burnout in students.

## 2 | METHODS

### 2.1 | Participants and procedures

Study participants were second-year genetic counseling students at accredited genetic counseling programs and early career genetic counselors who graduated within two years of the time of

the workshop. After receiving approval from the Northwestern University institutional review board, flyers advertising the improv workshop were distributed via email to genetic counseling program directors to forward to their second-year students, through the National Society of Genetic Counselors' (NSGC) student research listserv, and direct emails to genetic counselors who practice in the Chicagoland area. Additionally, we posted advertisements on a Facebook page for students in genetic counseling programs with an anticipated graduation date in 2018. The first author facilitated two workshops with a total of 14 participants. One workshop with eight current students was held at the 2017 NSGC Annual Education Conference and one with six new career genetic counselors was held at Northwestern University. Participants in the workshops completed two surveys, one before the improv workshop and one immediately after. All participants were contacted approximately 2 months after the workshop and completed a 20–40-min follow-up interview with the first author, who is trained in qualitative research methods.

## 2.2 | Intervention

The workshop was adapted from the "Playing Doctor" medical improv seminar taught at the Northwestern University Feinberg School of Medicine, created by Watson in 2002 (Watson, 2011). The first author, who at that time was a genetic counseling graduate student who also has an undergraduate theater degree, received special permission to participate in the 10-hr medical student seminar. Then, workshop activities for the intervention (Table 1) were selected by the first author and Watson based on their relevance and applicability to genetic counseling. Specifically, the workshop was designed so that upon completion of the workshop, students would be able to

describe how improvisation is used by genetic counselors, and utilize improvisation techniques collaboratively with other improvisors to create imagined scenes on stage. The first author facilitated the 2-hr workshop. During the workshop, participants and the workshop facilitator debriefed each improv activity by discussing connections between the activity and the practice of genetic counseling.

## 2.3 | Instrumentation

The pre-intervention survey included basic demographics and questions about external stressors. Participants were asked about relocation for school or their current job, nearby sources of social support, cohort size or number of genetic counseling co-workers, and how they funded graduate school. The post-intervention survey, a modified version of a medical improv class evaluation survey utilized by Watson (2011), included evaluative questions about the intervention on a 4-point Likert-type scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). This survey asked participants to rate 17 statements about their satisfaction with the workshop and how much they believed medical improv would address skills used in clinical situations.

The semi-structured interview guide included sections about the workshop and its integration in genetic counseling education. Participants were asked about their reactions to the workshop, and whether they believed medical improv should be implemented in genetic counseling graduate programs. In addition, the interview guide included a section on medical improv's relationship with stress and anxiety, as stressful or anxiety-producing experiences have been documented to hinder psychosocial skill use by genetic counseling students while in clinical rotations (Borders et al., 2006; MacFarlane et al., 2016). Consistent with previously identified stressors in

TABLE 1 Activities used at the medical improv workshop

Activity	Description	Skills Addressed
Attack/Defend	A warm up activity where participants chase each other around the space	Warm-up/Ice Breaker
Dr. Know-it-All	An activity where participants must work together to answer a question one word at a time	Teamwork, Flexibility, Adaptability
Gibberish Translator	An activity where participants must perform a scene in gibberish, and other participants translate the gibberish into English	Non-Verbal Communication, Teamwork
Cut to the Chase!	An activity where participants must distill a 60 s scene into 30, 15, and 5 s scenes	Tailoring Information
Conducted Stories	Participants work together to tell a story, where the facilitator can choose which participant is speaking	Teamwork, Flexibility, Adaptability
1776	Participants describe a modern technology to another participant, as if they are from the 1700s.	Tailoring Information
Pinball	Participants move around the room, and must start and stop moving together, without any verbal communication	Teamwork, Nonverbal cues
Alphabet Scenes	Participants must perform a scene, where each new line must begin with the next letter of the alphabet	Flexibility, Adaptability
Counting Circle	Participants stand or sit in a circle with their eyes closed and must count up to ten without two participants overlapping	Teamwork

genetic counseling students, participants were asked whether they experienced stress because of academic and professional demands, interpersonal interactions, intrapersonal thoughts, and feelings of isolation (Jungbluth et al., 2011).

The workshop and survey instruments were pilot tested with five second-year genetic counseling students enrolled in the Northwestern University Graduate Program in Genetic Counseling. The interview guide was pilot tested with two participants from the pilot intervention. The intervention, survey, and interview guide were modified after the pilot tests to improve clarity and flow.

## 2.4 | Data analysis

### 2.4.1 | Quantitative analysis

Descriptive statistics (means, standard deviations, percentages) were calculated for responses to survey items.

### 2.4.2 | Qualitative analysis

Qualitative analysis was conducted using an interpretive description approach, where codes are generated without an initial preconceived framework. In this approach, later iterations of qualitative analysis are utilized to conceptualize the data and form a narrative (Thorne et al., 2004). In consultation with the second author, the first author read through every transcript, identified key words and phrases in the transcripts, and then collapsed the key words and phrases into codes based on similarity. After naming each code, they were grouped into conceptual categories which were discussed and refined with the second author. Themes were formed by reanalyzing transcripts for code placement within each transcript, to identify how codes were interrelated. The final results were again reviewed and discussed with the second author to achieve consensus.

## 3 | RESULTS

Of the 21 genetic counseling students and new graduates who expressed interest, 14 participated. Eight genetic counseling students and one new graduate participated in the workshop at NSGC and five new graduates participated in the workshop in Chicago.

### 3.1 | Descriptive statistics

Participant demographics are summarized in Table 2. All participants were female, and the majority was White ( $n = 10$ ; 71%). The mean age of participants was 26.1 years ( $SD = 2.3$  years). The majority of participants relocated for school or for their current position ( $n = 8$ ; 57%), and had nearby sources of social support, such as friends and

family members ( $n = 11$ ; 79%). The majority of current students were in a class of  $\geq 7$  people ( $n = 7$ ; 88%) and all new graduates had at least one other genetic counselor co-worker. A majority of participants received funding assistance for school through loans ( $n = 8$ ; 57%) or through their graduate program ( $n = 9$ ; 64%). Participants' mean student loan debt was \$57,625 ( $SD = \$35,051$ ).

### 3.2 | Post-workshop evaluation

Responses to the workshop were positive, with the majority of participants ( $n = 13$ ; 92.9%) agreeing that "studying improv could make me a better genetic counselor," and the same proportion agreeing that they "would recommend this class to other genetic counseling students." All participants ( $n = 14$ ; 100%), "felt free to try new things" and "free to fail." A majority believed a 2-hr seminar once a week for 5 weeks would help students meet the learning objectives asked about on the survey. Most agreed a full seminar would be beneficial for students to learn how to respond in the moment (mean = 3.79), be flexible and resourceful (mean = 3.71), and deal with stressful situations (mean = 3.64). For a summary, see Table 3.

### 3.3 | Qualitative results

Three topics were covered in the interviews: participant reactions, applicability of medical improv to genetic counseling, and student engagement with the medical improv workshop, and themes emerged within each category as reported below. Quotes from current graduate students are labeled "S" and quotes from new genetic counselors are labeled "GC." For a summary of categories and themes, see Figure 1.

#### Reasons for participation

When participants were asked why they attended a medical improv workshop, the majority stated they were interested or curious about the improv workshop ( $n = 9$ ; 64.2%), and they enjoyed helping out with student research ( $n = 8$ ; 57.1%). Table 4 summarizes the reasons participants gave for participating in this study.

#### 3.3.1 | Participant reactions to medical improv

Two major themes emerged from participants' overall reactions to the medical improv workshop: (1) the centrality of camaraderie in their workshop experience, and (2) the importance of stripping medical knowledge from the workshop.

##### *Importance of camaraderie*

Overall, participants in this study reacted positively and enjoyed the experience of the medical improv workshop. Camaraderie

TABLE 2 Demographics of participants of the medical improv workshop (N = 14)

Variable	n (%)	M	SD	Mdn	Range
Gender					
Female	14 (100)				
Age		26.1	2.3	25	24–31
Ethnicity					
White	10 (71)				
Asian	1 (7)				
Bi-Racial	3 (21)				
Relationship status					
Committed relationship	7 (50)				
Engaged	1 (7)				
Married	1 (7)				
Single	4 (29)				
Domestic partner	1 (7)				
Location					
Northeast (CT, ME, MA, NH, RI, VT, NJ, NY, PA)	1 (7)				
Midwest (IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD)	7 (50)				
West (AZ, CO, ID, MT, NV, NM, UT, WY, AK, CA, HI, OR, WA)	6 (43)				
Relocate for School/Job?					
Yes	8 (57)				
No	6 (43)				
Nearby Social Support					
Yes	11 (79)				
No	3 (21)				
Funding sources					
Loans	8 (57)	57,625	35,051	52,000	12,000–120,000
Program assistance	9 (64)	11,039	7,375	14,000	1,350–24,000
Family assistance	5 (36)	47,400	20,768	47,000	25,000–80,000
Students					
Cohort Size					
≤6	1 (13)				
≥7	7 (88)				
NEW GCs					
Number of GC Coworkers mean (range)		2.7	1.4	3	1–4
Specialty					
Cancer	3 (50)				
Pediatrics	1 (17)				
Prenatal	1 (17)				
Laboratory	1 (17)				
Year of Graduation					
2016	2 (33)				
2017	4 (67)				

	No. (%) who Agree or Strongly Agree	Average rating <sup>a</sup>
During this Workshop...		
The teacher created an atmosphere in which I could take risks	14 (100)	3.71
I felt supported by my classmates	14 (100)	3.86
I felt free to try new things	14 (100)	3.64
I felt free to fail	14 (100)	3.57
I felt playful and spontaneous	14 (100)	3.57
I felt good about myself	12 (85.7)	3.14
I learned something new about myself	12 (85.7)	3.21
I anticipate that a full improv seminar could... <sup>b</sup>		
Help me be a better listener	13 (92.9)	3.29
Help me become more observant	14 (100)	3.36
Help me respond in the moment	14 (100)	3.79
Help me to be a more flexible and resourceful person	14 (100)	3.71
Increase my confidence in myself	12 (85.7)	3.29
Improve my ability to deal with stressful situations	14 (100)	3.64
Help me to become a better team member/collaborator	13 (92.9)	3.36
Help me feel more fearless	12 (85.7)	3.43
-	-	-
Studying improv could make me a better genetic counselor	13 (92.9)	3.29
I would recommend this class to other genetic counseling students	13 (92.9)	3.64

TABLE 3 Evaluation responses from participants of the medical improv workshop

<sup>a</sup>Participants rated agreement on a 4-point Likert scale (1 = Strongly Disagree, 4 = Strongly Agree)

<sup>b</sup>A full improv seminar was defined to participants as one 2-hr class per week for 5 weeks.

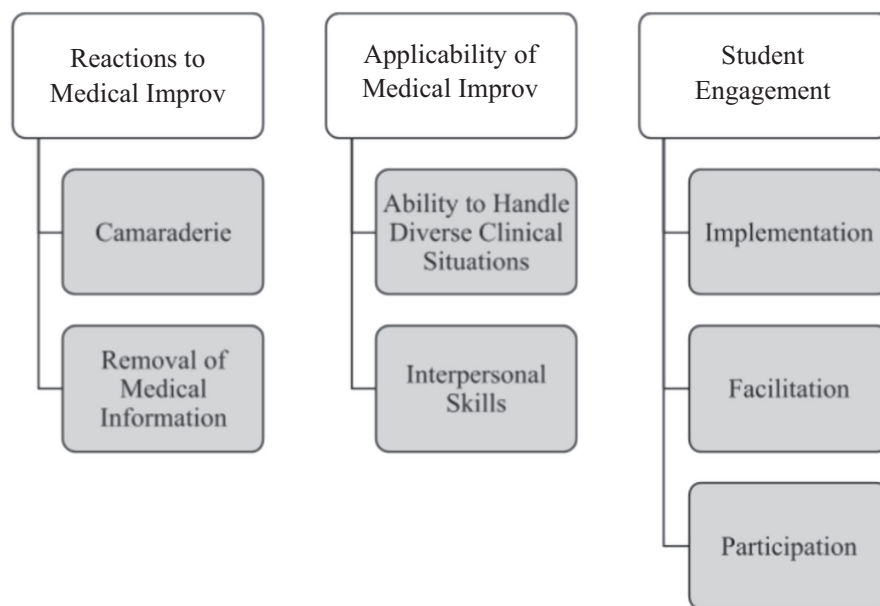


FIGURE 1 Identified themes classified into three categories based on conceptual similarity

frequently emerged as central to their experience, and was commonly discussed in relation to creating a low-pressure environment for participants to experiment with new ideas. Participants

noted the sense of camaraderie was one of the reasons the workshop was not as intimidating as they initially thought it was going to be.

TABLE 4 Participants' reasons for participating in medical improv

Reason for Participation	Count (n = 14)	Example Quote
Helping Student Research	8	"I wanted to help contribute to research. I'm a student myself, and I somewhat believe in "survey karma," in that, if you participate in other research, hopefully you will have a good turnout for your own."
Prior Experiences with Medical Improv	4	"I went to NSGC last year, so in 2016 in Seattle, and there... was someone who talked about incorporating improv into her practice as an MD."
Prior Exposure to the Performing Arts	2	"I've always thought that improv would be fun, I'd always go to improv shows in my undergraduate career."
Interested or Curious about Workshop	9	"I had never been a part of an improv class before, so I thought it was an interesting opportunity."

I felt like putting yourself out there to make mistakes and not be perfect and being able to play with others was just in general, a really good thing to build camaraderie. And being able to fail, and it be okay, and people laugh about it.

[S #8]

The fellowship formed extended past the conclusion of the workshop. As one participant put it, "I think it's also a great class bonding experience. [During NSGC]- I kept running into people after the [workshop] from other programs, and I think we all kind of connected within that" [S #2].

#### *Relationship to clinical rotations: removal of need for medical knowledge*

Participants described how the workshop addressed clinical psychosocial stressors but decoupled those stressors from medical knowledge. One participant reflected, "When I was a student, I was really scared... of not having the answers to unexpected questions... I think [medical improv] could be really helpful in making students more flexible and adaptable to new and scary situations" [GC #2]. The focus on psychosocial skills independent of clinical information distinguishes medical improv from clinical simulations currently implemented in genetic counseling training. Compared with simulations, participants reported feeling less pressure to have the correct information and could experiment freely with psychosocial skills.

The improv [removes] that thinking piece and lets you kind of play with these skills in a way that's a lot more accessible and interaction-based. So, it really lets you take these crazy chances that you wouldn't do within a mock session [clinical simulation] in front of your peers and your class.

[S #2]

Most other participants described how debriefing or connecting the activity to clinical experiences helped position the activity within clinical practice. "I appreciated that during the session you kind of debriefed us about the skills that could be helpful within the [activity] that we just completed... I think it really helped cement the connection [S #2]."

However, by removing the medical information, some participants may lose the connections between medical improv and genetic counseling practice. One participant was unable to connect the improv activities with genetic counseling, saying, "Some of it, I guess I'm just not really sure if it would... help me be a better genetic counselor... they were very fun to do... but I don't know if they really affected my practice" [S #1].

### 3.3.2 | Applicability of medical improv to genetic counseling

Participants believed the medical improv workshop could help students who are overly anxious about their performance in clinical rotations become more confident in their abilities. One participant described an immediate confidence boost after leaving the improv workshop.

When I did come out of the improv class, I felt really confident. I felt really good, and I thought that was a really positive experience... even though we failed [at some activities], and sometimes we succeeded, I felt really confident after I left.

[S #8]

Participants described two themes related to their increased confidence from workshop participation: (1) the development of mental flexibility to handle diverse clinical situations, and (2) practicing interpersonal clinical skills.



### *Ability to handle diverse clinical situations*

As described by participants, genetic counselors experience stress when faced with unexpected and changing or uncomfortable situations. Participants viewed medical improv activities as providing skills to help students handle these interactions and unexpected situations, ultimately building confidence. For example, participants felt the skill of “thinking on your feet,” is particularly important to practice when faced with an unexpected situation and some said quick thinking was a challenge for them when they began their clinical rotations. “Wow, if I had that [improv]... in the beginning of my training, I wouldn't have been so nervous, um, in interacting with patients, because I would feel maybe more prepared for, um, kind of going off script” [GC #5]. In addition to being useful for new trainees, one participant described how the addition of medical improv training could be beneficial for, “just thinking of ways to think outside of the box, if I'm seeing a student [who] may be struggling with certain techniques, thinking of different techniques to practice with them... or suggestions that I could make to them [GC #3].

Participants also described how the overall experience of the workshop was helpful in training them to be comfortable in uncomfortable or awkward situations. Participants explained that they initially felt uncomfortable or awkward, because the workshop was a new experience for them. However, by providing an environment where participants could be free to experiment, they overcame their initial discomfort and developed confidence facing uncomfortable situations. As one participant described, “being in front of people and putting yourself out there, and being willing to be wrong or say something silly... I think in gaining that sort of confidence to be the center stage performer in the room [S #4].

### *Interpersonal clinical skills*

Participants described how the medical improv workshop built their interpersonal clinical skills confidence. One skill participants discussed was how to give information and tailor a session to the needs of their patients. As one participant explained, the workshop “helped me think about the way I communicate a little bit better... trying to remember that sometimes, when you're explaining genetics, it's like you're talking in a foreign language, so you really have to break it down for people [S #6]. Participants indicated that the medical improv workshop allowed them to practice word choice and pacing, which can improve information delivery in clinical practice, especially under time constraints.

The ability to recognize patients' needs is essential to tailoring a genetic counseling session. Participants noted the importance of active listening in determining how to approach specific clinical situations. One participant described:

You learn that thinking in your head about what you're going to say next... literally doesn't matter... And so slowly, I think you would learn, like, ‘Okay, all I have to do, all I'm responsible for, is listening to what the other person has to say. And then when they're

done, I'm going to think about what I have to say.’ But there's no utility to thinking about what I'm going to say while they're talking.

[GC #1]

In addition to being present and listening, participants noted that the medical improv seminar could improve their abilities to interpret non-verbal cues to inform their understanding of a patient's needs. By training students to engage in active listening and read non-verbal cues, medical improv can help students tailor their counseling to match the unique communication styles of each patient.

Finally, participants described that by working with others in the workshop, they practiced strategies that would help them create rapport with patients, including establishing unconditional positive regard for their patients. For example, one participant said, “I had forgotten until I did that improv workshop- just remembering that every person comes with a very unique perspective, but that is ultimately a positive thing, because we have a lot to learn from the people around us” [GC #4].

### 3.3.3 | Student engagement with medical improv

Many participants felt that for medical improv to be successful, students would need more than a brief introduction to the subject during their training. When considering the introduction of a longer course into genetic counseling training, participants described student engagement as a major factor that could influence the effectiveness of improv for students.

#### *Barriers to participation in medical improv*

Many participants described people they knew who were intimidated by or anticipated feeling uncomfortable about the medical improv workshop and described how this discomfort could inhibit participation during a mandatory workshop. For example, “I guess I worry that, uh, maybe some students wouldn't take it as seriously, that it would make them nervous. I mean, just having stage fright, if that's not the kind of activities that you normally like to do” [GC #3]. As previously described, even those who participated in the workshop anticipated discomfort before voluntarily taking part, but this feeling dissolved as the facilitator's approach and the teamwork required by the exercises established camaraderie.

Participants also worried a medical improv workshop may conflict with other demands on their time like coursework, rotations, and thesis writing. Participants felt finding time to participate in medical improv could be challenging, and suggested students may view this as less important than other responsibilities.

I don't know if I would have enjoyed the class as much if I was going through my period of time where I was having a lot of outside stressors... I would have been too distracted, and so I wonder if some people might



say, "Maybe this is a waste of time," or "I need to be doing other things," "I need to actually be practicing at my rotation".

[GC #3]

#### *Implementation of medical improv*

When discussing the timing of a medical improv workshop within a graduate genetic counseling program, participants had differing views. All participants anchored their timing around clinical rotations due to the belief that experiencing the workshop around the time of clinical rotations would offer the greatest learning opportunity. However, participants were split on whether the improv workshop would be most useful before or after the start of clinical rotations.

I think starting it before rotations begin would be helpful... but I think it could also be helpful to continue it through the beginning of rotations... I think it would be helpful to start it when you haven't had that experience, [and when] you actually have experience counseling patients, you can then have more of a hands-on experience to apply these skills to.

[GC #2]

Participants also identified how more than one exposure to medical improv would be important for students to develop the skills from medical improv and utilize them clinically. With repetition, participants believed the skills learned in improv could become more natural for students. For example, "I think maybe one workshop about [medical improv] isn't necessarily enough, but I imagine if you were to do something repeatedly over time, [you would] get good at reading nonverbal cues or responding to things that you're not expecting" [GC #1]. Some participants suggested that medical improv could be incorporated into other courses, especially clinical simulation classes or role-plays, which may help students make connections between medical improv and genetic counseling.

Something like [medical improv], I think would also kind of fall into that same category [as a] role play... you can, you know, do some role plays, and then this class, and then some more role plays. And then, maybe you can see how this class would be more applicable to genetic counseling... it would cement the learning more by doing that in the context of different role plays.

[S #1]

#### *Importance of facilitator*

Participants believed a facilitator trained in medical improv is essential. One participant said, "Having a facilitator who can really implement it the way that it should be [is important]... someone who might try to implement this class might think that they can do it without having any training" [S #3].

### 3.3.4 | Medical improv and stressors for GC students

Table 5 summarizes the stressors that participants described experiencing as a genetic counseling student or new genetic counselor. The majority indicated experiencing stress due to a heavy workload ( $n = 12$ ; 86%) or feeling short on time ( $n = 9$ ; 64%), some felt their responsibility to their patients contributed to their stress ( $n = 5$ ; 36%), and a few reported experiencing stress when they encountered unexpected clinical situations ( $n = 3$ ; 21%).

A majority of participants also described feeling stress from interpersonal interactions ( $n = 8$ ; 87%), specifically interactions with supervisors ( $n = 6$ ; 42.8%) and comparing themselves to other trainees and genetic counselors ( $n = 5$ ; 35.7%). Half of the participants described stress as a result of feeling isolated or limited in their personal relationships ( $n = 7$ ; 50%).

Some other stressors that participants expressed but were less common included feeling a lack of professional identity due to transitioning into genetic counseling from a previous career ( $n = 2$ ; 14%) and a lack of time for self-care ( $n = 4$ ; 29%).

On the other hand, many participants identified rewarding experiences in graduate school. The majority of participants described close relationships with their classmates ( $n = 10$ ; 71%). In addition, half of the participants indicated that their time in the graduate program reaffirmed their choice of career ( $n = 7$ ; 50%).

Participants identified the workshop's lightheartedness as an important aspect and as a source of relief from the everyday stressors of their graduate program or practice.

I remember, like the afternoon of the workshop, I hadn't had a great day [and] before I was pretty tired, and afterwards, I felt re-energized... we laughed a lot and just did goofy things sometimes, but it was just a fun experience. So just, in a basic sense, the kind of lightheartedness of it is a nice change of pace sometimes... in that way, I think it could be helpful.

[GC #5]

Participants identified some sources of stress that medical improv would be unlikely to address. Stressors unrelated to their clinical rotations like personal difficulties learning skills (such as study skills or time management), academic content, or personal issues would not be addressed by the medical improv workshop. For instance, one participant said, "I guess maybe like some thesis or coursework related stuff [would not be addressed], where, you know, the stressor could be like, 'I procrastinated on something,' because I don't think that improv will really help you improve your procrastination" [S #6].

## 4 | DISCUSSION

Psychosocial counseling is a core principle of genetic counseling and should be implemented in patient care (Weil, 2003). However,

TABLE 5 Participants' experienced stressors and rewards while in graduate school

Stressors identified	Count (n = 14)	(%)
Academic/Professional Demands	14	(100)
Stress from Unexpected Clinic Situations	4	(28.6)
Heavy Workload	12	(85.7)
Responsibility to Patients	5	(35.7)
Stress from Time Constraints	9	(64.3)
Interpersonal Interactions	8	(57.1)
Issues with Supervisors	6	(42.9)
Comparison to Other GCs	5	(35.7)
Intrapersonal	4	(28.6)
Lack of Professional Identity	2	(14.3)
Self-Doubt	2	(14.3)
Financial	2	(14.3)
Isolation	7	(50)
Other	4	(28.6)
Lack of Time for Self-Care	4	(28.6)
Rewards Identified	Count (n = 14)	(%)
Reaffirmation of Career Choice	7	(50)
Close Relationship to Classmates	10	(71.4)

many genetic counselors underutilize psychosocial counseling in favor of information-giving (Meiser et al., 2008). Failure to utilize psychosocial skills may begin in training where genetic counseling students may shy away from practicing these techniques in clinical rotations (Borders et al., 2006; Shugar, 2017). The purpose of this study was to explore the acceptability and potential of medical improv as a method for teaching psychosocial skills to genetic counseling students. Participants in this study found the medical improv workshop addressed many core psychosocial competency skills for genetic counselors like active listening, concisely and effectively teaching patients of different educational backgrounds, and promptly responding to counselor/patient relationship dynamics (ACGC, 2019).

#### 4.1 | Current practices and medical improv

Currently, genetic counseling programs utilize clinical simulations to train students in psychosocial skills, and there is overlap between clinical simulations and medical improv (Holt et al., 2013; Watson, 2011). However, clinical simulations are evaluative in nature, and both peers and preceptors typically provide feedback on both information accuracy and psychosocial skills to trainees (McCarthy Veach et al., 2006). In improv, success is defined by "yes and," the idea of affirming what others have said and building off of those statements (Watson, 2011). In medical improv, student evaluation is based on engaging with the workshop and participating rather than clinical or medical accuracy (Watson, 2011).

These differences in evaluation may be key to participants' beliefs, as reported in this study, that they were "freer to fail" and try new things when compared to other aspects of their training program. In addition, by only focusing on psychosocial skills, medical improv eliminated the pressure to remember medical information that students are expected to know in a clinical simulation. By allowing students an opportunity to practice and build interpersonal skills, medical improv can help students and new genetic counselors build their confidence in using these skills. In conjunction with the confidence that the medical improv workshop can build to handle difficult situations, students may feel better prepared to handle the differing and unique scenarios that present during their clinical rotations. The importance of decoupling psychosocial training from medical information is critical to medical improv, as it allows students freedom to experiment with different skills before utilizing them in a clinical context (Watson & Fu, 2016).

#### 4.2 | Anxiety and medical improv

Novice genetic counselors described lacking confidence and feeling uncomfortable in their new roles and situations (Ramachandra et al., 2019). Genetic counseling students who are more anxious than average are more likely to feel that they perform poorly during clinical rotations (MacFarlane et al., 2016). Furthermore, students who are more stressed or anxious are also less likely to be receptive to supervision and may miss opportunities to utilize psychosocial communication (Borders et al., 2006). These issues may prevent students from practicing psychosocial counseling skills and using

them in clinical interactions. Participants noted the medical improv workshop could be helpful in managing stressors related to interpersonal interactions, such as those that arise in clinical rotations like dealing with unexpected situations, being comfortable with discomfort, and being able to think on your feet. Medical improv can build confidence with these situations by providing a space for students to practice being uncomfortable.

### 4.3 | Barriers, concerns, and implementation into curricula

Student engagement due to resistance or discomfort with the setting was a concern participants felt could impact the implementation of medical improv. While participants in this study discussed feeling more comfortable than they had anticipated once in the workshop, this should still be a consideration. Participants in this study discussed the importance of having a trained, experienced facilitator. As with many teaching situations, facilitators may have to anticipate resistance from some students and implement strategies for overcoming resistance. In addition, trained facilitators can help students recognize that the primary purpose of a medical improv workshop is to fill existing gaps in their knowledge. A facilitator must be able to teach students to embrace being “stage-appropriate stupid,” where the student is expected to have some knowledge but also recognize that not-knowing, vulnerability, risk, and failure are normal parts of the learning process (Green et al., 2016). By doing so, facilitators can help students identify how medical improv can apply more broadly to the context of their education. Nevertheless, a previous study on required medical improv classes found that even students who were resistant to or uncomfortable with the method improved their patient counseling skills (Boesen et al., 2009).

### 4.4 | Practice and educational implications

This study suggests that medical improv can potentially be successful in conjunction with traditional educational tools, such as clinical simulations and clinical supervision.

Genetic counseling clinical supervision goals include good student-supervisor communication, tailoring supervision to the student skill level, and empowering students to feel in control of their sessions (Wherley et al., 2015). Just as medical improv may increase genetic counseling students' comfort in new environments, new genetic counseling supervisors may benefit from similar training to improve their supervision skills. In other educational fields, the potential for improv to help educators adapt messages to individual students and situations has been proposed (Maheux & Lajoie, 2011). Study participants identified that workshop activities had potential to help them both improve overall communications skills, as well as tailor information to meet the learner and explained how medical improv may boost trainees' comfort in new or stressful situations, such as those they may encounter in their clinical rotations. For

instance, supervisors might call upon the idea of “stage appropriate stupid” to remind students who are upset about mistakes that they, as trainees, are not expected to be perfect. Training supervisors and students with the same curriculum may provide them with a shared experience and vocabulary, which may improve communication in a supervisory setting.

### 4.5 | Study limitations

This study required a significant amount of participants' time, which was likely a barrier to participation. In addition, there may be bias due to self-selection. Specifically, a total of 14 individuals participated in this study, representing three cohorts of genetic counseling students. This sample is significantly smaller than the population of genetic counseling students and new genetic counselors eligible for the study, and may not be representative of the population as a whole. The first author facilitated the medical improv workshops and conducted the interviews. As such, participants may have established a sense of camaraderie with the first author, potentially responding more positively during interviews than they may have to another interviewer. However, given their honesty toward questions about barriers and limitations of improv, it is believed such bias did not have much of an impact. Furthermore, as this study did not assess validated measures of learning, this study is not able to draw conclusions about the impact of a medical improv workshop for genetic counseling students on learning outcomes.

### 4.6 | Research recommendations

This study demonstrated an interest in medical improv training among genetic counseling students and early career genetic counselors. Further studies are needed to examine the efficacy of a medical improv course in genetic counseling programs. These studies will help determine the utility of medical improv in genetic counseling training. In addition, longitudinal studies that investigate the effects of repeated exposures to medical improv can help determine implementation strategies for medical improv targeted toward genetic counseling students.

## 5 | CONCLUSION

Despite the exploratory nature, this study demonstrated that medical improv has the potential to be well received by and beneficial to genetic counseling students and genetic counselors, and is consistent with findings from studies of medical improv in other medical disciplines. Medical improv training has the potential to familiarize genetic counseling students with clinical situations or to allow students to work through challenges they experience in their clinical rotations, without the added pressure of correctly incorporating

their medical genetics knowledge. By doing so, trainees can build confidence in their psychosocial clinical skills so that when they are faced with using these skills in clinical settings, they feel less anxious and more prepared. By training genetic counseling students in medical improv, they may handle the complexities of psychosocial communication in clinical settings more effectively and ultimately provide better care to their patients.

## AUTHOR CONTRIBUTIONS

Substantial contributions to the conception, design, analysis, interpretation, and drafting of the published work were made by each of the listed authors: Weilong Li, Courtney Scherr, Remington Fenter, Katie Watson, and Catherine Wicklund. Weilong Li and Courtney Scherr confirm that they had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. All the authors gave final approval of this version to be published and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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## COMPLIANCE WITH ETHICAL STANDARDS

## CONFLICTS OF INTEREST

Weilong Li, Courtney Scherr, Remington Fenter, Katie Watson, and Catherine Wicklund declare that they have no conflicts of interest.

## HUMAN STUDIES AND INFORMED CONSENT

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. This study was reviewed and approved by the Northwestern University institutional review board. Both written and verbal informed consent was obtained from all participants for being included in the study.

## ANIMAL STUDIES

No non-human animal studies were carried out by the authors for this article.

## DATA SHARING AND DATA ACCESSIBILITY

The data that support the findings of this study are available from the corresponding author upon reasonable request

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