Hearing Voices Simulation: Impact on Occupational Therapy Students

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Abstract

Auditory hallucinations, which are symptoms of schizophrenia, can significantly disrupt individuals' daily lives. Occupational therapists (OTs) can address both the daily needs of people with schizophrenia and address cultural stigmas against mental illness. To combat stigma and increase empathy for patients with mental illnesses, auditory hallucinations simulations were developed. The purpose of this study was to determine if the Hearing Voices That Are Distressing (HVTAD) Simulation impacts OT students' attitudes toward patients with auditory hallucinations and to explore the students' perceptions of the simulation's effectiveness as a teaching method. The participants completed a pretest Attitudes to Mental Illness Questionnaire (AMIQ) and listened to the HVTAD Simulation while completing a classroom activity. The participants completed a posttest AMIQ and a reflective questionnaire. The significant increase in composite scores, $t(27) = -2.92$, $p = .039$, on the AMIQ indicated increased empathy toward people with mental illnesses. Results of the qualitative analysis showed that the students viewed the simulation as an effective teaching methodology. Many participants also believed that the simulation made them better prepared to treat patients in the mental health population. These findings align with current perspectives in healthcare fields, including occupational therapy, regarding the effectiveness of simulations as teaching methodologies.

Comments

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According to the National Institute of Mental Health, there were approximately 43.4 million adults aged 18 years or older living with a mental illness in the United States during the year 2015. This accounts for 17.9% of the U.S. adult population (Bose et al., 2016). Occupational therapists can play a key role in the care of this population of adults living with mental illness, including those with schizophrenia.

Schizophrenia is a mental health condition that impacts virtually every aspect of an individual's life. According to the *Diagnostic and Statistical Manual of Mental Disorders*, symptoms of schizophrenia include a variety of cognitive, behavioral, and emotional dysfunctions (American Psychiatric Association [APA], 2013). Diagnostic criteria include the presence of delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior, and/or negative symptoms for at least 6 months. In addition, significant impairment in one or more major areas of functioning is evident (APA, 2013). Auditory hallucinations are the most common types of hallucinations and are experienced by more than 70% of people with schizophrenia (Hugdahl et al., 2008). These hallucinations are most often experienced as real communication with another person as opposed to merely being experienced as a figment of one's imagination (Hugdahl et al., 2008; Kalhovde, Elstad, & Talseth, 2013). Auditory hallucinations, and a diagnosis of schizophrenia more broadly, can significantly impact an individual's daily life and interactions with others.

Schizophrenia is associated with numerous functional limitations that lead to occupational performance deficits. Kalhovde, Elstad, and Talseth (2013) interviewed 14 people with psychotic disorders who experienced auditory hallucinations. Many participants reported that constantly hearing voices in the background made daily life more difficult. Semkovska, Bédard, Godbout, Limoge, and Stip (2004) found that participants with schizophrenia, compared to controls, displayed more sequencing errors, repetitions, and omissions when completing daily tasks, such as creating a menu. Significant correlations were found between positive schizophrenia symptoms and these sequencing errors (r = 0.48, $p < 0.05$) and between negative schizophrenia symptoms and these omissions (r = 0.59, $p < 0.01$). The results of this study show that schizophrenia and related auditory hallucinations can have a serious impact on occupational performance.

Schizophrenia also impacts social participation. Kalhovde et al. (2013) reported that participants with auditory hallucinations found it difficult to relate to others and often thought that their auditory hallucinations impacted others' impressions of them. Goldberg and Schmidt (2001) found that individuals with schizophrenia, especially those who displayed negative symptoms, had higher levels of shyness and lower levels of sociability and experienced troubled social relations during childhood. These traits can negatively impact an individual's ability to engage in meaningful social participation and experience meaningful relationships.

Stigmatization is another serious issue that individuals with schizophrenia face, and one that can have an impact on their personal lives. Mann and Himelein (2004) found that schizophrenia was a more stigmatized mental illness than depression. They suggested that researchers develop targeted interventions to reduce the stigmatization of schizophrenia. Stigmatization of mental illnesses, including schizophrenia, has also been found to be associated with drastically low levels of self-esteem in individuals with mental illness (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001). The stigma against mental illnesses, like schizophrenia, impacts the ways in which individuals view themselves and interact with the surrounding world. Dickerson, Sommerville, Origoni, Ringel, and Parente (2002) evaluated patients with schizophrenia and their interpretation of stigma. They found that the majority of

these patients worried about being viewed in a negative light because of their mental illnesses. This can prevent patients from seeking health care services, due to fear of being treated with attitudes of stigma, and hinder the development of therapeutic relationships with health care professionals. It is important for health care practitioners, such as occupational therapists, to be aware of the stigma that impacts patients with mental illnesses and to do their best to address it in practice.

Occupational therapists work in a wide variety of settings, including mental health. According to the American Occupational Therapy Association's (AOTA) Salary and Workforce Survey Executive Summary (2015), only 2.4% of occupational therapists in the United States work specifically in the mental health setting. However, mental health occupational therapists are not the only occupational therapists that will treat patients with mental illnesses. Psychological health is an important part of well-being and is inextricably linked with all practice settings and diagnoses (AOTA, 2016). In their Mental Health Action Plan, the World Health Organization (2013) reported that people with mental illnesses experience much higher rates of disability and mortality than the rest of the population. In response to this trend, and to support the Centennial Vision, AOTA has identified the mental health practice setting as a key practice area for the 21st century (AOTA, n.d.). It is imperative that occupational therapists are able to evaluate and address the mental health needs of clients in all practice settings and at a community level. Occupational therapists must be prepared to treat patients with a variety of mental health symptoms, even those symptoms that are the most misunderstood, such as auditory hallucinations.

Empathy, as defined by the *Occupational Therapy Practice Framework*, is "the emotional exchange between occupational therapy practitioners and clients that allows more open communication, ensuring that practitioners connect with clients at an emotional level to assist them with their current life situation" (AOTA, 2014, p. 12). To increase empathy for and an understanding of patients living with mental illnesses, such as schizophrenia, auditory hallucination simulations have been developed. A handful of studies have been completed that explore the effects of these auditory hallucination simulations on health care professional students' attitudes toward patients that experience hallucinations. Ando, Clement, Barley, and Thornicroft (2011) completed a systematic review of 10 hallucination simulation studies and found that the simulations, considered an effective learning tool, were consistent in their ability to increase participants' empathy toward patients that experience auditory hallucinations. However, the desire to maintain a social distance from patients with schizophrenia was also a common theme among study participants after listening to the simulations. Ando et al. (2011) also noted that qualitative data suggests that although participants did experience uncomfortable, and sometimes distressing, feelings, the simulations gave "an 'insider's perspective' which produced empathy and respect" (p. 8). Kepler, Lee, Kane, and Mitchell (2016) conducted an auditory simulation study with 87 nursing students. The Hearing Voices That Are Distressing auditory simulation program was used in this study, and comparison of pre and posttest Attitudes to Mental Illness Questionnaire (AMIQ) scores revealed a significant positive change in attitudes toward those who experience auditory hallucinations. The participants reported an increased awareness of the negative impact that auditory hallucinations can have on a person's life. Self-efficacy in providing care to patients with auditory hallucinations was also measured, but no significant changes were found. Kepler et al. (2016) concluded that debriefing with participants after the study may have led to an increase in the self-efficacy scores.

Overall, studies using auditory hallucinations simulations found that the simulations were effective in changing the attitudes and/or empathy of participants (Dearing & Steadman, 2009; Galletly & Burton, 2011; Hamilton Wilson et al., 2009; Kidd, Tusaie, Morgan, Preebe, & Garrett, 2015; Skoy,

Eukel, Frenzel, Werremeyer, & McDaniel, 2016). While not all of the reviewed studies used the same simulation program, they all found positive results using auditory hallucinations simulations. Students often reported that they felt the simulation was a beneficial learning tool that helped them understand patients with mental health disorders. However, participants also reported some degree of unpleasant feelings after listening to the simulations (Ando et al., 2011; Dearing & Steadman, 2009; Kidd et al., 2015). At the time of this publication, there was no available literature on auditory hallucinations simulation studies completed with occupational therapy students or practitioners.

The purpose of this study was to determine if the Hearing Voices That Are Distressing simulation (HVTAD) impacts occupational therapy students' attitudes toward treating patients with auditory hallucinations. It also seeks to explore students' perceptions of the effectiveness of such a simulation as a teaching methodology. It is hypothesized that occupational therapy students will experience improved attitudes toward people living with auditory hallucinations, and mental illnesses more generally, as measured by the AMIQ, and will perceive the HVTAD simulation curriculum as an effective learning tool.

Method

Study Design

A single-group mixed methods design with pre and postintervention tests was used in this study. The Institutional Review Board at the university where the study was completed granted the study an exempt status.

Participants

The participants consisted of a convenience sample of 35 students from an accredited Master of Science in occupational therapy (OT) program. The OT program is part of a private, urban university housed in a medical center in the Midwest. All students enrolled in the Analysis of Occupational Performance course during the winter 2017 quarter were invited to voluntarily participate in the simulation study. The three student researchers excluded themselves. In addition, students with a history of auditory hallucinations or high levels of anxiety were advised to self-exclude from the study.

Measures

Demographic data consisting of the participants' age and sex were collected at pre and postintervention.

Attitudes to Mental Illness Questionnaire

A modified version of the AMIQ was used at pre and postintervention to measure the students' attitudes toward patients with mental health disorders. This measurement tool was obtained from a previous study completed by Kepler et al. (2016) that investigated the use of the HVTAD simulation to improve nursing students' attitudes toward individuals with mental illnesses. The AMIQ is an instrument designed to identify the concerns that people have about individuals with mental illnesses. The measure consists of a fictional case vignette (see Table 1) about an individual with schizophrenia who experiences auditory hallucinations. A 5-item questionnaire (see Table 2) followed the fictional case. These questions assess attitudes toward the effects of auditory hallucinations on the fictional individual's career, work and social relationships, spousal relationship, and likelihood of legal trouble. The responses to the questions were graded on a 5-point Likert scale. Although the original responses to the questions on the AMIQ ranged from -2 to 2, the researchers labeled the responses by adding the constant of 3 in order to maintain clarity and avoid negative values for data analysis. Therefore, responses that represented negative attitudes toward mental illness were scored a 2 (*slightly negative*) or

1 (*very negative*). Responses to questions that the participants did not know or that were neutral were scored a 3. Responses that reflected positive attitudes toward mental illness were scored a 4 (*slightly positive*) or 5 (*very positive*). Total scores ranged from 5 to 25. Lower values on this scale indicated lower feelings of empathy toward people who have a mental illness, and higher values on this scale indicated higher feelings of empathy. The mean responses for each question were calculated for both the pretest and posttest questionnaires. Luty, Fekadu, Umoh, and Gallagher (2006) performed a study to assess the validity of the AMIQ as a measuring tool. The results showed that the AMIQ has good stability; test-retest reliability ($r = 0.702$); alternative test reliability ($r_s = 0.704$, $p < 0.001$); as well as face, construct, and criterion validity. According to Luty et al. (2006), the "AMIQ can be used in various medical and mental health stigma research and intervention settings" (p. 257).

Table 1

Case Vignette from the Attitudes to Mental Illness Questionnaire

Michael has schizophrenia. He needs an injection of medication every 2 weeks. He was detained in the hospital for several weeks 2 years ago because he was hearing voices from the Devil and thought that he had the power to cause earthquakes. He has been detained under the Mental Health Act in the past.

Table 2

Questions from the Attitudes to Mental Illness Questionnaire

Question 1	Do you think that this would damage Michael's career?
Question 2	I would be comfortable if Michael was my colleague at work.
Question 3	I would be comfortable about inviting Michael to a dinner party.
Question 4	How likely do you think it would be for Michael's wife to leave him?
Question 5	How likely do you think it would be for Michael to get into trouble with the law?

Reflective Open-ended Questions

 A 4-item open-ended questionnaire (see Table 3) was administered postintervention to assess the students' attitudes toward people who experience auditory hallucinations, thoughts on the effectiveness of the simulation as a teaching methodology, and ways the experience could be applied to clinical practice. The use of reflective open-ended questions after the simulation experience was modeled after the Kepler et al. (2016) study. The researchers used the open-ended questions in their study to evaluate the students' feelings toward the simulation. The information obtained from this open-ended reflection was analyzed as qualitative data and was found to have significant results. In a similar vein, a qualitative method was used to analyze the occupational therapy students' responses to the reflective open-ended questions after participating in the simulation experience. The researchers chose to forgo face-to-face interviews with the participants to reduce social desirability bias. Krosnick and Presser (2010) suggest that eliminating the interviews and ensuring anonymity on questionnaires may reduce social desirability bias, in which participants attempt to influence how others see them by responding in

ways that they deem socially appropriate. By adhering to these recommendations, the researchers aimed to collect responses that were as free from bias as possible.

Table 3
Qualitative Questions

Question 1	Describe how this experience has impacted your attitude toward persons who experience auditory hallucinations.
Question 2	List the benefits of the HVTAD simulation as a teaching method for occupational therapy students.
Question 3	List the challenges of the HVTAD simulation as a teaching method for occupational therapy students.
Question 4	Provide examples of how this simulation experience can be applied to your clinical practice as an occupational therapist.

Intervention

Patricia Deegan, a clinical psychologist specializing in psychiatric disorders, created the HVTAD simulation. The simulation is preloaded onto an MP3 player and includes an introduction and a 45-min track of voices that mimic auditory hallucinations. According to the HVTAD simulation curriculum, participants listen to the auditory hallucinations through headphones while completing a series of tasks to experience the challenges that those who hear auditory hallucinations face on a daily basis (Deegan, 2006). The curriculum has been piloted with many groups, including students (Deegan, 2006; Kepler et al., 2016).

Procedure

Over the course of three 2-hour Analysis of Occupational Performance class periods, the occupational therapy student cohort participated in craft labs. During these craft labs, six groups of students took turns presenting a specific craft to the rest of the class. The crafts included beadwork, weaving, sand art, stained glass painting, woodworking, and fuse bead art. During the craft presentations, the rest of the class participated in the craft while using an "impairment" to simulate what it is like for patients with physical, visual, or mental health impairments to participate in an occupational therapy craft group. Physical impairments included gloves that keep the fingers in flexion, arm braces that keep the arm in extension, and gardening gloves or oven mitts to inhibit sensation. Visual impairments included a wide variety of glasses that simulated conditions, such as macular degeneration and diabetic retinopathy. The mental health impairment was the HVTAD simulation. The students could choose whatever impairment they wanted for each craft. They were encouraged to change impairments between craft groups and to try all of the impairments. The students used the impairment for the duration of the 45-min craft activity. The students that chose to use the HVTAD simulation impairment and participate in the study completed a pretest AMIQ and returned it to one of the researchers prior to beginning the craft. The participants listened to the HVTAD simulation while completing the craft as instructed by the presenting group. At the end of the simulation, the participants completed a posttest AMIQ and the reflective, open-ended questionnaire about their thoughts and attitudes regarding the experience. The participants were ensured that their responses would remain

anonymous and confidential. The students were given a debriefing form that included the purpose of the study, debriefing questions, and information about what health care professionals can do to help a person who is experiencing auditory hallucinations. In addition, during the class period following the three craft lab days, a faculty member who specializes in mental health conducted a class-wide debriefing session.

Data Analysis

Quantitative data analyses were performed using SPSS version 18. Descriptive statistics were used to characterize the participants. Due to abnormally distributed data for individual questions, a Wilcoxon signed ranks test was used to determine the change in preintervention and postintervention AMIQ scores for each individual question. A paired samples *t*-test was used to determine the change in normally distributed composite AMIQ scores. Responses to the open-ended questionnaire were coded using a grounded theory approach consisting of inductive coding and constant comparison (Bradley, Curry, & Devers, 2007). Three researchers coded until saturation, at which time a fourth researcher reviewed the codes. Themes evolved from the codes, and all of the researchers reviewed these themes for representativeness of the data.

Results

Quantitative Results

Twenty-eight students participated in the study. There were 27 females and one male. Ages ranged from 21 to 31 years, with an average participant age of 24.11 years. Wilcoxon signed ranks tests were conducted to compare pre and posttest AMIQ scores for individual questions. The difference in scores for Question 3 on the pretest ($M = 2.68$, $SD = .90$) and posttest ($M = 3.18$, $SD = 1.09$) was statistically significant, $Z (27) = -2.50$, $p < .05$. A paired samples *t*-test was performed to compare the composite pre and posttest AMIQ scores. Pretest composite scores ($M = 11.75$, $SD = 2.41$) and posttest composite scores ($M = 13.25$, $SD = 3.96$) differed significantly, $t (27) = -2.17$, $p < .05$.

Qualitative Results

There were four prominent themes found through careful analysis of the participants' responses to the reflective, open-ended questionnaire. The themes were increased empathy, increased knowledge, increased skills, and educational purpose. The majority of the participants reported experiencing an increase in empathy toward people with mental illnesses. One student stated, "It made me realize I should have more empathy for people who experience auditory hallucinations because it makes functioning so difficult." Another student reflected, "A better understanding of the impact has made me even more compassionate toward individuals experiencing hallucinations." Along with the theme of increased empathy, the student responses showed a theme of increased knowledge, as the students gained a better understanding of the difficulties with functioning for people who experience auditory hallucinations. One student explained, "It has helped me realize how difficult it might be to function in your everyday life while experiencing the hallucinations." In addition, a student observed that the simulation could "increase understanding and ability to relate to people who experience auditory hallucinations." The increase in skills is another theme found in the qualitative analysis. The students reported feeling that they developed more adequate skills for treating patients in the mental health population. One student commented, "Because I have at least some level of understanding of what this patient population has to live with, I feel I am better equipped to communicate with empathy and authenticity." Another student stated, "It may be easier to choose intervention plans and goals." The students also reported that they felt the HVTAD simulation would be an effective teaching method to

incorporate into occupational therapy curricula. The students noted that the method "serves to make us even more client-centered" and that the simulation "helps to break that barrier of unfamiliarity." These responses indicate a significant theme of educational purpose and benefit for occupational therapy students and patients with mental health conditions.

Discussion

Overall, the results of this study suggest that the HVTAD simulation has the potential to change occupational therapy students' attitudes toward individuals that experience auditory hallucinations. The increase in AMIQ scores (pretest composite scores [M = 11.75, SD = 2.41], posttest composite scores [M = 13.25, SD = 3.96], t [27] = -2.17, $p < .05$) indicates that the students felt more empathy for people who experience auditory hallucinations after participating in the simulation. An increase in empathy is extremely important in a society where many people still hold negative feelings of stigma toward people with a mental illness (Angermeyer & Matschinger, 2003; Mann & Himelein, 2004; Parcesepe & Cabassa, 2013). Increasing empathy among occupational therapy students could enable them to treat people with mental illnesses more effectively.

Further analysis of the study results showed that Question 3 from the AMIQ ("I would be comfortable about inviting Michael to a dinner party" [see Table 2]) had a statistically significant increase in scores, indicating increased empathy toward someone with a mental illness, as described above. This specific question reflects social interaction, which is meaningful since many people avoid engaging in social interactions with people who have a mental illness (Angermeyer & Matschinger, 2003; Lauber, Nordt, Falcato, & Rössler, 2004). This lack of social interaction can cause people with a mental illness to feel isolated. Several of the responses to the qualitative questionnaire addressed social interaction. One of the students stated, "I think this experience helped me understand how auditory hallucinations impact social interactions." Another student further elaborated, "[The simulation] made me more empathetic because the voices made it difficult to concentrate. I also felt disconnected from people around me. That feeling of isolation was the hardest part." Responses such as these indicate that the students gained an understanding of how mental illness can hinder client participation in many occupations, including social activities. Occupational therapists that truly understand how detrimental this can be to individuals may be better able to develop client-centered treatment plans and strong therapeutic rapport with their clients.

In addition to findings of increased empathy for people with auditory hallucinations after participating the HVTAD simulation, the results of the qualitative analysis show that the simulation can be an effective teaching methodology for students studying occupational therapy. There is currently a disconnect between the number of individuals in the United States living with a mental illness and the percentage of occupational therapists that practice specifically in mental health settings. Such simulations have the potential to familiarize students with mental health occupational therapy and encourage more future practitioners to enter this practice setting. The students who participated in the HVTAD simulation recognized numerous benefits from their experiences in the classroom. Some of the students believed that experiencing the simulation made them better prepared to treat patients in the mental health population once they become clinicians. For example, one of the students wrote, "This simulation can help me better understand what a patient with auditory hallucinations is going through and how to develop a meaningful treatment to cater to their [sic] needs." Since the simulation showed students how difficult it can be to perform daily occupations while experiencing hallucinations, the students expressed having a better understanding of how having a mental illness might prohibit patients

from being functional and independent in everyday life. Qualitative analysis also showed that some of the participants believed they had more empathy for people with mental illness after completing the simulation. Overall, the participants believed that benefits of the auditory hallucination experience as a teaching method included a better understanding of the difficulty in functioning that arises with auditory hallucinations, a potential decrease in stigma, the ability to better plan interventions for clients, and therapy and therapists that are more client-centered. One student explained, "This experience has helped me decrease certain stereotypes I had with schizophrenia due to my lack of exposure to the condition."

The participants noted that there were some challenges to the HVTAD simulation experience as a teaching method for occupational therapy students. Some of the students felt that the simulation could cause a negative or stressful response for some participants. One student stated that it was possible that people could become "upset by the content." The students also felt that the simulation was too short to realistically represent what it would be like to live with auditory hallucinations. One student noted that, "it was easy to recognize that it is a simulation and to not listen to the voices." As with any simulation, it is rarely possible to fully replicate the symptoms that people may experience, especially when the symptoms can vary between individuals. Despite these challenges, the students generally believed that the simulation was an effective teaching tool that allowed them to feel increased empathy toward those with a mental illness and gave them the insight to become more competent occupational therapists.

The findings from this study also align with current perspectives in various health care fields, including occupational therapy, regarding the effectiveness of simulations as a teaching methodology. Cook et al. (2011) found that the use of simulations among health profession students, when compared to no intervention, had beneficial effects on learning outcomes, such as knowledge, skills, and behaviors. Ando et al. (2011) found that simulations of auditory hallucinations increased empathy and offered a unique perspective of the illness experience. Bennett, Rodger, Fitzgerald, and Gibson (2017) completed a review of 57 articles from the occupational therapy literature that focused on the use of various types of simulations in occupational therapy curricula. The simulations included written case studies, videos of simulated or real patients, role-play, standardized patients, mannequins and part-task trainers, and virtual reality and computer-based patients. The authors found that simulations, regardless of type, enhanced student competencies in areas such as professional attitudes and behaviors, communication, information gathering, goal setting, and intervention implementation. These perceived enhancements were based primarily on student report, as was the case in the present study. Bennett et al. (2017) found that students felt better equipped to choose intervention plans and establish goals for this patient population and felt they could more effectively communicate with patients who experience auditory hallucinations. They also developed more compassion, patience, and empathy that they would apply to clinical practice. The authors suggested that future research use a mixed methods approach to gather both quantitative and qualitative data that could provide educators with information about what works and why in terms of simulations in occupational therapy curricula. With similar findings, our study adds to the growing body of knowledge regarding the effectiveness of simulations in occupational therapy curricula.

Limitations

The primary limitation of this study was a small homogenous sample, which limits the generalizability of the findings. In addition, the authors did not follow up on the students' attitudes and perceptions after the initial data collection period to determine if changes were maintained over time.

Finally, some of the students experienced technical difficulties with the MP3 players, which may have impacted their experiences.

Implications for Practice

This study found that the HVTAD simulation is an effective tool for increasing empathy and educating occupational therapy students about auditory hallucinations, and mental illness more broadly. The students expressed a greater understanding of the experiences of those living with auditory hallucinations. They also noted that knowledge gained from the simulation could be useful in relating to patients and in planning interventions in their future careers. These results are particularly timely given the potential changes in occupational therapy education. At the 2017 AOTA annual conference, recommended changes in fieldwork and experiential learning were presented. An AOTA Board of Directors ad hoc committee (2017) identified the possible use of simulations (among other options) as a replacement to traditional Level I fieldworks to address the current shortage of fieldwork placement availability. The present study offers another point of consideration that could impact this potential transition in occupational therapy education.

Further research is needed to fully understand the long-term impacts of simulations, such as the HVTAD simulation, on occupational therapy students' and practitioners' attitudes toward and treatment of those living with mental illness. As education standards change and as mental health continues to reemerge as an emphasized practice setting, mental illness simulations can serve as unique teaching methodologies and educational experiences for students. This study represents the beginning of this merger and paves the way for both future research and future education in occupational therapy.

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References

American Occupational Therapy Association. (n.d.). Mental health. Retrieved from http://www.aota.org/Practice/Mental-Health.aspx

American Occupational Therapy Association. (2014). Occupational therapy practice framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy*, *68*(Suppl. 1), S1-S48. http://dx.doi.org/10.5014/ajot.2014.682006

American Occupational Therapy Association. (2015). *Salary & workforce survey: Executive summary*. Retrieved from https://www.aota.org/Education-Careers/Advance-Career/Salary-Workforce-Survey.aspx

American Occupational Therapy Association. (2016). Occupational therapy services in the promotion of mental health and well-being. *American Journal of Occupational Therapy*, *70*, 1-15. http://dx.doi.org/10.5014/ajot.2016.706S05

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Ando, S., Clement, S., Barley, E. A., & Thornicroft, G. (2011). The simulation of hallucinations to reduce the stigma of schizophrenia: A systematic review. *Schizophrenia Research*, *133*(2-3), 8-16. https://doi.org/10.1016/j.schres.2011.09.011

Angermeyer, M. C., & Matschinger, H. (2003). The stigma of mental illness: Effects of labelling on public attitudes towards people with mental disorder. *Acta Psychiatra Scandinavica*, *108*(4), 304-309. https://doi.org/10.1034/j.1600-0447.2003.00150.x

AOTA Board of Directors. (2017). Residency for OTs considered by AOTA ad hoc committee report. Retrieved from https://www.aota.org/~/media/Corporate/Files/EducationCareers/Educators/Fieldwork/AOTA-Fieldwork/Residency-for-OTs-considered-by-AOTA-ad-hoc-committee-report.pdf

Bennett, S., Rodger, S., Fitzgerald, C., & Gibson, L. (2017). Simulation in occupational therapy curricula: A literature review. *Australian Occupational Therapy Journal*, *64*(4), 314-327. https://doi.org/10.1111/1440-1630.12372

Bose, J., Hedden, S. L., Lipari, R. N., Park-Lee, E., Porter, J. D., & Pemberton, M. R. (2016). *Key substance use and mental health indicators in the United States: Results from the 2015 national survey on drug use and health*. Retrieved from https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR1-2015/NSDUH-FFR1-2015/NSDUH-FFR1-2015.pdf

Bradley, E. H., Curry, L. A., & Devers, K. J. (2007). Qualitative data analysis for health services research: Developing taxonomy, themes, and theory. *Health Services Research*, *42*(4), 1758-1772. https://doi.org/10.1111/j.1475-6773.2006.00684.x

Cook, D. A., Hatala, R., Brydges, R., Zendejas, B., Szostek, J. H., Wang, A. T., . . . Hamstra, S. J. (2011). Technology-enhanced simulation for health professions education: A systematic review and meta-analysis. *Journal of the American Medical Association*, *306*, 978-988. https://doi.org/10.1001/jama.2011.1234

Dearing, K. S., & Steadman, S. (2009). Enhancing intellectual empathy: The lived experience of voice simulation. *Perspectives in Psychiatric Care*, *45*(3), 173-182. https://doi.org/10.1111/j.1744-6163.2009.00219.x

Deegan, P. (2006). *Hearing voices that are distressing curriculum: Complete training and curriculum package.* Lawrence, MA: National Empowerment Center.

Dickerson, F. B., Sommerville, J., Origoni, A. E., Ringel, N. B., & Parente, F. (2002). Experiences of stigma among outpatients with schizophrenia. *Schizophrenia Bulletin*, *28*(1), 143-155.

Galletly, C., & Burton, C. (2011). Improving medical student attitudes towards people with schizophrenia. *Australian and New Zealand Journal of Psychiatry*, *45*(6), 473-476. https://doi.org/10.3109/00048674.2011.541419

Goldberg, J. O., & Schmidt, L. A. (2001). Shyness, sociability, and social dysfunction in schizophrenia. *Schizophrenia Research*, *48*(2-3), 343-349. https://doi.org/10.1016/s0920-9964(00)00143-2

Hamilton Wilson, J. E., Azzopardi, W., Sager, S., Gould, B., Conroy, S., Deegan, P., & Archie, S. (2009). A narrative study of the experiences of student nurses who have participated in the hearing voices that are distressing simulation. *International Journal of Nursing Education Scholarship*, *6*(1), 1-15. https://doi.org/10.2202/1548-923X.1727

Hugdahl, K., Løberg, E., Specht, K., Steen, V. M., van Wageningen, H., & Jørgensen, H. A. (2008). Auditory hallucinations in schizophrenia: The role of cognitive, brain structural and genetic disturbances in the left temporal lobe. *Frontiers in Human Neuroscience*, *1*, 1-10. https://doi.org/10.3389/neuro.09.006.2007

Kalhovde, A. M., Elstad, I., & Talseth, A. (2013). Understanding the experiences of hearing voices and sounds others do not hear. *Qualitative Health Research*, *23*(11), 1470-1480. https://doi.org/10.1177/1049732313507502

Kepler, B. B., Lee, H., Kane, I., & Mitchell, A. M. (2016). Voice simulation in nursing education. *Nurse Educator*, *41*(2), 66-69. https://doi.org/10.1097/NNE.0000000000000213

Kidd, L. I., Tusaie, K. R., Morgan, K. I., Preebe, L., & Garrett, M. (2015). Mindful teaching practice: Lessons learned through a hearing voices simulation. *Issues in Mental Health Nursing*, *36*(2), 112-117. https://doi.org/10.3109/01612840.2014.953278

Krosnick, J. A., & Presser, S. (2010). Question and questionnaire design. In P. V. Madsen & J. D. Wright (Eds.), *Handbook of survey research* (pp. 263-313). Bingley, UK: Emerald Group Publishing Limited.

Lauber, C., Nordt, C., Falcato, L., & Rössler, W. (2004). Factors influencing social distance toward people with mental illness. *Community Mental Health Journal*, *40*(3), 265-274. https://doi.org/10.1023/B:COMH.0000026999.87728.2d

Link, B. G., Struening, E. L., Neese-Todd, S., Asmussen, S., & Phelan, J. C. (2001). Stigma as a barrier to recovery: The consequences of stigma for the self-esteem of people with mental illnesses. *Psychiatric Services*, *52*(12), 1621-1626. https://doi.org/10.1176/appi.ps.52.12.1621

Luty, J., Fekadu, D., Umoh, O., & Gallagher, J. (2006). Validation of a short instrument to measure stigmatised attitudes towards mental illness. *The Psychiatrist*, *30*(7), 257-260. https://doi.org/10.1192/pb.30.7.257

Mann, C. E., & Himelein, M. J. (2004). Factors associated with stigmatization of persons with mental illness. *Psychiatric Services*, *55*(2), 185-187. https://doi.org/10.1176/appi.ps.55.2.185

Parcesepe, A. M., & Cabassa, L. J. (2013). Public stigma of mental illness in the United States: A systematic literature review. *Administration and Policy in Mental Health and Mental Health Services Research*, *40*(5), 384-399. http://doi.org/10.1007/s10488-012-0430-z

Semkovska, M., Bédard, M., Godbout, L., Limoge, F., & Stip, E. (2004). Assessment of executive dysfunction during activities of daily living in schizophrenia. *Schizophrenia Research*, *69*(2-3),

289-300.
https://doi.org/10.1016/j.schres.2003.07.005

Skoy, E. T., Eukel, H. N., Frenzel, J. E., Werremeyer, A., & McDaniel, B. (2016). Use of an auditory hallucination simulation to increase student pharmacist empathy for patients with mental illness. *American Journal of Pharmaceutical Education*, *80*(8), 142. doi: 10.5688/ajpe808142

World Health Organization. (2013). *Mental health action plan 2013-2020*. Retrieved from http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1