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CREATING A CULTURALLY APPROPRIATE WEB-BASED BEHAVIORAL INTERVENTION FOR AMERICAN INDIAN/ ALASKA NATIVE WOMEN IN SOUTHERN CALIFORNIA: THE HEALTHY WOMEN HEALTHY NATIVE NATION STUDY

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Abstract: Health disparities in fetal alcohol spectrum disorders (FASD) are of high importance to American Indian/Alaska Native (AI/AN) communities. We conducted focus groups and interviews with 21 AI/AN women and key informants in Southern California to modify a brief, Web-based program for screening and prevention of prenatal alcohol use. This process resulted in several important program modifications and was essential for fostering partnerships between researchers and the community, engaging community members in research, and identifying community priorities.

INTRODUCTION

Fetal alcohol syndrome (FAS) is a pattern of congenital malformations that includes pre- and postnatal growth deficiency, microcephaly, characteristic craniofacial anomalies, and mental deficiency (Jones, 2005). FAS is recognized as the leading known, completely preventable cause of birth defects. Estimates of the birth prevalence of FAS vary according to the population studied and the method of ascertainment (Abel, 1995). However, FAS represents only the most severe end of the spectrum of effects seen in some children of women who drink during pregnancy. Increased rates of growth deficiency and neurobehavioral deficits have been noted in the offspring of women who drink moderate or even lesser amounts of alcohol (O'Connor, Brill, & Sigman, 1986; Streissguth, Barr, & Sampson, 1990). The broad spectrum of alcohol effects, now encompassed by the umbrella term fetal alcohol spectrum disorders (FASD), might be six times more prevalent than the full-blown syndrome (Sampson et al., 1997).

American Indian/Alaska Native (AI/AN) women in the U.S. have poorer health across several outcomes, as compared to the general population. The infant mortality rate among Native women within the 35-state Indian Health Service area is 28% higher than the overall rate (8.8 vs. 6.9 per 1000 live births, respectively; Indian Health Service, 2008). Some of the highest rates of FAS in the U.S. have also been reported among AI/AN populations (Abel, 1995; May & Gossage, 2001). While prevalence estimates vary widely, data suggest that at least some AI/AN groups are at high risk (May & Gossage, 2001; May et al., 2009). As such, FASD is of considerable public health interest, and represents a health disparity that is of high importance to AI/AN communities.

There are more than 550 federally recognized tribes in the United States, each with a unique history, geography, and culture. It is not surprising, then, that the patterns of alcohol use are also heterogeneous across AI/AN groups and differ from those found in general U.S. population surveys. Beals and colleagues compared quantity and frequency of reported alcohol use in the general U.S. population to that of Southwest and Northern Plains tribes (Beals et al., 2003). Results suggest that alcohol use patterns vary by region and that AIs from both regions are more likely to be lifetime abstainers of alcohol than the U.S. population overall. Others have identified a high rate of alcohol consumption among Northern Plains AI women attending a prenatal clinic, where 74.% consumed alcohol prior to pregnancy and 16.2% consumed any alcohol while pregnant (May et al., 2004). The proportion of Southern California AI/AN women of childbearing age who consume alcohol in quantities and patterns that would be of concern for the development of the embryo in the early weeks of pregnancy is unknown.

Half of pregnancies in the U.S. are not recognized until the fifth or sixth week of gestation, by which time a significant proportion of embryonic development has already been completed (Jacobson, Jacobson, & Sokol, 1996). Therefore, non-pregnant women of childbearing age represent an important audience for interventions aiming to reduce alcohol-exposed pregnancies. The Screening, Brief Intervention, and Referral for Treatment (SBIRT) approach has been shown to be effective in reducing drinking among women of childbearing age (Floyd et al., 2007; Manwell, Fleming, Mundt, Stauffacher, & Barry, 2000). SBIRT is based on Motivational Interviewing, a directive approach to enhance intrinsic motivation for behavior change (Miller, 2002). A Web-based SBIRT intervention was recently developed for use among non-pregnant women of childbearing age who receive Women, Infants, and Children (WIC) services in Southern California. In a small randomized controlled trial, 150 women were randomly assigned to receive either this Web-based intervention followed by personalized feedback, or general information about FASD and the risks of alcohol use during pregnancy. The intervention was unique in that it was designed to modify drinking behaviors that might not be “risky” for non-pregnant women, but could be risky if a woman became pregnant and continued them. The motivation to change was linked directly to the

health of a future baby. In this study, both conditions (the general information and the Web-based intervention, with or without personalized feedback) resulted in reduced risky drinking occasions for women (Delrahim-Howlett et al., 2011). Study participants rated this brief Web-based intervention as both feasible and acceptable.

Culturally appropriate and individually tailored health promotion efforts are sometimes more effective than generalized approaches (Kreuter, Oswald, Bull, & Clark, 2000; Skinner, Campbell, Rimer, Curry, & Prochaska, 1999). However, it is unclear whether this is the case for programs aimed at preventing or treating substance abuse among AI/AN women. A limited number of studies, generally focused on FASD prevention, have evaluated the effectiveness of alcohol treatment and prevention approaches for AI/AN women (Masis & May, 1991; Montag, Clapp, Calac, Gorman, & Chambers, in press; Peterson, Berkowitz, Cart, & Brindis, 2002). Many interventions are not rigorously evaluated and their program results are often not published in peer-refereed journals, so it is difficult to ascertain whether culturally appropriate substance use prevention programs are more effective in changing behavior than are standard approaches (Hawkins, Cummins, & Marlatt, 2004; Hodge, Jackson, & Vaughn, 2010; Montag et al., in press). Despite a lack of clear evidence, researchers working with AI/AN populations have emphasized the importance of both community involvement and cultural relevance in interventions, and have demonstrated the positive impact of culturally appropriate approaches to substance use prevention programs (Baydala et al., 2009; Hawkins et al., 2004; Jiwa, Kelly, & Pierre-Hansen, 2008; May & Moran, 1995; Montag et al., in press; Noe, Fleming, & Manson, 2003).

We describe the planning and development phase of a Web-based SBIRT intervention to reduce alcohol-exposed pregnancies among AI/AN women representing nine tribes in Southern California. The purpose was to engage Native women, community leaders, and Indian Health clinic staff members in the process of adapting an existing theory-based intervention, which has proven effective in other populations, for use in one AI/AN community by making it culturally appropriate and including relevant individualized feedback messages. Given the heterogeneity in alcohol use among Native women (Collins & McNair, 2002), we aimed to develop a site-specific program for this region. We summarize the process of recruiting participants; obtaining and incorporating feedback; and modifying the intervention design and content to make it culturally appropriate, understandable, accessible, and relevant to AI/AN women of childbearing age. Our methods and experiences could be useful as a guide to other researchers and practitioners involved in modifying existing programs for cultural appropriateness, particularly with AI/AN populations.

METHODS

The planning and development phase, conducted over the first year of the project, included preliminary qualitative research and community outreach to adapt the intervention culturally. The original project aims proposed 4-6 focus groups with AI/AN women of childbearing age (18-45 years old) and Native and non-Native key informants (clinic staff who had familiarity and experience with the topic and population). Focus groups were conducted between April and October 2010. The primary aims were to evaluate an existing Web-based SBIRT program designed to prevent risky alcohol use among women of childbearing age (Delrahim-Howlett et al., 2011); and modify elements of this program for AI/AN women in this Southern California community, including cultural appropriateness, comprehension, accessibility, and relevance.

The planning and development phase also included discussions with and feedback from tribal board members, the Medical Director of the local Indian Health clinic, medical and behavioral health clinic staff, and outside consultants with experience in alcohol use prevention research among AI/AN populations. The purpose was to ask these individuals to assist in the development of a culturally appropriate program, gain support from clinic staff and the tribal community, encourage community engagement, and integrate with existing research projects in the community and with ongoing clinic activities. Feedback was obtained through presentations to tribal board members and clinic staff, and informal discussions with clinic staff and consultants.

Methods of focus group recruitment included flyers posted throughout the clinic, flyers given directly to patients by health care providers, verbal and written information provided by research assistants in the clinic waiting rooms, and informal word of mouth. Women interested in participating were asked to contact a study research assistant based at the clinic who provided more information and enrolled participants. We conducted groups with both key informants and Native women of childbearing age. We aimed to notify as many Native women, ages 18-45 years, as possible about the opportunity to participate in one of the focus groups. We sought to include women from different age groups, and both mothers and women who had not had children. Five women of childbearing age who consented to participate did not attend a focus group. Three women of childbearing age and one key informant completed an individual interview rather than a focus group because of low attendance and scheduling challenges.

This study was approved by the Institutional Review Boards of the local Indian Health clinic, University of California San Diego, and San Diego State University. Each participant completed oral and written informed consent procedures prior to the focus group or interview. With participant consent, each focus group session/interview was audio-recorded using a tabletop digital recorder. Focus groups/interviews were facilitated by the study coordinator and Native research assistants trained in qualitative interviewing. We used a semi-structured interview guide with open-ended

questions; focus groups/interviews were 1-2 hours in length. Participants received a \$20 gift card. During the focus groups/interviews, participants were asked to review each section of the Web-based program and comment on the following: overall program design; program name; colors, images, and graphics; ease of use; perceived community receptivity; comprehension of specific wording; comfort in completing the program; relevance of personalized feedback messages; relevance for community; general suggestions for improvement; and ways to increase cultural appropriateness of the program. These core items were included in all groups, but the interview guide was also flexible to encourage conversation and allow for new topics of interest to arise. Due to its length, the full guide is not included here; examples of interview questions included: What do you think about the way these images/words look? What do you think your friends and relatives would think about this program? What do you think about the information in this section? Can you think of anything that would make this program more meaningful and capture women's attention?

We transcribed all focus groups/interviews and used cross-case, inductive analysis to identify themes, sub-themes, and patterns in the data (Patton, 1990). The analysis of focus group data—including reading text, coding data and developing themes, reducing data to essential points, and identifying key modifications—was an iterative process and continued through the data collection process. Two researchers independently reviewed the data and began developing codes, themes, and sub-themes. The final themes required consensus between the two coders and were finalized after rechecking the original transcripts to ensure that the meaning and intent of the participant comments were accurately captured. After completing analyses and incorporating key modifications, we tested the revised Web-based program during three individual interviews where participants were asked to evaluate and provide detailed comments on the revised program. Because of serious confidentiality concerns within the community, we elected not to provide any identifying details of participants in our results.

RESULTS

Recruitment and Participation

A total of 21 participants—15 AI/AN women of childbearing age and 6 key informants—attended focus groups or were interviewed individually, and two Native women of childbearing age returned to test the revised Web-based program. Focus groups and interviews consisted of 1 to 6 participants each.

Focus group results

Generally, participants had a positive response to the program and liked the Web-based format. One participant reported, “I think it’s good [that it’s Web-based] because some people would maybe be embarrassed to enter some information to a stranger, and about their family history, some people get weirded out.” Several participants also reported that the program might help raise awareness about alcohol use during pregnancy. One young woman said:

It’s good! It kind of scares you straight for a little bit. You don’t normally see this, you just think, Oh a couple of drinks, but you know, really, health-wise it’s a lot of calories. It hurts your health and your baby, it’s sad. But our generation or people that live around here, and who probably didn’t know they were pregnant, are out drinking.

Participants identified five key areas to address to facilitate making the intervention culturally appropriate, understandable, accessible, and relevant to AI/AN women of childbearing age in this community.

1. Make the program more personal and relatable to women by including pictures and a personal story about having a child affected by alcohol use during pregnancy

Following the advice of the Native women participants, we changed the graphics and colors throughout the program, incorporating earth-tone colors and modifying graphics to make the content more understandable. We also added a logo designed by Native staff and volunteers that was intended to appeal to a broad range of women in the community. The logo featured a medicine wheel with four silhouettes of women across different life stages (adolescence, pregnancy, motherhood, and older adult). Because participants also felt it would make the program more personal and relatable, we included pictures of Native women, babies, and children. Another important change was the addition of a short audio clip from a Photovoice exhibit entitled “Picture This” (Healthy Generations Family Support Program, 2008). This project involved giving cameras to women from Sioux Lookout and asking them to use the pictures they took, along with their words, to express their points of view and experiences as parents of children with FASD. With this video clip, we were able to address a specific shortcoming identified by focus group participants by incorporating the oral tradition that is important in many Native cultures.

2. Emphasize confidentiality

Because participants identified confidentiality as a critical concern, we included a written confidentiality statement on the home page emphasizing that all answers would be kept confidential and would not affect medical care received now or in the future. We also created a brief video

introduction to further emphasize confidentiality. The video was about 1 minute in length and introduced the purpose of the program, emphasizing that answers to questions and personalized feedback were confidential, were for personal use alone, and would not be seen by others, including health care providers. Focus group participants identified a trusted health care provider who has served the community for over 35 years to be featured in the video. In planning for the intervention, we also developed strategies to ensure availability of a private office space where participants would be able to complete the intervention within the clinic, where it would be implemented during the study.

3. Incorporate family and community orientation

Women discussed both family and community culture as important influences on alcohol use behavior in this community. One Native woman described the role of family this way:

Well I think the family plays a huge role. I would say probably a greater role in an individual's life out here than it does in the general population, just because we are so intertwined and so it really depends on the family members on what decisions the family is going to make. Like if she has family members who are active in their alcoholism, she's going to be influenced and really it's because the messages that she's hearing from them could be so different than what she might be hearing from people who are choosing not to drink.

While this program is not designed to modify behavior at the family or community level, we were able to honor these values by emphasizing during the video introduction described in Theme 2 that the information provided in the intervention was for the benefit of the individual, family, and community. For example, the introduction stated that the program was designed for “you and other women in our community” and discussed importance of healthy lifestyle choices for all women who are pregnant or may become pregnant. We also included important tailored feedback messages about the influence of family alcohol use on future risk of alcohol dependence, as well as recommendations about the importance of spending time with family and friends who do not drink.

When participants were asked what women in the community would think of this program, feedback was mixed. One woman reported a positive outlook, saying:

I liked the family risk part, mine was really high, which I assumed it would be, but it was an interesting part of the feedback section. A lot of people don't realize that if your family has drinking problems, you are more predisposed to having a higher drinking risk as well.

However, another had a more pessimistic perspective, reporting that her friends and relatives “would probably laugh at it. They are all alcoholics.”

4. Tailor content to our community

We modified the wording used in the program, including feedback messages, to improve relevance and understanding. For example, participants advised us that women in the community would prefer if we described the bloodstream using the words “blood system.” In the series of questions evaluating alcohol use, we included examples of common drink types such as alcoholic energy drinks. We also added information to address perceived norms about widespread alcohol use among young women in the community. As one woman reported, “[The feedback section] said that 50% of women don’t drink at all, which I thought was interesting, because I honestly don’t know anyone else besides myself that doesn’t drink!” To adjust perceived norms about drinking, the Screening, Brief Intervention, and Referral for Treatment approach includes feedback to compare an individual’s drinking with the norm of someone in a relevant, similar population. Overall, focus group participants reported a dislike for having their own drinking behavior compared with that of the general U.S. population, and felt it irrelevant. We hoped to obtain reference data that included AI/AN women of childbearing age with the same or similar tribal affiliation, but these data are unavailable. As an alternative, we added the following true/false question to adjust norms: “Most women aged 18-44 who are members of Southwest tribes currently drink alcohol.” When a user answers the question, the feedback explains the results of a recent study reporting that most women of childbearing age who are members of Southwest tribes are not current drinkers (Beals et al., 2003)

5. Include more information about how women’s alcohol use can negatively impact children’s health.

Focus group conversations identified some common myths about alcohol use during pregnancy in this community. One participant said:

Yeah I remember the misinformation. I remember friends telling me like it’s okay to drink as long as you only drink... Old wives tales mix with misinformation and you get things like “It’s okay to drink as long as you only drink in the morning so your body metabolizes it”. Or “It’s okay to drink wine”. Like I said, with my first pregnancy, I heard it was okay if you did everything. Like drugs in moderation, or drinking as long as you followed the rules. I heard you could smoke cigarettes like a chimney as long as you smoked lights.

We added a series of true/false questions to help dispel some of these myths, including the perceived safety of drinking wine during pregnancy, drinking in the morning, and drinking beer to help with nausea. In addition, we developed 16 individually tailored, computer-generated feedback messages to encourage changes in alcohol use, or continued healthy practices, based on current contraception use, pregnancy status, and reported alcohol use over the past 2 weeks. Finally, we added significant content on the importance of avoiding alcohol use during pregnancy, even before pregnancy is recognized, as well as information about FASD, emphasizing that alcohol use during pregnancy has a lifelong impact on children, but this impact is completely preventable if alcohol is avoided during pregnancy.

DISCUSSION

The main goal for the planning and development phase of the study was to modify an existing Web-based SBIRT intervention to create a culturally appropriate intervention for prevention of alcohol-exposed pregnancies among AI/AN women in Southern California. While other FASD prevention programs have been developed and demonstrate the importance of incorporating the local culture, circumstances, and norms of AI/AN communities (May, 1995; May & Moran, 1995), we are aware of no other Web-based programs. This planning and development phase was critically important and resulted in significant changes to the content and design of the Web-based SBIRT. Importantly, it also provided the opportunity for community involvement and for researchers to begin building trust with women in this community.

Participatory research methods are increasingly recognized as central to successful community-research partnerships, particularly for addressing health disparities (Macaulay et al., 1999; Wallerstein & Duran, 2006; Williams et al., 2010). While it is unclear whether a culturally appropriate program will be more effective in changing women's drinking behavior during pregnancy (Hawkins et al., 2004; Hodge et al., 2010), the process of engaging the community and gaining feedback on community priorities in the early phases of research was essential. Focus group participants also emphasized the value of cultural appropriateness, saying that interventions, including the language within them, must be understandable to the average community member and delivered only after consulting with tribal members. Consistent with other research (Williams et al., 2010), women in this community perceived a lack of benefit from research studies and general skepticism of research. One Native woman said:

Indian Health needs to do a study and have the results out in that community all the time, not on a Web site, not in a library...Everybody does health surveys. Smoking,

drinking, you know it. Hey, this is my life, all I've ever heard about is studies, I've never seen the results in my community. I've never had anyone come to me and be like, I need to tell you this. Ever!

Another added "Every anthropologist, every historian has come and taken from us and done nothing but take and they never give back." This distrust of research is not surprising given historical research abuses, including coerced sterilization of women and controversial genetic research involving the Havasupai people (Mello & Wolf, 2010; Torpy, 2000). Although participants were not asked specifically about their feelings toward research studies, they mentioned these examples as a reason why some in the community might be hesitant to participate in a study. These comments reinforce the need for continued involvement of community members in research.

Throughout the planning and development phase, early discussions with tribal leaders, the Medical Director of the clinic, clinic staff, and consultants were also essential. The Medical Director played a significant role with intersecting obligations as a clinician, tribal member, Co-Principal Investigator on this study, and Co-Leader of the Native American Research Centers for Health which has a mission to decrease health disparities between AI/AN populations and other groups in California. His leadership allowed us to successfully engage tribal board and community members, educate and involve clinic staff, identify key informants for focus groups, plan for possible barriers, and develop solutions to support the acceptance and success of the study within the clinic and community.

We also experienced some unique challenges to conducting this study within the structure of an Indian Health clinic. Time for IRB approval was significantly longer than expected. This delay was due in part to the involvement of three collaborating institutions. Our experience indicates a need to plan for 12 months of development time to accommodate review and re-review of protocol and promotional materials, including iterative amendments by three IRB committees. Another significant challenge was lower-than-expected participation by Native women. Even after extensive clinic-based recruitment efforts by clinicians and research staff, only about 30 women expressed interest in participating in a focus group and even fewer attended. The best participation rates came by reaching out through informal networks, such as word of mouth, and by holding focus groups/interviews during midday lunch breaks so that clinic staff could participate. Finally, we identified a concern among community members that research activities would not be distinct from clinical medical care. This concern may, in part, explain why recruitment efforts in the clinic were less effective than community-based informal recruitment. While the clinic offers an ideal location for recruitment, it appears important to increase awareness that research is being conducted for the benefit of the community as a whole and is separate from services provided by the clinic.

The qualitative component of the study has both strengths and limitations. Important strengths include the fact that focus groups/interviews represented both a diverse group of AI/AN women from several Southern California tribes and key informants, such as clinic staff, who have extensive experience working with Native women in this region. However, study participation rates were lower than expected and some focus groups contained only one or two women. While this individual-level feedback was valuable, it lacked the synergistic discussion that occurs in focus group settings. As with all qualitative research, results are not representative of all AI/AN women of childbearing age. It is likely that additional modifications would be needed for use in other tribes and regions. Such changes could include modifications to the text to increase comprehension, modifications to the design to appeal to the unique culture and aesthetic of the community, and content changes to address community-specific needs for knowledge and understanding about the risks of alcohol use during pregnancy. Although we did not find that tribal concepts regarding prevention of alcohol use during pregnancy were significantly different enough to warrant more sweeping changes to the intervention, this may not be the case in other regions.

The planning and development phase of this study provided an opportunity to involve community members, tribal leaders, and clinic staff in the research process as well as to modify an existing Web-based SBIRT intervention to be culturally appropriate and relevant to Native women in this region. While it is unclear whether this effort will result in a more effective behavioral intervention, this process allowed us to develop important relationships and trust within the community, without which we could not move forward. In particular, women in this community have emphasized the importance of cultural appropriateness and inclusion of tribal members in all phases of research. Both AI/AN women in this community and clinic staff have demonstrated an interest in prevention of FASD and provided positive feedback on the use of a Web-based SBIRT program to prevent alcohol-exposed pregnancies. This program has the potential to provide a culturally appropriate, cost-effective approach to assess and prevent prenatal alcohol use.

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A COGNITIVE-BEHAVIORAL TREATMENT FOR DEPRESSION IN RURAL AMERICAN INDIAN MIDDLE SCHOOL STUDENTS

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Abstract: Rural American Indian (AI) middle school students with depressive symptoms who participated in a culturally modified version of the Adolescent Coping with Depression (CWD-A) course (n = 8) reported significant improvement in depressive symptoms at post-intervention and at 3-month follow-up. There was also a nonsignificant but clinically relevant decrease in participants' anxiety symptoms. Students reported satisfaction with the intervention, and it was potentially more cost-effective and less stigmatizing than the individualized treatment-as-usual interventions to which it was compared. These results suggest the CWD-A is a promising approach for reducing depressive and anxiety symptoms in rural AI students and should be further evaluated with a larger sample of students.

Many youth in the United States, particularly American Indian (AI) youth, reside in rural and often medically underserved communities. According to the 2000 U.S. Census Bureau, 39% of persons who identify, at least in part, as American Indian or Alaska Native (AI/AN) reside on reservations or in other rural communities (U.S. Census Bureau, 2010). Particularly concerning for AI youth living in reservation and rural communities is their limited access to mental health services (Ringel & Sturm, 2001; Stamm et al., 2003; U.S. Department of Health and Human Services [USDHHS], 2001).

Anxiety, disruptive behavior, mood disorders, and substance use disorders are the most prevalent mental health diagnoses in persons ages 13 to 18 years, with lifetime prevalence rates of 32%, 19%, 14%, and 11%, respectively (Merikangas et al., 2010). Lifetime prevalence of major depressive disorder/dysthymia in adolescents was estimated as 11.7% in the National Comorbidity Study (Merikangas et al., 2010). Findings from the 2010 National Survey on Drug Use and Health were that 8% of youth ages 12-17 years met criteria for a major depressive episode in the past year (USDHHS, 2012). Diagnostic rates of these problems in AI youth appear to equal or exceed rates in youth of other racial/ethnic groups (USDHHS, 2001; Whitbeck, Yu, Johnson, Hoyt, & Walls,

2008), although current data are scarce and at least one older study (Beals et al., 1997) reported lower rates of any anxiety disorder for AI adolescents from the U.S. Northern Plains compared to non-AI youth of similar ages.

Relative to diagnostic estimates of depressive disorders, studies using depressive symptom checklists typically find even higher rates of depression in adolescents—ranging from 20% to 50% of those surveyed, with increasing prevalence in girls, but not boys, at older ages (Kessler, Avenevoli, & Merikangas, 2001). In a national school-based study, Saluja et al. (2004) reported that AI/AN 6th, 8th, and 10th grade students had the highest percentage of elevated depressive symptoms (29%) compared to all other racial/ethnic groups. However, specific estimates should be interpreted with caution, given the variability in findings as well as the lack of research on the phenomenological aspects of depression and symptom expression in AI youth generally, and specifically across different AI communities (Manson, 1995). Of positive note is that the Center for Epidemiologic Studies-Depression (CES-D; Radloff, 1977) checklist has been empirically supported for use with AI adolescents and young adults in several studies (Kim, DeCoster, Huang, & Chiriboga, 2011; Thrane, Whitbeck, Hoyt, & Shelley, 2004; Whitbeck, Yu, McChargue, & Crawford, 2009);

Depression in adolescents has serious consequences, including increased risks for suicide, comorbid substance use disorders, adulthood reoccurrence, and general life impairment (Brooks, Harris, Thrall, & Woods, 2002; Glied & Pine, 2002; USDHHS, 2010). These concerns are even greater for AI/AN youth, who have the highest rates of suicide in the U.S. of all racial/ethnic groups (Centers for Disease Control and Prevention, 2009; Suicide Prevention Research Center, 2011). AI/AN youth are at higher risk for depression, substance abuse, and suicide due to their relatively higher levels of economic and social disadvantage, exposure to alcohol and drug use, exposure to suicide and other violent behavior, and acculturation stress, as well as the extraordinary history of relocation, discrimination, and trauma of Native people (Goodkind, LaNoue, & Milford, 2010; Holm, Vogeltanz-Holm, Poltavski, & McDonald, 2010; LaFromboise, Albright, & Harris, 2010; Suicide Prevention Resource Center, 2011; USDHHS, 2001).

Despite the need for effective and early interventions for preventing and reducing depression, anxiety, and related problems in AI youth, very few intervention outcome studies have been conducted. Gone and Alcántara (2007) reported that only two interventions to date have been sufficiently tested to warrant designation as “evidence-based” for use with AI populations: An adaptation of the 16-week Coping with Depression course (Lewinsohn, Holberman, & Clarke, 1989) conducted by Manson and Brenneman (1995) was effective in reducing depression in older AIs living in the Pacific Northwest, and the Zuni Life Skills Development Curriculum, which lasted one year and included nearly 100 sessions (LaFromboise & Howard-Pitney, 1995), was effective in reducing suicidal ideation and hopelessness in AI students from a Southwest tribal school.

A recent pilot study with 24 AI youth from three Southwestern tribes demonstrated the feasibility and effectiveness of a culturally adapted intervention for reducing trauma-related anxiety and depression symptoms (Goodkind et al., 2010).

All three of the interventions described are based on cognitive-behavioral therapy (CBT) principles and skills, which emphasize decreasing negative thoughts, feelings, and associated affective states; decreasing risk behaviors; and increasing positive activities, including psychosocial and coping/self-regulation skills. Because empirically supported CBT interventions for depression are psychoeducational, skill based, adaptable, have a positive focus, and may be conducted in groups, some (e.g., Goodkind et al., 2010) have argued that adapting and testing CBT approaches with AI youth holds considerable promise, despite potential cultural barriers (see Gone & Alcántara, 2007 for a discussion of these issues, including the role of the therapist in the community and the role of science and evidence-based practices, among others). Additionally, school-based courses for improving mood and social functioning may provide a less stigmatizing approach for AI youth and their families as compared to other outpatient treatments for depression (Cuijpers, Muñoz, Clarke, & Lewinsohn, 2009; Manson, 1992; LaFromboise & Howard-Pitney, 1995).

In the current study, we report on the effectiveness of a culturally adapted Coping with Depression course for Adolescents (CWD-A; Clarke, Lewinsohn, & Hops, 1990) in reducing depressive and anxiety symptoms in a group of AI middle school students from a rural Northern Plains tribal school. The CWD-A is a group-based course shown effective in reducing depressive symptoms and improving psychosocial functioning in nonminority youth (see Cuijpers et al., 2009). The intervention team selected the CWD-A to adapt for AI students in the school setting for several reasons: (1) its empirical support with adolescents and with AI adults; (2) its flexibility and adaptability; (3) its brief (16 sessions) and, thus, potentially cost-effective approach; (4) its focus on improving both depressive and anxiety symptoms; and (5) its potential for being acceptable to AI youth and their families. The adaptation is described in the Methods section.

We hypothesized that students who participated in the CWD-A course would have significantly less depression and anxiety from pre- to post-intervention and at 3-month follow-up; that participants would report satisfaction with and acceptance of the course; and that students' improvements in depression and anxiety would equal or exceed outcomes for a group of comparison students receiving individualized treatment-as-usual (TAU) interventions for their depressive symptoms.

METHODS

Participants

Participants were 16 AI middle school students identified as having depressive symptoms from a rural Northern Plains reservation school that served a community with low socioeconomic status. The CWD-A group consisted of 8 students and the treatment-as-usual group, hereafter call the TAU group, consisted of 8 students. Participants in the CWD-A group ranged from 11 to 14 years of age ($M = 12.38$, $SD = .92$) and participants in the TAU group ranged from 12 to 14 years of age ($M = 12.5$, $SD = 1.07$). There were 3 girls and 5 boys in each group. The CWD-A group consisted of 5 sixth graders, 2 seventh graders, and 1 eighth grader; the TAU group consisted of 4 sixth graders, 2 seventh graders, and 2 eighth graders. There were no differences at pre-intervention between students in the CWD-A group and the TAU group in age, grade in school, gender, or on the two symptom inventories.

Procedure

Community, Educator, and Parent Involvement

This study was a collaboration of school and community stakeholders; the course was provided within the school with the support of the community. Prior to the beginning of the study, the primary investigator (PI) contacted educators, community mental health professionals, school administrators, and an outside expert on AI/AN mental health and asked them to independently review materials and provide input on the study design, course materials, and program evaluation. The study was then approved by the University of North Dakota Institutional Review Board, the local school administrators, and the tribal community school board (according to community protocol for a school-based intervention). Publication and presentation of the course material and study results was agreed upon by the PI and local school administration. All course- and study-related publications and presentations have been shared with the local school administrators for community dissemination.

Modified Coping with Depression for Adolescents Course Materials

The PI, in consultation with educators, school and community mental health professionals, as well as an expert in AI mental health issues, modified the CWD-A course (Clarke et al., 1990) to be used with AI middle school students. The CWD-A course is a CBT intervention; therefore, it is structured and time-limited. The course is based on cognitive (Rush, Beck, Kovacs, & Hollon, 1977), self-control (Rehm, 1977), behavioral (Lewinsohn, Youngren, & Grosscup, 1979),

interpersonal (Weissman et al., 1979), and social skills (Bellack, Hersen, & Himmelhoch, 1981) treatment approaches, with a strong focus on skill development. The CWD-A course was developed for groups of six to eight students to be taught in 16 2-hour sessions.

Many of the modifications made for the current study were based on Kahn, Kehle, Jenson, and Clark's (1990) modifications for middle school students, but utilized the most recent version of the CWD-A course. Kahn's primary modifications included simplification of terms, examples, role-plays, practice assignments, and removal of the relaxation and parent training components. Kahn's modified course was taught in 12 50-minute sessions. For this study, additional modifications for cultural sensitivity and relevance were made, including offering it as part of the regular school schedule (class credit was provided), changing examples and role-play situations to reflect culturally appropriate and relevant activities, and adding discussions about the cultural impact of skills such as assertiveness, eye contact, constructive criticism, and self-disclosure.

The name of the course was changed to the Skills Development Class, to remove stigma from attending the group. The class was taught in 13 35- to 40-minute sessions, held twice each week for 7 weeks, followed by 2 booster sessions held within 1 month post-intervention. Booster sessions included a general review of materials covered during the class. Students were provided small snacks to encourage a relaxed atmosphere, as well as small rewards for meeting their goals or completing homework. A certificate of completion was provided to students at the end of the class.

Detailed information on the class can be found in the treatment manual and is available upon request from the author. Intervention materials and a complete report of findings and recommendations for future implementation were distributed to school and community professionals. In addition, caregivers were encouraged to meet, ask questions, and share feedback with the PI at the Spring Parent Fair held at the school.

Measures

The Children's Depression Inventory (CDI; Kovacs, 1992) is a 27-item self-report questionnaire that is widely used to measure depressive symptoms in youth. Students indicate which symptoms are most true for them during the past two weeks and score each symptom as either 0 (e.g., *sad once in a while*), 1 (*sad many times*), or 2 (*sad all the time*). The psychometric properties of the CDI have been empirically supported for use in both nonminority and African American youth (Craighead, Smucker, Craighead, & Ilardi, 1998; Saylor, Finch, Spirito, & Bennett, 1984) and AI Northern Plains youth (Hamill, Scott, Dearing, & Pepper, 2009; Scott et al., 2008; Scott & Dearing, 2012). Analyses in the current study were based on raw scores, but raw scores were also transformed to *T* scores to examine clinical significance levels. *T* scores at or above 65 were considered to show "clinically significant" depressive symptoms.

Longitudinal research on the CDI has found small decreases in scores, due to testing effects, over successive administrations with one-year lag times (Twenge & Nolen-Hoeksema, 2002); however, we have not found any published evidence that decreases in scores across briefer periods of time, e.g., less than 6 months, are confounded by testing effects. Twenge and Nolen-Hoeksema (2002) also reported in their meta-analysis that they found no evidence that decreases in CDI scores across time are due to social desirability bias (i.e., the tendency to answer in a manner viewed as favorable by others).

The Multidimensional Anxiety Scale for Children (MASC; March, 1997) is a 39-item self-report measure of anxiety in children and adolescents. The measure utilizes a four-point Likert-type scale. When converted to *T* scores, scores at or above 65 are considered to show “clinically significant” anxiety symptoms. The MASC has adequate test-retest reliability, discriminative validity, and concurrent validity with nonminority youth (March, 1997; Baldwin & Dadds, 2007), and emerging evidence suggests it is adequate for use with African American (Kingery, Ginsberg, & Burstein, 2009) and Southwestern AI adolescents (Goodkind et al., 2010).

An additional measure, developed by the PI and administered during the exit interview, evaluated students’ perceptions of the effectiveness of the intervention and their acceptance of and satisfaction with the class. The students responded, using a 10-point Likert scale, as to how much their mood improved due to the CWD-A class, with higher scores indicating a stronger belief that the class improved their mood. The students then placed a check mark by each skill that they remembered learning and rated the helpfulness of that skill. Students were then asked by the investigator to respond to three primary questions: (1) “What did you think of the class?” (2) “What did you think about how the class was taught?” and (3) “What did others think about you being in this class?” Last, students were asked if they had participated in a treatment program or if they had seen a counselor while in the class.

Participant Selection

First, all students attending grades 6-8 of the middle school ($N = 131$), including special education classes, were screened in the regular classroom setting for depressive symptoms with the CDI (Kovacs, 1992) as part of a schoolwide biyearly depression screening. Students with raw scores of 15 or higher on the CDI, indicating moderate levels of depression, were considered for inclusion in the CWD-A class. Thirty-six students (27% of those screened) met inclusion criteria after this step.

Next, caregivers of all 36 students who met inclusion criteria were contacted via letter or follow-up phone call. Information regarding their child’s depression screening, local counseling services, and information on the CWD-A class and study was provided. If a caregiver provided written consent for his/her child’s participation, the PI contacted the child, provided information

about the class, and asked if he/she assented to participate. All students whose caregivers provided written consent assented to participate in the class. Caregiver consent and student assent were completed for 19 (53%) of the 36 students. Students were then randomly assigned, using a block design to ensure equal numbers of boys/girls and grade levels, to one of two conditions: (1) CWD-A group or (2) TAU group. Ten students were assigned to the CWD-A group and 9 students were assigned to the TAU group. After group assignment, one student in the CWD-A group withdrew, leaving 9 students in the CWD-A group. Midway through the class, one student in the CWD-A group chose not to continue in the group; the student was provided the remainder of the materials individually and was not included in the analysis. One student in the CWD-A group completed the post-intervention CDI measure and exit interview, but did not complete the post-intervention anxiety measure and was included in all but the anxiety measure analysis. In the TAU group, one student withdrew due to school absenteeism. A total of 16 students (8 CWD-A group, 8 TAU group) were included in the final analyses.

Students in the CWD-A group attended the class during the second quarter of the Fall semester. Students in the TAU group were offered services in the community, either at their local Indian Health Service clinic or with the school counselor, during the Fall semester. Sixty-three percent (5 of 8) of students in the TAU group received some level of individualized counseling services during the year. Specific interventions provided to these students were not evaluated. Further, it should be noted that, due to the small size of the community and limited resources, therapists involved in the CWD-A class provided some of the individualized services to students in the TAU group. In the fourth quarter of the school year, 75% (6 of 8) of students in the TAU group went on to take the CWD-A class.

Therapists

Classes were team-taught by two therapists: One was an Indian Health Services mental health professional with a masters degree in social work; the second, a graduate student with a masters degree in clinical psychology employed by the school. The IHS professional was of AI ethnicity and led the class. Both therapists had previous experience working with adolescents. Both received additional training in the CWD-A class, as well as weekly supervision, by the PI and a PhD-level clinical psychologist who consulted with the school. The class can be taught by one or two therapists and can be delivered by a variety of mental health professionals.

Design

All students who had caregiver consent and provided assent to participate ($N = 19$) completed the CDI and MASC at pre-intervention. At the end of the 7-week CWD-A class, the remaining students ($N = 16$) again completed the CDI and MASC. Students in the CWD-A group also

participated in an exit interview. Three months after post-intervention measures were completed, students again completed the CDI and MASC ($N = 16$). Students who had elevated depression scores at follow-up (T score > 65 on the CDI) were contacted, as were their caregivers, and referrals for local counseling services were made.

Data Analysis

Two repeated measures ANOVAS using SPSS 14.0 were conducted to examine the between-group by measurement time (pre-intervention, post-intervention, and 3-month follow-up) interaction effects for the students' CDI and MASC scores. Using GPOWER 3.0, we determined that, at a power of 0.80 with an alpha level of 0.05, our sample size of 15 was sufficient to detect only a large effect (eta-squared of .14 or greater). We therefore report both the significance level of the findings and the overall effect sizes.

RESULTS

Post-intervention and 3-month Follow-up Changes in Depressive and Anxiety Symptoms

Depressive Symptoms

A mixed repeated measures ANOVA was used to analyze group (CWD-A group vs. TAU group) differences in changes on the CDI from pre- to post-intervention to 3-month follow-up (measurement time effect). There was no significant interaction effect of group and time, but there was a significant main effect of time, indicating that students in both groups reported significantly lower scores on the CDI from pre- to post-intervention to 3-month follow-up, $F(2, 28) = 10.09$, $p < .01$ ($\eta^2 = .419$ demonstrating a large effect size). Follow-up tests found a significant difference between the pre-intervention and post-intervention scores, $t(15) = 2.843$, $p < .05$, as well as a significant difference between the pre-intervention and 3-month follow-up scores, $t(15) = 5.256$, $p < .001$, indicating a decrease from pre- to post-intervention that was maintained at follow-up for both groups of students. Means and standard deviations for the CDI scores at pre-intervention, post-intervention, and 3-month follow-up periods are presented in Table 1.

Three students (33.3%) in the CWD-A group and 3 students (37.5%) in the TAU group had scores at or above the clinically significant level for depression symptoms (≥ 65) at pre-intervention. At post-intervention, 2 students in each group continued to have clinically significant scores, but by 3-month follow-up, only 1 student in each group continued to have clinically significant levels of depressive symptoms.

Table 1
Means and Standard Deviations for the Children’s Depression Inventory (CDI) and the
Multidimensional Anxiety Scale for Children (MASC) by Group and Assessment Time

	CWD-A Group				TAU Group			
	<i>n</i>	Pre	Post	3-month Follow-up	<i>n</i>	Pre	Post	3-month Follow-up
CDI Total Depression Score								
Mean	8	21.00	14.38	14.13	8	20.37	13.25	11.25
<i>SD</i> ^a		(5.29)	(9.93)	(8.11)		(4.10)	(9.87)	(6.41)
MASC Total Anxiety Score								
Mean	7	51.57	43.29	40.14	8	44.25	37.00	46.00
<i>SD</i>		(14.44)	(23.01)	(24.14)		(23.93)	(23.34)	(16.94)

^a *SD* = Standard deviation

Anxiety Symptoms

There were no significant group differences or changes in scores on the MASC from pre- to post-intervention to 3-month follow-up, although the moderate effect size of the interaction ($\eta^2 = .105$) suggested the groups differed from pre-intervention to follow-up. Although we did not have sufficient power to test for group differences at only two time points, the means in Table 1 show that students in the CWD-A group maintained their gains at 3-month follow-up, but the TAU group scores returned to pre-intervention levels at 3-month follow-up.

Post-Intervention Interview

All students who completed the CWD-A class ($n = 8$) also completed a post-intervention interview. Students’ perceptions of improvements in their depressive symptoms were rated on a scale from 1 (*The class helped improve my mood not at all*) to 10 (*...helped very much*); the average rating was 7. Next, students were asked which skills, out of a list of 20, they remembered learning in the class and were asked to rate the skills as being either “not helpful,” “somewhat helpful,” or “really helpful.” On average, students reported recalling 75% of the class topics, and indicated that approximately 50% of the class topics were “somewhat helpful” and 25% were “really helpful.” Students’ favorite class topics involved learning to interact with others (friendly skills, starting conversations), topics repeated throughout the class (mood diary, active listening, goal setting), and specific class exercises (brainstorming, hearing positive things about yourself).

Students also were asked their general impressions about the class. Most said they would take the class again and provided comments indicating general satisfaction with it (e.g., “It was fun,” “It was good,” “It was easy”). Some said that answering questions in front of other students was the most difficult part of the class. Many thought the class would work well for other students, including AIs. Students liked various elements of the class, including the 2- to 3-person group activities, the workbook, the rewards, and having the class during the regular school day. Five students reported discussing the class with family, friends, or teachers. Three reported that they talked with their family about the class and what they were learning, sharing that their caregivers supported the class. All but one said that they would recommend the class to their friends.

Treatment Fidelity

Average attendance for the 8 CWD-A group students who stayed in the class throughout the quarter was 11.4 of 13 regular sessions and 1.6 of 2 booster sessions. The PI and the school’s consulting clinical psychologist verified that therapists delivered the CWD-A components accurately and with fidelity. The CWD-A Course Therapist Compliance Measure (Clarke et al., 1990) was used to measure compliance with the treatment protocol. Four sessions (approximately 25%) were randomly selected for compliance ratings. Compliance was adequate, with 80% of treatment components found to be in perfect compliance and 20% of treatment components found to be in partial compliance.

DISCUSSION

Depression

The current study aimed to determine if the CWD-A class, which has been found to be effective among other populations, could be modified for use with rural AI middle school students experiencing moderate to severe depressive symptoms, and whether the modified class would be feasible and acceptable as a treatment modality within a rural AI reservation community. Unlike previous studies (Kahn et al., 1990; Lewinsohn, Clarke, Hops & Andrews, 1990) in which the effectiveness of the CWD-A intervention was compared to a no-treatment control group, our study compared students in a school-based CWD-A class to students receiving individualized TAU interventions in the school or community.

As hypothesized, students in the CWD-A group had a significant decrease in depressive symptoms at post-intervention, which was maintained at 3-month follow-up, as did students in the TAU group. In terms of clinically meaningful findings, we found that the number of students in

both groups that had clinically elevated CDI scores (T score ≥ 65) decreased from pre-intervention to follow-up, with only 1 student in each group continuing to have clinically elevated scores at 3-month follow-up.

This finding is consistent with a study by Weisz et al. (2009) that compared a group CBT approach to individualized TAU in the general population. Decreases in depression were seen across both groups, but group CBT was found to be less costly and was timelier in decreasing depressive symptoms.

Although depressive symptoms in youth, as with adults, may decrease over time without intervention, depression in youth is a serious risk factor for future depressive episodes and other serious consequences; therefore, increasing access to effective and nonstigmatizing interventions is a priority, especially for at-risk youth (Brooks et al., 2002; Stamm et al., 2003). This modified CWD-A course, a group skills-based intervention, led to a significant decrease in depressive symptoms while demonstrating time savings, as therapist time was utilized more efficiently in the group setting than it would have been in individual counseling sessions, and required fewer school and community resources, which is of particular importance in communities with limited mental health resources.

Anxiety

Results revealed a nonsignificant but clinically relevant decrease in the CWD-A group's anxiety symptoms. As hypothesized, there was a moderate effect size of the interaction, suggesting that the CWD-A and TAU groups differed from pre-intervention to follow-up, with only students in the CWD-A group maintaining a decrease in anxiety at 3-month follow-up. These results were evident despite the fact that anxiety symptoms were not specifically discussed with students in either group, nor were caregivers contacted regarding concerns about their child's anxiety. Other studies (e.g., Stark, Reynolds, & Kaslow, 1987) have indicated decreases in anxiety during treatment focused on decreasing depressive symptoms. Perhaps the CWD-A course, or other skills-based CBT group interventions, are more amenable to reducing anxiety than are individual treatment modalities that target depressive symptoms. Further research on the phenomenological aspects of anxiety and depression among AI youth may help elucidate these findings. Based on our observations and students' reports, it seems plausible that the class may have led to lowered anxiety by helping students manage anxiety-provoking situations and gain positive practice experiences, while students in the TAU group might not have been exposed to these experiences. However, without more detailed information on the TAU interventions, specific conclusions cannot be made.

Students' Perceptions of the Class

In the post-intervention interview, students reported that the CWD-A class was helpful in improving their mood, noted a preference for 2- to 3-person activities, and indicated that family and friends were typically supportive. For example, one student responded by asking when the class would be offered again, indicating that he/she would like to learn more skills by taking it again. Student feedback suggested that the number of class sessions could be increased or the amount of materials limited to provide for more repetition of materials. In addition, offering the class multiple times may be acceptable to students and could potentially lead to better outcomes. Students found the class to be an acceptable treatment modality, consistent with research by others on group CBT approaches with AI youth experiencing trauma symptoms (Goodkind, et al., 2010).

Furthermore, the school counselor and third author of this report noted that some students who had refused individual counseling in the past agreed to attend the class, and caregivers who had not previously consented to individual counseling services for their child agreed to their child's participation in the class. This finding suggests that, at least for some students and their caregivers, the CWD-A class, held within the school setting, may be less stigmatizing than individual counseling services, and perhaps more consistent with AI culture and values (LaFromboise & Howard-Pitney, 1995) and the collectivistic perspective of many AI communities (Brislin, 2000).

It is possible that the group setting was inhibiting for some students, especially given that they knew one another relatively well. In this study, however, CWD-A class leaders consistently reminded students that they did not have to discuss any information that they felt uncomfortable sharing, and that choosing to discuss private and sensitive feelings was their decision. Nonetheless, whenever CWD-A is implemented, group leaders should monitor and refer students who appear to need individualized attention. Conversely, the fact that the students knew one another well may have enhanced the intervention, given the importance of high group cohesion in predicting positive outcomes in CWD and other group therapies (e.g., Hoberman, Lewinsohn, & Tilson, 1988).

Strengths and Limitations

The current study adds to the literature base on the feasibility of the CWD-A course by examining its effectiveness and acceptability among rural AI middle school students. This study demonstrated a promising way to provide services in a rural, underserved community. The acceptability of this modified CWD-A course among AI students expands the potential use of this well-established treatment for youth with depressive symptoms. Furthermore, results also suggest that the CWD-A course may have some impact on anxiety symptoms, although this finding needs to be examined in more detail and with a larger sample of students. A final strength of this study was

the strong collaboration between the school and local mental health professionals in implementing this class. Parents, teachers, administrators, community members, and school and community mental health professionals worked together to review the design, implementation, and evaluation of the CWD-A class. This newly modified version of the CWD-A class is now available for other researchers and mental health professionals to use within this and other communities.

This small pilot study was limited, and further research is needed to support our findings and provide more evidence for using this approach with other AI youth. Due to the small sample size, we had reduced statistical power to test statistical effects, but we believe that our findings could be supported with a larger sample size. Further, results from this specific community may not generalize to other AI students, particularly those not living in rural reservation communities.

In addition, given the size of this community and the limited access to mental health services, therapists who provided the CWD-A class also provided individual TAU interventions within the community, perhaps decreasing some of the differences between the groups. Given our lack of detailed information on these TAU components, our ability to compare and differentiate these groups was further complicated, and specific conclusions about the TAU interventions or how they might compared to the CWD-A course cannot be drawn.

Another concern was the high percentage of students with depressive symptoms during the screening process who declined participation in the study/class (47% of eligible students). This finding might suggest a low level of acceptability with the screening and recruitment process among families in the community, or it might be related to other factors, including the possibility that CDI scores might be influenced by social desirability bias. However, at least one study has reported that social desirability bias was not evident in youth with elevated depression scores on the CDI (Logan, Claar, & Scharff, 2008). Nonetheless, concerns about adolescent response bias should be acknowledged, and, consistent with evidence-based assessment practices, multiple sources of information should be considered in making diagnostic and treatment decisions for adolescents who may be depressed. With that said, 53% of eligible students did opt to participate, considerably higher than Goodkind et al.'s (2010) participation rate (31%) in a similar school-based group CBT intervention for AI youth. Future studies could be conducted to better understand those who declined participation, to determine barriers to treatment, and to investigate whether there are any differences between students' families who chose to participate versus those who declined (e.g., in terms of their readiness for change in treatment).

Another limitation was the lack of "real-life" indicators of symptom change. A more detailed examination of factors such as grades, attendance, work completion, and school attitude may be helpful, as well as caregiver and teacher reports of students' symptoms.

Last, Beauvais and LaBoueff (1985) discuss the role of acculturation and its importance in understanding and working with diverse groups of people. Future research may benefit from examining how an individual's identification with his/her own culture as well as with the majority culture impacts the effectiveness of CBT interventions.

Conclusions

Results suggest that this modification of the CWD-A course is a promising treatment intervention for rural AI middle school students with depressive symptoms in this particular Northern Plains reservation community. Students in both groups demonstrated a significant decrease in depressive symptoms, with some students moving out of the range of clinical significance. There was also a trend for students in both groups to have a decrease in anxiety symptoms from pre- to post-intervention, although only students in the CWD-A group continued to demonstrate a trend toward lower anxiety symptoms at 3-month follow-up. Although more research is clearly needed, this study contributes to the literature on CBT for youth in underserved rural communities, informing the acceptability and feasibility of cultural adaptations to a CBT depression intervention for youth. While students in both the CWD-A and TAU groups reported a decrease in depressive symptoms, the effectiveness and acceptability of the group intervention suggests that this culturally modified version of the CWD-A course may be a promising treatment alternative, as it utilizes fewer school resources than individual treatment and may be a less stigmatizing treatment approach in rural AI communities.

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EXPANDING URBAN AMERICAN INDIAN YOUTHS' REPERTOIRE OF DRUG RESISTANCE SKILLS: PILOT RESULTS FROM A CULTURALLY ADAPTED PREVENTION PROGRAM

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Abstract: This article examines changes in the drug resistance strategies used by urban American Indian (UAI) middle school students during a pilot test of a substance use prevention curriculum designed specifically for UAI youth, Living in 2 Worlds (L2W). L2W teaches four drug resistance strategies (refuse, explain, avoid, leave [R-E-A-L]) in culturally appropriate ways. Data come from 57 UAI students (53% female; mean age = 12.5 years) who participated in L2W during an academic enrichment class for Native youth at two Phoenix schools. Students completed a pre-test questionnaire before the L2W lessons and a post-test 7 months later. Questions assessed the use of R-E-A-L and alternative strategies commonly reported by UAI youth (change the subject, use humor). Tests of mean differences from pre-test to post-test showed significant increases in use of refuse, explain, and leave, and an expanding R-E-A-L repertoire. Use of more passive strategies (avoid, use humor) did not change significantly, except for change the subject, which increased. Changes in the use of strategies did not differ significantly by gender, age, school grades, parental education, or length of urban residence. The L2W curriculum appears effective in teaching culturally relevant communication strategies that expand UAI youths' repertoire of drug resistance skills.

INTRODUCTION

This article reports on a pilot test of a culturally adapted substance use prevention intervention designed specifically for urban American Indian (UAI) youth. The adapted curriculum, called *Living in Two Worlds* (L2W), is based on *keepin' it REAL*, a universal substance use prevention curriculum which is designed to equip youth in middle school with a repertoire of skills to resist substance use offers (Gosin, Marsiglia, & Hecht, 2003). *Keepin' it REAL* is a model program for middle school

students on the National Registry of Evidence-Based Programs and Practices (Substance Abuse and Mental Health Services Administration [SAMHSA], 2011a). The original program teaches the four drug resistance strategies (refuse, explain, avoid, leave [R-E-A-L]) used most often by youth in the United States and Mexico (Alberts, Miller-Rassulo, & Hecht, 1991; Kulis, Marsiglia, Castillo, Becerra, & Nieri, 2008; Kulis, Marsiglia, Ayers, Calderón-Tena, & Nuño-Gutierrez, 2011; Marsiglia, Kulis, Martinez Rodriguez, Becerra, & Castillo, 2009). The L2W curriculum is designed to reflect the social contexts in which UAI youth are exposed to substances and culturally influenced ways of responding to offers to use them. This article describes changes in the nature and frequency of use of drug resistance strategies as reported by UAI students who participated in a pilot test of the adapted prevention curriculum at two sites.

Substance Use among AI Youth

Prevention programs for AI youth that teach drug resistance strategies are vitally important given the severe impact of substance use on many AI communities. AIs have disproportionately higher rates of preventable diseases resulting from substance use. Of the 10 leading causes of death among AIs, 4 are closely linked to substance use: liver disease and cirrhosis, injuries, suicide, and homicide (Centers for Disease Control and Prevention, 2001). Age-adjusted rates of death resulting from alcohol dependence are reported to be as much as six times higher for AIs than for the general population of the U.S. (Indian Health Service, 2009).

Research on different populations of AI youth has often reported that they are highly vulnerable to substance use, although rates of use vary markedly by substance, region, and tribal background (Beauvais, 1996). For example, in a recent national survey, AI adolescents (12-17 years of age) reported lower rates of current alcohol use than their Hispanic and non-Hispanic White counterparts (SAMHSA, 2011b). Compared to non-Native youth, however, AI adolescents have reported earlier onset, higher rates, and less perceived harmfulness of substance use in some studies (Moncher, Holden, & Trimble, 1990; SAMHSA, 2004). Studies of AI youth have also found that alcohol and substance use are associated with risky sexual behavior, mental health problems, and suicidality across clinical, community-based, reservation, urban, national, and statewide samples (Dickerson & Johnson, 2012; Hellerstedt, Peterson-Hickey, Rhodes, & Garwick, 2006; Kaufman et al., 2007; Marsiglia, Nieri, & Stiffman, 2006; Potthoff et al., 1998; Stiffman, Striley, Brown, Limb, & Ostman, 2003). The severe health threats linked to AI youth substance use present an urgent need for effective prevention approaches.

Prevention through Drug Resistance Training

The systematic incorporation of drug resistance skill training in prevention programs is supported by communication competence theory (Spitzberg & Cupach, 1984), which posits that youth are better able to competently resist using substances when they possess the knowledge, skills, and appropriate motivation regarding various ways of communicating effectively (Bandura, 2001; Griffin, Botvin, Scheir, Epstein, & Doyle, 2002; Gosin et al., 2003). The knowledge component relates to understanding the effects and consequences of substance use, while the skills component involves effective ways of interacting and communicating to resist substance offers. Motivation encompasses normative (dis)approval of substance use, the attitudes of peers towards substance use, and expected consequences of substance use. Together, these components facilitate divergent thinking, the ability to consider multiple strategies in a substance offer situation until an effective strategy is identified (Wright, Nichols, Graber, Brooks-Gunn, Botvin, 2004). Relying on only one strategy may be inadequate because pressure from the offeror may increase after initial resistance to the offer (Alberts, Hecht, Miller-Rassulo, & Krizek, 1992). A wide repertoire of drug resistance skills is needed, too, because substance offer interactions unfold in different ways depending on the setting, the person offering, and the particular substance. Youth are particularly susceptible to substance offers from peers, increasing the need for good communication skills (Alberts et al., 1991; Alberts et al., 1992; Botvin & Botvin, 1992). Youth are less likely to use substances if they are socially adept at turning down substance offers while also maintaining valued relationships with peers (Doi & DiLorenzo, 1993; Griffin et al., 2002; Skara & Sussman, 2003).

Prevention programs that teach a repertoire of drug resistance strategies have been found to be effective among multicultural samples including non-Hispanic White, Latino, and African American youth (Botvin, Schinke, Epstein, & Diaz, 1994; Kulis et al., 2005; Hecht et al., 2003). The drug resistance strategies taught in the *keepin' it REAL* curriculum—refuse, explain, avoid, leave—represent a variety of approaches to resisting substance offers. The refuse strategy is to turn down a substance offer verbally or nonverbally without an explanation. The explain strategy declines the offer while providing an explanation or excuse. The avoid strategy is to decide to stay away from situations or places where substances might be offered. The leave strategy is to physically exit situations when substances are offered (Marsiglia & Hecht, 2005). The *keepin' it REAL* curriculum extended prior prevention models that teach drug resistance and life skills (Botvin, Griffin, Diaz, & Ifill-Williams, 2001) by incorporating values and practices from diverse ethnic groups that promote cultural protection against substance use (Castro, Proescholdbell, Abeita, & Rodriguez, 1999). The curriculum was designed to be culturally grounded (Marsiglia & Kulis, 2009), that is, embedded in the cultural values of the target populations, rather than merely composed of

symbolic cultural representations, such as superficial alterations to language, examples, or visual images. The *keepin' it REAL* program was systematically grounded in the communication styles and cultures of three youth populations—Mexican American, African American, and non-Hispanic White—and this multicultural intervention was proven effective in preventing substance use and reinforcing anti-drug norms and attitudes among youth from these racial and ethnic groups in a randomized controlled trial (Hecht et al., 2003; Kulis et al., 2005). The *keepin' it REAL* program was, however, found to be not as effective for UAI youth, a group that was not explicitly targeted in the program's development (Dixon et al., 2007). In the randomized trial, over 400 UAI youth who participated in *keepin' it REAL* reported steeper trajectories of alcohol and marijuana use compared to both their non-Native counterparts and to UAI youth not in the program. Additional research with UAI youth found evidence of distinctive social and cultural contexts of substance offers and culturally influenced ways of handling such offers (Hurdle, Okamoto & Miles, 2003; Kulis, Okamoto, Rayle, & Sen, 2006; Okamoto, Hurdle and Marsiglia, 2001; Okamoto, LeCroy, Dustman, Hohmann-Marriott, & Kulis, 2004; Okamoto et al., 2006, Rayle et al., 2006; Waller, Okamoto, Miles, & Hurdle, 2003). This research suggested the need for an adaptation of the *keepin' it REAL* curriculum to incorporate culturally distinctive worldviews, authentic examples of substance use scenarios, and drug resistance strategies.

Cultural Program Adaptation for UAI Youth

Although a detailed description of the adaptation process is beyond the scope of this article (see Reeves, Dustman, Kulis, & Harthun, in press), the comprehensive summary below emphasizes the aspects of the process that bear most directly on this article, with illustrative examples of each stage.

The adaptation of *keepin' it REAL* for UAI youth followed the cultural adaptation model proposed by Castro and colleagues (Castro, Barrera & Martinez, 2004), which systematically incorporates three types of information: (1) prior research on ecological risk and resiliency factors and environmental contexts of substance use among UAI students; (2) ways that UAI youth typically encounter and respond to substance offers; and (3) representations of UAI cultural values and heritage based on feedback from several UAI constituencies: middle school students; their parents; and elders, other leaders, and professionals from the UAI community.

Research has shown how risk and resiliency related to substance use for AI youth emerge from interdependent relationships with peers and family members in schools, reservations, and communities (Hurdle et al, 2003; Waller et al., 2003; Trotter, Rolf, & Baldwin, 1997). A frequently documented risk factor is the prevalent exposure of AI youth to substance use within the family. This exposure may occur through permissive substance use attitudes held by parents and other

family members, substance offers made to youth by their relatives, and adult models of substance use and addiction (Bates, Beauvais, & Trimble, 1997; Hurdle et al., 2003; King, Beals, Manson, & Trimble, 1992; LeMaster, Connell, Mitchell, & Manson, 2002; Moran & Reaman, 2002; Oetting, Beauvais, & Edwards, 1988; SAMHSA, 2004; Swaim, Oetting, Thurman, Beauvais, & Edwards, 1993; Trotter et al., 1997; Waller et al., 2003; Yu & Stiffman, 2007; Yu, Stiffman & Freedenthal, 2005). Peers, siblings, and cousins also exert strong influences on AI youth to use substances or resist their use (Trotter et al., 1997). Cousins are very influential in the substance use decision making of UAI youth due to their frequent interaction in multiple environments (e.g., schools, neighborhoods, reservations; Waller et al., 2003). The adapted L2W curriculum incorporated narratives of UAI youth who described actual scenarios where they had encountered substance offers, including the specific setting and their relationship to the person offering the substance (Kulis et al., 2006; Okamoto et al., 2004).

The adapted curriculum also incorporated culturally specific drug resistance strategies identified in prior research. Qualitative studies show that, although large proportions of UAI youth use the four R-E-A-L drug resistance strategies, they employ them in distinctive ways and supplement them with other means of resisting substance use (Kulis & Brown, 2011; Kulis, Reeves, Dustman and O'Neill, 2011). For example, when utilizing the refuse strategy they emphasize respectful ways to say “no” to an offer, and often follow a direct refusal with some version of the explain strategy. In addition to avoiding situations where substances were offered, they rely on passive strategies to evade using substances while remaining present when offers occur (e.g., redirecting attention away from the substance offer by changing the subject or using humor). These nonconfrontational approaches may be preferred culturally because they allow AI youth to remain in social situations and preserve relationships with key members of their peer and family networks (Okamoto et al., 2001).

The cultural adaptation also incorporated elements of AI cultural heritage into the curriculum lessons. The integration of traditional knowledge and values into self-identity can serve as a protective factor for Native youth by promoting ethnic pride, self-esteem, and interpersonal skills (Beauvais, 1998; Broderick, 1991; Kulis, Napoli, & Marsiglia, 2002; Marsiglia, Cross, & Mitchell-Enos, 1999; Weaver, 1996). Appropriate cultural content has also been shown to increase the effectiveness of prevention curricula for AI youth (Schinke et al., 1988). UAI youth have complex and varied ethnic and cultural identities, making it challenging to identify shared elements of cultural heritage that resonate among those from different tribal backgrounds and with different family histories of migration from reservation to urban communities.

For L2W, shared cultural elements were identified by four groups of UAIs who were recruited through a collaboration among the research team, leaders of local urban Indian centers, and school district personnel in charge of AI programs: an AI steering group, focus groups with UAI adults

and students, and local and national curriculum experts (see Reeves et al., in press, for details). Because of IRB concerns, group meetings were not video- or audio-taped; instead, research team members took extensive notes.

The steering group is an advisory body for the research team's university research center, and is comprised of UAI community leaders, Native K-12 educators and counselors, and center researchers who work with the local UAI community. The steering group reviewed the curriculum development; gave feedback on content, format, and teaching strategies; and made recommendations about recruitment, content, and format of the adult focus groups.

Four of these adult focus groups were held, with a total of 12 UAI participants: parents, educators, and/or providers serving the UAI community. The focus group participants discussed what UAI youth should know to keep themselves safe in dangerous or risky situations, and which elements of AI culture should be embedded in a program for UAI adolescents.

The 20 UAI students who participated in two adolescent focus groups attended public middle schools in the local urban area. Led by Native facilitators, the students identified culturally influenced ways of responding appropriately to offers of alcohol, cigarettes, and other drugs (Kulis & Brown, 2011; Kulis, Reeves, Dustman, & O'Neill, 2011).

The research team identified curriculum experts locally through the AI steering group and contacts with the university's American Indian Studies department. National curriculum experts familiar with prevention curricula for Native youth were identified through contacts within professional associations and by project consultants. The experts reviewed an interim draft of the curriculum and provided feedback about the appropriateness of the content and format via a standard set of questions.

Although the members of the four groups that provided input on cultural content for the L2W curriculum were not formally asked to identify their tribal affiliations, their comments often made reference to their tribal heritage and represented a range of backgrounds and life experiences. The research team analyzed this feedback to identify the intertribal cultural elements—those that are meaningful across tribes—that were most commonly and widely seen as essential for culturally grounding UAI youth, and as protective and promotive of their well-being.

The qualitative data analysis was designed to identify emergent themes rather than a priori categories (Corbin & Straus, 2008). Several members of the research team, including AI members, worked independently to identify and code themes, grouping highly similar responses to reach saturation (Guest, Bunce, & Johnson, 2006). The coders then labeled and defined the categories based on team consensus, arriving at the following set of recurring themes: ancestry (including clans or bands), Native spirituality, oral traditions/storytelling, connection to reservation or "home," sacred history, ritual, respect, traditional language, and traditional beliefs (which represent the continuity

of culture and identity, passed down by elders, that helps youth understand their origins and their role in the community). These cultural heritage elements were systematically incorporated into the adapted curriculum through examples and exercises.

Based on the three sources of information used in the cultural adaptation model (prior research on ecological risk and resiliency factors, prior research on circumstances surrounding substance offers and responses, and cultural norms), *keepin' it REAL* was adapted to reflect the contexts of substance offers and use among UAI students in central Arizona. The L2W adaptation used culturally appropriate content, language, and delivery formats; fidelity to the core components of the *keepin' it REAL* program was preserved. These components include the R-E-A-L drug resistance strategies; communication competence training (Spitzberg & Cupach, 1984); a narrative-based approach—much like storytelling—to enhance identification with the prevention messages (Holland & Kilpatrick, 1993); social norms as motivators in substance use, such as adolescents' personal norms about whether substance use is (un)acceptable, expected (dis)approval of substance use by peers and parents, and perceptions of peer substance use (Cialdini, Reno, & Kallgren, 1990); and social learning theory (Bandura, 2001) to teach life skills and their role in risk assessment and decision making (Hecht et al., 2003). The adaptation presented the R-E-A-L strategies in a new order, and in variations that demonstrated culturally appropriate ways to utilize them. For example, the original program taught the avoid strategy primarily as a way to stay out of risky situations. It was expanded in L2W to include ways that UAI youth may use evasive tactics to eschew using substances in situations they cannot avoid, such as pretending to use substances offered by their cousins or discreetly discarding substances offered by adult family members. In addition to R-E-A-L, the research team incorporated other strategies that UAI youth had reported during the qualitative research phase, including redirecting (i.e., changing the subject) and using humor to deflect substance offers. The research team redesigned the curriculum examples to reflect AI cultural values and worldviews, and explorations of Native cultural heritage were interwoven into each lesson.

The purpose of the current study was to assess changes in the use of R-E-A-L and other strategies by the students who participated in a pilot test of the L2W curriculum. The specific objectives were to determine whether their use of R-E-A-L strategies increased, and whether they shifted from reliance on certain types of strategies to others, such as from relatively passive (avoid, change the subject) to more assertive or direct (refuse, explain, leave) means of resisting substance offers.

METHODS

The student respondents for this study ($N = 57$) were AI youth in the 7th or 8th grades enrolled in two urban schools in the Phoenix metropolitan area in the fall of 2008. These two schools were chosen because they offer voluntary academic and cultural enrichment programs specifically for AI youth. Official school district reports indicated that youth of AI background accounted for 5-11% of enrolled students at the schools. The respondents for the study comprised a nearly gender-balanced sample (53% female) and were age appropriate for 7th or 8th grade (mean age = 12.5 years; range, 11-15 years). All but one of the students said they belonged to an AI tribe or reservation community. Over 95% of the affiliations mentioned were with Arizona tribes or reservation communities. Reflecting the tribal backgrounds of the AI population in Phoenix, the tribe mentioned most often was Navajo (Diné). Most of the remaining affiliations were with the Apache, Hopi, or Tohono O'odham tribes.

The study followed human subjects protection policies of the researchers' university IRB, of the students' schools and school districts, and of the social service agency sponsoring the academic enrichment program. All of the youth who participated in the voluntary program were identified to the school as AI by their parents at the time of school enrollment. Every AI student enrolled in the voluntary academic enrichment program in the study schools was invited, and agreed, to participate in the study. Active parental consent and student assent were obtained from all the participants, starting with an explanatory letter sent home to parents/guardians. Every effort was made to obtain consent and assent in a non-coercive manner.

Students completed a pre-test questionnaire before the first L2W lesson and a post-test questionnaire 1 month after the lessons were finished, 7 months after the start of the project. University-trained proctors carried out the one-hour self-administered, written questionnaire in the students' regular classrooms. Students were informed that the questionnaire was part of a university research project, their participation was voluntary, and their answers were confidential. They were given the option to return a signed assent form and complete the questionnaire, or to return the assent form unsigned along with a blank questionnaire, without drawing attention to their choice not to participate. No blank questionnaires were returned at either pre- or post-test. Consented students who were absent on the initial date, or were unable to finish within the allotted time, were able to complete the questionnaire in class within the subsequent two-week period. Seven students who completed only the pre-test or the post-test, but not both, were not included in the analysis.

Twelve lessons of the L2W curriculum were delivered during the next 5 months during the regular class period for the Native educational and cultural enrichment program. Some lessons spanned multiple weekly classes. The lessons were delivered by a Native facilitator provided by the

largest social and educational service agency serving AIs in the metropolitan area. The facilitator received extensive training in delivery of the L2W curriculum from the research team.

Measures: The questionnaires asked students the number of times they used R-E-A-L strategies, as well as alternative strategies commonly reported by UAI youth in the focus group. The research team constructed multiple item measures of the use of seven drug resistance strategies, with parallel measures at pre- and post-test. The respondents indicated how often in the last 30 days they had used each specific strategy to deal with substance offers. (They were not asked to report the total number of times they were offered substances, or whether they chose between using a strategy and using a substance—only how often they used each strategy.) The strategies were described as follows. (1) “...said ‘No’ without giving a reason why?” (Refuse); (2) “...gave an explanation or excuse to turn down the offer?” (Explain); (3) “...avoided people or places because you might be offered [alcohol/cigarettes/marijuana]” (Avoid); (4) “...left the situation without accepting the offer?” (Leave); (5) “...changed the subject to talk about something else?” (Redirect); (6) “...made a joke or did something to make people laugh?” (Humor); (7) “...used some other way not to accept the alcohol/cigarettes/marijuana?” (Other). There were three questions for each strategy, referring in turn to ways that students dealt with offers of alcohol, of cigarettes, and of marijuana. The responses to each individual item were coded as the number of times the strategy had been used: 0, 1, 2, or 3 (or more) times. The research team calculated a score for each strategy by summing the responses to the three relevant items. In addition to measuring frequency of use of each strategy, the research team analyzed the strategies as dichotomies—whether the strategy had been used, regardless of frequency. Finally, the team calculated the size of each student’s R-E-A-L repertoire: the number of different R-E-A-L strategies s/he had used in the last 30 days (0 to 4), regardless of frequency.

Demographic characteristics employed in the analysis included gender (0 = male, 1 = female), age (in years), academic performance (usual school grades, from 1 = *mostly F’s*, 2 = *D’s and F’s*, 3 = *mostly D’s*, 4 = *C’s and D’s*, 5 = *mostly C’s*, 6 = *B’s and C’s*, 7 = *mostly B’s*, 8 = *A’s and B’s*, 9 = *mostly A’s*), highest parental education (1 = *less than high school*, 2 = *high school*, 3 = *beyond high school*), family type (0 = *one-parent household*, 1 = *two-parent household*), and length of urban residence (1 = *less than 1 year*, 2 = *1-5 years*, 3 = *more than 10 years*, 4 = *all my life*).

Analysis strategy: The research team assessed statistically significant changes in the number and type of drug resistance strategies through paired *t*-tests of mean differences in the frequency of their use from pre-test to post-test. Additional results present the proportion of students using each strategy at pre-test and post-test; the proportions who used the strategies with increasing, decreasing, and unchanged frequency; and those who used them neither at pre-test nor at post-test. Unlike the tests of mean differences—which can be influenced by large changes in frequency of use of the strategies by minorities of the students—these proportions reveal how commonly students

changed their behavior and in which direction, and they separate students who had no opportunity to use some strategies because of little or no exposure to substance offers in the prior month. We also tested whether changes in the frequency of use of strategies varied by demographic characteristics, using residual change regression models.

RESULTS

Table 1 presents descriptive statistics at pre-test and post-test on the use of drug resistance strategies in the last 30 days, as well as paired *t*-tests of mean differences in their use. The strategy used most commonly at pre-test was avoid, which was used by more than half the students and with a mean frequency that was more than twice that of any other strategy. The strategies used least often at pre-test were leave and unspecified other strategies, which were used by only about one-quarter of the students. The proportion of students using each strategy increased from pre-test to post-test, such that the mean frequency of use of the different strategies clustered within a narrower range at post-test. *T*-tests of mean differences showed significant increases from pre-test to post-test in use of three of the R-E-A-L strategies: refuse, explain, and leave. Use of redirect and unspecified other strategies also increased significantly. Use of the avoid strategy declined slightly but non-significantly, and use of humor increased non-significantly. The size of the students' R-E-A-L repertoire also increased significantly. A typical student used 1.5 of the four R-E-A-L strategies at pre-test but 2.24 of them at post-test, and the proportion using at least one of the R-E-A-L strategies grew by 10% from pre-test to post-test.

Table 1
Use of Drug Resistance Strategies in the Last 30 Days, at Pre-test and Post-test (N = 57)

Variable	Pre-test			Post-test			t-test
	Mean	SD	% Non-zero	Mean	SD	% Non-zero	
Refuse	1.06	2.16	32.6%	2.04	2.48	56.1%	2.25*
Explain	1.25	2.31	34.7%	2.04	2.29	57.5%	1.84*
Avoid	2.63	3.37	54.2%	2.29	2.57	57.1%	-0.61
Leave	0.87	1.93	28.8%	1.75	2.28	52.6%	2.22*
Redirect (Change subject)	1.17	2.12	35.1%	2.00	2.51	54.6%	1.91*
Humor	1.27	2.11	38.1%	1.79	2.28	52.1%	1.24
Other strategy	0.89	2.02	25.8%	2.18	2.68	55.8%	2.89**
REAL Repertoire	1.50	1.48	65.3%	2.24	1.61	75.4%	2.73**

One-tailed tests:

* $p < .05$

** $p < .01$

Means for the demographic variables at pre-test (data not included in Table 1) indicated that a majority of the students were female (53%) and living with both parents (63%) rather than one parent (all lived with at least one parent, and approximately 20% also lived with a grandparent). The average student was 12.5 years old, with typical school grades corresponding to C's and D's, high-school educated parent(s), and more than 10 years of residence in the urban area. Although exact data on substance offers were not collected, more than four fifths of the students noted that they were at least sometimes in situations where alcohol, cigarettes, marijuana, or other drugs were available to them.

Table 2 depicts the changes in use of drug resistance strategies from pre-test to post-test in another way, by dividing the students into four categories: those who never used the strategy at pre- or at post-test, those who used it at both times at the same frequency, those whose use decreased in frequency, and those whose use increased in frequency. The distributions were very similar for five strategies: refuse, leave, redirect, humor, and unspecified other. For these, approximately one-third of the students never used the strategy, a small minority (6-9%) used it at the same frequency, a somewhat larger minority (14-20%) decreased their use, and approximately 40% increased their use. The distributions for explain and for the R-E-A-L repertoire showed an even larger proportion—47% and 50% respectively—that increased their use. Finally, the avoid strategy had a singular distribution: the proportions of students increasing and decreasing its use were nearly equivalent. The proportion of students who never used a strategy at pre- or at post-test—which included those who had not been offered substances in the prior 30 days—varied from 22% for avoid to 36% for leave and unspecified other strategies.

Table 2
Pre-test to Post-test Changes in Frequency of Use of Drug Resistance Strategies (N = 57)

	Refuse	Explain	Avoid	Leave	Redirect	Humor	Other	REAL Repertoire
No Use	33.0%	28.3%	22.1%	26.1%	31.9%	33.9%	36.3%	23.2%
Same	6.8%	4.9%	11.1%	6.5%	7.9%	8.8%	7.0%	4.7%
Decreased	17.2%	19.5%	33.0%	15.3%	19.8%	20.4%	13.5%	22.5%
Increased	43.0%	47.4%	33.9%	42.1%	40.4%	37.0%	43.2%	49.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3 reports the results of residual change regression analysis models that predicted frequency of use of the drug resistance strategies at post-test. Included among the predictors in each model are the corresponding pre-test measures of the same outcome, providing a baseline adjustment. The regression coefficients thus indicate how the demographic variables predicted change in these

outcomes from pre-test to post-test. Only one effect was statistically significant: students living in two-parent households used the avoid strategy less than those living with one parent; there was a non-significant effect in the same direction for all other strategies.

Table 3
Regression Analysis Predicting Frequency of Use of Drug Resistance Strategies at Post-test,
Adjusting for Pre-test Frequency (N = 57)

	Refuse	Explain	Avoid	Leave	Redirect	Humor	Other	REAL Repertoire
Pre-test Frequency	0.238 <i>0.283^a</i>	0.103 <i>0.180</i>	0.176 <i>0.114</i>	0.233 <i>0.210</i>	0.276 <i>0.245</i>	0.287 <i>0.228</i>	0.207 <i>0.245</i>	0.210 <i>0.146</i>
Gender (Male = 0, Female = 1)	-0.505 <i>0.735</i>	-0.474 <i>0.782</i>	0.656 <i>0.846</i>	0.065 <i>0.738</i>	-0.487 <i>0.916</i>	-0.144 <i>0.888</i>	-0.343 <i>1.050</i>	-0.228 <i>0.471</i>
Age	-0.067 <i>0.367</i>	-0.018 <i>0.351</i>	0.088 <i>0.328</i>	0.019 <i>0.380</i>	0.085 <i>0.419</i>	0.101 <i>0.314</i>	0.052 <i>0.305</i>	0.122 <i>0.250</i>
School Grades	-0.132 <i>0.205</i>	-0.145 <i>0.156</i>	0.092 <i>0.178</i>	-0.214 <i>0.237</i>	-0.185 <i>0.172</i>	-0.186 <i>0.183</i>	-0.281 <i>0.220</i>	-0.063 <i>0.100</i>
Two-parent Family	-0.436 <i>0.921</i>	-0.865 <i>0.950</i>	-2.297* <i>1.015</i>	-0.581 <i>1.020</i>	-0.544 <i>0.957</i>	-0.523 <i>1.011</i>	-0.704 <i>0.895</i>	-0.669 <i>0.539</i>
Parental Education	-0.378 <i>0.336</i>	-0.486 <i>0.375</i>	-0.260 <i>0.375</i>	-0.362 <i>0.388</i>	-0.407 <i>0.348</i>	-0.252 <i>0.432</i>	-0.440 <i>0.413</i>	-0.237 <i>0.180</i>
Time in Urban Area	0.079 <i>0.316</i>	0.146 <i>0.276</i>	0.328 <i>0.254</i>	0.226 <i>0.272</i>	0.109 <i>0.334</i>	0.140 <i>0.339</i>	0.179 <i>0.365</i>	0.069 <i>0.150</i>
Intercept	3.351 <i>4.575</i>	2.929 <i>4.413</i>	0.888 <i>4.122</i>	0.528 <i>5.072</i>	1.231 <i>5.233</i>	-0.222 <i>3.829</i>	1.192 <i>4.578</i>	0.792 <i>3.068</i>
R ²	.142	.155	.214	.158	.176	.159	.177	.174

^a Standard errors are italicized

* $p < .05$

DISCUSSION

The L2W curriculum was designed to teach a range of drug resistance strategies based on clear communication, but fitting the social and cultural contexts in which UAI students confront offers to use substances. Results showed that the UAI students increased their reliance on more direct methods of resisting substance use offers (refuse, explain, leave). These strategies were taught explicitly in the curriculum, but in culturally appropriate ways. Students also increased their use of an indirect strategy—to redirect or change the subject. Students maintained, rather than replaced, use of relatively passive strategies (avoid, humor). They expanded their repertoire of different R-E-A-L strategies and also reported increases in the number of unspecified other strategies used.

The pilot test of the adapted L2W curriculum did not have a control group for comparison and, therefore, did not include data on rates of substance use. However, the changes reported by the participants show promising results for the program's effectiveness in expanding UAI youths' repertoire of drug resistance skills. It is notable that these results emerged despite the relatively short interval between the end of the curriculum and the post-test, and despite the resulting need to restrict measurement of use of the strategies to the prior 30 days in order to have comparable pre-test and post-test data. Measuring students' use of the strategies over a longer time period might reveal even more substantial changes. The lack of significant variation in these changes by gender, age, academic grades, and parental education provides initial indications that the program resonates well with many demographic subgroups of UAI youth. Some patterns in the regression analyses deserve closer investigation with a larger sample; the pilot's small sample size and resulting large standard errors generated only one statistically significant result.

Additional research is needed, as well, on the nature of the unspecified other strategies that UAI youth reported using with increasing frequency. It is possible that exposure to the curriculum sensitized the students to different ways of responding to substance use offers, such that they both recognized additional ways that they had been using to deal with substance offers, and developed new ways to handle such offers. As researchers identify these strategies and document their prevalence, it may be worthwhile to consider incorporating them into the repertoire of strategies taught in prevention programs for UAI youth.

However, although promising, the results provide only provisional evidence of the effectiveness of the curriculum, given that this was an exploratory pilot test with a relatively small non-probability sample of two schools in a single metropolitan area of the Southwest. Thus, the results cannot be generalized reliably to the rest of the metropolitan setting, or to other urban AI communities in the U.S. Sample selection methods may have overrepresented UAI students from families that maintain the strongest connections to their Native heritage: The student respondents were all identified to their schools as AI by their parents, and were participating voluntarily in a cultural enrichment program for Native students.

Another limitation of the study is that, without randomization or a control group, the study was not designed to assess the effect of L2W on actual substance use rates; it examined only short-term results on the use of drug resistance strategies. When data from the randomized trial of L2W (which has both short- and long-term follow-up data, and a control group) become available, it will be possible to determine whether increases in use of the R-E-A-L strategies and the expanding R-E-A-L repertoire translate into relative reductions in actual substance use. In addition, it will be helpful if future studies can distinguish between students who have an opportunity to use a R-E-A-L strategy but do not, and students who have no such opportunity. Because of the small sample

size for the pilot study, the statistical tests that were performed must be considered exploratory. Nevertheless, the consistency of the pilot results showing increases in use of three of the four R-E-A-L strategies is an encouraging indication that an existing prevention approach can be culturally adapted to resonate well with UAI communities, despite their cultural diversity, while promoting learning and application of important skills for resisting substance use.

Although the cultural adaptation process for L2W was not the primary focus of this article, the research team hypothesized that relevant cultural material could be incorporated into the curriculum based on the identification of values that were shared by UAI youth from diverse tribal backgrounds and with different urban and reservation experiences. The research team attempted to address this central yet unresolved challenge in developing prevention efforts for UAI communities using a structured qualitative research process that involved different UAI constituencies and multiple data analysts. Further reflection on that process may help in assessing the import of the quantitative results showing changes in students' use of drug resistance strategies.

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