

**ONLINE ROLE-PLAY SIMULATIONS WITH EMOTIONALLY RESPONSIVE
AVATARS FOR THE EARLY DETECTION OF NATIVE YOUTH
PSYCHOLOGICAL DISTRESS,
INCLUDING DEPRESSION AND SUICIDAL IDEATION**

Jami Bartgis, PhD, and Glenn Albright, PhD

Abstract: Gatekeeper training is a widely used prevention method for training local community members to recognize the signs and symptoms of suicide and to support appropriate referrals for mental health. Training community “gatekeepers” is critical for increasing access to care for those youth who are in need, as youth often turn first to family and friends for help. This study examines the outcomes at pre-training, post-training, and 3-month follow-up for American Indian and Alaska Native (AI/AN) students, teachers, and faculty completing online role-play gatekeeper training simulations. The simulations use emotionally responsive avatars that have memory and personality, and respond like real students experiencing psychological distress in realistic situations. Data from 86 matched pairs showed significant increases in self-identified gatekeeper attitudes of preparedness, likelihood (behavioral intent) and self-efficacy to engage in helping behaviors (i.e., identifying those in psychological distress, talking to them, and supporting a referral for services) 3 months after training. This study provides promising evidence for use of online avatar-based training with AI/AN communities and has the potential to address many of the current challenges with gatekeeper training in Indian Country.

INTRODUCTION

Disparities in suicide rates for American Indian and Alaska Native (AI/AN) people have been reported for decades (Dizmang, Watson, May, & Bopp, 1974; Suicide Prevention Resource Center, 2013). While the U.S. Surgeon General’s Report identifies a number of community risk

factors, including violence, poverty, and racism/discrimination linked to mental health problems (Satcher, 2001a, b), AI/AN scholars have identified historical traumas as a unique risk and contributing factor for mental health disparities, including suicide (Brave Heart 2003; Brave Heart & DeBruyn, 1998; Whitbeck, Adams, Hoyt, & Chen, 2004). Further, there are many co-occurring illnesses and conditions that show similar disparities for AI/AN people, including depression, substance abuse, post-traumatic stress disorder (PTSD), and anxiety disorders (Evans-Campbell, Lindhorst, Huang, & Walters, 2006; Freedenthal, Stiffman, & Rubin, 2004; Rutman, Park, Castor, Taulii, & Forquera, 2008; Saluja et al., 2004; Simoni, Sehgal, & Walters, 2004; Spear, Crèvecoeur, Rawson, & Clark, 2007; Urban Indian Health Institute [UIHI], 2009). The limited resources for prevention, treatment, and recovery related to behavioral health conditions in Indian Country further exacerbate the current disparities (U.S. Commission on Civil Rights, 2003). Regardless of the etiology and systemic challenges in preventing suicide in AI/AN communities, culturally appropriate, sustainable, and affordable interventions are critical for addressing the current disparity as the devastating impact of suicide reverberates within families, communities, and the greater society.

Suicide Rates and Prevalence in Indian Country

AI/AN people represent only 1.7% of the U.S. population (U.S. Census Bureau, 2010), but represent the highest rates of suicide among youth in the U.S. The Centers for Disease Control and Prevention (CDC) report the suicide rate for AI/AN youth ages 15-34 years as 2.5 times higher than the national average for that age group (31 per 100,000 as compared to 12.2 per 100,000, respectively), and suicide is the second leading cause of death for AI/AN youth and young adults (CDC, 2012a). For young men, these rates are even higher. The National Violent Death Reporting System of the CDC indicates that AI/AN young men ages 15-19 years have a death rate of 25 per 100,000. For young men ages 20-24 years of age, the suicide rate jumps to 46 deaths per 100,000 people (CDC, 2012b).

In urban communities, where 71% of the entire AI/AN population now lives (Urban Indian Health Institute, 2013), suicidal ideations and attempts are as concerning as in rural/reservation communities. In a review of data from Youth Risk Behavior Survey, 10.9% of AI/AN urban youth reported a suicide attempt requiring hospitalization within the last year (UIHI, 2009). This rate is four times greater than the national average. In a community-based

study with urban AI youth, almost one fifth (18.6%) reported that they had thought about ending their lives within the last month (Pettingell et al., 2008). Given the extreme disparities, it is critical to identify and address unique risk factors when implementing programs and interventions for suicide prevention.

Historical Trauma as a Unique Risk Factor

According to the Surgeon General's Mental Health Supplement, American Indian and Alaska Native people are more likely to be living in poverty than any other ethnic minority group in the U.S. The Surgeon General identifies that the history and experience of Native people; including discrimination, oppression, and land loss; has contributed to poor social determinants of health that lead to high need for mental health care, although the report would not admit cause (Satcher, 2001a, b). While the U.S. recognizes the relationship between mental health challenges and historical losses and oppression for AI/AN people, direct links have been conceptualized and studied only recently (Brave Heart & DeBruyn, 1998; Duran, Duran, & Brave Heart, 1998; Whitbeck, Adams, et al., 2004; Whitbeck, Chen, Hoyt, & Adams, 2004; Whitbeck, Walls, Johnson, Morrisseau, & McDougall, 2009). In a groundbreaking article, Brave Heart and DeBruyn (1998) examined the similarities between Jewish Holocaust survivors and the Indigenous experience in the U.S. This paper proposed that the "social ills" facing AI/AN people were the result of chronic trauma, loss, and grief across generations of families and coined the terms *historical trauma* and *historical unresolved grief*. These terms have been used to describe the oppressions, grief, and loss that have resulted in the historical trauma effects seen today (Brave Heart, 2003). Preliminary studies aimed at measuring historical trauma have found that these losses are a part of the ongoing experiences of AI/AN people, and have been linked to current behavioral health issues (Whitbeck, Chen, et al., 2004; Whitbeck et al., 2009; Wiechelt, Gryczynski, Johnson, & Caldwell, 2012). Recognizing historical trauma as a unique risk factor is imperative for supporting suicide prevention efforts in AI/AN communities.

Gatekeeper Training Models

To address suicide in Indian Country, many communities are implementing gatekeeper training, which teaches local community members and professionals to identify warning signs and symptoms of psychological distress, including anxiety, post-traumatic stress, depression, and

suicidal ideation, and to ensure that individuals with suicidal ideation are linked to services. There are very few published studies on the impact of gatekeeper training for AI/AN populations (Muehlenkamp, Marrone, Gray, & Brown, 2009) but there are international studies examining use with Indigenous populations (see Clifford, Doran, & Tsey, 2013 for review). Research shows that gatekeeper training is effective in increasing knowledge and self-efficacy in participants, but few studies have examined changes in gatekeeper behaviors (Aseltine & DeMartino, 2004; Cross, Matthieu, Lezine, & Knox, 2010; Issac et al., 2009; Kalafat & Gagliano, 1996; Mann et al., 2005; Wyman et al., 2008). There is some research on the relationship of skill sets learned during gatekeeper training and utilization of these skills in the future (Albright, 2013; Albright, Goldman, Shockley, McDevitt, & Akabas, 2011; Cross et al., 2011), and some research showing that gatekeeper training reduces self-disclosed suicide attempts and rates (Aseltine & DeMartino, 2004; Eggert, Thompson, Randell, & Pike, 2002; Knox, Litts, Talcott, Feig, & Caire, 2003).

Commonly used gatekeeper training programs not examined in this study include Applied Suicide Intervention Skills Training (Mencuccini, 2008); Safe Talk (Tanney, Ramsay, Lang, & Kinzel, 2006); Question, Persuade, Refer (QPR; Wyman et al., 2008); LifeLines (Aseltine et al., 2004); and Signs of Suicide (Kalafat & Gagliano, 1996). All of these training programs, with the exception of Safe Talk, are included in the Substance Abuse and Mental Health Services Administration's National Registry of Evidence-based Programs and Practices (NREPP), showing effectiveness with various populations.

The Kognito Gatekeeper Simulations (KGSs) presented in this paper (described in detail below) are, to the authors' knowledge, the only online role-play modality found in the literature that has been shown to bring about changes in gatekeeper behaviors. Kognito has three online role-play training simulations in the NREPP. The online virtual KGS for high school educators has been shown to increase gatekeeper skills, attitudes, and intent to help students, as evidenced by increases in user preparedness, likelihood, and self-efficacy to identify signs of student psychological distress and to engage at-risk students in a conversation. As a result of the training, participants self-reported significant increases in the number of students in psychological distress they identified, discussed concerns with, and referred to the counseling center (Albright, 2013). Lastly, after participating in the KGS for college students, learners reported being more likely to identify signs of psychological distress within themselves and to self-refer into mental health support services (Albright, Himmel, Goldman, & Shockley 2013).

Additional models for suicide prevention include skills building for at-risk youth and youth/community camps that focus on developing a strong sense of cultural identity and the healing from historical traumas. Two evidence-based practices (EBPs), which are practices whose efficacy has been determined by comparing outcomes to those of a control group that did not receive the training, have been developed specifically for AI/AN youth. The American Indian Life Skills curriculum (AILS; formerly the Zuni Life Skills Curriculum) is a 30-week school-based course focused on reducing suicide risk and improving protective factors among AI adolescents ages 14 to 19 years (LaFromboise & Howard-Pitney, 1995). Project Venture was developed specifically for the prevention of substance abuse in AI/AN youth, but also has been used to address suicide (American Indian/Alaska Native National Resource Center for Substance Abuse and Mental Health Services, 2007; Sanchez-Way & Johnson, 2000). Two similar programs are being utilized in Indian Country but do not yet have enough data to be considered EBPs: the Gathering of Native Americans (GONA) and Native HOPE.

Use of Role-plays to Change Gatekeeper Behaviors

Face-to-face role-plays, which involve constructing situations that attempt to mimic real-life circumstances authentically (Ladousse, 1987; Ments, 1983), have long been used in a wide variety of training and educational contexts. Training participants typically are expected to behave in role-plays as they would in real life. In certain training environments it may be permissible for trainees to explore different behaviors and outcomes, as in the KGSs used in this study. In some cases, all participants are trainees, while in other cases, trained professionals perform certain roles, which leads to a more standardized and reliably reproduced experience to bring about mastery and deliberate practice (McGaghie, Siddall, Mazmanian, & Myers, 2009).

Despite the overall benefits of face-to-face role-plays, situational factors can influence their effectiveness. Performing in front of peers, instructors, and other role players can increase the likelihood a trainee will feel embarrassment or social evaluative threat (i.e., fear of being evaluated in a social setting, Nestel & Tierney, 2007; Stevenson & Sander, 2002). Both negative emotions in general and social evaluative threat in particular are known to impede cognitive performance (Baumeister, Twenge, & Nuss, 2002; Bolte, Goschke, & Kuhl, 2003; Kuhlmann, Piel, & Wolf, 2005; Lupien et al., 1997; Payne et al., 2006; 2007; Smallwood, Fitzgerald, Miles, & Phillips, 2009). Additionally, the cost of face-to-face role-plays with professionals can be a drawback, because professional instructors must be expertly trained and calibrated, especially if

gatekeepers from all segments of the community and various professions are being trained. Such training may result in the quality and consistency of the role-play to be reduced, as it may not be realistic across all settings and contexts. Further concerns emerge when the role-play requires a perspective or behavior very different from that of the trainees (e.g., a trainer who does not understand AI/AN historical trauma), and/or playing this role may make the trainee feel self-conscious. For these and other reasons, online simulations (such as those used in this study) using virtual role-plays that are highly replicable (high fidelity) where the trainee is interacting with computer-driven avatars or virtual humans rather than another person, often are preferable. This delivery method has the added advantage of being able to reach large numbers of geographically dispersed individuals in a cost-effective manner.

The majority of gatekeeper training programs do not employ active learning strategies, such as role-plays, to aid skill development (Cross et al., 2011). Researchers have begun to explore the use of role-plays during gatekeeper training to allow people the opportunity to practice the new skills in a safe environment. Cross et al. (2011) found that the use of role-plays or behavioral rehearsal in gatekeeper training resulted in higher overall gatekeeper skills immediately post-training and at 3-month follow-up, compared with trainees who did not participate in a role-play. However, there was significant reduction in both groups' scores at 3-month follow-up. Rubak and colleagues (2005) argue that role-plays must be designed to be a potent stimulant to the imagination and created with real-world scenarios. In other words, the potential to learn is limited if the simulation's narrative is not established, maintained, and relatable. Without proper guidance and context, behavioral rehearsals among gatekeeper training participants may not be effective and the learning process may be limited, which, in turn, may make it less likely that the learner will return for further training. Use of qualified trainers, as was done in Cross's (2011) face-to-face role-play simulations, may counteract this limitation, but can be problematic to scale up and costly to implement. More recently, a meta-analysis (Shockley & Albright, 2014) examined the impact of five online virtual role-play gatekeeper training simulations completed by 8,700 participants that included college educators, students, and K-12 school personnel. The effect sizes provided evidence that game-based role-play gatekeeper training simulations using virtual humans have an impact on preparedness, likelihood, self-efficacy, and gatekeeper behaviors that is sustained over time.

Current Study

The a priori aim of the current study was to examine the usefulness of the KGSs with AI/AN users for increasing preparedness, likelihood and self-efficacy in identifying the signs and symptoms of suicide and increasing gatekeeper behaviors. The authors hypothesized that the KGSs can be a useful tool for supporting suicide prevention in AI/AN communities and may have the potential to overcome cultural and geographical challenges in traditional gatekeeper training models.

About the Kognito Gatekeeper Training Simulations

Each KGS used in this study was built around a series of mini-conversation games in which users interact with intelligent, fully animated, and emotionally responsive student avatars that are experiencing psychological distress, such as anxiety, PTSD, depression, and thoughts of suicide (the avatar development process is described in the Methods section). These virtual humans possess their own personality and memory and adapt their behaviors to the learners' conversation decisions throughout the role-play to provide the player with a highly realistic, yet risk-free, experience of interacting with virtual students in psychological distress (see Illustration 1). The virtual students are multiethnic, which is helpful in trainings that are being used with individuals from many different ethnic backgrounds. This is the first publication on the effectiveness of these multicultural simulations with an AI/AN sample.

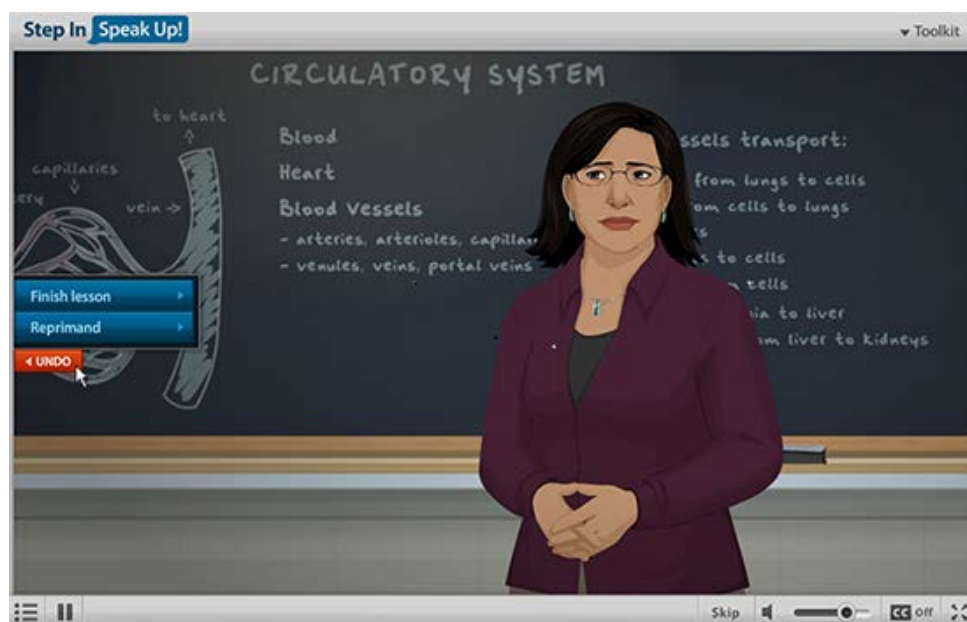
The online KGSs in this study were first found to be an effective tool for helping family members take an active role in motivating veterans with post-deployment stress to seek help at the Veterans Administration (Albright et al., 2011).

To facilitate gatekeeper communication skills, learners engage in virtual role-plays using Motivational Interviewing (MI; Lane & Rollnick, 2007) skills. All KGSs in this study teach learners to employ a set of MI techniques originally designed by clinical psychologists for use in counseling sessions with problem drinkers (Miller, 1983). MI is a goal-oriented, client-centered counseling approach designed to actively engage clients in identifying their problems and to increase their intrinsic motivation to change their behavior (Miller & Rollnick, 2012). Numerous meta-analyses have demonstrated the efficacy of MI in a variety of clinical contexts, including motivating individuals in primary care settings to address weight loss, smoking cessation, adolescent substance abuse, and problem drinking (Armstrong, Mottershead, Ronksley, Sigal,

Campbell, & Hemmelgarn, 2011; Burke, Arkowitz, & Menchola, 2003; Heckman, Egleston, & Hofmann 2010; Jensen et al., 2011; Lai, Cahill, Qin, & Tang, 2010; Lundahl & Burke, 2009; Rubak, Sandbæk, Lauritzen, & Christensen, 2005; VanBuskirk & Wetherell, 2014; Vasilaki, Hosier, & Cox, 2006). The KGSs cover four core MI skills: asking open-ended questions, providing affirmation, reflective listening (listening closely and periodically confirming comprehension), and summarizing client self-assessments. These techniques have been associated with effective therapy and are thought to encourage strong rapport and support behavioral change (Miller & Rollnick, 2012).

The KGSs also have a virtual coach that provides ongoing positive feedback when the learner employs effective conversation strategies and corrective feedback in response to poor conversation choices, such as being judgmental or diagnosing a problem. The avatar's verbal and nonverbal responses provide the learner with immediate feedback. To complete the KGSs used in this study, the learner must be able to identify the signs of psychological distress and successfully engage the student avatar in a conversation that results in an effective referral to support services. In Illustration 1, users assume the role of Ms. Yazzie and learn to manage a challenging conversation with a student being bullied. Users interact with the virtual character by selecting (clicking on) conversation tactics they would use to manage the conversation. These tactics change continually based on prior selections; thus, each learner can have a very different experience within the conversation.

Illustration 1
Avatar of Ms. Yazzie



METHOD

From April 2011 to December 2013, outcome data were collected from 9,000 participants completing one of four KGSs: (1) university and college faculty, (2) college students, (3) high school educators, and (4) middle school educators.

More than 10% of participants ($n = 983$) self-identified as AI/AN by responding to demographic questions that included a list of races. Of the 983 AI/AN participants, 86 matched pairs were drawn from 19 middle and high schools and 42 colleges that were dispersed geographically across 19 states, in both rural and urban settings. Matched pairs describe all individuals who completed pre-training, post-training, and 3-month follow-up surveys, allowing researchers to track changes in their attitudes, experiences, and behaviors over time. The reduction of 983 AI/AN participants to 86 matched pairs does not differ from that of other racial groups, as we generally have a 10% response rate for participants who have completed assessments at all timepoints. In addition, the 86 AI/AN matched pairs' outcome measures assessed in the present study (described later) were consistent with the total matched pairs' outcome measures of all races combined. Of the 86 AI/AN matched pair participants, 46.5% also indicated another race.

The four KGSs enabled us to collect data from five different races across a wide spectrum of educational settings (middle school through college) for gatekeeper skills aimed at identifying and helping youth in psychological distress (See Table 1). All KGSs were developed with input from nationally recognized subject matter experts who were dispersed geographically throughout the country and had racial, ethnic, and cultural diversity training; most had worked with AI/AN groups but it is important to note that the modules are not specific to AI/AN cultures. Additionally, hundreds of end users, including school personnel and higher education faculty, staff, and students, participated in beta testing. This input was part of a comprehensive iterative process involving every aspect of simulation development, ranging from accuracy of content, engaging and realistic storylines, virtual character development, and avatar verbal and nonverbal responses, to interactive activities that augment learning. All of the KGSs are listed in Section III of the Suicide Prevention Resource Center/American Federation of Suicide Prevention (SPRC/AFSP) Best Practices Registry (<http://www.sprc.org/bpr/section-i-evidence-based-programs>). KGS for College Students and KGS for High School Educators also are listed in the Substance Abuse and Mental Health Services Administration's National Registry for Evidence-Based Programs and Practices (<http://www.nrepp.samhsa.gov/SearchResultsNew.aspx?s=b&q=kognito>). Demos can be viewed at www.kognito.com/demos.

Table 1
Number of Users by Race and Type of KGS Completed

Race/Ethnicity^a	Faculty/Staff (N = 1505)	Students (N = 531)	High School Educators^b (N = 775)	Middle School Educators (N = 484)
American Indian or Alaska Native	2.7%	3.6%	1.3%	3.3%
White/Caucasian	87.6%	81.4%	65.9%	88.4%
Black or African American	9.2%	12.4%	3.5%	9.9%
Asian	4.3%	11.5%	1.5%	1.7%
Native Hawaiian or other Pacific Islander	0.5%	1.0%	0.6%	0.6%
Hispanic	6.2%	1.7%	15.2%	22.7%

^a Participants could choose more than one category. Hispanic is a separate item from race, as it is considered an ethnicity. ^b Some participants were not asked demographic questions

Participants were recruited mainly via e-mails sent by school administrators (principals, directors of counseling departments and student affairs), staff members at nonprofit organizations, and State Youth Suicide Prevention Coordinators. As part of the KGS adoption package, schools are provided a variety of media materials from the vendor, including flyers, sample e-mail language, and PowerPoints for face-to-face recruitment presentations, to augment outreach efforts.

We used Survey Monkey to collect pre-training, post-training, and 3-month follow-up data. All three surveys included the 11-item Gatekeeper Behavior Scale (GBS), a validated tool that predicts gatekeeper behaviors (Albright, Davidson, Goldman, Shockley, & Timmons-Mitchell, in press). Drawn from two major theories of motivation, the GBS is composed of three subscales that measure gatekeeper attitudes and beliefs by assessing: 1) how prepared participants are to engage in gatekeeper behaviors, including recognizing people in psychological distress or at risk of suicide, motivating them to seek help, and knowing appropriate mental health services to which to refer those in distress for help; 2) the likelihood or behavioral intent to engage in gatekeeper behaviors; and 3) how confident participants are in their ability to engage in gatekeeper behaviors (i.e., self-efficacy).

In the three surveys used in the college student KGS, including the GBS, items containing the word “student” were changed to “fellow student.” The only other difference between the KGS surveys is that the college student version of the post-training survey two additional questions: “As a result of this course I may:” 1) be more likely to recognize the signs of psychological stress in myself, and 2) seek help from the counseling center myself when

feeling stressed. Responses were collected via a 4-point Likert scale ranging from 1 = *Strongly disagree* to 4 = *Strongly agree*. See Appendix 1 for GBS assessment items. The GBS was validated using confirmatory factor analysis and had internal reliabilities of .95, .85, and .94, respectively.

In addition to the GBS, post-survey questions also measured participants' reactions to the training program, including an overall rating (on a 4-point Likert scale ranging from 1 = *Poor* to 4 = *Excellent*) and whether they would recommend the program to others. They also were asked specific means efficacy questions (on a 5-point Likert scale ranging from 1 = *To a very great extent* to 5 = *Not at all to a very little extent*). Means efficacy is defined as an individual's belief in the utility of the tools available for performing a job, and has been correlated with changes in behavior (Eden, Ganzach, Flumin-Granat, & Zigman, 2010). The means efficacy questions used in this study included measures of the training's 1) usefulness; 2) construction; 3) ease of use; 4) likelihood of helping the learner with students (or fellow students) in psychological distress, 5) basis on scenarios that are relevant; and 6) likelihood of aiding the learner in getting timely help to their students (or fellow students).

The post-training survey also included demographic items. Lastly, to determine impact on gatekeeper behaviors, participants reported on the pre-training survey and the 3-month follow-up survey the number of students that they: 1) were concerned about due to psychological distress, 2) approached to talk to about their concern, and 3) referred to mental health services during the past two academic months.

RESULTS

AI/AN participants in the present study were from 19 geographically dispersed U.S. states, with Texas (31%) and California (29%) accounting for the highest percentages of participants. Of the participants who completed the KGS for educators (not the college student training), 23.9% reported that they had received prior gatekeeper training in suicide prevention, and 17.1% had received training to become a mental health practitioner. Demographic information is seen in Table 2.

Table 2
Demographic Information for Each KGS

	Faculty/Staff (N=41)	Students (N=19)	High School Educators (N=10)	Middle School Educators (N=16)
<u>Gender</u>				
Male	21.9%	15.8%	40.0%	18.7%
Female	78.1%	84.2%	60.0%	81.3%
<u>Age (in years)</u>				
25 and younger	11.1%	89.5%	0.0%	6.2%
26-35	11.1%	0.0%	55.6%	12.5%
36-45	22.2%	10.5%	11.1%	43.8%
46-55	33.3%	0.0%	33.3%	18.7%
Older than 55	22.2%	0.0%	0.0%	18.8%
<u>Years of Working in Education or Student Rank</u>				
< 3	20.0%	37.0% Freshman	40.0%	12.5%
3-5	30.0%	10.5% Sophomore	20.0%	18.8%
6-10	20.0%	31.6% Junior	30.0%	31.2%
> 11	30.0%	15.8% Senior; 5.2% Graduate Student	10.0%	37.5%

In this study, all AI/AN participant data from the four KGSs were combined ($N = 86$) to provide enough power for a repeated-measures analysis of variance (ANOVA), which revealed that there was a significant increase in participants' preparedness to help students in psychological distress between pre-training, post-training, and 3-month follow-up scores, $F(1.87, 159.12) = 58.88, p < .015$ ($F_{crit} = 3.90$). Bonferroni's correction indicated that the post-training and 3-month follow-up scores were significantly higher than pre-training scores. Three-month follow-up scores were significantly lower than post-training scores, but were still significantly higher than pre-training scores, indicating some reduction in preparedness over time. See Table 3 and Figure 1 for comparisons of preparedness at each timepoint.

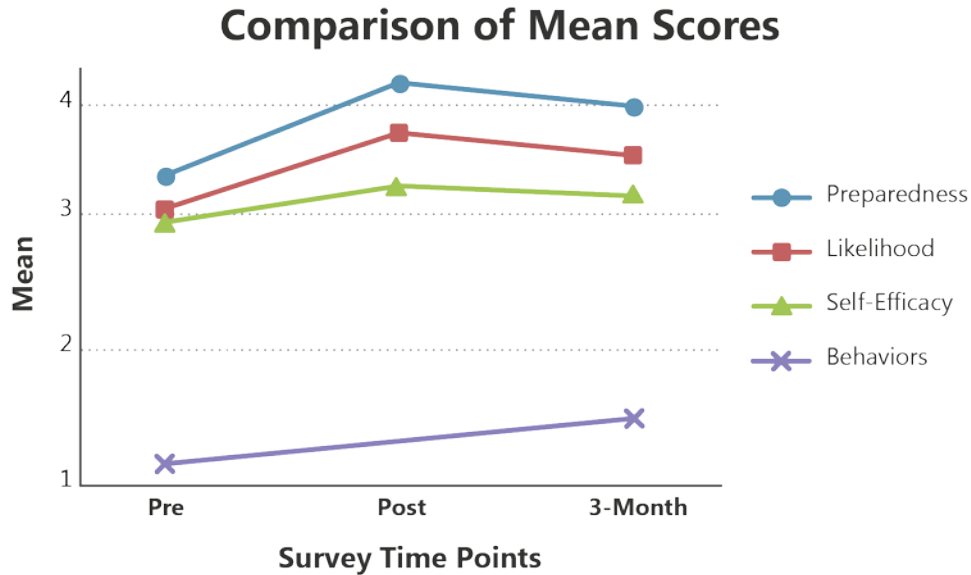
A second repeated-measures ANOVA showed that there was a significant increase in participants' likelihood to help students in psychological distress between pre-training, post-training, and 3-month follow-up scores, $F(1.89, 137.62) = 24.35, p < .05$ ($F_{crit} = 3.910$). Bonferroni's correction indicated that the post-training and 3-month follow-up scores remained significantly higher than pre-training scores. There was no significant decrease in 3-month follow-up scores when compared to post-training scores.

Table 3
Comparison of Gatekeeper Behavior Scale Measures Over Time

Measure	Pre-Training M (SD)	Post-Training M (SD)	3 Month Follow-up M (SD)	Effect Size n ²
Preparedness (n=86)	3.40 (.74)	4.17 (.63)	3.97 (.62)	.41
Likelihood (n=74)	3.08 (.71)	3.64 (.44)	3.49 (.55)	.25
Self-Efficacy (n=84)	2.92 (.58)	3.27 (.72)	3.17 (.49)	.10
Behaviors (n=74)	1.15 (1.74)	-	1.49 (2.16)	.06 ^a

^a effect size calculated using r^2

Figure 1
Comparison of Gatekeeper Behavior Scale Measures Over Time



A third repeated-measures ANOVA showed that there was a significant increase between pre-training, post-training, and 3-month follow-up scores of participants' self-efficacy to help students in psychological distress, $F(2,166) = 9.64, p < .05$ ($F_{crit} = 3.05$). Bonferroni's correction indicated that the post-training and 3-month follow-up scores were significantly higher than pre-training scores. There were no differences between post-training and 3-month follow-up scores.

To summarize, the data show significant increases in all three gatekeeper variables of preparedness, likelihood, and self-efficacy from pre-training levels to 3-month follow-up. At 3-month follow-up, the variables of likelihood and self-efficacy remained significantly higher when compared to post-training scores, whereas preparedness significantly declined, but remained significantly higher when compared to pre-training scores.

We found a significant increase in the mean number of actual gatekeeper behaviors reported at 3-month follow-up ($M = 1.49$, $SD = 2.16$) compared with pre-training reports ($M = 1.15$, $SD = 1.74$) of the same behaviors, $t(73) = 2.03$, $p = .046$, two-tailed. Preparedness had a large effect of .41. Likelihood and self-efficacy had medium to large effects of .25 and .10, respectively. Behaviors had a small to medium effect of .06.

All measures of means efficacy were high for the following statements: the training was 1) a useful tool, 2) well constructed, 3) easy to use, 4) likely to help the learner with a student in psychological distress, 5) based on scenarios that are relevant, and 6) likely to aid the learner in getting timely help for the student (see Table 4 for results).

Table 4
Means Efficacy

Please indicate to what extent you think that the course is:	To a Very Great Extent	To a Great Extent	To Some Extent	To a Little Extent	Not at All/ To a Very Little Extent
A useful tool	29.8%	48.8%	20.2%	1.2%	0.0%
Well constructed	31.3%	59.0%	9.6%	0.0%	0.0%
Easy to Use	47.1%	43.5%	5.9%	2.4%	1.2%
Likely to help you with students in psychological distress	36.0%	46.7%	16.0%	1.3%	0.0%
Based on scenarios that are relevant to you and your students	38.5%	36.9%	20.0%	4.6%	0.0%
Aid you in getting timely help to your students	28.6%	41.7%	27.4%	2.4%	0.0%

Reaction data also were high, with 100% of participants rating their respective course good to excellent and 96.5% agreeing or strongly agreeing that all faculty, staff, administrators, educators, and students in their academic institution should take the course. Ninety-five percent would recommend the course to a colleague or fellow student.

Lastly, for those college/university students who completed the training, 75% agreed or strongly agreed with the statement “As a result of this course I may be more likely to recognize the signs of psychological stress in myself.” Ninety percent either agreed or strongly agreed with the statement “As a result of the course I may seek help from the counseling center myself when feeling stressed.”

DISCUSSION

Our findings support the use of KGSs with AI/AN participants, and highlight some important implications for the field of gatekeeper training. First, KGSs demonstrated usefulness for educating AI/AN participants who are not formally trained in mental health. Given the current disparities in suicide rates, these training simulations are important tools for preparing teachers and students to identify the signs and symptoms of suicide and make appropriate links to referrals.

Second, the study found benefits for those who had prior gatekeeper training, perhaps because the practice component includes MI skills training and virtual role-play conversations coupled with personalized feedback. These findings indicate that periodic training over time might be important to maintain a person's feelings of preparedness. In much the same way that individuals need to be refreshed on a timely basis to maintain Cardiopulmonary Resuscitation (CPR) skills, gatekeepers should refresh their skills to maintain preparedness. Fortunately, the KGSs are available online 24/7, which allows for easy access to refresh one's skills.

The study found that the course not only seems to increase participants' ability to help others at risk, but also may be useful in supporting at-risk participants in seeking care. Therefore, the KGSs may serve as both training for gatekeepers and support for personal help-seeking behavior for suicide prevention.

The KGSs offer a number of unique advantages. First, the program is sustainable once it has been developed. Given the high workforce turnover in many AI/AN communities, an online training simulation is amenable to address both training of new staff and periodic retraining to maintain and even increase the number of people with gatekeeper skills. While the training simulations have not yet been fully adapted for AI communities (beyond the development of the AI avatar teacher, Ms. Yazzie), such adaptation could be accomplished with the current technology, which could lead to customized mobile applications to address the specific needs of AI/AN communities.

Second, the online training simulations provide realistic role-plays to support MI skills building with continual feedback in a friendly, nonjudgmental environment. The avatar does not judge participants. Performance in the role-playing tasks remains confidential. These factors allow for skills building at one's own pace and without concern for making mistakes in a public forum; therefore, they may be particularly useful with AI/AN populations. Being the center of attention or receiving individual recognition is inconsistent with the collective worldview of many AI/AN people, and may interfere with learning for some (Pewewardy, 2002).

Third, the KGSs have high fidelity. Fidelity refers to the quality of delivery across all trainers so that there is a high standardization of the learning experience, including accurate knowledge dissemination, realistic and engaging role-plays, and appropriate feedback. As the data indicate, the fidelity of the KGSs is very highly standardized and the simulations can be replicated (due, in part, to the comprehensive and interactive development process involving subject matter experts and a variety of end users), whereas face-to-face training depends on the skill and experience of each individual trainer and her/his knowledge of the population being trained, which can compromise the learning experience.

Fourth, the training course can be tailored and adapted to meet the cultural and geographical needs of AI/AN communities. Once participants are trained as gatekeepers, they must know where to refer individuals about whom they are concerned. Without this knowledge, people are not likely to engage in gatekeeper behaviors. The KGSs address this concern by providing participants with local resources they can use to link those at risk to services. KGSs are available online and stream easily, so AI/AN learners who are geographically dispersed in rural communities can receive the training as long as they have Internet access. Finally, the simulations can be adapted to meet the unique cultural nuances of AI/AN communities regarding historical trauma and other culturally specific issues. For example, there is heterogeneity among tribes regarding cultural factors (e.g., belief about death), and the KGSs allow for cultural tailoring of content and messages (Novins, Beals, Roberts, & Manson, 1999).

Lastly, the authors propose that the KGSs could support increased access to and utilization of gatekeeper training across Indian Country in a number of ways. Many AI/ANs fear or mistrust Western institutions, including health care systems, because of governmental policies that have created serious losses and disparities for tribal communities and because Western models of care that do not always fit the culture. This fear and mistrust can impact help-seeking behavior significantly (Goodkind et al., 2011; Guadagnolo, Cina, Koop, Brunette, & Petereit, 2011). The American Indian Service Utilization, Psychiatric Epidemiology, Risk, and Protective Factors Project, one of the largest psychiatric sample studies ever conducted with an AI/AN sample, highlighted help-seeking behavior of AI/AN people. The study found that fewer than half of AIs with depression, anxiety, or a substance use disorder actually sought out treatment from a mental health care professional in their lifetime (Beals et al., 2005). Studies also have found that AI/AN youth report stigma, embarrassment, or shame related to help seeking for suicidal ideation (Freedenthal & Stiffman, 2007). Many AI/AN people avoid mental health care

in smaller, remote communities due to concerns about confidentiality (De Coteau, Anderson, & Hope, 2006). Further, health services for AI/AN people are extremely underfunded (U.S. Commission on Civil Rights, 2003) and the Indian health system (Indian Health Services, tribally operated services, and urban Indian organizations) suffer greatly from workforce shortages in mental health and turnover of highly stressed staff members (Kim, 2000; Sebelius, 2011). These findings demonstrate the challenges for AI/AN people attempting to access care and the importance of interventions that are nonthreatening, private, and sustainable in the community. The KGSs may address many of these access and utilization challenges, but more research is needed to examine their efficiency and cost effectiveness for Indian health systems.

There also are disadvantages to this training model. One major disadvantage is the upfront cost required to develop these training simulations, for they require an extensive needs analysis, comprehensive instructional design planning, content and script production, narration by professional voice actors, ongoing feedback from subject matter experts and end users, and beta testing. From start to finish a 6-month effort from a team of professionals is required. However, once the simulations are developed, the training is sustainable, unlike face-to-face gatekeeper models. Another disadvantage is that, unlike face-to-face training, users are not afforded the advantages of interacting with a skilled live trainer. Culturally sensitive skilled trainers are ideal, but are not always practical. Lastly, even though this training has low bandwidth requirements, not all users may be able to access it due to lack of adequate Internet connectivity. However, the simulations are being migrated to mobile apps and DVDs, providing more access points.

Study Limitations

As in many field studies, it was difficult to recruit subjects for experimental and control groups through true random assignment. Thus, one limitation of the current study is that it utilized a quasi-experimental, within-group design that did not include a control group, and that examined changes within individuals over time as opposed to comparison with a control group. Additionally, to increase sample size, we combined data from AI/AN participants who completed one of four different training simulations. Although these training sessions exposed participants to the same learning models and gatekeeper skills, ideally the study would have had a sufficient sample size to evaluate the impact of each KGS individually.

Another limitation is that out of 983 participants who identified themselves as AI/AN, only 86 were matched pairs which is defined as those who completed the pre-survey, simulation, post-survey and 3-month follow-up survey. Even though these response rates are not different from other races, it may indicate that matched paired participants could be more motivated and disproportionately predisposed to assuming a “helper” role. This possible confound is present in most gatekeeper training research and is especially true for face-to-face programs, in which the learner must be at a physical location at a specific time/date. In addition, data collection occurred over a 2-1/2 year period, so we cannot rule out potential threats to internal validity that were outside the control of the study.

Finally, changes in actual gatekeeper referrals to mental health support services were self-reported due to a number of important concerns, primarily issues surrounding privacy of data. Additionally, gatekeeper behaviors were reported over two timepoints: the first covering the prior two academic months before completing the simulation and the second encompassing months two and three after completing the simulation. This represents a possible confound as the number of students that a participant had the opportunity to interact with was not controlled for. For example, a teacher may interact with more students across semesters, resulting in increased number of at risk youth identified and referred to care.

Future Research

While this study provides promising evidence for the use of virtual human or avatar technology to increase gatekeeper skills and behaviors for AI/AN people, more research is needed to determine the effectiveness of this training course. Future research will seek to increase the AI/AN sample size for each KGS, so the programs can be evaluated individually. Further, research is needed to examine the effectiveness of avatar training compared with face-to-face gatekeeper programs. Finally, it is important to note that the avatar program used in this study has not yet been fully adapted to AI/AN cultures. Given that the KGSs can be customized, it is possible to develop gatekeeper programs by working with tribal elders and cultural leaders to integrate the wisdom and experience of traditional healing, further addressing the stigma associated with seeking and receiving mental health treatment. Future research conducted in partnership with tribes and/or urban Indian health organizations could be beneficial for implementing the simulations and studying effectiveness with a closer cultural lens.

REFERENCES

- American Indian/Alaska Native National Resource Center for Substance Abuse and Mental Health Services (2007). *Helping our people endure: Native youth training manual*. Portland, OR: Oregon Health & Sciences University. Retrieved from http://www.oneskycenter.org/wp-content/uploads/2014/03/NativeHopeYouthTrainingManual_000.pdf
- Albright, G. (2013, November). *Building the capacity of educators to support primary prevention and early intervention goals with youth at risk for psychological distress*. Paper presented at the annual meeting of the American Public Health Association, Boston.
- Albright, G., Davidson, J, Goldman, R, Shockley, K. & Timmons-Mitchell, J. (in press). Development and validation of the gatekeeper behavior scale: A tool to assess suicide prevention gatekeeper trainings. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*.
- Albright, G., Goldman, R., Shockley, K. M., McDevitt, F., & Akabas, S. (2011). Using an avatar-based simulation to train families to motivate veterans with post-deployment stress to seek help at the VA. *Games for Health: Research, Development, and Clinical Applications*, 1(1), 21-28. <http://dx.doi.org/10.1089/g4h.2011.0003>
- Albright, G., Himmel, J., Goldman, R., & Shockley, K. (2013). *At-risk for university students: An on-line interactive gatekeeper training simulation for identification and referral of students exhibiting signs of psychological distress*. Rockville, MD: Substance Abuse and Mental Health Services Administration, National Registry of Evidence Based Programs and Practices. Retrieved from <http://www.nrepp.samhsa.gov/ViewIntervention.aspx?id=303>
- Armstrong, M. J., Mottershead, T. A., Ronksley, P. E., Sigal, R. J., Campbell, T. S., & Hemmelgarn, B. R. (2011). *Motivational interviewing to improve weight loss in overweight and/or obese patients: a systematic review and meta-analysis of randomized controlled trials*. *Obesity reviews*, 12(9), 709-723. <http://dx.doi.org/10.1111/j.1467-789X.2011.00892.x>
- Aseltine Jr, R. H., & DeMartino, R. (2004). An outcome evaluation of the SOS Suicide Prevention Program. *American Journal of Public Health*, 94(3), 446-51. <http://dx.doi.org/10.2105/AJPH.94.3.446>
- Baumeister, R. F., Twenge, J. M., & Nuss, C. K. (2002). Effects of social exclusion on cognitive processes: Anticipated aloneness reduces intelligent thought. *Journal of Personality and Social Psychology*, 83(4), 817. <http://dx.doi.org/10.1037/0022-3514.83.4.817>
- Beals, J., Novins, D. K., Whitesell, N. R., Spicer, P., Mitchell, C. M., & Manson, S. M. (2005). Prevalence of mental disorders and utilization of mental health services in two American Indian reservation populations: Mental health disparities in a national context. *American Journal of Psychiatry*, 162(9), 1723-1732. <http://dx.doi.org/10.1176/appi.ajp.162.9.1713>

- Bolte, A., Goschke, T., & Kuhl, J. (2003). Emotion and intuition effects of positive and negative mood on implicit judgments of semantic coherence. *Psychological Science, 14*(5), 416-421. <http://dx.doi.org/10.1111/1467-9280.01456>
- Brave Heart, M.Y.H. (2003). The historical trauma response among natives and its relationship with substance abuse: A Lakota illustration. *Journal of Psychoactive Drugs, 35*(1), 7-13. <http://dx.doi.org/10.1080/02791072.2003.10399988>
- Brave Heart, M.Y.H., & DeBruyn, L. M. (1998). The American Indian holocaust: Healing historical unresolved grief. *American Indian and Alaska Native Mental Health Research, 8*(2), 56-78. <http://dx.doi.org/10.5820/aian.0802.1998.60>
- Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology, 71*(5), 843-861. <http://dx.doi.org/10.1037/0022-006X.71.5.843>
- Centers for Disease Control and Prevention (CDC). (2012a). *Suicide: Facts at a glance*. Atlanta, GA: Author. Retrieved from <http://www.cdc.gov/violenceprevention/pdf/suicide-datasheet-a.pdf>
- CDC. (2012b). *Web-based injury statistics query and reporting system [WISQRS]*. Atlanta, GA: Author. Retrieved from <http://www.cdc.gov/nchs/hus/american.htm>
- Clifford, A.C., Doran, C.M., & Tsey, K. (2013). A systematic review of suicide prevention interventions targeting Indigenous peoples in Australia, United States, Canada, and New Zealand. *BMC Public Health, 13*, 463-474. <http://dx.doi.org/10.1186/1471-2458-13-463>
- Cross, W., Matthieu, M. M., Lezine, D., & Knox, K. L. (2010). Does a brief suicide prevention gatekeeper training program enhance observed skills? *The Journal of Crisis Intervention and Suicide Prevention, 31*(3), 149-159. <http://dx.doi.org/10.1027/0227-5910/a000014>
- Cross, W. F., Seaburn, D., Gibbs, D., Schmeelk-Cone, K., White, A. M., & Caine, E. D. (2011). Does practice make perfect? A randomized control trial of behavioral rehearsal on suicide prevention gatekeeper skills. *The Journal of Primary Prevention, 32*(3-4), 195-211. <http://dx.doi.org/10.1007/s10935-011-0250-z>
- De Coteau, T., Anderson, J., & Hope, D. (2006). Adapting manualized treatments: Treating anxiety disorders among Native Americans. *Cognitive and Behavioral Practice, 13*(4), 304-309. <http://dx.doi.org/10.1016/j.cbpra.2006.04.012>
- Dizman, L. H., Watson, J., May, P. A., & Bopp, J. (1974). Adolescent suicide at an Indian reservation. *American Journal of Orthopsychiatry, 44*(1), 43-49. <http://dx.doi.org/10.1111/j.1939-0025.1974.tb00867.x>
- Duran, B., Duran, E., & Brave Heart, M. Y. H. (1998). Native Americans and the trauma of history. In R. Thorton (Ed.), *Studying Native America: Problems and prospects* (pp. 60-78). Madison, WI: University of Wisconsin Press.

- Eden, D., Ganzach, Y., Flumin-Granat, R., & Zigman, T. (2010). Augmenting means efficacy to boost performance: Two field experiments. *Journal of Management*, 36(3), 687-713. <http://dx.doi.org/10.1177/0149206308321553>
- Eggert, L. L., Thompson, E. A., Randell, B. P., & Pike, K. C. (2002). Preliminary effects of brief school-based prevention approaches for reducing youth suicide—Risk behaviors, depression, and drug involvement. *Journal of Child and Adolescent Psychiatric Nursing*, 15(2), 48-64. <http://dx.doi.org/10.1111/j.1744-6171.2002.tb00326.x>
- Evans-Campbell, T., Lindhorst, T., Huang, B., & Walters, K. (2006). Interpersonal violence in the lives of urban American Indian and Alaska Native women: Implications for health, mental health, and help-seeking. *American Journal of Public Health*, 96(8), 1416-1422. <http://dx.doi.org/10.2105/AJPH.2004.054213>
- Freedenthal, S., & Stiffman, A. R. (2007). “They might think I was crazy”: Young American Indians’ reasons for not seeking help when suicidal. *Journal of Adolescent Research*, 22(1), 58-77. <http://dx.doi.org/10.1177/0743558406295969>
- Freedenthal, S., & Stiffman, S., & Rubin, A. (2004). Suicidal behavior in urban American Indian Adolescents: A comparison with reservation youth in a Southwest state. *Suicide and Life-Threatening Behavior*, 34(2), 160-171. <http://dx.doi.org/10.1521/suli.34.2.160.32789/full>
- Goodkind, J. R., Ross-Toledo, K., John, S., Hall, J. L., Ross, L., Freeland, L., & Lee, C. (2011). Rebuilding trust: A community, multiagency, state, and university partnership to improve behavioral health care for American Indian youth, their families, and communities. *Journal of Community Psychology*, 39(4), 452-477. <http://dx.doi.org/10.1002/jcop.20446>
- Guadagnolo, B. A., Cina, K., Koop, D., Brunette, D., & Petereit, D. G. (2011). A pre-post survey analysis of satisfaction with health care and medical mistrust after patient navigation for American Indian cancer patients. *Journal of Health Care for the Poor and Underserved*, 22(4), 1331. <http://dx.doi.org/10.1353/hpu.2011.0115>
- Heckman, C.J., Egleston, B.L., & Hofmann, M.T. (2010). Efficacy of motivational interviewing for smoking cessation: A systematic review and meta-analysis. *Tobacco Control*, 19, 410-416. <http://dx.doi.org/10.1136/tc.2009.033175>
- Isaac, M., Elias, B., Katz, L. Y., Belik, S. L., Deane, F. P., Enns, M. W., & Sareen, J. (2009). Gatekeeper training as a preventative intervention for suicide: A systematic review. *Canadian Journal of Psychiatry*, 54(4), 260-8. Retrieved from <http://publications.cpa-apc.org/browse/sections/0>
- Jensen, C. D., Cushing, C. C., Aylward, B. S., Craig, J. T., Sorell, D. M., & Steele, R. G. (2011). Effectiveness of motivational interviewing interventions for adolescent substance use behavior change: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 79(4), 433. <http://dx.doi.org/10.1037/a0023992>

- Kalafat, J., & Gagliano, C. (1996). The use of simulations to assess the impact of an adolescent suicide response curriculum. *Suicide and Life-Threatening Behavior*, 26(4), 359-364. <http://dx.doi.org/10.1111/j.1943-278X.1996.tb00839.x/abstract>
- Kang, S. H., & Gratch, J. (2010). Virtual humans elicit socially anxious interactants' verbal self-disclosure. *Computer Animation and Virtual Worlds*, 21(34), 473-482. <http://dx.doi.org/10.1002/cav.369>
- Kim, C. (2000). Recruitment and retention in the Navajo Area Indian Health Service. *Western Journal of Medicine*, 173(4), 240-243. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/journals/183/>
- Knox, K. L., Litts, D. A., Talcott, G. W., Feig, J. C., & Caine, E. D. (2003). Risk of suicide and related adverse outcomes after exposure to a suicide prevention program in the US Air Force: Cohort study. *BMJ*, 327(7428), 1376. <http://dx.doi.org/10.1136/bmj.327.7428.1376>
- Kuhlmann, S., Piel, M. & Wolf, O.T. (2005). Impaired memory retrieval after psychosocial stress in healthy young men. *Journal of Neuroscience*, 25, 2977-2982. <http://dx.doi.org/10.1523/JNEUROSCI.5139-04.2005>
- Ladousse, G.P. (1987). *Role play*. New York: Oxford University Press.
- LaFromboise, T., & Howard-Pitney, B. (1995). The Zuni Life Skills Development Curriculum: Description and evaluation of a suicide prevention program. *Journal of Counseling Psychology*, 42(4), 479-486. <http://dx.doi.org/10.1037/0022-0167.42.4.479>
- Lai, D.T., Cahill, K., Qin, Y., & Tang, J.L. (2010). *Motivational interviewing for smoking cessation*. *Cochrane Database of Systematic Reviews*, CD006936. <http://dx.doi.org/10.1002/14651858.CD006936.pub2>
- Lane, C., & Rollnick, S. (2007). The use of simulated patients and role-play in communication skills training: A review of the literature to August 2005. *Patient Education and Counseling Journal*, 67, 13-20. <http://dx.doi.org/10.1016/j.pec.2007.02.011>
- Lundahl, B., & Burke, B. L. (2009). The effectiveness and applicability of motivational interviewing: A practice-friendly review of four meta-analyses. *Journal of Clinical Psychology*, 65(11), 1232-1245. <http://dx.doi.org/10.1002/jclp.20638>
- Lupien, S.J., Gaudreau, S., Tchiteya, B.M., Maheu, F., Sharma, S., Nair, N.P., . . . Meaney, M.J. (1997). Stress-induced declarative memory impairment in healthy elderly subjects: Relationship to cortisol reactivity. *Clinical Endocrinology & Metabolism*, 82(7):2070-2075. <http://dx.doi.org/10.1210/jcem.82.7.4075>
- Mann, J. J., Apter, A., Bertolote, J., Beautrais, A., Currier, D., Haas, A., & Hendin, H. (2005). Suicide prevention strategies: A systematic review. *Journal of the American Medical Association*, 294(16), 2064-2074. <http://dx.doi.org/10.1001/jama.294.16.2064>

- McGaghie, W.C., Siddall, V.J., Mazmanian, P.E., & Myers, J. (2009). Lessons for continuing medical education from simulation research in undergraduate and graduate medical education: Effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines. *Chest*, 135, 62S-68S. <http://dx.doi.org/10.1378/chest.08-2521>
- Mencuccini, C. (2008). Breaking the silence of suicide. *Mental Health Weekly*, 18(41), 5-6. Retrieved from <http://www.mentalhealthweeklynews.com/>
- Ments, M. V. (1983). *The effective use of role-play: A handbook for teachers and trainers*. London: NP Cogan Page.
- Miller, W. R. (1983). Motivational interviewing with problem drinkers. *Behavioral Psychotherapy*, 11(2), 147-172. <http://dx.doi.org/10.1017/S0141347300006583>
- Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing: Helping people change*. New York: Guilford Press.
- Muehlenkamp, J.J., Marrone, S., Gray, J.S., & Brown, D.L. (2009). A college suicide prevention model for American Indian students. *Professional Psychology: Research and Practices*, 40(2), 134-140. <http://dx.doi.org/10.1037/a0013253>
- Nestel, D., & Tierney, T. (2007). Role-play for medical students learning about communication: Guidelines for maximizing benefits. *BMC Medical Education*, 7(1), 3-11. <http://dx.doi.org/10.1186/1472-6920-7-3>
- Novins, D. K., Beals, J., Roberts, R. E., & Manson, S. M. (1999). Factors associated with suicide ideation among American Indian adolescents: Does culture matter? *Suicide and Life-Threatening Behavior*, 29, 332-346. <http://dx.doi.org/10.1111/j.1943-278X.1999.tb00528.x/abstract>
- Payne, J., Jackson, E., Ryan, L., Hoscheidt, S., Jacobs, J., & Nadel, L. (2006). The impact of stress on neutral and emotional aspects of episodic memory. *Memory*, 14(1), 1-16. <http://dx.doi.org/10.1080/09658210500139176>
- Pettingell, S. L., Bearinger, L. H., Skay, C. L., Resnick, M. D., Potthoff, S. J., & Eichhorn, J. (2008). Protecting urban American Indian young people from suicide. *American Journal of Health Behavior*, 32(5), 465-476. <http://dx.doi.org/10.5993/AJHB.32.5.2>
- Pewewardy, C. (2002). Learning styles of American Indian/Alaska Native students: A review of the literature and implications for practice. *Journal of American Indian Education*, 41(3), 22-56. Retrieved from <https://jaie.asu.edu/>
- Rubak, S., Sandbæk, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: A systematic review and meta-analysis. *British Journal of General Practice*, 55(513), 305-312. Retrieved from <http://bjgp.org>

- Rutman, S., Park, A., Castor, M., Tualii, M., & Forquera, R. (2008). Urban American Indian and Alaska Native youth: Youth Risk Behavior Survey 1997-2003. *Maternal and Child Health Journal*, 12(1), 76-81. <http://dx.doi.org/10.1007/s10995-008-0351-3>
- Saluja, G., Iachan, R., Scheidt, P. C., Overpeck, M. D., Sun, W., & Giedd, J. N. (2004). Prevalence of and risk factors for depressive symptoms among young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 158(8), 760-765. <http://dx.doi.org/10.1001/archpedi.158.8.760>
- Sanchez-Way, R., & Johnson, S. (2000). *Cultural practices in American Indian prevention programs. juvenile justice - challenges facing American Indian youth: On the front lines with senator Ben Nighthorse Campbell*. Retrieved from https://www.ncjrs.gov/html/ojjdp/jjnl_2000_12/cult.html
- Satcher, D. (2001a). *Mental health: Culture, race, and ethnicity—A supplement to Mental Health: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. Retrieved from <http://health-equity.pitt.edu/866/1/sma-01-3613.pdf>
- Satcher, D. (2001b). *Youth violence: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Office of the Surgeon General, National Center for Injury Prevention and Control, National Institute of Mental Health, Center for Mental Health Services. Retrieved from <http://www.ncbi.nlm.nih.gov/books/NBK44294/>
- Sebelius, K. (2011). *Report to Congress. Approaches for identifying, collecting, and evaluating data on health care disparities in Medicaid and CHIP*. Washington, DC: Department of Health and Human Services. Retrieved from <https://www.medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/downloads/4302b-rtc.pdf>
- Shockley, K., & Albright, G. (2014, April). *Development and validation of a scale to assess the impact of gatekeeper training programs*. Paper presented at the annual meeting of the American Association of Suicidology, Los Angeles.
- Shockley, K., & Albright, G. (2014, April). *Building suicide prevention skills using virtual Humans: A meta-analysis*. Paper presented at the annual meeting of the American Association of Suicidology, Los Angeles.
- Simoni, J. M., Sehgal, S., & Walters, K. L. (2004). Triangle of risk: Urban American Indian Women's sexual trauma, injection drug use, and HIV sexual risk behaviors. *AIDS and Behavior*, 8(1), 33-45. <http://dx.doi.org/10.1023/B:AIBE.0000017524.40093.6b>
- Smallwood, J., Fitzgerald, A., Miles, L. K., & Phillips, L. H. (2009). Shifting moods, wandering minds: Negative moods lead the mind to wander. *Emotion*, 9(2), 271-276. <http://dx.doi.org/10.1037/a0014855>
- Spear, S., Crèvecoeur, D. A., Rawson, R. A., & Clark, R. (2007). The rise in methamphetamine use among American Indians in Los Angeles County. *American Indian and Alaska Native Mental Health Research* 14(2). <http://dx.doi.org/10.5820/aian.1402.2007.1>

- Stevenson, K., & Sander, P. (2002). Medical students are from Mars - business and psychology students are from Venus - University teachers are from Pluto? *Medical Teacher*, 24(1), 27-31. <http://dx.doi.org/10.1080/00034980120103441>
- Suicide Prevention Resource Center. (2013). *Suicide among racial/ethnic populations in the U.S.: American Indians/Alaska/ Natives*. Waltham, MA: Education Development Center, Inc. Retrieved from [http://www.sprc.org/sites/sprc.org/files/library/AI AN%20Sheet%20Aug%2028%202013%20Final.pdf](http://www.sprc.org/sites/sprc.org/files/library/AI_AN%20Sheet%20Aug%2028%202013%20Final.pdf)
- Tanney, B. L., Ramsay, R. F., Lang, W. A., & Kinzel, T. A. (2006). Safetalk: Development of brief skills training in suicide intervention. *Psychiatria Danubina*, 18(Suppl. 1), 94-95. Retrieved from http://www.hdbp.org/psychiatria_danubina/about.html
- U.S. Census Bureau. (2010). *The American Indian and Alaska Native population*. Washington, DC: Author. Retrieved from <https://www.census.gov/prod/cen2010/briefs/c2010br-10.pdf>
- U.S. Commission on Civil Rights. Office of Civil Rights Evaluation. (2003). *A quiet crisis: Federal funding and unmet needs in Indian Country. A Report of the U.S. Commission on Civil Rights, Office of Civil Rights*. Washington, DC: Author.
- Urban Indian Health Institute (UIHI). (2009). *Urban American Indian and Alaska Native youth: An analysis of select national data sources*. Seattle, WA: Retrieved from http://www.uihi.org/wp-content/uploads/2009/03/youthreport_updatemar091.pdf
- UIHI. (2013). *U.S. Census marks increase in urban American Indians and Alaska Natives*. Seattle, WA: Author. Retrieved from <http://www.uihi.org/wp-content/uploads/2013/09/Broadcast-Census-Number-FINAL-v2.pdf>
- VanBuskirk, K. A., & Wetherell, J. L. (2014). Motivational interviewing with primary care populations: A systematic review and meta-analysis. *Journal of Behavioral Medicine*, 37(4), 768-80. <http://dx.doi.org/10.1007/s10865-013-9527-4>
- Vasilaki, E. I., Hosier, S. G., & Cox, W. M. (2006). The efficacy of motivational interviewing as a brief intervention for excessive drinking: A meta-analytic review. *Alcohol and Alcoholism*, 41(3), 328-335. <http://dx.doi.org/10.1093/alcalc/agl016>
- Whitbeck, L. B., Adams, G. W., Hoyt, D. R., & Chen, X. (2004). Conceptualizing and measuring historical trauma among American Indian people. *American Journal of Community Psychology*, 33, 119-130. <http://dx.doi.org/10.1023/B:AJCP.0000027000.77357.31>
- Whitbeck, L. B., Chen, X., Hoyt, D. R., & Adams, G. W. (2004). *Discrimination, historical loss and enculturation: Culturally specific risk and resiliency factors for alcohol abuse among American Indians*. *Journal of Studies on Alcohol*, 65, 409-418. <http://dx.doi.org/10.15288/jsa.2004.65.409>

- Whitbeck, L.B., Walls, M.L., Johnson, K.D., Morrisseau, A.D., & McDougall, C.M. (2009). Depressed affect and historical loss among North American Indigenous adolescents. *Journal of American Indian and Alaska Native Mental Health Research*, 16(3), 16-41. <http://dx.doi.org/10.5820/aian.1603.2009.16>
- Wiechelt, S.A., Gryczynski, J., Johnson, J.L., & Caldwell, D. (2012). Historical trauma among urban American Indians: Impact on substance abuse and family cohesion. *Journal of Loss and Trauma: International Perspectives on Stress & Coping*, 17(4), 319-336. <http://dx.doi.org/10.1080/15325024.2011.616837>
- Wyman, P. A., Brown, Hendricks, C., Inman, J. Cross, W., Schmeelk-Cone, K., . . . Pena, J. B. (2008). Randomized trial of a gatekeeper program for suicide prevention: 1-year impact on secondary school staff. *Journal of Consulting and Clinical Psychology*, 76(1), 104-115 <http://dx.doi.org/10.1037/0022-006X.76.1.104>

ACKNOWLEDGEMENTS

The authors want to acknowledge Mr. Seprieono Locario for supporting the development of this project to increase access of this innovative simulation technology for AI/AN communities.

AUTHOR INFORMATION

Dr. Bartgis is with the University of Oklahoma Health Sciences Center. She is the corresponding author and can be reached at jami-bartgis@ouhsc.edu.

Dr. Albright is with Baruch College, City University of New York.

**Appendix 1
Gatekeeper Behavior Scale**

Subscale	Item	Question	Scale
Preparedness	How would you rate your preparedness to:		
	1	Recognize when a student's behavior is a sign of psychological distress	
	2	Recognize when a student's physical appearance is a sign of psychological distress	1 - Very Low
	3	Discuss with a student your concern about the signs of psychological distress they are exhibiting	2 - Low 3 - Medium
	4	Motivate students exhibiting signs of psychological stress to seek help	4 - High 5 - Very High
	5	Recommend mental health support services (such as the counseling center) to a student exhibiting signs of psychological distress	
Likelihood	6	How likely are you to discuss your concerns with a student exhibiting signs of psychological distress?	1 - Very Unlikely 2 - Unlikely
	7	How likely are you to recommend mental health/ support services (such as the counseling center) to a student exhibiting signs of psychological distress?	3 - Likely 4 - Very Likely
Self-Efficacy	Please rate how much you agree/disagree with the following statements:		
	8	I feel confident in my ability to discuss my concern with a student exhibiting signs of psychological distress	1 - Strongly Disagree
	9	I feel confident in my ability to recommend mental health support services to a student exhibiting signs of psychological distress	2 - Disagree 3 - Agree
	10	I feel confident that I know where to refer a student for mental health support	4 - Strongly Agree
	11	I feel confident in my ability to help a suicidal student seek help	
