An Online Role-Play Simulation with Emotionally Responsive Avatars for the Early Detection of Native Youth Psychological Distress Including Depression and Suicidal Ideation

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ABSTRACT

Gatekeeper training has been 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 that are in need as youth often turn first to friends and family for help. This study examines the outcomes at pre, post, and 3-month follow-up for American Indian and Alaska Native (AI/AN) students, teachers, and faculty completing online role-play gatekeeper training simulations with emotionally responsive avatars that have memory and personality and respond like real students experiencing psychological distress. Data from 86 matched pairs showed significant increases in gatekeeper preparedness, likelihood, self-efficacy, and behaviors including 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.

Key Words: Gatekeeper, American Indian/Alaska Native, Avatar, Suicide
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 Resource Prevention Center, 2010). While the U.S. Surgeon General’s Report identifies a number of community risk factors that are linked to mental health problems, including violence, poverty, and racism/discrimination (Satcher, 2001a, 2001b). AI/AN scholars have identified historical trauma as a unique risk and contributing factor for mental health disparities, including suicide (Brave Heart 2003; Brave Heart & DeBruyn, 1998; Whitebeck, 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, and post-traumatic stress disorder (PTSD), and anxiety disorders (Evans-Campbell, Lindhorst, Huang, & Walters, 2006; Freedenthal & Stiffman, 2004; Rutman, Park, Castor, Taualii, & Forquera, 2008, 2012; Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004; Simoni, Sehgal & Walters, 2004; Spear, Crèvecœur, Rawson, & Clark, 2007; Urban Indian Health Institute, 2009). The limited resources for the prevention, treatment and recovery support for 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, the need for culturally appropriate, sustainable and affordable interventions will be 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 United States population (U.S. Census Bureau, 2010), but represent the highest rates of suicide among youth in the United States. 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 more extreme. The National Violent Death Reporting System of the CDC indicates that AI/AN young men ages 15 to 19 years have a death rate of 25 per 100,000. For young men ages 20 to 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 within the last year requiring hospitalization (Urban Indian Health Institute, 2009). This rate is 4 times greater than the national average. In a community-based study with urban Indian youth, almost one fifth (18.6%) reported that they have thought about ending their lives within the last month (Pettingell, Bearinger, Skay, Resnick, Potthoff & Eichhorn, 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 Indians and Alaska Natives are the most impoverished ethnic minority group in the United States. Although no causal links have yet been demonstrated, there is good reason to suspect that the history of oppression, discrimination, and removal from traditional lands experienced by Native people has contributed to their current lack of educational and economic opportunities and their significant representation among populations with high need for mental health care” (Satcher, 2001a, 2001b).

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, Hoyt, & Chen, 2004; Whitbeck, Chen, Hoyt, & Adams, 2004; and Whitbeck, Walls, Johnson, Morrisseau, & McDougall, 2009). In a groundbreaking article, Brave Heart and De’Bruyn (1998) examined the similarities between Jewish Holocaust survivors and the American Indian experience. This paper proposed that the “social ills” facing AI/AN people were the result of ongoing and chronic trauma, loss, and grief across generations of families. This article coined the terms, historical trauma, a term used and historical unresolved grief. The term historical trauma has been used to describe these historical oppressions, grief, and loss, and historical trauma effects is a term used to describe the effects of these losses (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 related historical losses to behavioral health issues (Whitbeck, Chen, Hoyt, & Adams, 2004; Whitbeck et al., 2009; and Wiechelt,
Gryczynski, Johnson & Caldwell, 2012). Recognizing historical trauma as a unique risk factor is imperative for supporting suicide prevention efforts 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 in others, 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 et al., 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 (Kalafat and Gagliano, 1996; Cross, Matthieu, Lezine & Knox, 2010; Issac et al., 2009; Aseltine & DeMartino, 2004; Wyman et al., 2008; Mann et al., 2005). While there is some research on the relationship of skill sets learned during gatekeeper training and utilization of these skills in the future (Cross, Seaburn, Gibbs, Schmeelk-Cone, White, & Caine, 2011, Albright, 2013; Albright, Goldman, Shockley, McDevitt & Akabas 2011), there are studies showing that gatekeeper training reduces self-disclosed suicide attempts and rates (Aseltine & DeMartino, 2004; Knox et al., 2003; Eggert et al., 2002).

Commonly used gatekeeper training programs include Applied Suicide Intervention Skills Training (Mencuccini, 2008), Safe Talk (Tanney, Ramsay, Lang & Kinzel, 2006), Question, Persuade, Refer (QPR; Wyman et al., 2008). The Kognito Gatekeeper Training (KGT)
simulations presented in this paper are currently the only online training modality that has been shown to be efficacious. Of the gatekeeper training programs being used, Kognito has three online role-play training simulations in the National Registry of Evidenced Based Programs and Practices, and QPR has one face-to-face training program.

The online virtual KGT simulation for high school educators have 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 the result of the training, there were significant self-reported increases in the number of students in psychological distress that were identified, discussed concerns with and referred to the counseling center (Albright, 2013). LifeLines and Signs of Suicide (SOS) have shown increases in students’ knowledge of suicide prevention, suicide prevention skills, and “expressed intent” to inform an adult about an at-risk peer (Kalafat et al., 1996; Aseltine et al., 2004). Kalafat (1996) found that some of these programs have shown a decrease in suicide rates among the targeted population as reported. Furthermore, staff members who are already in “gatekeeper roles,” such as counselors, have reported increasing their use of suicide-identification behaviors with students (Wyman et al., 2008). Likewise LaFromboise et al., (1995) found that the Zuni Life Skills Development Curriculum, a culturally specific gatekeeper training that targets AI/AN, produced significant changes in suicide intervention and problem-solving skills in students whose behaviors were observed in role-playing scenarios. Students in this study also reported a reduction in risk factors and an increase in protective factors, such as reduced feelings of hopelessness. Lastly, the KGT simulations for college and university students has shown that after receiving training 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 life skills building for at-risk youth and youth/community camps that focus on building a strong sense of cultural identity and the healing from historical traumas. Two evidence-based practices 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 14 to 19 years old (LaFromboise & Howard-Pitney, 1995). Project Venture is the second evidence-based practice that was developed specifically for the prevention of substance abuse in AI/AN youth, but has also been used to address suicide (Sanchez-Way & Johnson, 2000; AI/Alaska Native National Resource Center, 2007). Two similar programs being utilized in Indian Country that have not yet documented the evidence to be considered evidence-based practices include 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 authentically mimic a real-life circumstance (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, though in certain training environments it may be permissible for trainees to explore different behaviors and outcomes, as in the KGT’s 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 learning and deliberate practice (McGaghie, Siddall, Mazmanian & Myers, 2009). Of particular note, role plays have been used effectively to teach Motivational Interviewing (MI; Lane & Rollnick, 2007), a core set of skills taught in the KGT simulations described in this study.

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 (Nestel & Tierney, 2007; Stevenson & Sander, 2002). Both negative emotions in general, and threat of being evaluated in a social setting in particular, are known to impede cognitive performance (Baumeister, Twenge, & Nuss, 2002; Bolte et al., 2003; Smallwood, Fitzgerald, Miles, & Phillips, 2009; Lupien et al., 1997; Payne et al., 2006; 2007; Kuhlmann, Piel, & Wolf, 2005). Additionally, the cost of face-to-face role-plays with professionals can be a drawback, because they must be expertly trained and calibrated. If trainees for all roles are used, costs are reduced, but so too may be the quality and consistency of the role-play. This concern is especially problematic when one role requires a perspective or behavior very different from that of the trainees (e.g., a trainer who does not understand AI/AN historical trauma), which may make the trainee feel especially self-conscious. For these and other reasons, the simulations examined in this study used the standardized online KGT simulations where role plays are highly replicable (high fidelity) and conducted in a virtual environment where the trainee is interacting with computer-driven avatars or virtual humans.
rather than another person. This delivery method has the added advantage of being able to reach large numbers of geographically dispersed individuals cost effectively.

To date, the majority of gatekeeper training programs do not employ active learning strategies such as role rehearsal to aid skill development (Cross et al. 2011). Researchers have begun to explore the implications of using role-plays during gatekeeper trainings 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 a 3-month follow-up, compared to trainees who did not participate in a role play; however, there was significant reduction in both groups’ scores at follow-up. Rubak and colleagues (2005) argue that role-plays need to be designed to be a potent stimulant to the imagination and created with real-world scenarios. In other words, the potentiality of learning is limited if the simulation’s narrative is not established, maintained, and relatable. Behavioral rehearsals among gatekeeper training participants, without proper guidance and proper context, may not be effective, because the role-play narrative is not appropriately established and the learning process limited, which, in turn, may make it less likely that the learner will return for further training. A way to counteract this limitation is to use qualified trainers, as was done in Cross’s (2011) face-to-face role-play simulations. However, the use of trainers can be problematic to scale up as well as costly to implement. The online KGT simulations utilizing virtual role-plays in this study was first found to be an effective tool to engage family members in taking an active role in motivating veterans who have post deployment stress to seek help at the VA (Albright, et al., 2011). More recently, a meta-analytic study (Shockley & Albright, 2014) examined the impact of virtual role-play gatekeeper training
simulations on five online 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 (Albright et al., 2014a).

**Current Study**

The current study is to examine the usefulness of the KGT simulations with American Indian users for increasing awareness of the signs and symptoms of suicide and to increase gatekeeper behaviors. The authors hypothesize that the KGT simulations can be a useful tool for supporting suicide prevention in AI communities and have the potential to overcome cultural and geographical challenges in traditional gatekeeper training models.

**About the Kognito Gatekeeper Training Simulations**

Each KGT simulation used in this study was developed by Kognito and was built around a series of mini-conversation games where 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 students in psychological distress (see Illustration 1). The virtual humans are multiethnic, which is helpful in trainings such as this, which are being used with individuals from many different ethnic backgrounds. This is the first publication on the effectiveness with an AI sample.
To facilitate gatekeeper communication skills, learners engage in role-plays using MI skills within the virtual training environment. All KGT simulations in this study train learners how to employ a set of MI techniques originally designed by clinical psychologists for use in counseling sessions with problem drinkers (Miller, W. R., 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 using MI in a wide 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; Lundahl, & Burke, 2009; Rubak, Sandbæk, Lauritzen & Christensen, 2005; Heckman, Egleston & Hofmann 2010; Lai, Cahill, Qin & Tang, 2010; Jensen, Cushing, Aylward, Craig, Sorell & Steele, 2011; Vasilaki, Hosier & Cox, 2006; Vanbuskirk & Wetherell, 2013). The KGT simulations 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 KGT simulations 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. Additionally, the avatar’s verbal and nonverbal responses provide immediate feedback to the learner. To complete
the training the learner must be able 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. Yazzi 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.
METHOD

From April 2011 to December 2013, outcome data were collected from 9,000 participants completing one of four KGT simulations: (1) University and College Faculty, (2) College Students, (3) High School Educators and (4) Middle School Educators. In each training simulation, users entered an online virtual environment and engaged in a series of interactive exercises, including simulated role-play conversations with emotionally responsive student avatars. To complete the training, learners had to successfully identify and refer those avatars in psychological distress to support services.

Of the participants, 983 self-identified as AI/AN by responding to demographic questions that included a list of races (American Indian or Alaska Native, White, Black/African American, Asian, Native Hawaiian, and/or Hispanic). Of the 983 AI/AN participants, 86 matched pairs were drawn from 19 middle and high schools and 42 colleges that were geographically dispersed across 19 states, in both rural and urban settings. Matched pairs describe individuals who completed pre-, post-, 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 time points. Also, the 86 AI/AN matched pairs’ outcome measures assessed in this study (described later) were consistent with the total matched pairs’ outcome measures of all races combined. Of the 86 AI/AN participants, 46.5% also indicated another race/ethnicity.
The four training simulations enabled us to collect data from five different races across a wide spectrum of educational settings (middle school through college) in gatekeeper skills aimed at identifying and helping youth in psychological distress (See Table 1). All the training simulations were developed with input from nationally recognized subject matter experts who were geographically dispersed throughout the country and had racial, ethnic, and cultural diversity training; most had worked with AI/AN groups. 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. Additionally, all the KGT simulations 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). KGT for College Students and KGT for High School Educators also are listed in SAMHSA’s National Registry for Evidence-Based Programs and Practices (NREPP; 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 KGT simulations completed.

<table>
<thead>
<tr>
<th>Ethnicity/ Race*</th>
<th>Faculty/Staff N= 1505</th>
<th>Students N=531</th>
<th>High School Educators# N=775</th>
<th>Middle School Educators N=484</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian or Alaska Native</td>
<td>2.7%</td>
<td>3.6%</td>
<td>1.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>87.6%</td>
<td>81.4%</td>
<td>65.9%</td>
<td>88.4%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>9.2%</td>
<td>12.4%</td>
<td>3.5%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Asian</td>
<td>4.3%</td>
<td>11.5%</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Native Hawaiian or other Pacific Islander</td>
<td>0.5%</td>
<td>1</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6.2%</td>
<td>1.7%</td>
<td>15.2%</td>
<td>22.7%</td>
</tr>
</tbody>
</table>

* Participants could choose more than one category. Hispanic is a separate item from race as it is considered an ethnicity.

# Some participants were not asked demographic questions

Participants were recruited by school administrators (principles, directors of counseling departments and student affairs) that adopted the KGT simulations. As part of the adoption package schools are provided a variety of media materials provided by the vendor to augment their outreach efforts including flyers, sample email language and PowerPoint’s for face-to-face recruitment presentations. In this study, participants were mainly recruited by e-mails sent out by college/university counseling department heads, non-profit organizations and State Youth Suicide Prevention Coordinators. Survey Monkey was used to collect pre- post-, and 3-month follow-up data, which included the 11-item Gatekeeper Behavior Scale (GBS), a validated tool that predicts gatekeeper behaviors (Shockley & Albright, 2014). Drawn from two major theories of motivation, the GBS is comprised 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 refer those in distress to seek help), (2) the likelihood or behavioral intent to engage in gatekeeper behaviors, and (3) how confident are participants in their ability to engage in gatekeeper behaviors (i.e., self-efficacy). See Appendix 1 for assessment items. The GBS was validated using confirmatory factor analysis and had internal reliabilities of .95, .85 and .94 respectively.

Survey questions also measured participants’ reaction to the training program, including overall rating of the course (on a 4-point Likert scale) and whether they would recommend it to other users. They also were asked specific means efficacy questions (on a 5-point Likert scale). 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 trainings’ usefulness, ease to use, relevance of scenarios, and helpfulness in getting timely assistance for students. Demographic and course satisfaction data were collected in the post-training survey. Lastly, to determine impact on gatekeeper behaviors, participants reported at pre-test and at the 3-month follow-up the number of students 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 study were from 19 geographically dispersed US states, with Texas (31%) and California (29%) accounting for the highest percentages of participants. Of the participants who completed the KGT simulations for educators (not the student training), 23.9% reported that they have 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 KGT training simulation.

<table>
<thead>
<tr>
<th></th>
<th>Faculty/Staff (N = 41)</th>
<th>Students (N = 19)</th>
<th>High School Educators (N = 10)</th>
<th>Middle School Educators (N = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>21.9%</td>
<td>15.8%</td>
<td>40.0%</td>
<td>18.7%</td>
</tr>
<tr>
<td>Female</td>
<td>78.1%</td>
<td>84.2%</td>
<td>60.0%</td>
<td>81.3%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 and younger</td>
<td>11.1%</td>
<td>89.5%</td>
<td>0%</td>
<td>6.2%</td>
</tr>
<tr>
<td>26 – 35</td>
<td>11.1%</td>
<td>0%</td>
<td>55.6%</td>
<td>12.5%</td>
</tr>
<tr>
<td>36-45</td>
<td>22.2%</td>
<td>10.5%</td>
<td>11.1%</td>
<td>43.8%</td>
</tr>
<tr>
<td>46-55</td>
<td>33.3%</td>
<td>0%</td>
<td>33.3%</td>
<td>18.7%</td>
</tr>
<tr>
<td>Older than 55</td>
<td>22.2%</td>
<td>0%</td>
<td>0%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Years of Working in Education or student rank</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3</td>
<td>20.0%</td>
<td>37% Freshman</td>
<td>40.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>3-5</td>
<td>30.0%</td>
<td>10.5% Sophomore</td>
<td>20.0%</td>
<td>18.8%</td>
</tr>
<tr>
<td>6-10</td>
<td>20.0%</td>
<td>31.6% Junior</td>
<td>30.0%</td>
<td>31.2%</td>
</tr>
<tr>
<td>&gt;11</td>
<td>30.0%</td>
<td>15.8% Senior</td>
<td>10.0%</td>
<td>37.5%</td>
</tr>
</tbody>
</table>
In this study, all AI/AN participant data from the four KGT simulations 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-, post-, and follow-up scores $F(1.87, 159.12) = 58.88$, $p < .01$ ($F_{crit} = .390$). Bonferroni’s correction indicated that the post-training and 3-month follow-up scores were significantly higher when compared to pre-training baseline scores. Follow-up scores were significantly lower than post-training scores (but still significantly higher compared to baseline), indicating some reduction in preparedness over time. See Table 3 and Figure 1 for comparisons of preparedness at each time point.

The second repeated-measures ANOVA showed that there was a significant increase in participants’ likelihood to help students in psychological distress between pre-, post-, and follow-up scores $F(1.89, 137.62) = 24.35$, $p < .05$ ($F_{crit} = .3910$). Bonferroni’s correction indicated that the post-training and 3-month follow-up scores remained significantly higher when compared to pre-training scores and there was no significant decrease in follow-up scores when compared to post-training scores.

The third repeated-measures ANOVA showed that there was a significant increase in participants’ self-efficacy to help students in psychological distress between pre-, post-, and follow-up scores $F(2,166) = 9.64$, $p < .05$ ($F_{crit} = .305$). Bonferroni’s correction indicated that the post training and 3-month follow-up scores were significantly higher when compared to pre-training scores and there were no differences between post-training and follow-up scores.
To summarize, the data show significant increases in all three gatekeeper variables of preparedness, likelihood, and self-efficacy from pre-training (baseline) levels to 3-month follow-up measures. The follow-up variables of likelihood and self-efficacy remained significantly higher when compared to post training measures whereas preparedness significantly declined but still remained significantly higher when compared to baseline.

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 to 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.

Table 3. Comparison of gatekeeper training survey measures over time

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-Training M (SD)</th>
<th>Post-Training M (SD)</th>
<th>3 Month Follow-Up M (SD)</th>
<th>Effect Size η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparedness (n=86)</td>
<td>3.40 (.74)</td>
<td>4.17 (.63)</td>
<td>3.97 (.62)</td>
<td>.41</td>
</tr>
<tr>
<td>Likelihood (n=74)</td>
<td>3.08 (.71)</td>
<td>3.64 (.44)</td>
<td>3.49 (.55)</td>
<td>.25</td>
</tr>
<tr>
<td>Self-Efficacy (n=84)</td>
<td>2.92 (.58)</td>
<td>3.27 (.72)</td>
<td>3.17 (.49)</td>
<td>.10</td>
</tr>
<tr>
<td>Behaviors (n=74)</td>
<td>1.15(1.74)</td>
<td>-</td>
<td>1.49(2.16)</td>
<td>.06*</td>
</tr>
</tbody>
</table>

*effect size calculated using \(r^2\)
Figure 1. Comparison of gatekeeper training survey measures over time

All measures of means efficacy were high for the following statements: the trainings were a useful tool, well-constructed, easy to use, likely to help the learner with a student in psychological distress, based on scenarios that are relevant, and aid the leaner 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:

<table>
<thead>
<tr>
<th>Item</th>
<th>To a very great extent</th>
<th>To a great extent</th>
<th>To some extent</th>
<th>To a little extent</th>
<th>Not at all or to a very little extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A useful tool</td>
<td>29.8%</td>
<td>48.8%</td>
<td>20.2%</td>
<td>1.2%</td>
<td>0%</td>
</tr>
<tr>
<td>Well constructed</td>
<td>31.3%</td>
<td>59.0%</td>
<td>9.6%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Easy to Use</td>
<td>47.1%</td>
<td>43.5%</td>
<td>5.9%</td>
<td>2.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Likely to help you with students in psychological distress</td>
<td>36.0%</td>
<td>46.7%</td>
<td>16.0%</td>
<td>1.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Based on scenarios that are relevant to you and student</td>
<td>38.5%</td>
<td>36.9%</td>
<td>20.0%</td>
<td>4.6%</td>
<td>0%</td>
</tr>
<tr>
<td>Aid you in getting timely help to your students</td>
<td>28.6%</td>
<td>41.7%</td>
<td>27.4%</td>
<td>2.4%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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.

For those college/university students who completed the training, 75% agreed with the statement “As a result of this course I may be more likely to recognize the signs of psychological stress in myself,” and 90% 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

The KGT simulations examined in this study resulted in positive findings to support their use with AI/AN participants and highlight some important implications for the field of gatekeeper training. First, KGT gatekeeper training simulations demonstrate usefulness for training AI/AN
participants who are not formally trained in mental health. Given the current disparities in suicide rates, the usefulness of the training simulations makes them important tools for preparing teachers and students as well as the general community 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 skills, gatekeepers should refresh their skills to maintain preparedness. Fortunately, the KGT simulations 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 a participant’s attitude and behavioral response to help others at risk, but also may be useful in supporting at-risk participants in seeking care. Therefore, the KGT simulations may serve both as a training for gatekeeping and personal help-seeking behavior for the prevention of suicide.

There are a number of unique advantages to the KGT simulations. First, the program is sustainable once it has been developed. Given the high workforce turnover and transient nature of many AI/AN communities, an online training simulation is amenable to address training of new staff, as well as periodic retraining to support, maintain, and even increase the number of people with gatekeeper skills. While the training modules have not yet been fully adapted for AI
communities (beyond the development of a new AI Avatar teacher, Ms. Yazzi), such adaption could be accomplished with the current technology, which can result in customized mobile applications that can 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, and performance in the role-playing tasks remains confidential. These factors may be particularly useful with AI/AN populations, as they allow for skills building at their own pace and without concern for making mistakes in a public forum. Putting an AI/AN individual as the center of attention or providing individual recognition is inconsistent with the collective worldview and may interfere with the learning for some of these individuals (Pewewardy, 2002). Further, tribes also express heterogeneity in related cultural factors, like belief about death, and the KGT simulations allow for cultural tailoring of content and messages (Novins et al., 2010).

Third, the KGT simulations have high fidelity. Fidelity refers to the quality of delivery across all trainers so there is a high standardization of the learning experience each time, including accurate knowledge dissemination, realistic and engaging role plays, and appropriate feedback. As the data indicate, the fidelity of the KGT simulations is very highly standardized and replicable, due, in part, to the comprehensive and interactive development process involving nationally recognized 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 his/her knowledge of the population being trained. Not surprisingly, such skills and experience can vary from person to person which can compromise the learning experience.
Fourth, the training course can be tailored and adapted to meet the cultural and geographical needs of AI communities. Once participants are trained as gatekeepers they must know where to refer individuals about whom they are concerned, or they are not likely to engage in gatekeeper behaviors. The KGT simulations address this concern by providing participants with local resources they can use to link those at risk to support services. KGT simulations are available online and stream quite easily, so AI/AN learners who are geographically dispersed in rural communities and have Internet access can receive the training. Finally, the simulations can be adapted to meet the unique cultural nuances of AI/AN communities, such as addressing culturally specific issues like historical trauma.

Finally, the authors propose that the KGT simulations could support increased access and utilization of gatekeeper training across Indian County in a number of ways. Many AI/AN have fear and mistrust of the system because of governmental policies that have created serious losses and disparities for tribal communities over centuries and from over-reliance on western models of care that do not always fit the culture; which impacts help-seeking behavior significantly (Goodkind et al., 2011; Guadagnolo, Cina, Koop, Brunette & Petereit, 2011). The American Indian Service Utilization, Psychiatric Epidemiology, Risk and Projective Factors Project (AI-SUPERPFP), 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 less 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 have also found that AI/AN youth report stigma, embarrassment, or shame related to seek help with suicide
(Freedenthal & Stiffman, 2007). Many AI/AN people avoid mental health care in smaller, remote communities for fear that there will be limited ability for them to maintain confidentiality (De Couteau, Anderson, & Hope, 2006). Further, contrary to popular belief, health services for AI/AN people are extremely underfunded (U.S. Commission on Civil Rights, 2003) and the Indian Health System suffers greatly from workforce shortages in mental health and turnover of highly stressed staffs (Sebelius, 2011; Kim, 2000). These findings demonstrate the challenges for AI/AN people accessing care and the importance of interventions that are non-threatening, private, and sustainable in the community. The KGT simulations 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.

Along with the advantages, there are disadvantages to this training model. A major one 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 requires a 6-month effort from a team of professionals. 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 for training, but, for the many reasons cited in this paper, 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 training simulations have the potential to be migrated to mobile apps and DVDs, providing more access points.
**Study Limitations**

As in many field studies, it was difficult to recruit subjects to comprise 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 use a control group, which involved examining changes within individuals over time as opposed to comparison with a control group. Additionally, to increase sample size, we had to combine data from AI/AN participants who completed one of four different training simulations. Although these trainings 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 KGT simulation individually.

Another limitation is that many participants self-selected into the study, which may have impacted results, as these individuals may have been 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, where the learner must be at a physical location at a specific time/date. Another limitation is that data collection occurred over a 2- 1/2 year period, so we cannot rule out potential threats to internal validity, such as the influence of a unique event within a community, that were outside the control of the study.

Lastly, changes in actual gatekeeper referrals to mental health support services were self-reported due to a number of important concerns, including issues surrounding privacy of data and not wanting to discourage treatment-seeking behavior.
Future Research

While this study provides promising evidence for the use of virtual human or avatar technology to increase gatekeeper skills and behaviors for AIs, much more research is needed to determine the effectiveness of this training course. Future research will be aimed at increasing the AI/AN sample size for each KGT simulation, so the programs can be evaluated individually. Further, research is needed to examine the effectiveness of avatar training as compared to 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 cultures. Given that the KGT simulations can be customized, it is possible to develop gatekeeper programs using tribal elders and cultural leaders to integrate the wisdom and experience of traditional healing as well as further addressing the stigma associated with seeking and receiving mental health treatment and the impact of historical trauma. Future research conducted in partnership with tribes and/or urban Indian health programs could be very beneficial for implementing the training courses and studying the effectiveness of the courses with a closer cultural lens.
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### Appendix 1. Gatekeeper Behavior Scale

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

1- Strongly Disagree
2- Disagree
3- Agree
4- Strongly Agree