American Indian and Alaska Native Mental Health Research

Volume 24, Issue 3, 2017

American Indian and Alaska Native Mental Health Research

Volume 24, Number 3, 2017

PSYCHOMETRIC EXAMINATION OF THE CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE WITH OLDER AMERICAN INDIANS: THE NATIVE ELDER CARE STUDY

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Abstract: Measuring mental health accurately is an important endeavor for screening purposes. Depression scales, such as the Center for Epidemiologic Studies Depression (CES-D) scale, have been well-established among different populations. Yet, little work has been done to examine the reliability and validity of the CES-D among older American Indians and Alaska Natives. The purpose of our study was to examine the factor structure, reliability, and concurrent validity of the full 20-item and abbreviated 12-item CES-D scale with a sample of older American Indians. Our findings demonstrate excellent internal reliability and concurrent validity of the full and abbreviated CES-D scales in our study sample.

INTRODUCTION

By 2020, depression is predicted to become the second leading contributor, behind heart disease, to the global burden of disease and physical disability (World Health Organization, 2012). Among community-dwelling older adults, the prevalence of clinically significant depressive symptomatology typically ranges from 8 to 16% (Blazer, 2003). The prevalence of depressive symptomatology has been shown to vary across older racial and ethnic populations (Dunlop, Song, Lyons, Manheim, & Chang, 2003). Although there is not a single definitive source of the prevalence of depression among American Indians and Alaska Natives (AI/ANs), collectively what data are available suggest disproportionately high rates of mental illness, including depression (Beals et al., 2005; Henry J. Kaiser Family Foundation, 2016; National Center for Health Statistics, 2014; Substance Abuse and Mental Health Services Administration, 2007).

Older AI/ANs, compared to older adults of other races and ethnicities, have been found to have higher prevalence rates of depressive symptomatology (Curyto et al., 1998). Specifically,

using the Centers for Epidemiological Studies—Depression (CES-D) scale (Radloff, 1977), researchers found the prevalence of clinically significant depressive symptomatology to be 18% among AIs aged ≥55 years in one tribe (Curyto et al., 1998).

Improving our understanding of depressive symptomatology among older AI/ANs will become more important as this population increases in size. Specifically, the number of AI/ANs aged ≥65 years is projected to more than triple between 2012 and 2050 and the number of AI/ANs aged ≥85 years is projected to have a more than sevenfold increase during the same time (Ortman, Velkoff, & Hogan, 2014). The increase in population combined with the lifelong disparities that AI/AN populations face (Goins et al., 2015) highlight an urgent need to understand depressive symptomatology in this population.

A meta-analysis comparing the factor structure of the CES-D scale across racial and ethnic populations suggests that great variation exists in how depressive symptomatology is conceptualized and expressed (Kim, DeCoster, Huang, & Chiriboga, 2011). Only one study has assessed the psychometric properties of the CES-D scale with older AIs (Chapleski, Lamphere, Kaczynski, Lichtenberg, & Dwyer, 1997). This study examined the factor structure of both the full 20-item scale and an abbreviated 12-item scale with 277 Great Lake region AIs aged ≥55 years. A 3-factor structure was determined to be the best fit model for the full scale, and the abbreviated scale was found to be an equally reliable and valid scale.

Measurement is a key foundational component of research. If a construct is not measured well, then concerns regarding scientific validity emerge. The literature on research and clinical measurement provides a thorough discussion of the potential sources of influences across different racial, ethnic, and cultural groups with respect to psychological assessments (Reynolds & Suzuki, 2013; US Department of Health and Human Services, 2001). Given this, mental health may be conceptualized differently in AI communities than in mainstream Western cultures (Beals et al., 2005; Hodge, Limb, & Cross, 2009). Thus, the purpose of this study was to examine the psychometric properties of a commonly used mental health measure with a sample of older AIs from a single tribe. Specifically, analyses procedures will be used to determine the factor structure, reliability, and concurrent validity of the full CES-D and the abbreviated scale with our sample.

METHODS

Analytic Sample

Data for these analyses were collected as part of the Native Elder Care Study, a cross sectional study of community-dwelling older members of a federally recognized AI tribe (Goins Garroutte, Leading Fox, Geiger, & Manson, 2011). The tribe's institutional review board, health board, tribal council, tribal elder council, and West Virginia University institutional review board approved the project. All study participants provided informed consent and received a $20 gift card. The [Oregon State University institutional review board approved the secondary data analyses for this study.

From 2006 to 2008, using in-person interviewer-administered surveys, data were collected on demographic characteristics, physical functioning, mental and physical health, personal assistance needs, and psychosocial resources. Inclusion criteria for this study included being an enrolled tribal member, aged ≥55 years, residing in the tribe's service area, non-institutionalized, and having passed a cognitive screen. Study inclusion criteria were determined by our tribal partners. For instance, the tribal partners requested that the age criteria be dropped from ≥65 years to ≥55 years and that the tribal partners were only interested in obtaining such information from members that were community-dwelling in their service area since the intention was to use the data to reassess the tribe's array of community-based services. The Time and Change Test was used as a cognitive screener (Inouye, Robison, Froehlich, & Richardson, 1998). Tribal partners preferred this measure given its brevity and less bias due to participants' socioeconomic characteristics compared to the more commonly used Mini Mental State Examination.

According to the tribal enrollment records, 1,430 persons were potentially eligible for study inclusion based on residential location and age. This list was randomized and the names and contact information were given to interviewers. Equal numbers of respondents were sought for the age groups 55-64, 65-74, and ≥75 years with a targeted sample size of 500. Randomly selected persons were recruited by telephone or home visit by an interviewer. Of the 633 persons assessed for eligibility, 50 were deemed ineligible. Of these 50 individuals, three resided outside of the tribe's service area; 14 were in a nursing home; 19 were deceased; and 14 did not pass the cognitive screen. Most interviews were conducted in the participant's home (87%), and the

remaining were conducted in a tribal office building. Seventy-eight persons refused to participate, yielding an 87% response rate and a final sample size of 505 with 491 who had complete responses to the full 20-item CES-D scale.

Measures

The CES-D scale measures depressive symptomatology, of which the full CES-D scale consists of 20 items (Radloff, 1977) and an abbreviated version consists of 12 items (Liang, Van Tran, Krause, & Markides, 1989); both were assessed as part of this study. The full scale's reliability and validity has been demonstrated among older adults and across different racial and ethnic groups (Kim et al., 2011). Similarly, the 12-item abbreviated version has been validated with older AIs (Chapleski et al., 1997). The full version of the CES-D scale is comprised of four domains (i.e., depressed affect, positive affect, somatic symptoms, and perceptions regarding interpersonal relationships; Radloff, 1977). The CES-D scale asks respondents how often they felt each symptom in the past week, with a response scale of 0 to 3 (0 = rarely or none of the time, 1 = some or a little of the time, 2 = occasionally or a moderate amount of time, 3 = most or all of the time). Positive affect items are reverse coded with the full scale total sum score ranging from 0 to 60.

Independent variables included in the analyses were age (55-64, 65-74, ≥75), gender (male, female), educational attainment (≤12 years, >12 years), and marital status (married/life partner, not married). Four measures were predicted to correlate with CES-D, thus assessing convergent validity. These measures included chronic pain, physical disability, social support, and self-efficacy. Chronic pain was assessed with the Chronic Pain Grade, which categorizes five grades of chronic pain ranging from pain free to most severe pain (Von Korff, Ormel, Keefe, & Dworkin, 1992). Physical disability was measured as the number of activities of daily living (ADL) and instrumental activities of daily living (IADL) limitations reported. The ADLs included bathing/showering, dressing, eating, transferring, walking, toileting, grooming, and getting outside (Fillenbaum, 1985). The IADLs included using the telephone, light housework, heavy housework, preparing meals, shopping, managing money, managing medications, and transportation (Lawton & Brody, 1969). Given that depression has been consistently associated with both physical disability and chronic pain (Bair, Robinson, Katon, & Kroenke, 2003; Bruce,

2001), we expected that higher scores on the two CES-D scales would be positively associated with higher scores on both the Chronic Pain Grade and a count of ADL and IADL limitations.

Social support was measured with the Medical Outcomes Study Social Support Survey (Sherbourne & Stewart, 1991). This is a 19-item survey with a 5-point response selection (0 = none of the time, 1 = a little of the time, 2 = some of the time, 3 = most of the time, 4 = all of the time) and a sum score range of 0 to 76. The internal consistency of this scale was very high (α = 0.96). Self-efficacy was measured with the General Self-Efficacy Scale (Jerusalem & Schwarzer, 1992). We examined general self-efficacy using a 9-item scale with a 4-point response selection (0 = not at all true, 1 = hardly true, 2 = moderately true, 3 = exactly true) and a sum score range of 0 to 27. The internal consistency of this scale was also high (α = 0.90). Research has demonstrated a strong and consistent inverse relationship between poor mental health and social support (Fiori, Antonucci, & Cortina, 2006; Golden, Conroy, & Lawlor, 2009; Conte, Schure, & Goins, 2014). We expected that higher scores on the two CES-D scales would be negatively associated with higher scores on the Medical Outcomes Study Social Support Survey. Also, in light of the research that has shown a similar inverse relationship between depression and self-efficacy (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Blazer, 2010), we expected that higher scores on the CES-D scales would also be inversely associated with the General Self-Efficacy Scale.

Statistical Analyses

Fourteen cases of those completely missing data on the CES-D scale were excluded. First, independent *t* tests were used to compare the CES-D scale scores of the 14 missing cases with the rest of the sample across sociodemographic characteristics. Results indicated the 14 cases were more likely to be older ($p < 0.001$) and have ≤ 12 years of education ($p < 0.001$). Second, chi-square tests were used to analyze differences across sociodemographic characteristics of those with clinically significant depressive symptoms (CES-D score of ≥ 16) to those without (CES-D score of <16). The sample was randomly split into two analytic samples to use one for the exploratory factor analysis (EFA) and the other for the confirmatory factor analysis (CFA). The EFA was used to examine the factor structure and the CFA to confirm it. The EFA sample consisted of 246 cases of which 185 persons had complete data on the full CES-D scale. The CFA sample consisted of 245 cases of which 179 persons had complete data

on the full CES-D scale. Overall, 26% of respondents had one or more CES-D scale item(s) missing. Of the 26% ($n = 128$) with some missing CES-D scale items, less than 30% ($n = 38$) had six or more missing items.

For the EFA, factor loadings were generated using an oblique rotation to determine the number of factors of the 20 items, with loadings of $\geq.40$ indicative of sufficient salience in determining the factor structure. For the CFA, models using maximum likelihood estimation (listwise deletion) were run. Best model was assessed with Goodness of Fit Indices using the 1) chi-square statistic with non-significant values indicating a good fit, 2) comparative fit index with values $>.95$ indicating a good fit, 3) root mean square error of approximation with values $<.08$ indicating a good fit, and 4) standardized root mean square residual with values $<.08$ demonstrating adequate fit (Acock, 2013).

The entire sample data ($N = 491$) was used to assess reliability and validity, using Cronbach's alpha reliability test and Pearson product moment correlations. Expected direct correlations with chronic pain and physical disability and expected indirect correlations with social support and self-efficacy were assessed. StataCorp statistical analysis software version 12 was used for all analyses (Stata Statistical Software, 2007).

RESULTS

The prevalence of clinically significant depression (≥16) in this sample was 13.24% ($n = 65$). Those in the youngest age category, 50-64 years, were more likely to have clinically significant depression (CES-D score ≥16) compared to those aged 65-74 and ≥75 years (19.9% versus 8.2% and 12.1%, respectively; $p = 0.005$). Those with 12 years or less of education were more likely to have clinically significant depression compared to those with some college and those with a college degree (15.7% versus 7.9%, $p = 0.19$). We found no statistically significant differences in clinical depression by gender or marital status.

Table 1 shows the EFA factor loadings for each of the scale items. The EFA for the full scale indicated a two-factor solution with 16 of the 20 items loading onto the first factor and 3 of the 20 items loading onto the second factor. With the exception of item 4 ("I felt that I was as good as other people"), all items loadings ranged from .403 to .832. The respective Eigenvalues for both factors was 6.61 and 1.05, with factor 1 representing 83.0% of the model variance and

factor 2 representing 17.0% of the model variance. The abbreviated scale fit with a one-factor solution with item loadings ranging from .413 to .772. The Eigenvalue was 4.25.

Table 1
Exploratory Factor Analysis, 2-Factor Structure of the Full 20-Item CES-D Scale and 1-Factor Structure of the 12-Item Abbreviated CES-D Scale (*n* = 185)

	Scale Items	Full 20-Item Scale[a]		Abbreviated 12-Item Scale[b]
		Factor 1	Factor 2	Factor 1
1	I was bothered by things that usually don't bother me	.666	-	-
2	I did not feel like eating; my appetite was poor	.536	-	.570
3	I felt I could not shake off the blues even with help from my family and friends	.715	-	.757
4	I felt that I was as good as other people	-	-	-
5	I had trouble keeping my mind on what I was doing	.562	-	.582
6	I felt depressed	.832	-	.772
7	I felt everything I did was an effort	.477	-	-
8	I felt hopeful about the future	-	.639	-
9	I though my life had been a failure	.604	-	-
10	I felt fearful	.763	-	-
11	My sleep was restless	.460	-	.457
12	I was happy	-	.515	.515
13	I talked less than usual	.461	-	-
14	I felt lonely	.752	-	.753
15	People were unfriendly	.514	-	-
16	I enjoyed life	-	.624	.413
17	I had crying spells	.655	-	.597
18	I felt sad	.724	-	.739
19	I felt that people dislike me	.403	-	-
20	I could not get "going"	.474	-	.530

Note. CES-D = Center for Epidemiologic Studies Depression scale. Items 4, 8, 12, and 16 were reverse coded; [a]Item 4 was dropped based on analysis results; [b]Item 8 was dropped based on analysis results. For the 3-factor model, Items 12 and 16 comprised the third factor.

Table 2 presents the Goodness of Fit Indices comparisons from the CFA for a 2-factor, 3-factor, and 4-factor model structure for the full 20 item CES-D scale and a 1-factor solution for the abbreviated CES-D scale. The indices confirmed a two-factor structure as the best model fit for the full scale (Chi-squared = 164.02; CFI = 0.969; RMSEA = 0.046; SRMR = 0.044). However, the fit statistics show that the abbreviated scale provides a superior fit (Chi-squared = 66.52; CFI = 0.980; RMSEA = 0.046; SRMR = 0.036) compared to the full scale factor models.

Table 2
Confirmatory Factor Analysis Fit Statistics for the CES-D Scale (*n* = 179)

	χ^2	df	χ^2 p value	CFI	RMSEA	SRMR
Full 20-Item Scale						
2-Factor Model	164.02	119	0.004	0.969	0.046	0.044
3-Factor Model	151.46	82	<0.001	0.942	0.067	0.061
4-Factor Model	203.67	122	<0.001	0.940	0.062	0.054
12-Item Model	66.52	47	0.032	0.980	0.046	0.036

Note: CES-D = Center for Epidemiologic Studies Depression scale; χ^2 = chi-squared value; CFI = comparative fit index; RMSEA = root mean squared error; SRMR = standardized root mean square residual

The Cronbach reliability test indicated an overall mean score of 0.8716 for the full CES-D scale. The alpha score for item 4 suggested that dropping this item would improve the overall scale reliability to 0.8824. Similarly, the reliability score for the abbreviated scale was 0.8332. The alpha score for item 8 suggested that dropping this item would improve the overall scale reliability to 0.8466.

Table 3 presents the Pearson product moment correlations with chronic pain, physical disability, social support, and self-efficacy. The full CES-D scale demonstrated direct correlations with chronic pain (r = .326, *p* < 0.001) and physical disability (r = .366, *p* < 0.001). It was inversely correlated with social support (r = -.281, *p* < 0.001) and self-efficacy (r = -.315, *p* < 0.001). Comparable correlations were demonstrated with the abbreviated scale.

Table 3
Full 20-Item CES-D Factor and 12-Item Scale Correlations with Chronic Pain, Physical Disability, Social Support, and Self-Efficacy (*n* = 491)

	Full CES-D Scale						Abbreviated 12-Item Scale	
	2-Factor Scale		Factor 1		Factor 2		Factor 1	
	r	*p* value	r	*p* value	r	*p* value	r	*p* value
Chronic Pain	.326	<0.001	.293	<0.001	.230	<0.001	.331	<0.001
Physical Disability	.366	<0.001	.340	<0.001	.238	<0.001	.354	<0.001
Social Support	-.281	<0.001	-.216	<0.001	-.306	<0.001	-.269	<0.001
Self-Efficacy	-.315	<0.001	-.248	<0.001	-.275	<0.001	-.299	<0.001

Note: CES-D = Center for Epidemiologic Studies Depression scale; Factor 1 = depressed affect, somatic activity, and interpersonal combined; Factor 2 = 3 items of the positive affect

DISCUSSION

The intent of this study was to examine the factor structure, reliability, and concurrent validity of the full and abbreviated 12-item CES-D scales with a sample of older AIs. This study demonstrated excellent internal reliability of the full (alpha = 0.8824) and 12-item (alpha = 0.8466) CES-D scales among this sample of older AIs. Additionally, the CESD scales' significant direct moderate correlations with chronic pain and physical disability demonstrated concurrent validity and indirect moderate correlations with social support and self-efficacy demonstrated divergent validity in this population. Previous studies examining the psychometric properties of the CES-D scale have shown varying factor structures with the full version in certain populations (Chapleski et al., 1997; Kim et al., 2011; Perreira, Deeb-Sossa, Harris, & Bollen, 2005). Our findings support the reliability and validity of a two-factor solution of the full CES-D scale and one-factor solution with the abbreviated scale in older AIs.

These results can be contrasted to findings from Chapleski and colleagues (1997) who concluded the 3-factor and 4-factor models to be superior to a 2-factor model in the full scale. Results from our CFA model indicate better model fit for the 2-factor structure. Similarly, results from another sample of adult AIs indicated comparable fit between a 3-factor and 4-factor model of the CES-D (Somervell et al., 1992). Our study corroborates the findings from Chapleski and colleagues (1997) showing the reliability and validity of the 12-item scale.

The implications of our findings are limited in that participants from this study were aged ≥55 years who resided near or on tribal lands of one AI tribe in the Southeast. It is important to note that the AI/AN populations are extremely diverse with 566 federally recognized tribal entities (Bureau of Indian Affairs, 2016), and therefore, this study may only apply to a subset of AI/AN populations. Thus, caution should be exercised in generalizing our findings to other older AI/ANs. Future research with other older AI/AN populations would benefit from examining the psychometric properties of their mental health measures in order for the community stakeholders, investigators, and others who rely on this information to feel confident in the measures used. A new revised version of the CES-D measure (CESD-R) was developed but not yet validated among different populations by the time of this study (Eaton, Smith, Ybarra, Muntaner, & Tien, 2004; Van Dam & Earleywine, 2011). Thus, we did not to test this new measure with our study population. Also, to our knowledge, only abbreviated versions of the original measure have been examined.

Substantial work remains with respect to moving our understanding from prevalence to identifying risk and protective factors of poor mental health in older AIs. Such research would ultimately contribute to the development or modification of intervention efforts. Ensuring that our measures of mental health produce consistent and accurate estimates is fundamental to this research. Future inquiry using this validated tool promises to enhance our understanding of mental health and ways to improve it in AI/AN populations.

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ACKNOWLEDGEMENTS

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COMPARISON OF AMERICAN INDIAN AND NON-NATIVE BASC-2 SELF-REPORT-ADOLESCENT SCORES

Georgette Yetter, PhD, and Victoria M. Foutch, PhD

Abstract: BASC-2 SRP-A scores of 162 American Indian (AI) youth were compared with those of an ethnically diverse sample (N = 200) to explore group equivalence. A MANOVA indicated group differences among the five composites, Wilks' Λ = 0.93, F(5, 356) = 5.68, p <.001. AIs outscored non-Natives in Inattention/Hyperactivity. We examined AIs' ADHD scores in relation to their acculturation strategies, measured using the Bicultural Ethnic Identity Scale. Culturally marginalized AIs (low White and low Indian acculturation) reported stronger ADHD symptoms than bicultural, assimilated, or separated youth. The potential impact of culture on clinical measures is discussed.

INTRODUCTION

Despite the resilience conferred by their ethnic pride and community, evidence shows that in some ways American Indian (AI) youth fare less well than members of other racial-ethnic groups. Compared with young people from other racial-ethnic groups, AIs are disproportionally more likely to manifest psychological and adaptive difficulties, such as anxiety and depression (Beals et al., 1997; Whitbeck, Johnson, Hoyt, & Walls, 2006). AI young people are more likely to experience attention-deficit/hyperactivity disorder (ADHD; Baydala, Sherman, Wikman, & Janzen, 2006; Beals et al., 1997; Fisher, Bacon, & Storck, 1998; Whitbeck et al., 2006). At school, they also are at higher risk of being classified with learning disabilities, intellectual disabilities, and emotional disturbance (U.S. Commission on Civil Rights, 2009). Among all U.S. ethnic and racial groups, AI students are at the highest risk of school dropout (Stark & Noel, 2015).

It seems likely that the statistical overidentification of AI youth with emotional, behavioral, and learning difficulties is attributable to multiple sources, such as the high poverty rate in the Native population (Federal Interagency Forum on Child and Family Statistics, 2015),

the deleterious effects of historical trauma resulting from anti-Indian government policies on Native families and communities (Choney, Berryhill-Paapke, & Robbins, 2005; Darou, Hum, & Kurtness, 1993), and teacher bias (Hollins & Guzman, 2009). It also raises questions about the appropriateness of the instruments used to evaluate AI young people (Lau & Blatchley, 2009; Ortiz, 2008). Culture is a lens through which individuals perceive, understand, and interact with others, and it is an important determinant of behavioral norms and expectations. For this reason, it is important to validate the equivalence of assessment instruments with members of distinct cultural groups. Native peoples make up only 2% of the U.S. population (U.S. Census Bureau, 2014). Even well-established clinical instruments with nationally representative norm samples rarely include a sufficient sample of AIs in their normative groups to establish test equivalence with this population.

Broadband behavior rating scales are commonly utilized in assessments of social-emotional functioning (Shapiro & Heick, 2004). They are designed to collect information addressing a wide range of functioning from multiple respondents and to allow for the comparison of responses across settings (Achenbach & Rescorla, 2001; Reynolds & Kamphaus, 2004; Weist, Rubin, Moore, Aldelsheim, & Wrobel, 2007). Behavior rating scales constitute an important component of psychological assessment in clinics, schools, and community settings (Shapiro & Heick, 2004). The Behavior Assessment System for Children (BASC-2; Reynolds & Kamphaus, 2004, recently revised in a third edition) is one of the most widely used behavior rating systems. It is used to evaluate both adaptive competencies and social, emotional, and behavioral difficulties of children, adolescents, and young adults aged 2 through 25.

The BASC-2 was developed using large normative samples of individuals that were representative of the gender, age, racial/ethnic composition, and geographic location of the U.S. population (Reynolds & Kamphaus, 2004). The BASC-2 self-report of personality (SRP), designed for individuals aged 12-21, assesses respondents' perceptions of their own social-emotional and behavioral functioning. The BASC-2 was developed and validated using samples reflecting the demographic composition of the U.S. population, with sizeable samples of African Americans and Latinos, but only 5-6% of the norm sample were members of other racial/ethnic groups (Reynolds & Kamphaus, 2004). Very few individuals in the BASC-2 normative sample were AIs. Recent studies have examined the cross-cultural equivalence of the BASC-2 with Asian American samples (Ahn, Ebesutani, & Kamphaus, 2014; Cho, Hudley, & Back, 2003), but

the validity of the BASC-2 with AIs has not yet been examined in the published literature. Professional ethical standards require that instruments be validated with different cultural groups. Validation with different groups ensures that clinical tests are appropriate for individuals who differ from the population for which the tests were developed and to ensure that the scores reflect the same constructs for all test takers (American Psychological Association [APA], 1993, 2010; American Educational Research Association, APA, & National Council on Measurement in Education, 2014).

Geographically, high concentrations of AIs are found in Oklahoma, the upper Midwest, Southwest, and Alaska. Over three-quarters of AIs in these regions live outside of reservations or other Native-designated areas (U.S. Census Bureau, 2010). In some areas with high concentrations of AIs, such as Oklahoma, AIs are relatively well integrated culturally. This integration results from a variety of factors, including federal policies directed at acculturating AIs into European-American society; the historic commingling of tribes involuntarily relocated from their original tribal lands; and the high rates of intermarriage, both among the various tribes and with non-Native peoples (Choney et al., 1995; Garrett & Pichette, 2000; Horejsi & Pablo, 1993). One study concluded that "today, [Oklahoma] Indians… see themselves simply as an American variant with a special heritage… [In recent decades they have] strengthened their pan-Indian as well as [their] tribal identities… The[ir current] situation can best be characterized as a healthy mixture of the acculturative-deculturative experience of cross-cultural adaptation, on one hand, and the strengthening of their group vitality on the other" (Kim, Lujian, & Dixon, 1998, pp. 254-255). For AI youth, evidence suggests that participation in traditional Native activities, identification with Native culture, and involvement in traditional spiritual practices, together with family and community support, are linked with superior resilience, higher levels of prosocial behavior, less substance use, and fewer externalizing behavior problems (LaFromboise, Hoyt, Oliver, & Whitbeck, 2006). For this reason, it may be important to examine the acculturation status of AIs in relation to their psychological, social, and adaptive outcomes (Garrett & Pichette, 2000; Oetting & Beauvais, 1991).

Acculturation has been defined as the degree to which individuals identify with and adhere to the cultural practices both of their heritage communities and of the dominant societies in which they live (Berry, 2005; Berry, Phinney, Sam, & Vedder, 2006; Oetting & Beauvais, 1991). In this bidimensional framework, individuals are classified into one of four acculturation

categories: *bicultural (integrated), assimilated, separated*, or *marginal*. Bicultural individuals strongly identify with both the majority and their traditional cultures; assimilated persons strongly identify with the majority culture and weakly identify with their heritage culture; separated individuals weakly identify with the majority culture and strongly identify with their traditional culture; and marginal persons weakly identify with both the majority and heritage cultures. Of the four acculturation strategies, Berry (2005) theorized that biculturalism would lead to the most favorable outcomes with the highest levels of personal resilience and adaptive capability, that assimilation and separation would lead to somewhat lower adaptive functioning, and that cultural marginalization would be the least successful psychologically and psychosocially. Ample research supports this hypothesis with European, Latino, and Asian immigrants to the U.S. (Nguyen & Benet-Martinez, 2013; Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Oetting and Beauvais (1991) also found support for the superiority of biculturalism over all other acculturation strategies for predicting favorable psychological outcomes in AI adults.

A recent meta-analysis of biculturalism and psychosocial adjustment, however, concluded that biculturalism may not be associated with healthier functioning in African Americans or AIs (Nguyen & Benet-Martinez, 2013). Among adult AIs residing on reservations, for instance, bicultural, assimilated, and marginalized individuals were reported more likely to abuse substances than were separated individuals (Herman-Stahl, Spencer, & Duncan, 2003). Garrett and Pichette (2000) found that the bicultural and separated acculturation strategies were equally predictive of healthy outcomes (high educational achievement, mature patterns of conflict resolution, and superior adaptive functioning) in AI youth, suggesting that it is strong acculturation to traditional culture, rather than to both traditional and majority cultures that plays a protective role for AI youth. The absence of strong support for a bicultural advantage for AIs has led to some discussion as to whether the biculturalism-adaptation link may apply only to ethnocultural groups that immigrated to the U.S. voluntarily, or alternatively, whether the development of full biculturalism may be hindered in AIs as a result of historical efforts by the dominant society to suppress their culture (Nguyen & Benet-Martinez, 2013; Schwartz et al., 2010). It is clear that more research is needed to better understand the linkage between acculturation and psychological functioning in AIs.

The Present Study

This study had two aims: 1) to compare the BASC-2 SRP-A composite scores of a sample of AI adolescents with those of a random sample of U.S. youth, and 2) to examine the AIs' BASC-2 SRP-A composite scores in relation to their acculturation strategies. We investigated three hypotheses. First, given prior evidence of higher risk among Native young people, we anticipated that at least some of the composite scores of an AI sample would be different from the scores attained by a random sample of U.S. youth. Second, we predicted that any differences between the AI and comparison samples that were observed would be related to the acculturation status of the AI sample. Third, in light of prior acculturation research, we expected that the composite scores of AIs more strongly acculturated to traditional AI ways would diverge more from those of the comparison sample than the composite scores of AIs more strongly acculturated to non-Native (majority culture) ways.

METHODS

Participants

Participants included two groups of youth aged 12 to 18. One group consisted of a convenience sample of AI youth recruited for the purposes of this investigation. The second (comparison) sample was randomly selected from among 12-18 year old participants in the nationally representative BASC-2 normalization sample (Reynolds & Kamphaus, 2004). Table 1 displays the racial/ethnic composition, gender makeup, and mean ages of the study samples.

American Indian Sample

The 162 youths in the AI sample consisted of 70 males (43.2%) and 92 females (56.8%), ranging in age from 12 to 18 ($M = 14.7$, $SD = 1.90$). Participants were drawn from four schools: three public secondary schools located in a large town with a population under 50,000 in northeastern Oklahoma, and an AI tribally-managed secondary school located in Oklahoma and funded by the Bureau of Indian Education. Sixty-one percent of the students enrolled at these public schools qualified for free or reduced-price lunch under the National School Lunch Program. The tribally-managed school served approximately 400 students, all registered as members of an American Indian tribe. Approximately three-quarters of its students were day

students; the remaining students resided at the school. Thirty percent of the tribally-managed school's students qualified for free or reduced-price lunch.

Of the 162 participating youth identified as AI, 125 (77.2%) had tribal identification cards formally recognizing their tribal membership. As Table 1 shows, the AI participants identified as members of 24 distinct tribes. The tribes most commonly represented included Cherokee (59%), Ponca (22%), Choctaw (14%), Osage (8%), and Otoe Missouri (8%). The majority of AI participants identified with more than one tribe, and most also identified as members of a non-AI racial/ethnic group. The median education level attained by the participants' mothers and fathers was some college or technical school.

Table 1
Age, Gender, and Racial/Ethnicity Composition of Study Samples

| Racial/Ethnic Group | | AI Sample[a] | | | | Comparison Sample[b] | |
| | | Public School (N = 93) | | Tribal School (N = 69) | | | |
		N	%	N	%	N	%
	Native American	93	100.0	69	100.0	4	2.0
	Hispanic	7	7.5	4	5.8	32	16.0
	African American	4	4.3	3	4.3	29	14.5
	White	63	67.7	45	65.2	122	61.0
	Asian	4	4.3	1	1.4	9	4.5
	Other	4	4.3	1	1.4	4	2.0
Gender	Female	42	45	41	59	94	47
Age (yrs)		M	SD	M	SD	M	SD
		14.0	1.93	15.7	1.40	14.8	1.85

[a]American Indian (AI) sample participants (N = 162) identified all racial/ethnic groups with which they identified, making the total percentage greater than 100%. [b]Comparison sample (N = 200) randomly selected from the BASC-2 standardization sample, capped at age 18.

Comparison Sample

The comparison sample was a subset of 200 youths randomly drawn from the general-population normative sample utilized in the initial development of the BASC-2 (Reynolds & Kamphaus, 2004). The second (comparison) sample was randomly selected from among 12-18 year old participants. The comparison sample included 106 males (53%) and 94 females (47%)

aged 12 to 18 ($M = 14.5$, $SD = 1.88$). The median education level attained by their mothers and fathers was some college or technical school.

Measures

SRP-A

The BASC-2 self-report adolescent form (SRP-A) is designed for youths ages 12 to 21. It consists of 176 items that comprise 16 primary scales; these are combined into five composite scales (Emotional Symptoms Index, Inattention/ Hyperactivity, Internalizing Problems, Personal Adjustment, and School Problems). Investigations of the SRP-A with the nationally representative normative sample reported internal consistency statistics of $\alpha = .83$ to $.96$ for the composite scales, $\alpha = .67$ to $.88$ for the clinical scales, and $\alpha = .68$ to $.88$ for the adaptive scales (Reynolds & Kamphaus, 2004). The structural validity of the SRP-A composite scales was supported by factor analyses showing strong factor loadings of scales to composites (Reynolds & Kamphaus, 2004). In the present study, the internal consistency ranged from $\alpha = .57$ to $.92$ for the composite scales, $\alpha = .35$ to $.85$ for the clinical scales, and $\alpha = .69$ to $.89$ for the adaptive scales for the AI sample (see Table 2). The internal consistency of the scales could not be computed for the comparison sample due to the unavailability of individual responses from the test publisher.

Bicultural Ethnic Identity Scale

The Bicultural Ethnic Identity Scale (BEIS; Moran, Fleming, Somervell, & Manson, 1999; Oetting & Beauvais, 1991) is a 16-item instrument that separately measures identification with AI culture and mainstream American culture. The BEIS produces scores on two subscales: an 8-item *Indian* subscale and an 8-item *White* subscale. The instrument, originally developed by Oetting and Beauvais (1991) and further expanded by Moran et al. (1999), was developed exclusively for use with AI youth. Items, rated on a 4-point Likert type scale, address current family cultural activities, future personal involvement in cultural traditions, language use in the home, and importance of religious or spiritual beliefs. For most items, the four response options are *not at all, a little, some,* and *a lot*; for several questions the response options are slightly reworded. The possible range of scores for each subscale is 8 to 32, where higher scores indicate stronger levels of acculturation. Cronbach's alpha coefficients were reported of .92 for the *White* subscale and .91 for the *Indian* subscale (Moran et al., 1999). The validity of the BEIS was

supported by exploratory and confirmatory factor analyses and by convergent and discriminant validation methods (Moran et al., 1999). The Cronbach's alphas for this study were .86 (*White*) and .92 (*Indian*).

Procedures

The study was approved by the Oklahoma State University IRB, school administrators, and local tribal leaders. The participating public schools' Title VII directors identified all students listed as AI from school records. Public school students were identified as AI by their schools' Title VII directors. At all participating schools, school administrators contacted the parents of AI students and mailed them study information and consent forms, together with a postage paid return envelope. One follow-up mailing subsequently was sent home to parents who did not respond to the initial invitation for their children to participate. A total of 881 letters were mailed and 207 were returned, for an overall response rate of 24%. Of the 207 letters returned, 183 of the respondents granted permission for the invited child to participate and 24 parents denied permission.

Data collection dates were determined in consultation with school administration. After obtaining student assent, the surveys were administered anonymously to students in groups at their schools. Participants at each school were offered the opportunity to be entered into a random drawing for a gift card. Of the 183 students whose parents gave permission for them to participate in the study, informed assent was obtained from 169 students. The survey packets included the SRP-A, BEIS, and a demographic information sheet. The placement of the SRP-A and BEIS within the packets was counterbalanced to control for possible order effects. The demographic sheet was placed last on all packets. The two orderings of the survey packet were distributed randomly among the participants at each school. Participants whose SRP-A scores could not be computed due to excessive missing responses as per the BASC-2 scoring instructions (Reynolds & Kamphaus, 2004) were excluded from analysis. Participants with missing BEIS responses were also excluded from analyses. The final number of usable responses was 162.

Plan of Analysis

A 2 x 5 multivariate analysis of variance (MANOVA) was conducted to examine the prediction of the five SRP-A composite T-scores from the American Indian (AI) and comparison groups. Subsequently, a discriminant function analysis (DFA) was carried out to investigate the relative importance of each composite for predicting sample membership. Findings of group differences in composite scores were followed up with investigation of group differences in clinical scores via additional MANOVAs and DFAs.

Subsequently, we explored the ability of acculturation status to predict the AI participants' SRP-A scores on the clinical scales on which group differences were found. The BEIS *White* and *Indian* acculturation scale scores were computed. AI participants were assigned to one of four acculturation groups: High *Indian* and High *White*, High *Indian* and Low *White*, Low *Indian* and High *White*, or Low *Indian* and Low *White*. The relationship between school type (public or tribal) and *White* acculturation, and the relationship between school type and *Indian* acculturation, were examined. One way analysis of variance (ANOVA) was implemented to investigate the prediction of SRP-A scale T-scores from AI students' acculturation status.

RESULTS

Table 2 displays the means and standard deviations of the composite scales' T-scores for both the AI and comparison groups, and the internal consistency of the composites for the AI group. Four of the five composites demonstrated good to excellent internal consistency ($\alpha = .84$-$.92$); the internal consistency was lower for School Problems ($\alpha = .57$). Overall, the correlations among the composites were moderate, ranging from $r = .29$-$.55$ (AI sample) and from $r = .32$-$.54$ (comparison sample). The Emotional Symptoms Index (ESI), which is composed entirely of items that also appear in other clinical scales, was highly correlated with Internalizing ($r = .90$) and Personal Adjustment ($r = -.80$).

Table 2
Means, SDs, and Coefficient Alphas of SRP-A Scales by Participant Sample

Composite Scale	Sample	M	SD	α^a
Emotional Symptoms Index				
	Comparison	49.9	9.17	
	AI	49.0	9.20	.84
Inattention/Hyperactivity				
	Comparison	50.2	10.19	
	AI	53.4	11.85	.86
Internalizing Problems				
	Comparison	49.8	9.37	
	AI	50.7	10.31	.92
Personal Adjustment				
	Comparison	50.1	9.64	
	AI	51.2	9.67	.84
School Problems				
	Comparison	51.2	10.69	
	AI	51.5	10.27	.57
Primary Scale	Sample	M	SD	α^a
Attention Problems				
	Comparison	50.3	9.88	
	AI	51.9	10.86	.79
Hyperactivity				
	Comparison	50.0	10.40	
	AI	54.1	11.42	.77
Somatization				
	Comparison	49.4	9.39	
	AI	51.3	10.53	.66
Sense of Inadequacy				
	Comparison	50.1	9.74	
	AI	50.2	10.22	.77
Depression				
	Comparison	49.5	9.20	
	AI	48.1	9.25	.83
Anxiety				
	Comparison	49.8	9.74	
	AI	51.6	10.87	.85
Social Stress				
	Comparison	50.4	10.13	
	AI	49.1	10.78	.48
Locus of Control				
	Comparison	50.4	9.95	
	AI	51.7	10.12	.77
Atypicality				
	Comparison	49.5	9.37	
	AI	51.9	11.65	.83
Sensation Seeking				
	Comparison	51.6	10.13	
	AI	51.9	10.40	.35

Table 2 Continued
Means, SDs, and Coefficient Alphas of SRP-A Scales by Participant Sample

Primary Scale	Sample	M	SD	α^a
Attitude Toward Teachers				
	Comparison	50.7	10.61	
	AI	51.2	11.11	.83
Attitude Toward School				
	Comparison	50.4	10.38	
	AI	50.3	9.82	.74

Note. American Indian (AI) sample *N* = 162. Comparison sample *N* = 200. Scale scores are reported as T-scores.
[a]Coefficient alphas could not be computed for the comparison sample, as item-level responses were not available.

Initially, a 2 x 5 MANOVA was carried out to examine whether the AI sample drawn from public schools differed from the sample drawn from the tribal school in its prediction of the five SRP-A composites. No sample difference was found among the five composites, Wilks' Λ = 0.97, $F(5, 156)$ = 0.97, p = .438, partial η^2 = .030. In subsequent analyses, the public school and tribal school AI scores were combined.

Table 3
Correlations Among SRP-A Composite Scales

	School Problems	Internalizing Problems	Inattention/ Hyperactivity	Emotional Symptoms Index	Personal Adjustment
School Problems	1.00	.43	.55	.37	-.29
Internalizing Problems	.49	1.00	.54	.90	-.56
Inattention/Hyperactivity	.57	.54	1.00	.52	-.40
Emotional Symptoms Index	.41	.91	.47	1.00	-.76
Personal Adjustment	-.32	-.62	-.32	-.80	1.00

Note. American Indian sample above main diagonal; comparison sample below main diagonal. All correlations statistically significant, *p* < .001.

A second 2 x 5 MANOVA was carried out to examine the prediction of the five SRP-A composites from the AI and comparison groups. Examination of the homogeneity of population variances assumption indicated no violation, Box's M = 17.04, $F(15, 475588)$ = 1.12, p = 0.33. Sample differences were found among the five composites collectively, Wilks' Λ = 0.93, $F(5, 356)$ = 5.68, p <.001, partial η^2 = .074. A DFA was implemented to investigate the relative importance of each composite for predicting sample membership. Table 4 presents the

MANOVA and DFA results. Both the univariate F tests and structure coefficients suggested that Inattention/ Hyperactivity accounted primarily for the sample differences on the composite scores, when disregarding the intercorrelations among the dependent variables. The standardized discriminant function coefficients (DFCs) suggested that the Emotional Symptoms Index (ESI) accounted primarily for the sample differences on composite scores even after controlling for the contributions of the other composite scores. Because the ESI is not independent of the other composite scales (all the ESI items also appear in other SRP-A composites), and also because the very high correlations between the ESI and two other composite scales increased the risk of collinearity in MANOVA and the likelihood of distortion in DFA results (Haase & Ellis, 1987), the ESI was removed from the analysis and the MANOVA and DFA were re-computed. Results, displayed on the right side of Table 4, consistently identified Inattention/ Hyperactivity as the best predictor of acculturation grouping.

Table 4
MANOVA and DFA Results: Relationships Between SRP-A Scores and Participant Sample

	F	p	Partial η^2	Observed Power	5 SRP-A Composites[a] Structure Coefficients	DFC	4 SRP-A Composites[b] Structure Coefficients	DFC
SRP-A Composite Scale								
Emotional Symptoms Index	0.793	0.374	.002	.144	0.166	2.362		
Inattention/ Hyperactivity	7.770**	0.006	.021	.794	-0.520	-0.809	.732	1.091
Internalizing Problems	0.719	0.397	.002	.135	-0.158	-1.826	.223	.233
Personal Adjustment	1.080	0.299	.003	.179	-0.194	0.413	.273	.662
School Problems	0.074	0.786	.000	.058	-0.051	0.448	.071	-.444
SRP-A Primary Scale								
Attention Problems	2.083	.150	.006	.302	.416	-.210		
Hyperactivity	11.694**	.001	.031	.927	.985	1.104		

Note. F = Univariate F tests with (1, 360) degrees of freedom. *DFC* = Standardized discriminant function coefficient. [a]Wilks' Λ = 0.93, *F*(5, 356) = 5.68, *p* <.001, partial η² = .074. [b]Wilks' Λ = 0.96, *F*(4, 357) = 3.59, *p* =.007, partial η² = .039. **p* < .01 ***p* < .001

As indicated in Table 2, the AI sample scored higher in Inattention/ Hyperactivity (M = 53.4, SD = 11.85) than the comparison sample (M = 50.2, SD = 10.19), constituting a small to medium effect (d = 0.29). Given the sample difference in the Inattention/ Hyperactivity composite, a series of follow-up analyses was carried out to explore the source of the difference in the Attention Problems and Hyperactivity primary scales that, together, make up the Inattention/ Hyperactivity composite. The correlation between Attention Problems and Hyperactivity was r = .54 for the comparison sample and r = .60 for the AI sample. A 2 (participant sample) x 2 (primary scale) MANOVA and DFA were undertaken. The homogeneity of population variances assumption was verified, Box's M = 5.21, F(3, 55174565) = 1.73, p = 0.16. Results, summarized at the bottom of Table 4, indicated a difference on the Attention Problems and Hyperactivity scales collectively, Wilks' Λ = .97, F(2, 359) = 6.01, p = .003, partial η^2 = .032. The univariate F tests, standardized discriminant function coefficients, and structure coefficients all indicated that the overall sample difference identified by Wilks' Λ was attributable primarily to differences in Hyperactivity. The AI sample (M = 54.1, SD = 12.24) scored higher in Hyperactivity than the comparison group (M = 50.0, SD = 10.40), representing a small to medium effect (d = 0.36). These results disconfirmed hypothesis 1.

Given the sample differences in Inattention/Hyperactivity, we proceeded to explore the ability of acculturation status to predict the AI participants' Inattention/Hyperactivity scores. First, the BEIS *White* and *Indian* acculturation scale scores were computed. Scores ranged from 10 to 32 on the *White* scale (median = 26) and from 8 to 32 on the *Indian* scale (median = 20). The acculturation scores were classified as Low or High using median splits, in accordance with previous acculturation research (Nguyen & Benet-Martinez, 2013; Ward & Rana-Deuba, 1999). The *White* and *Indian* acculturation scores were classified as Low if they were below their respective median scores of 26 (*White*) or 20 (*Indian*); they were considered High if they were above their respective medians. We then assigned the participants to one of four acculturation groups, based on their *White* and *Indian* acculturation scores: High *Indian* and High *White* (HI-HW; n = 41), High *Indian* and Low *White* (HI-LW; n =54), Low *Indian* and High *White* (LI-HW; n =43), or Low *Indian* and Low *White* (LI-LW; n =27). These four acculturation groups corresponded to the four acculturation categories of bicultural, assimilated, separated, and marginal, respectively, set forth in Berry et al.'s (2006) theory.

A chi-square test of independence was performed to examine the relation between school type (public or tribal) and *White* acculturation. No statistically significant relationship was found, X^2 (1, N = 162) = 1.68, p = .195. A second chi-square test of independence was performed to examine the relation between school type and *Indian* acculturation. A statistically significant relationship was found, X^2 (1, N = 162) = 4.60, p = .032. Students attending the tribal school had higher *Indian* acculturation scores than did the students attending public schools.

Table 5 displays the means and standard deviations of the SRP-A scale scores for each acculturation group. A weak correlation was found between the *White* and *Indian* acculturation classifications, φ = -.18. A one way analysis of variance was analyzed, with the four acculturation groups serving as independent variables and Inattention/ Hyperactivity composite as the dependent variable. Levene's test indicated no violation of the homogeneity of variances assumption, F(3, 161) = 1.62, p = .186. Results indicated that Inattention/ Hyperactivity differed among the four acculturation groups, F(3,161) = 5.45, p = .001, thereby confirming hypothesis 2. Post hoc Scheffé tests, with significance levels adjusted to .008 to account for multiple comparisons, identified the source of this difference as between the LI-LW (M = 59.6, SD = 12.05) and LI-HW acculturation groups (M = 48.5, SD = 9.42), p = .002, constituting a large acculturation effect (d = 1.03). Among AI participants endorsing weak levels of acculturation to Native ways, youth who also were weakly acculturated to the majority culture (marginalized youth) demonstrated significantly higher Inattention/ Hyperactivity symptoms than did those more strongly acculturated to the dominant culture (assimilated youth). This finding failed to support hypothesis 3.

Table 5
Means and Standard Deviations of SRP-A Scores by Acculturation Group

Indian	White	M	SD	% in clinical range[a]
Inattention/Hyperactivity Composite				
Low	Low	59.6	12.05	18.5%
	High	48.7	9.44	2.3
	All	53.0	11.74	8.5
High	Low	53.0	11.38	7.3
	High	54.6	12.72	14.3
	All	53.7	11.94	10.3
All	Low	55.2	11.95	11.0
	High	51.6	11.50	8.2
	All	53.4	11.83	9.6

continued on next page

Table 5 Continued
Means and Standard Deviations of SRP-A Scores by Acculturation Group

Indian	White	M	SD	% in clinical range[a]
		Attention Problems Primary Scale		
Low	Low	58.8	11.46	18.5
	High	48.1	9.43	2.3
	All	52.2	11.46	8.5
High	Low	51.6	10.15	3.6
	High	51.9	10.67	2.4
	All	51.8	10.33	3.1
All	Low	54.0	11.07	8.5
	High	50.0	10.19	2.3
	All	51.9	10.79	5.4
		Hyperactivity Primary Scale		
Low	Low	57.9	11.56	14.8
	High	49.3	9.41	2.3
	All	52.6	11.04	7.1
High	Low	54.1	12.85	14.5
	High	56.3	13.63	11.9
	All	55.0	13.17	13.4
All	Low	55.3	12.49	14.6
	High	52.7	12.12	7.0
	All	54.0	12.34	10.8

Note. American Indian sample, *N* = 162. BASC-2 scores are reported as s. BASC-2 scores $\geq$ 70 are in the clinical range. [a]Aggregated scores were computed as weighted averages.

Finally, the relative contributions of the Hyperactivity and Attention Problems primary scales to the observed acculturation group differences in the Inattention/ Hyperactivity composite were explored by carrying out a 4 x 2 MANOVA, with the four acculturation groups as independent variables and the Attention Problems and Hyperactivity scale scores as dependent variables. The assumption of homogenous covariance matrices was confirmed, Box's $M = 9.10$, $F(9, 128791) = 0.99$, $p = 0.45$. An omnibus main effect was evident, Wilks' $\Lambda = 0.88$, $F(6, 320) = 3.68$, $p = .001$, partial $\eta^2 = .065$. Univariate F tests, summarized in Table 6, showed that the acculturation groupings predicted both Attention Problems, $F(3, 161) = 5.96$, $p = 0.001$ and Hyperactivity, $F(3, 161) = 3.62$, $p = 0.014$. A DFA investigated the relative importance of the Hyperactivity and Attention Problems scales for predicting acculturation group membership (see Table 6). Together, the MANOVA and DFA results indicated that both Hyperactivity and Attention Problems contribute moderately to predicting acculturation group.

Table 6
Prediction of Attention Problems and Hyperactivity from Acculturation Groupings

Primary Scale	F	p	Partial η^2	Observed Power	Structure Coefficients	DFC
Attention Problems	5.96**	.001	.100	.953	.988	.882
Hyperactivity	3.62*	.014	.063	.788	.687	.186

Notes. American Indian sample, N = 162. F = Univariate F test with (3, 165) degrees of freedom. DFC = Standardized discriminant function coefficients. *p < .05 **p < .01

DISCUSSION

This study began by examining the entire SRP-A with AIs in comparison with the normative sample. Although the focus shifted to ADHD because this was the area where significant group differences were observed in SRP-A scores, the finding of low reliability for the School Problems composite and for the Social Stress and Sensation Seeking scales in the AI sample (reported in Table 2) raises the possibility that these scales may lack sufficient reliability when used with AIs.

In this study, AI adolescents scored higher on the SRP-A Inattention/ Hyperactivity composite than did an ethnically diverse sample randomly selected from the instrument's normalization group. Although the SRP-A Inattention/ Hyperactivity composite score is not in itself diagnostic of ADHD, screener instruments such as the BASC-2 are important for informing clinical decision making regarding the need for follow-up assessment.

Research has suggested racial and ethnic differences in children's measured ADHD symptoms. For example, compared with White children, African American children and youth tend to score higher, and Hispanic children score lower, on well-established ADHD rating scales, although the rates of the diagnosis of ADHD is much lower among African American than White children (Cuffe, Moore, & McKeown, 2005; Morgan, Staff, Hillemeier, Farkas, & Maczuga, 2013). Regarding AI and non-Native adolescents, apart from Costello, Farmer, Angold, Burns, and Erkanli (1997), who reported no difference in ADHD symptoms, the majority of published research in this area has indicated more severe ADHD symptoms in AIs than in the general population (Baydala et al., 2006; Beals et al., 1997; Fisher et al., 1998; Whitbeck et al., 2006).

The reasons for these racial/ethnic disparities in ADHD symptoms are not yet clear. It is

possible that these individuals may have experienced greater exposure to known ADHD risk factors (Nomura et al., 2012). For example, both low SES and maternal diabetes during pregnancy are associated with a doubling of the risk of child ADHD; for children with both risk factors, the risk is 14 times as high (Nomura et al., 2012). The prevalence of diabetes has grown among AI peoples in recent decades (Department of Health and Human Services, 2012). Attention-deficit/hyperactivity disorder also is more common in children with premature birth, poor nutrition, and maternal alcohol consumption or smoking during pregnancy (Child Development Institute, 2016). All these factors are linked with poverty (DeSilva, Samarasinghe, & Hanwella, 2011; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; World Health Organization, 2017), which is disproportionately high among AIs and African Americans. Nevertheless, the higher SRP-A Inattention/ Hyperactivity scores observed in our AI sample raise questions about the extent to which the diagnostic criteria established for ADHD reflect culturally-driven deviations from behavior patterns normative in the majority culture (Hosterman, DuPaul, & Jitendra, 2008; Rousseau, Measham, & Bathiche-Suidan, 2008).

In the second part of this study, the acculturation status of the AI participants was measured. An appreciable difference was observed in the median *Indian* and *White* acculturation scores, indicating that our AI sample was more strongly oriented to the dominant culture than to traditional Native ways. Both the *Indian* and *White* acculturation scales also demonstrated a wide range of scores (8 to 32 and 10 to 32, respectively, out of a possible range of 8 to 32 on both scales). These findings are consistent with previous research indicating that Oklahoma AIs tend to be well integrated into the dominant culture while still maintaining a connection with their Native heritage (Kim et al., 1998).

Among these AI youths, SRP-A Inattention/ Hyperactivity was strongly related to acculturation strategies. The marginally acculturated adolescents reported higher levels of Inattention/ Hyperactivity than did the assimilated youth. The marginally acculturated AI adolescents also had the highest percentages of clinically significant scores on the Inattention/ Hyperactivity composite, the Attention Problems, and the Hyperactivity scales (see Table 5). These findings are consistent with previous studies that reported less adaptive outcomes for culturally marginalized AIs (Garrett & Pichette, 2000; Herman-Stahl et al., 2003; Oetting & Beauvais, 1991). It should be emphasized that our findings are correlational and cannot identify cause and effect. An alternative interpretation of our results is that those youth who exhibited

more ADHD symptoms were less likely to endorse BEIS items indicating acculturation in either culture.

Whereas in the present investigation, acculturative marginalization was related to less healthy ADHD-related outcomes, the bicultural, assimilationist, and separated acculturation strategies were indistinguishable in their ability to predict the severity of ADHD symptoms. Our analysis failed to support a unique special advantage associated with biculturalism over the three other acculturation strategies. This finding challenges Berry's (2005) theoretical predictions and confirms suggestions that biculturalism may not be the singularly most adaptive acculturation strategy for AIs, as it appears to be for other ethnocultural groups in the U.S. (Nguyen & Benet-Martinez, 2013; Schwartz et al., 2010).

Strengths

The BASC-2 is one of the most commonly-used clinical instruments with children and adolescents. The present investigation is the first known study to examine the validity of BASC-2 scales with AIs. This study also is important for adopting a cultural framework for exploring potential predictors of mental health markers for AI adolescents.

Furthermore, the present inquiry extends the range of social and cultural environments in which mental health issues have been examined with AI adolescents. This investigation examined individuals in non-reservation communities. Much published mental health research with AI children and youth has been conducted with residents of Indian reservations (Baydala et al., 2006; Beals et al., 1997; Costello et al., 1997; Fisher et al., 1998; Whitbeck et al., 2006). However, three-quarters of AIs reside in non-tribal, non-reservation lands (U.S. Census Bureau, 2011). Reservations constitute a very distinctive type of setting that likely is not representative of the social and cultural environments that shape the lives of most AI youth.

Limitations

This study examined a very limited number of factors as potential predictors of ADHD symptomatology. It seems plausible that additional factors, not included in the current study, also are related to the observed relationships. It may be that both acculturative marginalization and ADHD have a common underlying cause that could not be addressed with the data available in this study. A second limitation pertains to the representativeness of our AI sample. Although the

comparison group was representative of the U.S. population at the time the BASC-2 was normed, our AI sample was a convenience sample drawn from the local community. It is almost certainly the case that the AI and comparison samples differed substantially in the geographic regions from which they were drawn. As can be seen in Table 1, although the mean age of the comparison sample was close to that of the AI sample, the comparison group was comprised of proportionally fewer females.

Thirdly, the majority of parents and guardians of the AI students invited to participate did not respond to invitations for their children to participate in the study. As a result, resulting response rate was lower than desired, raising questions about the representativeness of our sample. Research has shown that the AI population is less likely to participate in research than other minority groups (Rochat, 2008). These differences in participation have been attributed to AI mistrust of researchers and of Europeans, who often conduct research. Historically, AIs have been deceived, hurt, and taken advantage of by the U.S. government and researchers, so it is natural they would be less likely to want to participate (Choney et al. 2005; Darou et al., 1993).

A fourth limitation relates to the age range of our samples. The maximum age of our participants was 18, falling short of the maximum age of 21 for the SRP-A. Thus our results are limited to teenagers and cannot be assumed to reflect SRP-A scores for young adults. Finally, in this study we employed median splitting to assign participants to acculturation categories. There are potential drawbacks associated with the use of median splits for this purpose. Individuals near the midpoints of the two dimensions are placed into contrasting categories, leading to a loss of precision in classification (Berry & Sabatier, 2011). Moreover, the acculturation categories thus formed are relative to the particular sample, limiting generalizability across studies (Ward & Rana-Deuba, 1999). Nevertheless, our results for marginalized youth supported theoretical predictions, suggesting that the use of median splits may have practical utility for identifying individuals at risk within their communities.

Future Research

Additional study of the SRP-A with AIs is warranted to further investigate scale reliability. This study reported higher ADHD symptom scores among AIs as measured by the BASC-2, consistent with prior research. Although this finding is important, it should be borne in mind that the BASC-2 is a screener instrument and is not diagnostic in and of itself. Our results

suggest that similar studies are needed with ADHD-specific clinical measures, such as the Conners Third Edition (Conners, 2009), which are relied on more heavily for formal diagnosis. Future studies that examine ADHD symptoms in AIs should include a broader set of factors as potential predictors.

Our results suggest that acculturation theory is promising for informing future investigations of AI mental health risk and resilience. The AI participants in this study expressed a stronger orientation to the dominant culture than to traditional Native ways. It seems plausible, however, that AIs' acculturation profiles may differ substantially, depending on the sociocultural characteristics of their communities. As Schwartz et al. (2010) stated, "To understand acculturation, one must understand the interactional context in which it occurs… the characteristics of the [individuals] themselves, the groups … from which they originate, their socioeconomic status and resources, [and] the … local community in which they settle" (p. 240). A fuller understanding is needed of the impact of acculturation on psychological risk and resilience across diverse types of communities, ranging from isolated reservations to well-integrated areas and from rural to urban environments.

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ACKNOWLEDGEMENTS

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RELIGIOUS AND SPIRITUAL PRACTICES AMONG HOMELESS URBAN AMERICAN INDIANS AND ALASKA NATIVES WITH SEVERE ALCOHOL PROBLEMS

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Abstract: Engagement in religious and spiritual practices may be protective for homeless individuals with alcohol-related problems. However, little is known in this regard for urban-dwelling American Indians and Alaska Natives (AI/ANs) who have disproportionately high rates of homelessness and co-occurring alcohol use problems. Using secondary data from a nonrandomized controlled study testing a Housing First intervention, AI/AN participants (n = 52) and non-AI/AN participants (n = 82) were compared on demographic variables, alcohol use problems, religious affiliations, and religious/spiritual practices (importance, frequency, and type). AI/ANs who engaged in Native-specific independent spiritual practices had significantly lower alcohol use frequency in comparison to AI/ANs who did not.

INTRODUCTION

A long legacy of European American colonization has had a devastating impact on American Indian and Alaska Native (AI/AN) communities, resulting in significant poverty, intergenerational trauma, and pronounced health disparities (Davis, Roscigno, & Wilson, 2016; Gone & Calf Looking, 2011). Health disparities include disproportionately high rates of psychiatric problems, especially posttraumatic stress disorder, anxiety disorders, suicidal behavior, and substance use disorders (Brave Heart et al., 2016; Gone & Trimble, 2012). In terms of alcohol use disorders, research has consistently shown higher prevalence for AI/ANs (with variance among tribal or reservation groups) in comparison to the general U.S. population (e.g., Castor et al., 2006; Kunitz & Levy, 2000; Spicer et al., 2003). In a recent heterogeneous national sample of AI/AN adults, the lifetime prevalence of alcohol dependence was 26.3% for men and 14.5% for women, compared to 19.0% for men and 8.9% for women in the general

adult U.S. population (Brave Heart et al., 2016). Further, alcohol-related deaths among AI/ANs occur at 7 to 8 times the rate of such deaths in the general population (Gone & Trimble, 2012; Young & Joe, 2009). These problems are exacerbated by limited treatment access, availability, and utilization, combined with a virtual absence of evidence-based interventions designed by and evaluated for AI/ANs in particular (Gone & Calf Looking, 2011).

Homelessness, Alcohol Use, and Alcohol-Related Problems Among AI/ANs

Homelessness is also disproportionately common among AI/ANs. Although AI/ANs comprise only 1.2% of the U.S. population (U.S. Census Bureau, 2015), they make up an estimated 2.7% of the overall U.S. homeless population and 3.9% of the unsheltered U.S. homeless population (U.S. Department of Housing and Urban Development, 2015). (These statistics do not include those who report identifying with more than one racial category.) AI/ANs also have high rates of overcrowding and doubling up in housing, which are risk factors for homelessness (Webster, 2015; Whitbeck, Crawford, & Hartshorn, 2011). In fact, the percentage of AI/AN households with overcrowding and inadequate facilities (e.g., plumbing, kitchen amenities) increased by 10% from 1999 to 2009 (U.S. Government Accountability Office, 2010).

As is the case in the general homeless population (Koegel & Burnam, 1988; Thompson, Wall, Greenstein, Grant, & Hasin, 2013), homelessness among AI/ANs is frequently associated with financial, family, physical health, mental health, and substance use problems (Whitbeck et al., 2011). In particular, studies have indicated that homeless AI/ANs have much higher rates of alcohol consumption and alcohol-related problems than the general population (Kasprow & Rosenheck, 1998; Kramer & Barker, 1996; Lobo & Vaughan, 2003). Although research is mixed concerning whether homeless AI/ANs consume alcohol at greater quantities or frequencies than other homeless individuals, their experience of alcohol problems is generally more severe compared to homeless non-AI/ANs (Gamst et al., 2006; Kahn et al., 1992; Kasprow & Rosenheck, 1998; Travis, 1991; Westerfelt & Yellow Bird, 1999).

The Urban AI/AN Experience of Alcohol-Related Problems and Homelessness

AI/AN homelessness is not restricted to reservations. Approximately 70% of AI/ANs live in urban areas due to various factors, including forced relocation (e.g., the Indian Relocation Act

of 1956) and increased opportunities for employment (Castor et al., 2006; Davis et al., 2016; Jackson, 2002; Wendt & Gone, 2012). Although urbanization has benefited some AI/ANs, many have struggled to maintain adequate long-term employment and affordable housing. Urbanization has thus resulted in poverty that is on par with that on reservations and is considerably higher than in the general urban population (Davis et al., 2016; Dickerson & Johnson, 2010).

Compared to their counterparts on reservations, urban AI/ANs have less familial and other social support, fewer opportunities to engage in traditional cultural and spiritual practices, and less access to culturally appropriate health care services (Castor et al., 2006; Evans-Campbell, Lindhorst, Huang, & Walters, 2006; Jackson, 2002; Lobo, 2001). Perhaps as a result of these factors, urban AI/ANs experience a greater prevalence of homelessness than do non-AI/ANs living in cities (Westerfelt & Yellow Bird, 1999; Whitbeck et al., 2011). Considering their population share, the prevalence of homelessness among AI/ANs in major U.S. cities is disproportionately high. In fact, it is up to 5-10 times higher in several cities along the West Coast (Kramer & Barker, 1996; Lobo & Vaughan, 2003; Sugarman & Grossman, 1996; Whitbeck et al., 2011). Given the extent of the health, economic, and social problems in this marginalized population, it is imperative to better understand and address homelessness for urban AI/ANs.

AI/AN Spirituality

Because of the relatively high prevalence of alcohol use and alcohol-related problems among urban homeless AI/ANs, it is important to identify factors that may protect against alcohol problems in this community. There is growing evidence that enculturation—the extent of engagement with one's own cultural identity and participation in traditional practices—is negatively correlated with alcohol consumption and alcohol problems among AI/ANs. In other words, individuals who are more engaged in their own cultural identity and cultural practices tend to consume less alcohol and experience reduced alcohol-related problems (Fleming & Ledogar, 2008; Garroutte et al., 2009; Iwasaki & Byrd, 2010; Torres Stone, Whitbeck, Chen, Johnson, & Olson, 2006). Traditionally, AI/AN enculturation has been inseparable from spiritual beliefs and practices, reflecting cosmologies in which the spiritual is intertwined with all aspects of daily life (Greenfield et al., 2015; Kulis, Hodge, Ayers, Brown, & Marsiglia, 2012). Specific

beliefs and practices vary considerably between and within tribes and include traditional Native spiritual traditions, Christianity, and syncretic combinations of Indigenous and Christian traditions (e.g., the Native American Church; Garroutte et al., 2009; Kulis et al., 2012). Common pan-tribal spiritual practices include prayer, sweat lodges, drumming, dancing, smudging ceremonies, pipe ceremonies, and traditional medicine. Through these practices individuals and groups express gratitude; receive purification and healing; and maintain harmony with the cosmos and nature, among kinship and community relations, and between one's mind, body, and spirit (Portman & Garrett, 2006; Rybak & Decker-Fitts, 2009).

Although research is limited, several studies have shown a negative correlation between alcohol use/problems and AI/AN engagement in religious/spiritual practices (including traditional Native spirituality, Christianity, and syncretic combinations; Beebe et al., 2008; Kulis et al., 2012; Torres Stone et al., 2006; Yu & Stiffman, 2007). These results are consistent with growing evidence that spirituality is protective against negative substance use outcomes for individuals in general (Miller, 2013; Pardini, Plante, Sherman, & Stump, 2000). Taken together, these research findings suggest that spiritual practices might likewise be protective for homeless urban AI/ANs with alcohol use problems. There is, however, no previous research on spirituality in this population.

METHODS

Study Overview

This study is a secondary analysis of baseline data from a larger nonrandomized controlled study testing a Housing First intervention for chronically homeless adults with severe alcohol use problems (Larimer et al., 2009). Over one third of the sample (39%) identified as AI/AN, and the dataset included several items about alcohol use and religious/spiritual affiliations and practices. These data points are the focus of the current analysis.

We first compared AI/AN participants with non-AI/AN participants on demographic variables, alcohol use problems, and religious affiliation over time. We then compared the two groups on importance, frequency, and type of religious/spiritual practices in which they engaged. Finally, given the lack of research in this area, we explored patterns in AI/AN participants'

independent religious and spiritual practices, including the relationship between Native-specific practices and alcohol use and problems.

Participants

In this secondary study, we used baseline data from participants ($n = 134$) who were part of a larger, longitudinal parent study testing the effectiveness of low-barrier Housing First for chronically homeless individuals with severe alcohol problems in a large city in the U.S. Pacific Northwest. Participants were recruited between November 2005 and March 2007 from a) a rank-ordered list of individuals who in 2004 had incurred the highest costs in the area for publicly funded service use (e.g., emergency services, hospitalization, and incarceration) and b) a list of eligible individuals recommended by community providers familiar with the area's homeless population. (For more information about recruitment and engagement of the sample, see Collins et al., 2012; Larimer et al., 2009). The sample for the present study was broken into AI/AN and non-AI/AN subgroups.

Measures

The original study was approved by the institutional review boards at the University of Washington and the county's substance use treatment division. After obtaining written consent from participants, interviewers verbally administered the questions and measures described below as part of a larger survey battery (see Larimer et al., 2009). Interviewers were trainees in social science disciplines; they attended a training session prior to conducting interviews and were supervised by the original study's research coordinator and investigators (including licensed clinical psychologists).

Demographic Information

Demographic variables, including gender, age, marital status, number of children, education level, parent/guardian type (who primarily raised the participant), and race/ethnicity were assessed using coded participant responses to open-ended questions in baseline interviews (Larimer et al., 2009). For race/ethnicity, interviewers asked, "What is your ethnic background?" and coded responses as Hispanic or Latino, AI/AN, Asian, Native Hawaiian/Other Pacific Islander, Black or African American, White/Caucasian, more than one Race, or other; for the

latter two responses, interviewers reported participants' open-ended responses. Age was coded as number of years; number of children included biological and adopted children. Marital status was coded as legally married, remarried, consider self to be married (but not legally married), widowed, separated, divorced, or never married. Education level was coded as 7th grade or less, 8th-11th grade (one for each), GED, high school graduate, vocational school, some college, college graduate, some graduate school, or advanced degree. For parent status, interviewers asked, "With whom were you primarily raised?" and coded responses as both parents (biological or adoptive), mother only, father only, mother and step-father or live-in boyfriend, father and step-mother or live-in girlfriend, another relative, a non-relative, or none of the above.

Alcohol Use and Alcohol-Related Problems

Frequencies of baseline alcohol consumption and intoxication in the past 30 days were assessed using items from the Addiction Severity Index (ASI). The ASI is a widely used measure that has been found to be reliable and valid in multiple contexts, including for populations with alcohol use problems (McLellan et al., 1992). Alcohol quantity on typical and peak drinking occasions (in terms of number of standard drinks per day) during the past 30 days was assessed using the Alcohol Use Quantity Form, modified from the Timeline Follow-Back (TLFB) for this population (Larimer et al., 2009; Sobell & Sobell, 1992). The TLFB is a widely used measure that is reliable and valid for assessment of self-reported alcohol consumption (Sobell & Sobell, 1992).

Alcohol-related problems were measured with the 15-item Short-Inventory of Problems (SIP-2R; Blanchard, Morgenstern, Morgan, Lobouvie, & Bux, 2003). The SIP-2R uses a 4-point, Likert-type scale to assess the frequency of alcohol-related problems experienced in the past 3 months (0 = *never* to 3 = *daily or almost daily experience*). SIP-2R summary scores range from 0-45; these scores have been shown to be reliable and valid indicators of alcohol-related problems with substance-using individuals (Kenna et al., 2005).

Religious Affiliation

Interviewers asked participants to identify their religious affiliation(s), both during their upbringing and at the current time. Interviewers coded a participant's responses in one or more of the following categories: None, Protestant, Catholic, Baptist, Mormon, Jewish, Islamic, Buddhist, Hindu, Native American Church, religious/spiritual but non-denominational, agnostic, atheist, other Christian denomination, other non-Christian denomination, and unknown.

Responses coded as "other Christian denomination" and "other non-Christian denomination" were accompanied by qualitative text entries indicating participants' specific affiliations (e.g., "Russian Orthodox" or "tribal").

Frequency and Importance of Religious/Spiritual Practices

Participants were asked how often they attended religious/spiritual services and how often they did something on their own (i.e., independent practice) that they considered to be spiritual or religious. Both items were assessed on a 6-point Likert-type scale (1 = *once a week or more;* 2 = *a few times a month;* 3 = *once a month;* 4 = *three or more times a year;* 5 = *once or twice a year;* 6 = *never*). Participants also were asked to indicate the importance of religion/spirituality in their life on a 7-point, Likert-type scale (1 = *not at all important* to 7 = *the most important thing*) as well as whether they would attend religious/spiritual services more frequently if they could (yes/no). Participants who said they had engaged in independent spiritual or religious practices (*n* = 112) were asked an open-ended question to identify these practices.

Data Management

We created an AI/AN identity variable, which included individuals who identified as AI/AN or as multiracial with AI/AN race or a Native tribal affiliation specified. Due to the small number of participants coded for certain responses, we combined several demographic response codes. For religious affiliation, we recategorized certain responses as follows. First, among the "other Christian denomination" category, any Protestant denominations indicated by the qualitative text entries (e.g., "Methodist") were recategorized as "Protestant." Second, we created a new religious affiliation category, "tribal," to include any religious affiliation that was specific to an AI/AN tribe. In the "other non-Christian denomination" category, any tribal-specific religious affiliations indicated by the qualitative text entries were recategorized into the "tribal" category. For analytic purposes, we categorized all religious affiliation categories into one of four superordinate categories: a) Christian (Catholic, Baptist, Protestant, Mormon, other Christian denomination), b) non-Christian (religious/spiritual but non-denominational, Buddhist, Jewish, Muslim, other non-Christian denomination), c) Native American (Native American Church, tribal), and d) none (none, agnostic, atheist).

For independent religious/spiritual practices, the first author (in preparation for this secondary analysis) reviewed participants' brief, open-ended responses (typically between one

word and a short phrase) and created a codebook with definitions for eight categories (see Results section for categories). The first author and a coauthor (KS) independently coded each response, resulting in identical coding for 94.8% of participant responses; 99.2% agreement was achieved after a brief discussion between the coders, and 100.0% agreement was reached after brief consultation with another coauthor (DD). In addition, a coauthor who identifies as American Indian (LN) independently coded for one of the eight categories (Native-specific rituals/practices; see below) among AI/AN participant responses, resulting in 100% agreement with the other two coders. Some participants were coded for more than one category (13% in two categories; 3% in three).

Data Analysis Plan

We first compared AI/ANs with non-AI/ANs on demographic variables, alcohol use and problems, religious affiliation, and frequency/importance of religious/spiritual practices. Because most outcome variables were non-normally distributed and overdispersed, we used nonparametric inferential analyses. Specifically, Mann-Whitney U Test was used for all comparisons using continuous dependent variables, including continuous demographic variables, all alcohol use and problems comparisons, and continuous variables of frequency/importance of religious/spiritual practices. Fisher's Exact Test [*FET*] was used for all comparisons using categorical dependent variables, including categorical demographic variables, historical and current religious affiliation (for each superordinate category), and the categorical item assessing the importance of religious/spiritual practices. Fisher's Exact Test was also used to assess differences in religious affiliation change, in terms of participants having a current religious affiliation in a different superordinate category than the one in which they were raised.

For the alcohol use and problems comparisons, we also conducted quantile regression analyses in order to control for any statistically significant differences in demographic variables. This procedure is a regression in which the outcome is a percentile of the distribution, rather than the mean (see Koenker, 2005). Quantile regression at the median percentile allows for a measure of central tendency that is more informative than the mean when a distribution is non-normally distributed (see Hao & Naiman, 2007). For these analyses, this percentile was set at .50 (the median) using the *qreg* function in STATA. (For examples of alcohol and AI/AN research using quantile regression, see Kerr, Greenfield, & Midanik, 2006; Ritenbaugh et al., 2003).

Finally, we used Mann-Whitney U Test to explore differences in alcohol use/problems between AI/AN participants who reported using Native-specific religious/spiritual practices (based on the qualitative coding described above) and those who did not. As part of this exploration, we conducted post hoc analyses to rule out confounding factors. Specifically, we analyzed whether there were any significant demographic differences between these two groups (using Mann-Whitney U Test for continuous variables and Fisher's Exact Test for categorical variables), and we conducted Mann-Whitney U Test analyses for each of the independent religious/spiritual practices among AI/AN participants, in terms of their relationship with alcohol use/problems. For all statistical tests, alpha level for statistical significance was set at $p < .05$. Statistical analyses were conducted using STATA software (version 13).

RESULTS

Demographics

Demographic descriptions are shown in Table 1 for both AI/AN ($n = 52$) and non-AI/AN ($n = 82$) participants. The two groups showed statistically significant differences in education level and parent/guardian type (who primarily raised the participant). Compared to non-AI/ANs, significantly more AI/ANs had less than a high school education rather than had attended college. In addition, significantly more AI/ANs were raised by a nonrelative rather than by one or both parents, compared to non-AI/ANs. No statistically significant differences were detected for gender, age, marital status, or number of children (see Table 1).

Table 1
Participant Characteristics

Demographic Variable	AI/AN ($n = 52$)	non-AI/AN ($n = 82$)	Z	p
	% or M (SD)	% or M (SD)		
Gender (male)	92%	95%		.71
Age (yrs.)	46.9 (9.7)	49.0 (10.0)	-0.87	.38
Marital status				.71
Married	4%	4%		
Widowed/divorced/separated	40%	48%		
Never married	56%	48%		

continued on next page

Table 1 Continued
Participant Characteristics

Demographic Variable	AI/AN (*n* = 52)	non-AI/AN (*n* = 82)	*Z*	*p*
	% or *M* (*SD*)	% or M (*SD*)		
No. of children	1.3 (1.6)	1.0 (1.4)	1.24	.22
Parent/guardian type (primarily raised by)				<.001 [a]
Both parents (biological or adoptive)	28%	63%		
One parent	28%	24%		
Another relative	18%	10%		
Non-relative	26%	3%		
Education (highest level)				.01 [b]
At least some college	25%	46%		
High school graduate / GED	30%	31%		
< High school graduate / GED	46%	23%		
Race/ethnicity				
American Indian/Alaska Native (AI/AN)	76.9	--		
White/Caucasian	--	63.4		
Black or African American	--	15.6		
Hispanic/Latino	--	9.7		
Asian/Pacific Islander/Native Hawaiian	--	4.9		
> 1 race/ethnicity	23.1	2.4		
Other	--	3.7		

Note: Participants in a study comparing the effects of a Housing First intervention with a wait-list control condition among U.S. chronically homeless individuals with severe alcohol problems. The AI/AN group consists of those who identified their race/ethnicity as American Indian/Alaska Native (AI/AN), either alone or in combination with another race/ethnicity. Demographic information was collected during baseline interviews and coded by interviewers. Only one choice per category was coded. Differences between groups were analyzed using Mann-Whitney U Test (continuous variables) and Fisher's Exact Test (categorical variables). Missing data due to nonresponse: Marital status (*n* = 1); No. of children (*n* = 4); Parent/guardian type (*n* = 4); Education (*n* = 1).
[a] Post hoc pairwise comparisons (Fisher's Exact Test) were statistically significant for "both parents" and "non-relative" (*p*<.001) and "one parent" and "non-relative" (*p* = .005), with Bonferroni correction for 6 comparisons (α = .008).
[b] Post hoc pairwise comparison (Fisher's Exact Test) was statistically significant for "at least some college" and "< high school graduate / GED" (*p*<.001), with Bonferroni correction for 3 comparisons (α = .017).

Alcohol Use and Problems

Baseline alcohol use and severity variables are shown in Table 2. Both AIANs and non-AIANs had equal days of alcohol consumption (*Mdn* = 30.0) and intoxication (*Mdn* = 26.5) in the month prior to baseline, indicative of the heavy alcohol use of this population. AIANs had higher typical (*Mdn* = 23.3) and peak amounts of use (*Mdn* = 42.7), in comparison to non-AIANs (*Mdn* = 20.3 and *Mdn* = 25.9, respectively); however, only the difference in peak amount was

statistically significant. AIANs also had a higher but statistically insignificant SIP score (*Mdn* = 1.70)—indicating higher alcohol use problems—than did non-AIANs (*Mdn* = 1.47). Because there were statistically significant differences between AI/ANs and non-AI/ANs in education level and parent/guardian type (see above), we conducted quantile regression analyses with education level and parent/guardian type as covariates. In these analyses, AI/AN identity was not a statistically significant predictor of any of the alcohol use and problem variables, including peak amount ($p > .12$).

Table 2
Baseline Alcohol Use and Alcohol-Related Problems

Alcohol Use/Problems	M	SD	95% CI	Mdn	IQR	Z	p
Days consumed (past 30 days)[a]						-0.55	0.58
AI/AN (n=45)	22.27	11.33	[18.86, 25.67]	30.00	13.00-30.00		
non-AI/AN (n=77)	24.06	9.62	[21.88, 26.25]	30.00	20.00-30.00		
Days intoxicated (past 30 days)[a]						-0.19	0.85
AI/AN (n=46)	19.33	12.17	[15.71, 22.94]	26.50	7.00-30.00		
non-AI/AN (n=74)	19.62	12.17	[16.80, 22.44]	26.50	7.00-30.00		
Typical amount (past 30 days)[b]						1.27	0.20
AI/AN (n=47)	28.58	23.81	[21.59, 35.57]	23.33	14.26-32.90		
non-AI/AN (n=77)	23.22	19.71	[18.75, 27.69]	20.29	10.56-31.10		
Peak amount (past 30 days)[b]						2.12	0.03*
AI/AN (n=44)	51.97	50.51	[36.62, 67.33]	42.67	22.25-62.21		
non-AI/AN (n=69)	32.74	25.61	[26.60, 38.90]	25.92	13.82-46.66		
Alcohol-related problems (SIP-2R) (past 90 days)[c]						1.68	0.09
AI/AN (n=50)	1.76	0.78	[1.54, 1.98]	1.70	1.20-2.40		
non-AI/AN (n=81)	1.49	0.85	[1.30, 1.68]	1.47	0.93-2.13		

Note: Differences between American Indian/Alaska Native (AI/AN) group (*n* = 52) and non-AI/AN group (*n* = 82) analyzed using Mann-Whitney U tests. Responses from some participants are missing due to nonresponse.
[a] Assessed using items from the Addiction Severity Index (ASI).
[b] Alcohol quantity on typical and peak drinking occasions assessed using the Alcohol Use Quantity Form, modified from the Timeline Follow-Back (TLFB).
[c] Measured by Short-Inventory of Problems (SIP-2R), a 15-item 0-3 Likert-type scale for assessment of alcohol-related problems (0 = never; 3 = daily or almost daily).
* Statistically significant difference (*p* < .05); there were no statistically significant differences, however, in quantile regression analyses that controlled for education level and parent/guardian type.

Religious Affiliation

Descriptive statistics for historical and current religious affiliations are shown in Table 3, along with superordinate category differences between AI/ANs and non-AI/ANs. AI/ANs were significantly less likely to be currently affiliated with Christianity than were non-AI/ANs (36.7% vs. 59.5%). In addition, AI/ANs were significantly more likely than non-AI/ANs to report a Native American religious affiliation, both historically and currently. There were no other significant differences between the two groups.

Compared to non-AI/ANs (27.6%), a greater proportion of AI/ANs (41.3%) had changed their religious affiliation since their childhood (based on superordinate categories). This comparison, however, was not statistically significant (*FET* p = 0.16). Based on a post hoc analysis that was limited to participants who were raised Christian, significantly fewer AI/ANs (48.9%) than non-AI/ANs (77.1%) reported affiliating with Christianity at the time of the study (*FET* $p < .05$).

Table 3
Religious Affiliation Over Time

Religious Affiliation	Raised Affiliation (Pct.)			Current Affiliation (Pct.)		
	AI/AN	non-AI/AN	p	AI/AN	non-AI/AN	p
Christian	**75.0**	**77.2**	**.83**	**36.7**	**59.5**	**.02**
Catholic	37.5	27.8		12.2	21.5	
Baptist	2.1	22.8		2.0	16.5	
Protestant	16.7	12.7		8.2	10.1	
Mormon	2.1	0.0		0.0	1.3	
Other	12.5	10.1		14.3	10.1	
> 1 of above	4.2	3.8		0.0	0.0	
Non-Christian	**4.2**	**7.6**	**.71**	**20.4**	**17.7**	**.82**
Non-denominational	4.2	3.8		16.3	15.2	
Buddhist	0.0	1.3		0.0	1.3	
Jewish	0.0	1.3		0.0	1.3	
Muslim	0.0	1.3		0.0	0.0	
Other	0.0	0.0		4.1	0.0	
Native American	**10.4**	**1.3**	**.03**	**18.4**	**1.3**	**<.01**
Native American Church	6.3	1.3		16.3	1.3	
Tribal	4.2	0.0		2.0	0.0	

Table 3 Continued
Religious Affiliation Over Time

Religious Affiliation	Raised Affiliation (Pct.)			Current Affiliation (Pct.)		
	AI/AN	non-AI/AN	p	AI/AN	non-AI/AN	p
None	**8.3**	**11.4**	**.77**	**20.4**	**16.5**	**.64**
None	8.3	8.9		18.4	13.9	
Agnostic	0.0	0.0		0.0	1.3	
Atheist	0.0	2.5		0.0	1.3	
> 1 of above	0.0	0.0		2.0	0.0	
Other	**2.1**	**2.5**		**4.1**	**5.1**	
Multiple (>1 category)	0.0	2.5		0.0	3.8	
Unknown (by respondent)	2.1	0.0		4.1	1.3	

Note: Religious affiliations (for one's upbringing and at the time of the study) for American Indian/Alaska Native (AI/AN) participants (*n* = 52) and non-AI/AN participants (*n* = 82), as organized within superordinate categories (bolded). Participants who had affiliations across two or more superordinate categories (per time period) were categorized as "Multiple." Differences between AI/AN and non-AI/AN participants were analyzed using Fisher's Exact Test.

Frequency and Importance of Religious/Spiritual Practices

There were no statistically significant differences between AI/ANs and non-AI/ANs in the frequency and importance of religious and spiritual practices (*p* > .28). On average, both groups indicated that religion/spirituality was moderately important (AI/AN: *M* = 5.22, non-AI/AN: *M* = 5.23), attended religious/spiritual services about three times per year (AI/AN: *M* = 3.98, non-AI/AN: *M* = 4.33), and engaged in independent religious/spiritual practices a few times per month (AI/AN: *M* = 2.16, non-AI/AN: *M* = 2.36). In addition, most participants said they would attend services more frequently if they could (AI/AN: 63%, non-AI/AN: 59%).

Qualitative coding resulted in eight categories of independent spiritual practice: prayer, helping others, Native-specific rituals/practices, reading, arts, meditation, visiting a church, and other. Most practices were coded as prayer for both AI/AN and non-AI/AN participants (see Table 4 for frequencies in each category). Of particular interest—given our focus on AI/AN participants—was the "Native-specific rituals/practices" category, which was defined as any practice, ritual, or event that is of unique AI/AN heritage, is of special importance to AI/AN peoples, or refers to any kind of social gathering of AI/AN peoples. Seven participants (6 AI/ANs and 1 non-AI/AN) reported practices that were coded for this category. Responses for the 6 AI/AN participants were as follows: "blessed Four directions/elements," "attending a

powwow," "sing my powwow songs," "get Natives together," "swat [sweat] lodge" [sic], and a deidentified Native-specific "retreat." Based on post hoc analyses, there were no statistically significant demographic differences between the 6 AI/AN participants who reported these practices and the 44 AI/AN participants who did not ($p > .35$).

Table 4
Independent Religious/Spiritual Practices

Reported Practice	AI/AN		non-AI/AN	
	n	%	*n*	%
Prayer	29	58%	44	56%
Helping others	1	2%	7	9%
Native-specific rituals/practices	6	12%	1	1%
Reading	2	4%	7	9%
Arts	3	6%	3	4%
Meditation	2	4%	4	5%
Visiting a church	2	4%	3	4%
Other	8	16%	9	11%

Note: Eight categories of independent religious/spiritual practices, with percentages of American Indian/Alaska Native (AI/AN) and non-AI/AN participants who reported practices in each category (among the 112 participants who said they have done independent practices). Participants' open-ended responses were categorized based on qualitative coding process, with 100% agreement between two coders. Some participants were coded for one more than category (13% in two categories; 3% in three).

Relationship Between Native-Specific Rituals/Practices and Alcohol Use/Problems

As shown in Table 5, AI/ANs who engaged in independent Native-specific religious or spiritual practices reported significantly lower drinking frequency (*Mdn* = 5.00) and quantity on a typical day (*Mdn* = 8.81) compared to AI/ANs who did not engage in these practices (*Mdn* = 30.00 and *Mdn* = 25.44, respectively). Results also indicated a marginally significant difference in days of intoxication, with fewer days of intoxication among those engaged in Native-specific practices (*Mdn* = 5.00 vs. *Mdn* = 29.50). These analyses were replicated for each of the other (non-Native-specific) independent religious/spiritual practices and did not result in statistically significant differences in alcohol use/problems ($p > .08$).

Table 5
Relationship Between Native-Specific Independent Religious/Spiritual Practices and Baseline Alcohol Use/Severity (American Indian/Alaska Native Participants)

Alcohol Use/Problems	M	SD	95% CI	Mdn	IQR	Z	p
Days consumed (past 30 days)[a]						-2.61	0.009**
Native practice (*n* = 6)	10.00	12.31	[-2.92, 22.92]	5.00	0.00-20.00		
No Native practice (*n* = 39)	24.15	10.06	[20.89, 27.42]	30.00	23.00-30.00		
Days intoxicated (past 30 days)[a]						-1.96	0.050
Native practice (*n* = 6)	10.00	12.31	[-2.92, 22.92]	5.00	0.00-20.00		
No Native practice (*n* = 40)	20.73	11.66	[16.99, 24.46]	29.50	8.50-30.00		
Typical amount (past 30 days)[b]						-2.40	0.017*
Native practice (*n* = 6)	10.34	10.49	[-0.67, 21.36]	8.81	0.00-21.12		
No Native practice (*n* = 41)	31.25	24.11	[23.64, 38.86]	25.44	15.55-41.60		
Peak amount (past 30 days)[b]						-1.30	0.193
Native practice (*n* = 6)	30.51	36.18	[-7.45, 68.41]	19.74	0.00-50.30		
No Native practice (*n* = 38)	55.36	51.98	[38.28, 72.45]	44.53	23.36-62.21		
Alcohol-related problems (SIP-2R) (past 90 days)[c]						-1.02	0.310
Native practice (*n* = 6)	1.53	0.70	[0.79, 2.27]	1.53	0.93-2.07		
No Native practice (*n* = 44)	1.80	0.79	[1.56, 2.04]	1.70	1.30-2.53		

Note: Baseline alcohol use and severity among American Indian/Alaska Native (AI/AN) participants, sorted by those who reported an independent Native-specific religious/spiritual practice (*n*=6) and those who did not (*n*=44). Responses from some participants for certain outcomes are missing due to nonresponse. Differences between groups analyzed using Mann-Whitney U tests.
[a] Assessed using items from the Addiction Severity Index (ASI).
[b] Alcohol quantity on typical and peak drinking occasions assessed using the Alcohol Use Quantity Form, modified from the Timeline Follow-Back (TLFB).
[c] Measured by Short-Inventory of Problems (SIP-2R), a 15-item 0-3 Likert-type scale for assessment of alcohol-related problems (0 = never; 3 = daily or almost daily).
* *p* < .05
** *p* < .01

DISCUSSION

This study describes religious and spiritual affiliation and practices in a sample of homeless urban AI/ANs with severe alcohol problems.

AI/ANs Reported Higher Peak Alcohol Quantity than Non-AI/ANs

Findings indicated that AI/ANs consumed a higher quantity of alcohol on peak drinking occasions than did non-AI/ANs. This difference was not significant, however, in analyses that controlled for parent/guardian type and education level. The groups did not differ on other

drinking indices, including drinking frequency, amount consumed on their typical drinking day, and alcohol-related problems. Previous studies have had mixed results in comparisons of alcohol use and related problems between homeless AI/ANs and homeless non-AI/ANs, with some studies indicating a higher prevalence of alcohol use and alcohol-related problems among AI/ANs (Kahn et al., 1992; Kasprow & Rosenheck, 1998; Travis, 1991; Westerfelt & Yellow Bird, 1999) and one study showing no difference among racial/ethnic groups in their alcohol consumption (Gamst et al., 2006). The current study adds to this literature in showing group differences in alcohol use may be present for some measures but not for others. In addition, differences may be partially attributable to other demographic variables (e.g., parent/guardian type and education level); this explanation is consistent with recent population-level epidemiological research in which a higher prevalence of alcohol use disorders among AI/ANs was significantly attenuated when adjusting for sociodemographic characteristics (Brave Heart et al., 2016). Nonetheless, these results should not be misconstrued to support a reduction in Native-specific programming or funding for alcohol use problems; if anything, they support the importance of addressing alcohol use problems holistically and in light of longstanding socioeconomic disparities stemming from a legacy of colonialism.

AI/ANs and Non-AI/ANs Differed in Some Ways on Religion and Spirituality

AI/ANs who were raised Christian were less likely to have a Christian religious affiliation at the time of the study than were non-AI/ANs who were raised Christian. This change occurred alongside a greater number of AI/ANs with a Native American religious affiliation at the time of the study, in comparison to being raised with such an affiliation. These results are consistent with literature describing that some urban AI/ANs—whose families have less access to traditional Native religious and spiritual practices than do reservation-dwelling AI/ANs—seek out these practices as adults (Jackson, 2002; Lobo, 2001).

No significant differences between AI/ANs and non-AI/ANs were found for self-reported importance of religion and spirituality or frequency of attending services. Participants' responses, however, may have been shaped by the manner in which the questions were delivered. For example, AI/AN participants might not have assumed that questions about "religious or spiritual services," which may have connoted attending church or synagogue services, were inclusive of Native religious ceremonies or spiritual events (see Greenfield et al., 2015). Most

measures of religiosity and spirituality, including the one used in the current study, have not been validated for use with AI/ANs, and culturally-adapted assessment of these constructs for AI/ANs has been indicated (Greenfield et al., 2015).

Engagement in Native-Specific Religious/Spiritual Practice is Associated with Less Alcohol Use

A relatively small number of participants ($n = 6$) reported engaging in independent Native-specific religious and spiritual practices. Those who did, however, reported substantially less alcohol use in the prior month, including medians of 25 fewer days of alcohol use, 16.6 fewer days of intoxication, 16.6 fewer standard drinks on a typical drinking day, and 24.8 fewer standard drinks on their peak drinking day. Of these results, the differences in days of use and typical quantity were statistically significant, and the difference in days of intoxication was marginally significant. This group did not differ from other AI/AN participants on demographic variables or in other independent religious/spiritual practices. These findings thus suggest that traditional spirituality may be a protective factor for urban, homeless AI/ANs with severe alcohol use problems, which is consistent with previous research findings (e.g., Kulis et al., 2012; Torres Stone et al., 2006). We also note that these results held even given the likely ceiling effects for such a severely affected population in which we would expect more uniformly high alcohol use and thus relatively low variability.

Limitations

There are several limitations to this secondary, exploratory study. First, the parent study was not designed to focus on AI/AN issues in particular, and, as a result, Native-specific religious/spiritual practices were not directly assessed. Instead, report of these practices required participants to volunteer this information in response to a general question about independent religious/spiritual practices. It is possible, then, that these practices may be underreported. At the same time, it is possible that those who reported these practices in response to an open-ended question may represent a subgroup of AI/ANs who are especially inclined toward Native-specific religion and spirituality. Second, because these data are cross-sectional and the groups were not randomized, we are unable to infer temporality and causality, respectively. Thus, other, unknown factors may explain current findings. For example, AI/ANs with less alcohol use may be more

likely to engage in traditional spiritual practices or vice versa. Engagement in spiritual practices could be a proxy for greater cultural and social engagement more generally. Finally, the correlation between alcohol use/problems and the frequency and duration of independent religious/spiritual practices is unknown, as information about the latter was not collected in the original study.

CONCLUSIONS AND FUTURE DIRECTIONS

In this secondary study of chronically homeless people with severe alcohol problems, AI/ANs reported consuming significantly more alcohol on their peak drinking occasions, having fewer affiliations with Christianity, having more affiliations with the Native American Church, and engaging in more Native-specific independent religious/spiritual practices than did non-AI/ANs. Further, AI/ANs who engaged in Native-specific religious/spiritual practices had significantly lower alcohol use frequency than AI/ANs who did not. Although this latter finding is based on a small number of participants and should be interpreted with caution, the magnitude of these differences—among individuals who had incurred the highest cost of public health services—suggests that future research and clinical innovations in this area may yield clinically significant public health benefits.

Future studies should examine the relationship of Native spiritual practices and alcohol use longitudinally within a larger sample of homeless AI/ANs, using culturally appropriate measures for AI/AN religious and spiritual practices to better understand the preliminary findings highlighted in this study. To this end, researchers should partner with providers who serve homeless AI/ANs to generate evidence-based interventions for this population and should encourage the use of culturally appropriate and well-validated measures in clinical practice. Further, prior research has indicated that many urban AI/ANs are interested in Native religious and spiritual practices but are unable to access them (Clifasefi, Collins, Torres, Grazioli, & Mackelprang, 2016; Hartmann & Gone, 2012). Considering that religious and spiritual practices have a protective effect in the general population (Greenfield et al., 2015), we recommend that researchers and providers assess the importance and potential clinical significance of Native practices and, when appropriate, help to connect AI/ANs with opportunities to engage in them.

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ACKNOWLEDGEMENTS

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RESPONDING TO CONCERNING POSTS ON SOCIAL MEDIA: INSIGHTS AND SOLUTIONS FROM AMERICAN INDIAN AND ALASKA NATIVE YOUTH

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Abstract: **Purpose:** *This study aimed to understand American Indian and Alaska Native (AI/AN) adolescents' perspectives on concerning social media posts, including those expressing suicidal intent.* **Methods:** *A purposive sample of AI/AN youth were recruited; trained facilitators conducted focus groups. Participants discussed experiences viewing concerning posts on social media. Qualitative analysis used the constant comparative method.* **Results:** *A total of 32 AI/AN youth ages 14-22 participated. Three salient themes emerged: 1) youth typically respond alone; 2) barriers to action; 3) recommended training and support – trusted adults, anonymity, and privacy.* **Conclusion:** *Study findings will guide the development of resources trusted by AI/AN youth.*

INTRODUCTION

Suicide is among the top causes of mortality for youth in the U.S. (Frieden, Jaffe, Cono, Richards, & Iademarco, 2014). Risks for suicide include mental illness, such as depression, substance use, and exposure to violence (Hallfors et al., 2004; Howard-Pitney, LaFromboise, Basil, September, & Johnson, 1992). American Indian and Alaska Native (AI/AN) youth are disproportionally impacted by high rates of suicide and depression with suicide being the second leading cause of death for AI/AN teens (CDC, 2010). Among AI/ANs in high school, 21.8% seriously considered attempting suicide and 14.7% attempted suicide at least once in the last year; these numbers are well above national averages at 15.8% and 7.8%, respectively (Cwik et al., 2016; Frieden, Jaffe, Stephens, Thacker, & Zaza, 2012). Suicide has a devastating, reverberating impact on tribal communities, families, and youth. Cost effective, culturally appropriate interventions are critically needed (Bartgis & Albright, 2016).

Suicide prevention efforts targeted at youth are challenging, as many youth do not disclose suicidal ideation to others (White, MacInnes, Hingson, & Pan, 2013). Emerging research suggests that youth may disclose depression symptoms and suicidal ideation via social media, such as Facebook and Twitter. Previous work found that between 25% and 33% of older adolescents displayed references to depression symptoms on their Facebook profiles (Moreno et al., 2012; Moreno et al., 2011). In a one-week period, over 200,000 publicly available tweets included hashtags of #depression and approximately 3% of the tweets referenced suicidality (Pumper, Kelleher, Whitehill, & Moreno, 2014). Not only are such references common, they can be linked to real life experiences. In one study, participants who displayed references to depression on Facebook also self-reported depression symptoms (Moreno et al., 2012). Lay media reports and scholarly papers have described tragic cases in which youths' online posts have indicated suicidality before attempting or completing suicide (Baume, Cantor, & Rolfe, 1997). These public social media disclosures may provide new opportunities to identify youth at risk and connect them to appropriate resources and support.

Social media is used by the vast majority of youth as well as a high proportion of adults (Lenhart, 2015). Given that almost all AI/AN youth maintain social media accounts, social media using-peers may intervene when they view concerning social media disclosures (Craig-Rushing & Stephens, 2011). However, little is known about youths' experiences in responding to such posts and what challenges intervening may pose for them. Thus, the goals of this study were to better understand AI/AN youths' perspectives on concerning social media posts as a means to develop tools to help youth appropriately intervene.

METHODS

Given the purpose of our study was to understand youth perspectives, a qualitative study design was deemed most appropriate. Qualitative research approaches are designed to answer exploratory questions such as "why" and "how" and generate data that can lead to hypotheses (Glesne, 2010). In order to fully explore the concepts we sought to understand in this study, interaction between youth was critical to integrate into the study design. Focus groups are a study design in which a group of participants are asked questions, and communication between research participants is used to generate ideas (Kitzinger, 1995). Focus groups were designed to

better understand how AI/AN teens and young adults view, interpret, and act on their peers' social media posts referencing mental health concerns, including harm to self or others.

Setting

This focus group study was conducted at community events in Washington and Oregon between April and June 2015. The Seattle Children's Research Institute IRB and the Portland Area (PA) Indian Health Service (IHS) IRB approved this project.

Participants and Recruitment

We recruited participants between the ages of 14 and 22 years. Focus groups were structured such that same-age peers were placed together. Adolescents aged 14-18 were grouped separately from young adults aged 18-22. Participants were recruited from two intertribal youth camps hosted by tribes in the Pacific Northwest. Both gatherings were attended by multiple tribes and focused on culture, health promotion, and youth leadership skill-building.

Participants under the age of 18 received consent forms and study materials with registration paperwork in the mail prior to the event. The recruitment materials made it clear that participation was optional, and parental consent was required for this age group. For participants 18-22 years old, a trained facilitator reviewed the consent form and provided time for questions and clarification.

Instrument Development

Facilitator Guide

The facilitator guide was developed in an iterative process by research team members from Seattle Children's Research Institute/SMAHRT and the Northwest Portland Area Indian Health Board (NPAIHB)/WeRNative. The prompts and activities designed for the focus group were tailored to be developmentally and culturally appropriate. For example, younger adolescent groups included a worksheet activity (described below) in order to provide participation options for younger adolescents who may feel less comfortable speaking out in groups. The facilitator guide begins with a warm-up activity intended to garner understanding of participants' social media use. The guide then instructs the facilitator to transition the conversation to clarify what participant's considered to be a "concerning" display on social media, explore whether

participants had ever seen "concerning" displays on their own social media, and how they typically responded to such displays. Focus groups were semi-structured with open-ended primary questions and probing questions.

In order to tailor our approaches to be developmentally appropriate by age group, the study team tailored the focus groups with younger adolescents (14-18) to provide an opportunity for both verbal and written participation. The research team designed a written worksheet (See Appendix A: Ideal Program Worksheet) to address potential reluctance to share in a group setting based on the subject matter and age of participants. Among the younger groups, the study team asked participants to: 1) write down examples of what they would consider concerning displays on social media, and 2) help design an ideal program to help youth who post concerning content on social media. In addition, this approach allowed for participation from youth who were less comfortable speaking in small groups.

Ideal Program Worksheet

The Ideal Program Worksheet honored a solutions-focused approach. The study team sought to understand youth recommendations for future translation of findings to a relevant intervention. The worksheet was tailored for younger adolescents. The participants completed the worksheets individually, and the worksheet sections guided a group discussion after completion. The worksheet contained five sections, designed to better understand: 1) their preferred social media platform for an intervention, 2) people who should be involved in efforts to address concerning displays on social media, 3) needed resources to feel prepared to help if viewing a concerning post by a peer, 4) recommended messages created by youth to help someone who is posting concerning content, and 5) recommended or preferred websites or videos to offer someone who is sharing concerning content. The participants returned the worksheets to facilitators anonymously.

Facilitator Training

There were four total focus group facilitators, two from each of the collaborating teams in this study. All four facilitators reviewed relevant focus group methodology literature and/or were previously trained in focus group facilitation. Facilitators practiced questions with each other to ensure clarity and comfort with questions and supplemental probes. The four facilitators

facilitated the first focus group together to ensure consistency and standardization in future group facilitation. Subsequent focus groups involved paired facilitators.

Focus Group Procedures

At the beginning of each session, trained facilitators reviewed focus group ground rules with participants, including being respectful and treating the focus group as a "closed talking circle" (what is said within the group, stays in the group). Participants were also reminded that participation was optional, and if there were any questions they did not feel comfortable with, they were not required to answer them. Focus groups lasted between 45 and 60 minutes. All focus group discussions were audio recorded with written activities collected to augment the recorded responses. All data were transcribed within 7 days of collection.

Analysis

Focus Group Discussion

The investigators utilized a constant comparative approach, and every author reviewed all transcripts. The transcripts were imported to a qualitative analysis program (Dedoose). During an initial review of all transcripts, one primary coder identified initial overarching categories to begin the first cycle of data classification. Inductive reasoning based in grounded theory guided codebook development and theme identification.

All authors then met to discuss the initial list of parent and child codes to clarify confusion or add missing concepts. The parent codes consisted of root codes or overarching categories, while the child codes included sub-categories within the parent codes. Once authors reached consensus on the coding criteria, the first cycle of coding began by having two teams of two coders each code the same transcript blinded to one another. The purpose of this stage of analysis was to ensure reliability and validity of data. Each team of two coders also had a third member available to help reach consensus on appropriate coding of excerpts. Following blind coding of the same document, the transcript was reviewed to identify discrepancies in coding. The research team met to discuss discrepancies and standardize and align coding moving forward. This stage verified coder reliability and allowed progression to the second cycle of coding.

The second cycle of coding was intended to synthesize and integrate parent and child codes to move towards development of themes and broader concepts. Each team coded the remaining two transcripts and reviewed all transcripts once completed. After completion of all coding and review of all coded transcripts by all authors, each coding team developed an initial list of 3-5 themes based on a systematic review of coded excerpts. The authors met to discuss overlap and discrepancies within both documents. After reaching consensus among authors, the theme documents were merged. Once theoretical data saturation were reached, three themes were identified that consistently emerged from all three groups.

Ideal Program Worksheet

The investigators conducted content analysis of the qualitative responses shared by the participants. Two trained coders utilized a categorical development approach to identify 8-10 categories in order to organize participant responses and identify shared or overlapping ideas. Two more trained coders reviewed the categories to assess for consistency and accuracy. Responses were then analyzed for frequency across all focus group participants.

RESULTS

Participants

A total of 32 AI/AN adolescents participated in three focus groups, with group size varying from 8-16 participants. There were more female participants (65.6%) than male (34.4%). Over half of the participants were between the ages of 14 to 17 years (53.1%); the median age was 16 (See Table 1). In order to ensure confidentiality, tribal affiliation was not collected.

Table 1
Demographic Characteristics

	Focus Group Participants		Ideal Program Worksheet Responders	
	Characteristic	**N = 32**	**Characteristic**	**N = 24**
Gender				
	Female	21 (65.6)	Female	16 (66.7)
	Male	11 (34.4)	Male	8 (33.3)
Age				
	14-17	19 (59.4)	14-17	19 (79.2)
	18+	13 (40.6)	18+	5 (20.8)

Technology Use

All of the participants reported going online once a day; the majority of participants reported going online several times a day. The social media sites most commonly used among the participants were Facebook, Instagram, and Snapchat. Most of the participants accessed social media with their phones. During the focus group of 18-22 year olds, participants discussed the evolution of their social media use.

> When I was younger, like in high school, I went on Facebook a lot more and posted things all the time, but now that I'm in college and have a job, I never go on there. And then all of the people on my Facebook are all old too so they don't really post either. (Female participant)

Participants also described using social media to celebrate positive or humorous information, such as to share inspirational videos and connect with AI/AN news, events, and celebrities. One participant described her preference for funny content on Facebook as follows: "I like to see funny things on Facebook. I just post funny things. People make me laugh, and I want to make other people laugh when they scroll down my timeline" (Female participant).

Ideal Program Worksheet

The Ideal Program Worksheet was distributed at two focus groups among participants between the ages of 14-18. A total of 24 AI/AN youth completed the Ideal Program Worksheet. The median age was 16 years, and 66% were female. The majority of youth had viewed concerning displays by peers on social media previously. Facebook, selected by 68% of participants, was identified as the preferred platform to deliver an intervention. Participants generated a diverse list of people to involve in efforts to intervene on behalf of those posting concerning content. The four most commonly suggested groups for involvement included family, friends, mental health professionals, and health and safety programs. Notably, "everyone" and "myself" were also suggested.

The youth generated their own messages to be offered in response to a concerning post (See Table 2). All messages consisted of words of encouragement and support, most commonly

addressing isolation, inquiring about well-being, emphasizing self-worth, and offering to listen. For example, "I would make a Facebook page called, 'If you need someone to talk to, we're here'" (Male participant).

Table 2
Youth Generated Message Types

Categories	Example Messages
Reduce Isolation	"Are you doing ok? Where are you @, do you need me to come and get you out of the environment?"
Inquire About Well-being	"You ok? I'm here if you need anything. I'm going to dinner and I'm wondering if you want to go too, my treat."
Offer To Listen	"If you need anyone to talk to...I'm here ☺"
Provide Encouragement	"There's a rainbow after this storm I promise ☺ ALWAYS HERE FOR YOU <3"
Express Compassion	"I care for you, and I am here. I always will be, I won't leave you. I will stay by your side..."
Prompt Reflection	"You are important. Your life matters. You have a purpose on this earth."
Message To Stranger	"Hey, we don't talk, but I saw your post. Are you doing alright? I'm here if you ever need me."
Show Empathy	"You're not done in this world. I've been through the same or maybe even tougher, but in this world you would change it if you left. You do matter."

Three themes emerged within the teens' suggestions for intervention resources: inspirational videos, tips or guides on how to respond, and AI/AN-specific resources (See Table 3).

Table 3
Categories of Requested Resources

Categories	Representative Quotes
Inspirational Material	"Positive videos or posts that send good vibes and hopefully give them ideas on some help to have the bad vibes flush away."
Native-specific Resources	"Tribal Social Worker"; "Native Voices"; "Ask Auntie"; "We R Native"
Training & Guides to Respond	"Talking about it so I would know what to do in a real situation."; "Knowing what to say to them, don't want to say the wrong thing."

Focus Group

The researchers identified three salient themes that were present across each focus group, as participants described experiences viewing and responding to concerning displays on social media. The themes included: 1) responding alone (I saw it. I alone ought to do something about it); 2) complicated barriers to action (knowing what to do is much harder than it sounds); and 3) trusted adults and third party responders (tools and training are needed).

Respond Alone – *I saw it. I alone ought to do something about it!*

Participants expressed a genuine concern for those who posted concerning content online. There were no participants who indicated that their initial response would be inaction. In most cases participants' responses indicated a sense of personal responsibility or "duty" to respond. "You want to be that kind of person that says, 'I've tried my best to be there for them.' Not saying it will happen, but if it did" (Male participant).

Participants also shared personal experiences viewing concerning displays and their responses to those displays. The majority of participants reported having done something in response to a concerning disclosure on social media. The most common modalities were in-person, via private message (text or direct message), or by calling them.

> One of my craziest ones was – one of my friends was putting on Facebook I think…no it was on Facebook and Snapchat – how he was feeling suicidal or whatever, so it made [me] a little concerned. So I drove all the way to [location]. (Male participant)

Though participants were responding alone, they described a variety of communication techniques, including tough love, humor, and honesty. Humor was validated by multiple participants as a good way to break the ice and diffuse a stressful situation. "Yeah, well I wasn't doing nothing, so I was like, 'Well, we're going to have some fun, slap you with some truth too, while we're at it'" (Male participant). Participants easily developed supportive messages to say to their peer and strategies to distract them.

The concept of not responding to a concerning display weighed heavily for some participants. Participants described feeling conflicted, not knowing how to respond if they didn't

know whether the disclosure was true or not. The participant excerpt below verbalizes the pressure they put on themselves to respond.

> I was like, well, I don't want to feel like I am going to sit here watch you lying about everything. And then if you do something and I don't say anything. I'm going to feel very bad if I just sat here and didn't do anything. (Female participant)

Even when participants couldn't decipher whether the display was a true cry for help, many described responding. None of the participants described consulting anyone (e.g., parent, counselor, teacher, etc.) before or after responding.

> Yeah, it's kind of like, one of my buddies… he posted something that said, "I'm going to end my life tonight" or something weird like that. I messaged him to make sure everything is ok. He said, 'Oh, I was just quoting a song.' (Male participant)

Participants also shared their personal experience with the consequences of misinterpreting the display or not taking it seriously. "Cuz I've seen that happen before where people just brush it off like it's nothing really important because they constantly do it, but that person just ends up taking their own life" (Male participant). Male and female participants both had experience with the ramifications of not responding.

> That's nothing to joke about though. I know this, well I don't know them, but we are part of a group. This guy, he was asking for help and people were making fun of him and dissing on him. And he actually got mad and posted a picture of what he did to his arm… the whole thing was cut up and all that and bleeding. (Female participant)

The lack of reference to consulting or involving supportive adults conveyed a repeated sense of personal responsibility and was often coupled with feelings of stress, guilt, and

frustration. Youth described concerns about anonymity and confidentiality in reporting their peer. Youth also expressed fears that they may not do enough. This pressure was exacerbated by the assumption that it was their responsibility *alone* to address the concerning disclosure. "I didn't want to feel like I was his only support. I felt like I was his only support" (Male participant). Multiple participants expressed feelings of frustration, particularly when the attempts to reach out and help their peer were ignored, or there was no change in the posting behavior.

> But, I just felt like, I can't do it anymore. Like, someone else is going to have to be here for you. I can't keep revolving my life around you, making sure everything is fine with you. (Female participant)

Participants responded to concerning posts by themselves. Repeatedly, participants demonstrated the ability to recognize warning signs and an innate sense of how to support the person posting concerning content. However, participants also frequently questioned their responses and rarely identified places to turn for support. "Where I'm just like sorry man, do you want to hang out and trying to get his mind off of it" (Male participant).

Complicated Barriers to Action – Knowing what to do is harder than it sounds.

Participants shared challenges they had encountered responding to concerning displays on social media. Across all focus groups the participants expressed a desire to do something, but most weren't confident their approach was the right one. Several factors contributed to this doubt, including difficulty deciphering the true meaning of concerning posts, different levels of friendship with the person posting concerning content (i.e., acquaintance, classmate, friend, family member), and frustration when attempts to intervene proved ineffective. The most common barriers to action were "deciphering post meaning" and "responder fatigue." Youth felt responder fatigue when they reached out to those displaying concerning posts, often more than once, and the displayer made no change. "I'm not gonna help. I'm not gonna feel sorry for you guys. I offered my help to you, but you're not going to accept it" (Female participant).

Among the youth who had experience attempting to intervene, many expressed dissatisfaction because the approach they used did not work. At least one youth deleted a friend

on Facebook, feeling overwhelmed by the repeated concerning displays. Other youth echoed having used this approach when they felt their actions were not working.

> Because I thought what if I assume he is quoting lyrics to a song, but he actually does kill himself, I'll feel bad because I wasn't able to say anything to him. That would feel so horrible. So, I just ended up deleting him from Facebook. (Male participant)

The comfort in responding and the type of response selected by youth depended on the nature of the relationship between the viewer and displayer or how well the viewer knew the youth sharing the concerning content. Youth were more likely to reach out to a close friend in-person or through direct message. Participants expressed more uncertainty about how to respond and were more apt to "comment" on concerning posts if they were shared by an acquaintance. A minority of participants shared that they would still encourage meeting in-person regardless of the level of their friendship.

> Um, well I didn't know how to like say, "Hey," you know? I didn't know how to bring it up because we weren't that close, so I wasn't like…I didn't have like the right to just step in and be like, "Hey, why did you post that picture?" You know? (Male participant)

Participants described feeling uncertain when trying to determine the level of risk, or whether there was risk at all, for those who were posting concerning content. In some cases, messages were described as "drama" or attention-seeking, while others were identified as a true cry for help. The context and frequency of the concerning displays were repeatedly mentioned by youth as ways to differentiate and inform the response.

> Facilitator: So, if someone says, "Sometimes you have to fly with the eagles"?
> Female participant 1: I think it would depend on what the picture was
> Male participant 1: Yeah
> Female participant 2: Yeah

Female participant 1: If they were like, you know, outside, you might be like, oh yeah, they really want to fly with them eagles, you know?

Male participant 2: Their dreams

Facilitator: Like that could be a positive statement?

Female participant 1: Yeah

Participants were more likely to think it was "drama" when the displayer frequently shared negative or distressing content. Multiple participants agreed a displayer was more high risk when it came from someone who doesn't usually share concerning content, or there was a clear change in the nature of the online disclosures. Participants were more likely to ignore ("keep scrolling") concerning displays, based on the frequency of concerning displays.

Participants also offered a counter-perspective that regardless of frequency or attention-seeking, there should still be a response. Youth shared several examples demonstrating how complicated it is to decipher the meaning of an online disclosure.

If I'd seen a gun emoji and then like the x eyes or whatever, I still think that's something you should be concerned about. Even if they did have a bad day or something, you should probably still be concerned about them, because that's still like a red flag. Basically, you don't treat it any different, because who would ever know? (Female participant)

Trusted Adults and Third Party Responders – Tools and training are needed.

Participants' descriptions of experiences with concerning disclosures revealed a lack of confidence in responding. Despite a desire to intervene or respond, multiple participants felt like what they could offer wasn't quite enough. The more distant the relationship to the displayer, the more concerns for privacy and confidentiality contributed to more hesitancy in responding. Participants suggested trusted third party responders could help with this issue. **"**I think sometimes if talking to the person directly doesn't make you feel comfortable, talking to someone else that could neutralize it. I think that could be helpful" (Female participant).

Yeah, and that's the thing, one of my auntie's, she is one of the ladies out there. And I gave her his contact information. I think she is one of the suicide prevention counselors out there. I gave him the information for that, so if he did feel that, he could go to her. (Male participant)

Participants shared desired intervention ideas across different social media platforms through the Ideal Program Worksheet and in discussion during the focus groups. Online resources and tools included We R Native website (www.weRnative.org), phone apps, 24-hour counseling chat, and hotlines.

I think something that could help is We R Native. You probably have someone ask, "I'm having an issue and trying to figure out how to talk to my friend about an issue she is having." Maybe give me some advice or some tips about how I can approach the situation, how I can help them out better, better ways that I can do it, or maybe give me the number of someone who can help them. (Female participant)

While most participants described reaching out to those posting concerning messages in-person, they also discussed the benefits of offering technology-based interventions for adolescents.

Yeah, I don't know because I had a friend who was suicidal, and he didn't like talking on the phone. When I would try to talk to him it was more of a, we'll go on here and talk because I'm not going to call. With him I asked him, I called him. And he said, "I can't talk right now." So I just said, "Alright I'll just message you, so we'll go on your time, so as long as you message me back, I know you're fine. We'll go at your pace where I'm not going to go off and ask you hard questions and you have to think of an answer right away." (Male participant)

DISCUSSION

This study generated insights from AI/AN youth regarding how they interpret and act upon social media posts they consider "concerning." Most AI/AN youth who participated had seen a concerning post online. Many described feeling personally responsible for engaging with the person who posted the concerning content, but ill-equipped to offer help effectively. Youth recognized that they needed tools and training to help with these situations and referenced the importance of trusted adults.

It was evident in both the suggested messages and requested resources that AI/AN youth conceptualized themselves as having a primary role and responsibility to respond to their peer's concerning displays. As a result, many youth experienced a "cycle of viewer distress" (See Appendix C), characterized by viewing concerning posts on social media and experiencing stress and worry; responding the best way they know how, but typically alone; observing no change in the behavior of the person posting concerning messages; and experiencing frustration, fatigue, continued stress, and guilt. To support future interventions, over two-thirds of the participants recommended technology-based, AI/AN-specific resources.

Suggested Messages

The responders generated a list of messages to help peers who post concerning content. The messages were thematically categorized to understand the most common types of messages (See Table 2).

Requested Resources

Youth wanted resources to direct their peers to but also wanted training to feel better prepared to respond. The research team organized the requested resources into three categories: inspirational material, AI/AN resources, and training and guides to respond (See Table 3).

Limitations

There are several limitations to our study which merit attention. Our study utilized a purposeful sample, which is common in focus group studies. These findings represent data from the Pacific Northwest and cannot be generalized to AI/AN youth living in other regions of the

U.S. All youth participants were involved in tribe-sponsored health and wellness activities and may report higher levels of health awareness and behavioral intention than typical Native youth.

While generalization to the larger AI/AN youth population should be done with caution, this study was designed to generate ideas and information through participant interaction that can be tested in larger samples that are more representative. Social desirability may have influenced responses of our participants, particularly given the intimate nature of this topic. Our study design included facilitators from the AI/AN population as group leaders to enhance the comfort and cultural appropriateness of our discussion and provided non-verbal participation options for younger adolescents through the Ideal Program Worksheet. Our study design was limited in that we did not collect data via the Ideal Program Worksheet for older adolescents, as our previous experience supported that older adolescents are more comfortable speaking in groups. However, as the data yielded from the Ideal Program Worksheet was interesting and valuable in this study, future study designs may consider using such a worksheet with all ages to complement focus group discussions.

CONCLUSION

Despite these limitations, our study has important implications. The research team identified prevention and intervention strategies that could interrupt the viewer distress cycle at various stages (See Figure 1).

Figure 1. Prevention & Intervention Opportunities: Interrupting the Cycle of Viewer Distress
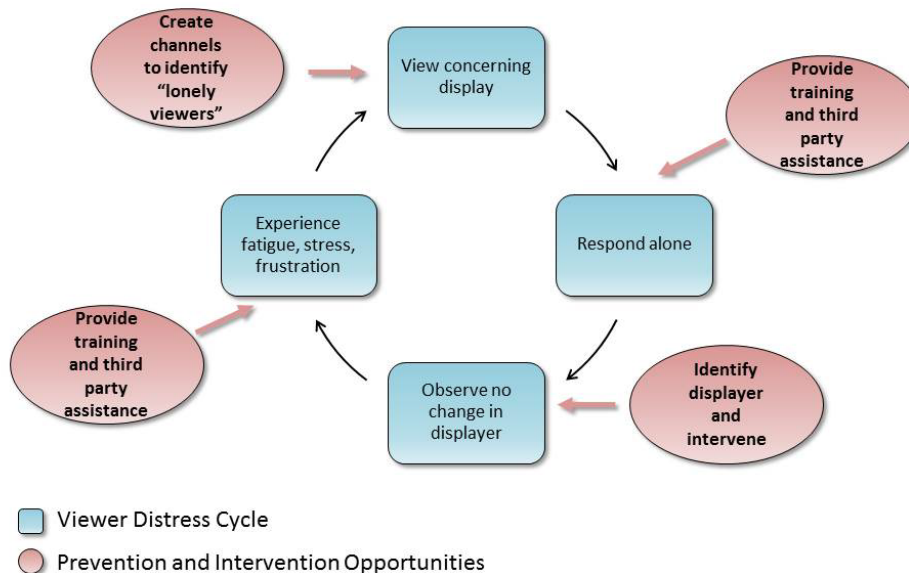
As an important first step, we suggest creating opportunities to increase youth awareness about concerning posts and the importance of taking action. Teachers, parents, coaches, and health educators can broach and normalize conversations about concerning social media posts during school assemblies and community gatherings, can teach youth how to respond to concerning displays, and can educate youth on what resources are available to support their intervention. Social marketing campaigns designed to promote youth awareness and intervention skills, delivered via social media, could reach youth already actively engaged with these channels. Routine screening during health care visits may also be effective by simply asking youth whether they'd ever seen or posted concerning content online. If robustly applied, high-risk youth will be identified by their peers, while connecting them to trusted adults who can help determine if additional mental health services are warranted.

Youth who *view* concerning messages also experience stress and frustration and should be supported as well. Repeatedly viewing posts depicting suicidality and self harm could reinforce unhealthy social norms or act as a trigger for at-risk youth. Trusted adults should emphasize support by acknowledging the youth's bravery for coming forward and thanking them for their concern. Providing adequate support to those who view and report concerning posts acknowledges their mental health needs and builds their confidence to intervene again in the future. These findings offer new strategies to identify at-risk AI/AN youth early, before concerning behaviors escalate, and may be relevant to wider audiences of youth who post and view concerning messages on social media.

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ACKNOWLEDGEMENTS

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Appendix A
Ideal Program Worksheet

If you could design an ideal program to help youth who post about mental health concerns on social media, what would it look like? We know this is a big question, but we just want to do some brainstorming to hear your ideas...

1. *First choose your platform. (circle one or write in other social media)*

2. *If you were to create something to help youth who share concerning posts on social media, who would you involve? List as many types of people you think would be able help take action.*

    1. _____   5._____
    2. _____   6._____
    3. _____   7._____
    4. _____   8._____

3. *Sometimes you need help to give help. What other information or resources would be helpful to YOU, so you can help others in distress. List 5 pieces of information or resources that would help YOU help others.*

    1. _____

    2. _____

    3. _____

    4. _____

    5. _____

4. *What kinds of messages would you create to help someone who's posting concerning content? List 2 messages that you think would help.*

    1. _____
       _____

    2. _____
       _____

5. *What kinds of websites, videos or other things would you recommend to someone who's sharing concerning content?*

Done! Time to share with the group

Appendix B
Additional Theme Quotes

Theme	Example Quotes
Theme 1: **I saw it. I alone ought to do something about it!**	"Because you know, just imagine if I felt that way and I posted like that. I would want somebody there for me, you know? ...to do something with me or something."
	"It kind of blew me away. You are going to go ahead and post that, when someone could come to your house to make sure you're fine. Someone is going to be concerned about you and put you in a psych ward...You're making people concerned for you and all of this will be for nothing.... It got to the point where I just didn't know what to do. I was just very worried about the whole situation. It got to the point where I just didn't know what was going to happen...."
	"It depends on who it is. I approach all of my friends differently, like, "hey bud, what's up?" or just like, "you ok?" you know? Just simple questions, but talk to them because... I'm really worried about them you know, because people are dying, because of drugs and alcohol, and I'm just over here like, "why you doing this? What got you into this? Were you peer pressured? Were you feeling depressed? Do you feel like there is no other way out? Talk to me."
Theme 2: **Knowing what to do is much harder than it sounds**	"And sometimes I think it just might be them creating drama, but then I also think it they're trying to reach out."
	"If it's a constant thing...if it changes though. You can tell it's a serious problem if someone goes from posting like what they're doing throughout the day and then something is really serious. You can tell something is wrong. But, if it's constant every day, it's hard to tell if something is really wrong and they need some help or they just want someone to notice them and are just saying a lot of stuff."
	"You can try, but you get tired at some point."
Theme 3: **Tools and training are needed**	"M1: Maybe get a hold of someone that you really look up to or they really look up to give some helpful advice. F2: Like a mentor? M1: Yeah F1: Someone close to them that they really trust and can open up to and talk to. Just let them know, this person is having a really hard time, they will talk to you so maybe you can go help them out."
	"Something with texting would work a lot better. Kids now-a-days are a lot more comfortable since we are the generation of technology and texting. People don't know how to take out the words that they're feeling. So, it would just be a lot easier to be able to text someone, write it down, and have someone write back to you and you can talk to them that way. That way there is not the pressure of having them sit there on the phone or face to face and just all the pressure you have on it"

Appendix C
Viewer Distress Cycle
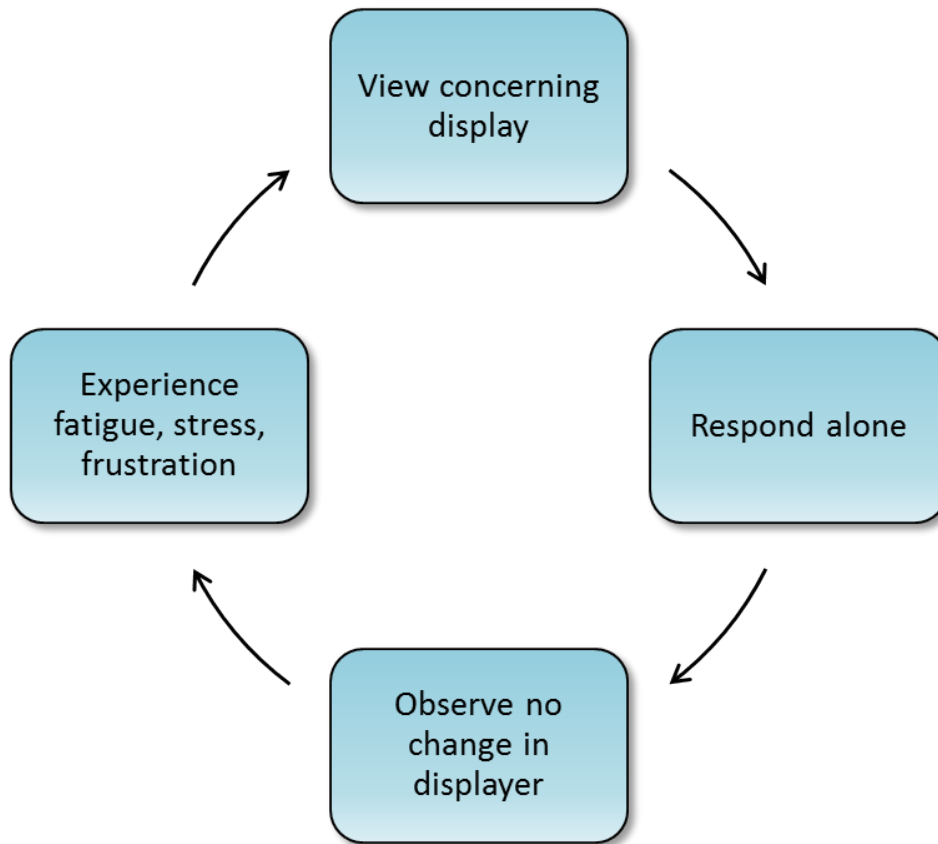
Appendix D
Facilitator Guide

Script: (5 minutes)

Hello and welcome! Thank you for attending today's discussion about social media.

My name is _____ and I am from the Northwest Portland Area Indian Health Board and this is my colleague_____ from the Social Media and Adolescent Health Research Team at Seattle Children's. We're part of a group that is looking at how the internet influences the health of teens and young adults. Because you are in this age group, we want to better understand your ideas and thoughts around social media and some common mental health topics.

If you think about it; this talking circle is pretty exciting! Your perspectives and feedback will shape the types of programs that are available to Native youth all across Indian Country.

Before we break out into 2 groups, let's go over a few things that will help our conversation:

o   We want this to be pretty informal, so there's no need to raise your hand.

o We will be having a "closed talking circle." This means that whatever is said in the group, stays in the group. We are doing this to respect each other's thoughts and opinions by not sharing each other's names or any comments people make. These things will not leave this room when we are finished. If you have any concerns about this please come talk to any of us after our session is over.

o If there's anything that's unclear, please stop me and ask me to clarify.

o If there's anything you feel uncomfortable talking about, you can always say 'pass.'

o From time to time, we may interrupt the conversation or change the subject so we have enough time to cover all our questions. If you feel strongly about a certain subject and we have time at the end, we can continue talking about it, or you can talk to us after afterwards.

o It is important that we practice respect with each other, so please try hard to not judge what other people say. You can ask any questions you want, but please don't make them personal questions or comments towards anyone in the group.

Does anyone have any questions before we begin?

Warm up Questions: (5 minutes)
1. ACTIVITY: Show of hands or human Scale (Have participants move to the left of the vertical line if answer is yes, right of the vertical line if no. Behind or in front of the horizontal line for frequency questions. (*If raising hands, state the number of people so that it can be recorded for transcription*)

   a. Do you?...

   Go online at least once a day? (Yes = _____)
   Go online several times a day? (Yes = _____)
   Go online almost constantly? (Yes = _____)
   Usually, go online from a mobile phone (n = _____)
              or from a desktop computer (n = _____)?
   Use Facebook? (n = _____)
     Frequency: Now step forward if you use Facebook at least once a day. (n = _____) Alright now back to the line.
   Use Snap chat? (n = _____)
     Frequency: Now step forward if you use Snap chap at least once a day. (n = _____) Alright now back to the line.
   Use Instagram? (n = _____)
     Frequency: Now step forward if you use Instagram at least once a day. (n = _____) Alright now back to the line.

   PROBE: What do you do on those sites?

PROBE: Out of these sites which do you use the most?

Alright let's break out into two groups.

Transition question: What are some things on social media you enjoy seeing or make you feel happy?

We're really interested in knowing about "concerning" content that is posted on social media sites. (10 minutes)

2. Have you <u>ever seen content</u> posted on social media by a classmate or friend that made you concerned about their safety, or the safety of others? Examples might include references to self-harm such as cutting oneself, posts about intentions to harm someone else, references to a depressed mood or thoughts of suicide.

    a. PROBE: What was it about the post that made you concerned?
    b. PROBE: On which social media sites is this most common?

3. **ACTIVITY: Write down as many examples of posts you would find concerning.**
    a. Pass out index cards, pen and "Like, Share, Comment, Do nothing at all, Talk to them in person handout" to each participant. You can come up with post(s) on your own, or you can work with a neighbor.
    b. Collect examples of concerning posts after 2 minutes.
    c. Randomly select 3-5 concerning posts. (*This activity seems like it may work if modified for older focus groups. After having participants write down as many examples of posts they would find concerning, instead of using these, ask everyone to pick one example post. Ask participants to think of one concerning example post they came up with, then go around the circle asking each individual: 1) Who posted? Friend, acquaintance or someone else? 2) What was the post? 3) What would you do and why?*

    d. *Say*: Refold your handout to select **what you'd do** in response to each post. *tell us if you'd like it, share it, comment on it, or do nothing at all*

        Let's say this was posted ***by an acquaintance*** on Facebook? (Read post)

        Let's say this was posted ***by a close friend*** on Facebook? (Read post)

        Let's say this was tweeted ***by an acquaintance*** on Twitter? (Read post)

        Let's say this was tweeted ***by a close friend*** on Twitter? (Read post)

        PROBE: Probe each answer (e.g. why would you "do nothing", explore barriers for inaction "share", "like" or "comment"?

PROBE: What does it mean when someone **likes** that post?

PROBE: What does it mean **when someone shares or retweets** this kind of post?

Ok. Now let's come up with some solutions. (10 minutes)

4. If you saw something that concerned you, <u>what would cause you to do something</u>? How would you decide to do something? What would cause you to reach out?

PROBE: If you saw a concerning post, would you ever follow-up with that person, to see how they're doing? How? (*online, in person, call them?*)

ACTIVITY 1: Create your own program

5. Let's break into 3-4 groups. If you could design an ideal program to help youth who post about mental health concerns on social media, what would it look like? We know this is a big question, but we just want to do some brainstorming to hear your ideas...Pass out script?

Script
First choose your platform. (list options, circle one)

If you were to create something to help youth who share concerning posts on social media, who would you involve? List as many types of people you think would be able help take action.

Sometimes you need help to give help. What other information or resources would be helpful to YOU, so you can help others in distress. List 5 pieces of information or resources that would help YOU help others.

What kinds of messages would you create to help someone who's posting concerning content? List 2 messages that you think would help.

What kinds of websites, videos or other things would you recommend to someone who's sharing concerning content?

Share with the group

PROBE: Is there anything like this that already exists?

INTEGRATED CARE WITH INDIGENOUS POPULATIONS: A SYSTEMATIC REVIEW OF THE LITERATURE

Melissa E. Lewis, PhD and Laurelle L. Myhra, PhD

Abstract: **Introduction:** *The integration of behavioral health into medical care is related to positive results including improved patient health outcomes, provider satisfaction, and cost-offset. Indigenous people suffer from the highest health disparities in the nation and disproportionately experience barriers to health care; yet it is unknown if integrated care is effective for this population.* **Methods:** *A systematic literature review was completed on the state of integrated care at Indigenous-serving health care sites in 2014 and was updated in 2016. Three databases were selected (Eric, Medline, and PsycInfo) and keywords pertaining to an Indigenous population and integrated care services (e.g., Native American, American Indian, or First Nations with integrated care, primary care, or family medicine) were used. After inclusion and exclusion criteria were applied, nine articles were selected out of the 2,889 articles found. Five additional articles were added in the 2016-update search. The selected articles were then evaluated using standards of integrated care.* **Results:** *The selected articles demonstrated wide-ranging and positive results including improved physical and mental health symptoms, reduced substance use, improvements in education and employment status, as well as a decreased involvement with the criminal justice system. It appears that interventions that additionally integrated culturally relevant health beliefs and practices experienced the largest gains in health outcomes.* **Discussion:** *Integrated care appears to be an intervention that can ameliorate these disparities by reducing stigma for those seeking care and providing coordinated care to prevent or reduce health care disparities in this population. While integrated care appears to be an effective system of care for Indigenous people, it must be noted that integration of local Indigenous health beliefs and practices is equally necessary.*

INTRODUCTION

Indigenous communities of North America[1] suffer from both physical and mental health risks and diagnoses at rates higher than non-Indigenous people (Indian Health Services [IHS], 2015). Indigenous people suffer disproportionately from alcoholism, diabetes, unintentional injuries, homicide, and suicide (Center for Disease Control [CDC], 2011; 2014; IHS, 2015). Furthermore, the comorbidity of chronic health conditions, mental health issues, and substance use disorders among Indigenous people has a profound impact on the wellbeing of individuals, families, and communities (IHS, 2015). Inadequate education, disproportionate poverty, access to and discrimination in the delivery of health services, and cultural differences have been linked to lower life expectancy and disproportionate disease burden among Indigenous people (CDC, 2011; 2014; IHS, 2015).

Integrated care refers to the multidisciplinary approach to health care service delivery, specifically the integration of behavioral health into medical care that has been related to numerous positive health outcomes, health care systems improvements, and reduced provider burnout (Bodenheimer, 2007; Funk & Ivbijaro, 2008; Willard & Bodenheimer, 2012). A leader in integrated care service and research, the Substance Abuse and Mental Health Services Administration (SAMHSA, 2017) defines integrated care as "the systematic coordination of general and behavioral healthcare" which "produces the best outcomes and proves the most effective approach to caring for people with multiple healthcare needs" (p. 1). The Agency for Healthcare Research and Quality (AHRQ) released a lexicon for integrated care providers to improve collaboration (Peek, 2013) and defined integrated care as:

> a practice team of primary care and behavioral health clinicians working together
> with patients and families, using a systematic and cost-effective approach to
> provide patient-centered care for a defined population. This care may address
> mental health and substance abuse conditions, health behaviors (including their

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[1] We use the term *Indigenous* to refer to the Native people of North America (United States or Canada; otherwise known as First Nations, American Indian, Native American, Alaska Native, and Native Hawaiian). We understand the complexity and political implications for the use of labels and do not wish to perpetuate insensitivity of many of these labels and recommend that local and regional terms be used when possible. In addition, the word *Indigenous* will be capitalized to indicate that it is representing a distinct sub-group.

contribution to chronic medical illnesses), life stressors and crises, stress-related physical symptoms, and ineffective patterns of health care utilization (Peek, 2013, p. 15).

Integrated care may be a structured model or can be used more loosely to define a coordinated approach to managing one's health (SAMHSA, 2017). Integrated care is based in the biopsychosocial-spiritual model that requires providers to consider a patient's health holistically, gathering information regarding the biological, psychological, social, cultural, and spiritual influences on the individual, couple, or family while using a systemic lens. In other words, integrated care examines multiple vertical and horizontal systems all the way from microsystems, such as cells and atoms, to the person, and up to the society and the biosphere, with the assumption that these systems interact with one another dynamically (McDaniel, Doherty, & Hepworth, 2013; Engel, 1977; SAMHSA, 2017). This complicated and nonlinear assessment process requires competent and fluid collaboration between a variety of experts.

The purpose of this project was to conduct a systematic review of integrated care interventions with Indigenous patients. The goals of this review was to highlight published, peer-reviewed, primary research studies of interventions that have potential to positively impact quality of health care delivery and health-related outcomes, thereby reducing the disproportionate health burden in Indigenous communities. More specifically, we assessed how health care organizations and providers are conceptualizing and enacting integrated care with Indigenous populations and the successes and challenges of carrying out these interventions with this population.

METHODS

We gathered published, peer-reviewed, primary articles using three highly respected databases (Eric, Medline, and PsycInfo [Appendix A]) to select articles, applying meta-analytic techniques to guide the data collection for this systematic review (Cooper, 2010; Wampler, Reifman, & Serovich, 2005). The initial search was completed in 2014, and to update the results, an additional search was conducted in 2016 that added 25 unique articles to the pool of all eligible articles. To critically evaluate the state of integrated care interventions being carried out at Indigenous-serving health care organizations, we followed a series of steps including a key
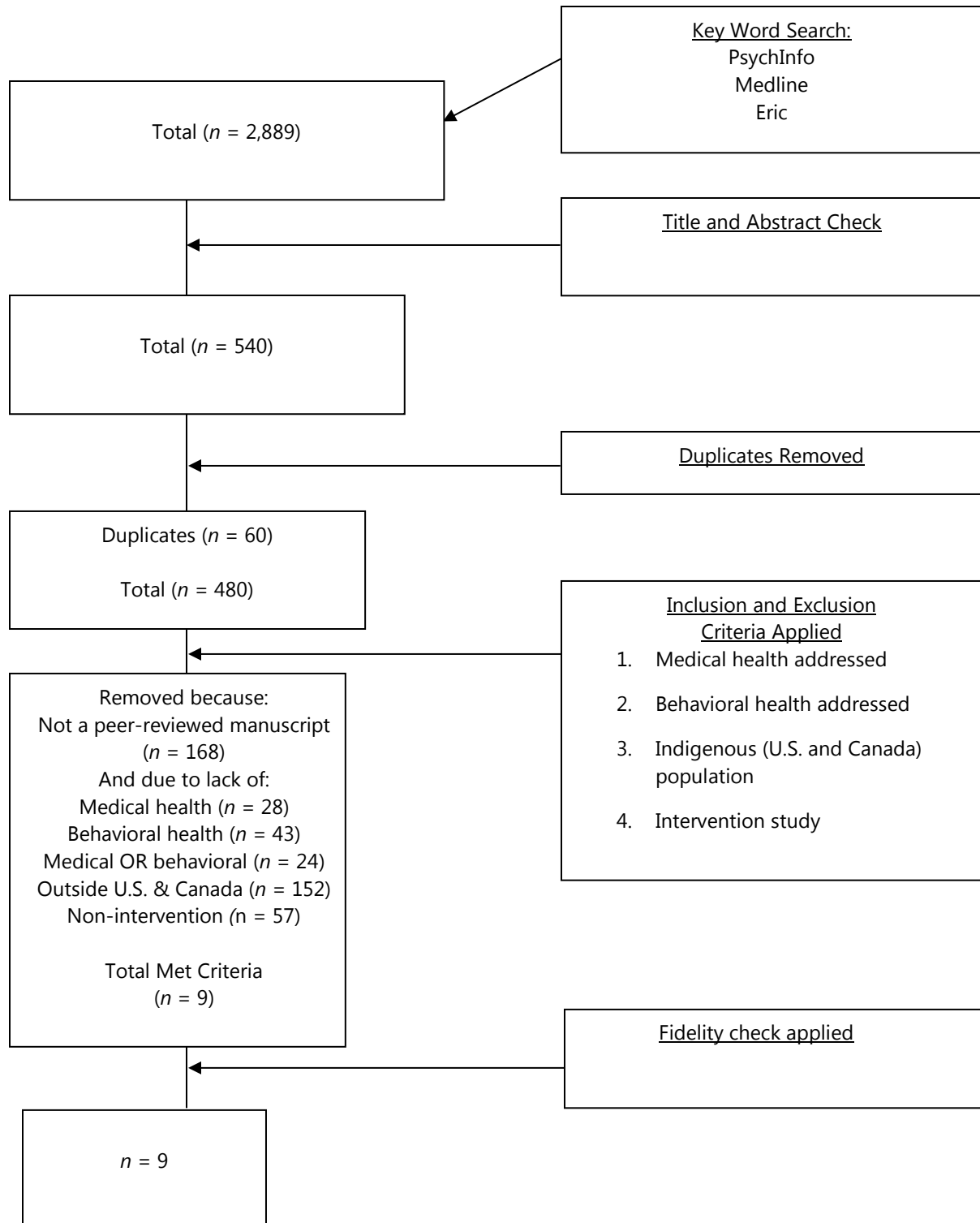
word search (see Figure 1), data filtering, and fidelity checks (Cooper, Hedges, & Valentine, 2009). Next, titles and abstracts were evaluated to ensure that the articles in fact addressed a) both behavioral and medical aspects of health and b) included Indigenous populations. Of the 2,889 articles identified, only nine articles met the inclusion criteria.

Figure 1
Key Word Search

Database	Search Terms
PsycInfo, Medline, Eric	1. Native American + Integrated Care 2. Native American + Primary Care 3. Native American + Family Medicine 4. Native American + Behavioral Health +Medical 5. Native American + Mental Health +Medical 6. American Indian + Integrated Care 7. American Indian + Primary Care 8. American Indian + Family Medicine 9. American Indian + Behavioral Health +Medical 10. American Indian + Mental Health +Medical 11. First Nations + Integrated Care 12. First Nations + Primary Care 13. First Nations + Family Medicine 14. First Nations + Behavioral Health +Medical 15. First Nations + Mental Health +Medical 16. Indigenous + Integrated Care 17. Indigenous + Primary Care 18. Indigenous + Family Medicine 19. Indigenous + Behavioral Health +Medical 20. Indigenous + Mental Health +Medical

All article selection steps were completed by researchers 1 and 2 collaboratively. To ensure reliability of selected articles, researcher 3 (research assistant) independently completed random fidelity checks covering 10% of all a) search results, b) abstract and title checks, and c) criteria checks. The research assistant was blinded to the initial article selection of researcher 1 and 2. Search results and abstract checks yielded the same selected articles at each stage. The criteria check resulted in the same nine article selections. Therefore, no articles were included or excluded due to this step to ensure reliability amongst researchers (see Figure 2). Finally, a table was created to view and compare selected articles' sections and results (see Table 1).

Figure 2
Literature Synthesis Methodology

Total (*n* = 2,889)	Key Word Search: PsychInfo, Medline, Eric
Total (*n* = 540)	Title and Abstract Check
Duplicates (*n* = 60) / Total (*n* = 480)	Duplicates Removed
Removed because: Not a peer-reviewed manuscript (*n* = 168) And due to lack of: Medical health (*n* = 28) Behavioral health (*n* = 43) Medical OR behavioral (*n* = 24) Outside U.S. & Canada (*n* = 152) Non-intervention (*n* = 57) Total Met Criteria (*n* = 9)	Inclusion and Exclusion Criteria Applied 1. Medical health addressed 2. Behavioral health addressed 3. Indigenous (U.S. and Canada) population 4. Intervention study
n = 9	Fidelity check applied

RESULTS

The results of this systematic review are organized into the following sections: We start with *motivation for integration,* which provides the reasoning that each site uses to shift their clinic to an integrated care model based on arguments that they present in their literature review sections. Next, we will *describe the interventions* themselves. Then, *evaluation and outcomes* of integrated care interventions will be presented detailing the health outcomes of patients. Finally, limitations of the selected articles will be presented.

Motivation for Integration

The rationale for use of integrated care with Indigenous patients is important because it provides a better understanding why such interventions may or may not be a good fit for this population. In Table 2 we compare each selected article based on key principles and outcomes of integrated care (Doherty et al., 1996; Patterson, Peek, Heinrich, Bischoff, & Scherger, 2002; Peek, 2013; SAMHSA, 2017; Seaburn, Lorenz, Gunn, Gawinski, & Mauksch, 1996). Rationale was usually found in the introduction or conclusion sections of the article, a place where the author explained their reasoning for utilizing an integrated care intervention with this population. The reasons to integrate were: 1) the high prevalence of health disparities (eight of nine); 2) the discord between how treatment is delivered and what is culturally needed for Indigenous people (seven of nine); 3) financial barriers to accessing health care (six of nine); 4) problems with standard care (four of nine); and 5) effectiveness of integrated care (four of nine; see Table 2).

High Prevalence of Health Disparities

The high prevalence of health disparities, both mental and physical health, was listed as the number one motivation to integrate behavioral health into medical care. The high comorbidity of mental health and substance use burden (Davis, Morse, Landa, & O'Brien, 1989; Fenn, Beiergrohslein, & Ambrosio, 2007; Maar et al., 2009; Parker et al., 1997; Saylors, 2003) and public health concerns (Duran et al., 2010; Mendenhall, Seal, Greencrow, Littlewalker, & Brownowl, 2012; Mehl-Madrona, 2000) in Indigenous communities necessitated behavioral health interventions. For example, the high prevalence of diabetes and related complications, such as comorbid heart disease and depression, has had devastating effects on Indigenous families and communities (Mendenhall et al., 2012).

Discord Between Treatment Delivery and Culturally Appropriate Care

The need for culturally appropriate care to decrease health disparities was one of the strongest reasons to integrate (Davis, Deen, Bryant-Bedell, Tate, & Fortney, 2011; Maar et al., 2009; Mendenhall et al., 2012; Mehl-Madrona, 2000; Parker et al., 1997; Saylors, 2003). According to critiques by Indigenous peoples, current medical care models address somatic complaints or symptoms instead of getting at the root of the problem: the relationship of historical experiences resulting from colonial genocidal policies and practices (Davis et al., 1989; Duran et al., 2010; Maar et al., 2009; Mendenhall et al., 2012; Parker et al., 1997). Duran and colleagues (2010) cited the Colonial Health Deficit as a theory that explains how the cumulative effects of colonization (e.g., loss of land and healthful food options) have created devastating health vulnerability and outcomes for Indigenous people (e.g., diabetes).

Strong familial networks and cultural, spiritual, and language practices related to health care are not currently being incorporated into services in a standard way (Davis et al., 2011; Duran et al., 2010; Maar et al., 2009; Mendenhall et al., 2012). Examples include, welcoming family members into treatment planning and eliciting and incorporating cultural and spiritual beliefs and practices into care regime. The values of Indigenous families and communities do not fit well within the Western medical system. For example, offering the assistance of a traditional healer is not standard practice in the Western medical system (Davis et al., 2011; Duran et al., 2010; Maar et al., 2009; Mehl-Madrona, 2000; Mendenhall et al., 2012; Parker et al., 1997; Saylors, 2003). Duran and colleagues (2010) say, "traditional teachings prescribe wellness, balance, and harmony and provide a mental framework for (HIV/AIDS) patient wellness" (p. 113).

Financial Barriers to Health Care

Six studies listed financial or poverty-related barriers to health care as reason to integrate, specifically related to travel (Davis et al., 1989; 2011; Duran et al., 2010; Maar et al., 2009) and health insurance (Davis et al., 1989; 2011; Duran et al., 2010; Fenn et al., 2007; Saylors, 2003; Maar et al., 2009). Without adequate insurance coverage and access to affordable care options, health needs go unmet (Davis et al., 2011; Fenn et al., 2007). Health care centers may be difficult to reach due to remote locations and/or a patient's lack of transportation (Davis et al., 2011; Duran et al., 2010; Maar et al., 2009). Furthermore, there is a shortage of mental health and substance abuse services (Davis et al., 2011; Duran et al., 2005), due in part to the difficulty

recruiting mental health professionals to rural areas or other areas where funds are lacking (Maar et al., 2009).

Problems with Standard Care

The problems with standard care or service gaps were a common motivator to integrate (Davis et al., 1989; 2011; Duran et al., 2010; Parker et al., 1997). Specifically, standard care or evidence-based treatments have been found to be less effective with this population (Davis et al., 1989; 2011; Duran et al., 2010; Parker et al., 1997). Ethnic minorities who received evidence-based care were twice as likely to re-experience depression symptoms and more likely to discontinue treatment, have fewer clinic visits, experience more problematic and severe side effects, and have negative feelings about the use of medication (Davis et al., 2011). Additionally, ethnic minorities are less likely to seek mental health treatment compared to White patients (Davis et al., 2011) and, in some cases, due to lack of trust of the health care system (Davis et al., 1989; Duran et al., 2010). Concerns arise when the use of these evidence-based interventions are mandated without time and resources to evaluate and make cultural adaptations (Duran et al., 2010). While there is concern around discordance between the kind of care that is delivered versus care needed in ethnic and racial minority populations, for many Indigenous patients, they have significantly less access to many health care services compared to non-Indigenous patients. For instance, there are not enough mental health and substance use services at clinics frequented by Indigenous people to provide sufficient care for the needs of this population (Duran et al., 2010).

Effectiveness of Integrated Care

Three of the studies were motivated by evidence that integrated care may better fit the needs and fill the gaps in services for Indigenous patients (Davis et al., 2011; Duran et al., 2010; Maar et al., 2009; Mendenhall et al., 2012). The researchers observed improvements in health outcomes with the use of integrated care and sought to assess its utility with Indigenous populations. For example, the use of collaborative care was linked to lower rates of probable depression than with usual care among other ethnic minority groups (Davis et al., 2011). Maar and colleagues (2009) listed anecdotal evidence of the success of integrated care with Indigenous populations including improved access to mental health services, increasing continuity of care, improved cultural safety, integration of clinical and traditional Indigenous care, and low attrition rates among interdisciplinary teams.

Description of Interventions

Community versus clinic interventions requires different resources, methods, and techniques, so they are grouped for ease of access for the reader. The description of the interventions from the selected articles is presented first, followed by their results in the next section.

Clinic-Based Intervention

The Four Corners American Indian Circle of Services Collaborative (Duran et al., 2010) provided HIV/AIDS care to the rural patients of the Navajo Nation. Patients received medical care at an IHS infectious disease clinic, mental health services from an IHS psychiatrist, culturally-tailored substance abuse treatment at Hiina'ah Bits'os Society, and cultural services through a traditional healer. Navajo AIDS Network (NAN) case managers provided psychosocial and cultural support and had monthly case consultation with IHS providers. Traditional Navajo approaches were combined with Western methods of health assessment, resource assessment, and health care delivery.

An Aboriginal health framework and traditional healers were central to the integrated health care system in rural northern Ontario (Maar et al., 2009), which addressed mental, physical, and spiritual wellbeing. The clinic used a shared intake form and care coordination services. The mental health services, Knaw Chi Ge Win, were accessed through provider- or self-referral. Administrative and financial barriers were addressed by implementing an hourly rate versus fee-for-service to encourage collaboration. Case managers had training in nursing, as well as traditional healing and offered both pharmacological and herbal medicines for their patients. Peer feedback, supervision, and consultation were used.

The Women's Circle of the Native American Health Centers of San Francisco Bay Area and Oakland (Saylors, 2003) offered a broad range of services including access to traditional healers. The program included a coed substance abuse treatment facility and individual and group counseling. Nurse case managers completed medical assessments and referred to medical, mental, dental, or social services as needed. They also served as liaisons between residential and outpatient services.

Fenn and colleagues (2007) evaluated a program that assessed and intervened in regard to tobacco use within a primary care clinic serving Alaska Native patients. A certified medical assistant assessed patients for tobacco use, readiness to change, and treatment adherence at every

appointment and over the phone. The health educator was matched with a medical provider to collaborate on these cases.

At Albuquerque Indian Hospital (Parker et al., 1997) primary care physicians and nurses were trained to use a standardized brief screening tool to help identify mental health conditions. Nurses administered and scored the screen directly before visit. Physicians made referrals according to the screen instructions. A new referral was made for mental health treatment for 70% of patients that were previously undiagnosed (Parker et al., 1997).

To reach rural patients, a telemedicine approach (Davis et al., 2011) was paired with a community health clinic at one of seven locations. The depression care team consisted of off-site nurses, pharmacists, and psychiatrists and on-site primary care providers. A registered nurse functioned as a care manager for the telemedicine patients and addressed treatment barriers. A pharmacist and psychiatrist called or used interactive video to follow up with patients based on the recommendation of the care manager.

Community-Based Intervention

Mendenhall and colleagues' (2012) informal, educational, and community-based intervention addressed diabetes among urban Indigenous people. Physicians, nurses, mental health providers, and content experts, such as nutritionists, met with community members weekly. All members of the group completed measures of height, weight, blood sugars, and foot checks at every meeting. Educational resources around exercise, food, and stress management were provided. The groups opened with prayer and a traditional meal.

Mehl-Madrona (2000) created and evaluated an intervention for pregnant women and their partners consisting of a series of talking circles with several health care providers aimed at reduction of alcohol, tobacco, and drug use during pregnancy. Lakota principles informed the talking circles and smudging ceremonies. Additional goals of the group included stress reduction, increase social support, and provide psychoeducation on birthing and parenting.

The integrated care system at the Acoma-Canoncito-Laguna (Davis et al., 1989) aimed to provide health education and promotion services to adolescents on the topics of mental and physical health, substance abuse, and family planning. This program was housed at the Laguna Pueblo high school in New Mexico (50 miles from Albuquerque); however, it was also linked to services within the community and IHS.

Evaluation and Outcomes of Integrated Care Interventions

Integrated care interventions were analyzed by pulling the following content from the selected article: target problem, population, facility, intervention, study limitations, and study results (see Table 1). Interventions were carried out at diverse facility types and with varying patient populations from the Southwest, Midwest, and Alaskan regions of the United States, as well as Canada. Interventions will be described in relation to their results and in relation to both improved health care systems delivery techniques and improved health status of patients—both critical components of integrated care service delivery. Integrated care requires changes to the delivery of care in hopes of improving patient populations' health, so we parsed these two results out for the reader so that they could assess both changes to systems and individuals.

Improved Health Status

As one might expect, improvements in health status were a central outcome, with seven of the nine interventions demonstrating health gains. Four interventions boasted improvements in physical health outcomes (Saylors, 2003; Marr et al., 2009; Mehl-Madrona, 2000; Mendenhall et al., 2012), three in substance use disorders outcomes (Fenn et al., 2008; Mehl-Madrona, 2000; Saylors, 2003), and two with improvements in mental health (Davis et al., 2011; 1989).

Physical health outcomes were measured or reported by claims of good health (Saylors, 2003); decreased health complications during and after delivery for mother and baby (Mehl-Madrona, 2000); improved blood pressure, A1C, and weight loss (Mendenhall et al., 2012); and decreased admissions to psychiatric hospitals and recidivism (Maar et al., 2009). Two of these four interventions also had decreased substance use behaviors, for a total of three out of nine interventions showing improvement in the area of substance use (Fenn et al., 2008; Mehl-Madrona, 2000; Saylors, 2003). Two of the nine interventions improved mental health status, specifically behaviors and attitudes (Davis et al., 1989), and reduced depression symptoms among the Indigenous veteran population, more so than among White veterans (Davis et al., 2011).

One intervention led to a decline in patient involvement with the criminal justice system (Saylors, 2003). Patients showed improvement in their functioning by obtaining housing (Duran et al., 2010), education, and employment (Saylors, 2003). In one intervention patients with HIV were able to address discrimination and resistance with their families and providers (Duran et al., 2010). The collaborations allowed for an increased ability to help families in need, which

included household and clothing items, transportation, and financial assistance (Duran et al., 2010).

Improved Care

By taking steps toward integrated care, all of the nine interventions were able to demonstrate improvements in patient care. The improvements included increased access (Davis et al., 2011; 1989; Duran et al., 2010; Parker et al., 1997), leading to decreased need for services later (Duran et al., 2010); increased screening (Parker et al., 1997) and retention (Davis et al., 1989; Mehl-Madrona, 2000); awareness of risk and protective factors and adherence to medical regime (Duran et al., 2010); increased support (Mehl-Madrona, 2000); more strategies or options for managing their health and life (Fenn et al., 2007); and decreased utilization of acute services, thus off-setting high cost care (Mehl-Madrona, 2000). Four interventions highlighted the significance and success of their cultural component for improving patient care (Duran et al., 2010; Maar et al., 2009; Mendenhall et al., 2012; Saylors, 2003).

Four studies linked their improved care to enhancing providers' knowledge, ability, and confidence to deliver high quality care (Duran et al., 2010; Fenn et al., 2007; Maar et al., 2009), like more accurate diagnosing (Parker et al, 1997). With multiple disciplines, patients, and community members working in collaboration, providers were able to benefit from sharing knowledge and experiences, which translated into enhanced care. The sharing of knowledge between rural satellite sites allowed for improvement in protocols (Maar et al., 2009). Furthermore, newly hired providers were able to work at full capacity sooner due to decreased provider isolation, ongoing education for care teams, and solidified care teams and mentorship (Maar et al., 2009). Additionally, gaining cultural knowledge and training allowed providers to better relate to their patients and preserve cultural safety (Duran et al., 2010; Maar et al., 2009).

Limitations of Selected Articles

It would be remiss not to mention the limitations of the selected articles, some of which were also identified within the articles themselves. The most common limitation was that all but two sampled the clinic population only, as opposed to community-based (Davis et al. 1989; Mendenhall et al., 2012). Only one study utilized telemedicine (Davis et al., 2011), despite other interventions serving both urban and rural communities (Duran et al., 2010; Maar et al., 2009; Parker et al., 1997). Of the studies, only two were true experimental designs (Davis et al., 2011;

Parker et al., 1997), and six were quasi-experimental designs (Duran et al., 2010; Fenn et al., 2007; Maar et al., 2009; Mehl-Madrona, 2000; Mendenhall et al., 2012; Saylors, 2003). Three of the studies had small sample sizes (Duran et al., 2010; Maar et al., 2009; Mendenhall et al., 2012), and one study had more women participants (Mendenhall et al., 2012). Only two studies completed data collection at a follow-up period (Fenn et al., 2007; Parker et al., 1997). Furthermore, replication of these interventions with subpopulations or samples is necessary due to the heterogeneity of the overall population.

DISCUSSION

Integrated care is the integration of medical and behavioral health providers into a team of collaborative health professionals using a biopsychosocial model to assess, treat, and prevent both physical and mental health disorders. Through a systematic literature review, this paper sought to discover the effects of integrated care implementation for Indigenous patients in the areas of physical and mental health. Integrated care models and techniques can be broad and vary by the needs of the clinic, the providers, and the patients (SAMHSA, 2017). The behavioral health integration strategies used in the selected articles ranged from assessments, coaching calls, care coordination, talking circles, and one-on-one discussions with behavioral health providers. Further, integrated care can either be targeted or non-targeted. Targeted services "have the advantage of increased patient acceptance because they can be presented as fitting the patient's (population) specific needs, as opposed to being a general service that should be added because the patient is psychologically troubled in some way" (Blount, 2003, p.125). Our results demonstrate that targeted integrated care for Indigenous patients resulted in positive health and systems outcomes in the reviewed articles.

All reviewed articles demonstrated improvement in at least one of the following areas: physical health, mental health, substance use, or overall well being. Out of nine articles, six demonstrated improvements in the area of mental health and substance abuse; three noted physical health improvements; and two noted gains in social, vocational, or environmental well being. In one intervention, depression even improved more so than with the White population (Davis et al., 2011). Integrated care implementation also resulted in system-wide changes including increased mental health assessment, access, medication adherence, patient retention, and care strategies. The diversity among integrated care intervention settings indicates that this

model is feasible in a variety of settings including those that are busy and resource-stressed.

The integration of behavioral health services into general health care for Indigenous populations appears to be a promising systems-level intervention to prevent and treat a number of chronic health needs based on the reviewed articles in this study. However, it is important to next determine if there is a significant improvement in health outcomes with the integration of behavioral health into medical care beyond literature review methodology. If results continue to remain significant in future research, it will be valuable to determine what components of integrated care interventions create positive change in this population. Integrated care interventions typically have many moving parts (e.g., behavioral health consultant, tribal patient navigator, diabetes consultant), and it is important to determine how much the model, versus individual providers, versus cultural tailoring relates to the positive health outcomes we noted in this study.

Trends that emerged in this project may shed light on resolving these questions. In assessing the rationale that each study used to integrate care services we discovered that *fit of services to population needs and symptoms* was most important. In other words, integrated care teams typically assess and treat patients using a broader lens and, therefore, are more likely to pick up psychological and social needs, in addition to the medical needs of patients. Indigenous patients are more likely than non-Indigenous patients to suffer from comorbid and multimorbid health issues requiring multiple, coordinated health care experts.

The second most popular reason to integrate care was to *provide health care that is more congruent with the health beliefs of Indigenous people.* The interventions that added cultural and social interventions (four out of nine articles) proved to be successful in affecting change in other areas of health and well being in addition to physical and mental health (e.g., general functioning, ecological improvements; Saylors, 2003). These results of cultural tailoring fall into the category of social determinants of health, which increasingly has been noted as the key to eliminate health disparities (Liburd, Jack, Williams, & Tucker, 2005). Our findings suggest the need to prioritize patients' cultural beliefs and practices in health care.

Limitations

The limitations of this systematic review include location (U.S. and Canadian tribes only), the use of databases rather than unpublished practice-base evidence, and use of specific

keyword searches, which may result in missing research projects that could have added information to the study including potentially successful grassroots interventions that are not published (Whitbeck, Walls, & Welch, 2012). Future reviews may include closer evaluation of interventions studies that were ruled out due to not meeting strict criteria of this review, for example, practice-based evidence.

CONCLUSION

Health care systems that serve Indigenous people currently underperform in the areas of prevention, assessment, and treatment (CDC, 2015; Lewis & Myhra, 2016), especially in the area of mental health; therefore, these systems must immediately be targeted for renovation to reduce health inequity and health disparities (Chapa, 2012; Hasnain-Wynia et al., 2010; Prince et al., 2007; Rodriguez, von Glahn, Grembowski, Rogers, & Safran, 2008). Prince et al. (2007) recommends that mental health be at the forefront of health care service delivery, health system development, and health and social policy, and integrated care may be one of the most effective models to accomplish this.

Study results can help guide other Indigenous-serving organizations and providers as they integrate mental health services into their health care systems to meet patient, family, and community needs. Specifically, culturally and regionally tailored integrated care for Indigenous patients is a promising form of health care delivery based on the results of this study. This targeted form of integrated care requires tribal and community collaboration to 1) increase medical providers' education on the community and their health beliefs, while 2) simultaneously revitalizing and prioritizing regional and tribal health beliefs in the clinic setting. A providers' tenure with a community alone does not equate to culturally appropriate care. It is important for providers to understand that their health knowledge, attitudes, and behaviors are embedded in a history of colonization. This awareness can help to shift care from, what can be, a judgmental experience to a healing and stigma-free experience for patients. Instead, ongoing training and community engagement is key to providing culturally appropriate care. Training for providers should focus on building knowledge, understanding, and empathy for Indigenous populations (Lewis, Hartwell, & Myhra, 2016). Specifically, understanding the impact of historical trauma and related intergenerational patterns of substance abuse and psychological trauma is critical in this population (Myhra, 2011; Myhra & Wieling, 2014).

The integration of cultural, spiritual, and traditional knowledge and practices into health care can help to build a foundation for healing and prevention. Community-based initiatives show promise for organization or intervention longevity and for true collaboration between provider-patient and health care organization-community to take place. Health care administrators may consider developing a patient and community advisory board in order to establish an ongoing dialogue and collaborative relationship that puts Indigenous values and beliefs at the forefront of agency policies and practices. Likewise, drawing on strong familial and community ties which are critical to maintain health and well being in Indigenous communities can serve to enhance prevention and treatment efforts. The next steps in this work are to continue to determine the effectiveness of integrated care in Indigenous communities, identify and learn from successful grassroots programs, evaluate practice-base evidence, and disseminate these best practices within Indigenous health care systems.

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ACKNOWLEDGEMENTS

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Table 1
Results of Systematic Review of Integrated Care in Indigenous-Serving Health Care Sites

Study	Target Problem	Population	Facility	Intervention	Study Limitations	Results
Davis et al. (2011)	Depression	"Minority" veterans	7 community-based out-patient, which were Veteran Health Service satellite facilities	Telemedicine-based collaborative care model to address depression in a rural population	Non-generalizability	IMPROVED HEALTH STATUS: Improvements in mental health. Reduced depression symptoms among Native veteran population, more so than the White population.
Davis et al. (1989)	General health of teens	Native American teenagers from urban New Mexico	Indian Health Service and school	School-based medical and mental health services tied to IHS services	Non-generalizability	IMPROVED CARE: Increased access to care and retention. IMPROVED HEALTH STATUS: Improved mental health status including improved behaviors and attitudes.
Duran et al. (2010)	HIV/AIDS	Adult American Indians residing on or near the Navajo Nation	Indian Health Service	Integrative HIV/AIDS care for rural patients on the Navajo Nation	Small sample size; Quasi-experimental design	IMPROVED CARE: Increased access and later a decreased need for services. Increased awareness of risk and protective factors, and adherence to medical regime. Enhanced provider knowledge, ability, and confidence to deliver high quality care. Enhanced provider knowledge and training around cultural allowed providers to better relate to their patients and preserve cultural safety. Significant success found for the cultural component. IMPROVED HEALTH STATUS: Improved in their functioning by obtaining housing. Address discrimination and resistance among families and providers. Aided families in need with household and clothing items, transportation, and financial assistance.
Fenn et al. (2007)	Tobacco use	Urban Alaska	Indian Health Service	Health educator assesses tobacco use and readiness to change at every appointment and collaborated with physician	Quasi-experimental design	IMPROVED CARE: Increased care strategies/options. IMPROVED HEALTH STATUS: Decreased substance use behaviors.

Table 1 Continued
Results of Systematic Review of Integrated Care in Indigenous-Serving Health Care Sites

Maar et al. (2009)	Mental health	First Nations people of Canada	Community-based	Care coordination services and case management services	Quasi-experimental design	IMPROVED CARE: The sharing of knowledge between rural satellite sites allowed for improvement protocols. Newly hired providers were able to work at full capacity sooner due to decreased provider isolation, ongoing education for care teams, and solidified care teams and mentorship. Enhanced provider knowledge and training around cultural allowed providers to better relate to their patients and preserve cultural safety. Significant success found for the cultural component. Enhanced provider knowledge, ability, and confidence to deliver high quality care. IMPROVED HEALTH STATUS: Improvement in physical health outcomes. Decreased admissions to psychiatric hospitals and recidivism.
Mehl-Madrona (2000)	Alcohol, drug, tobacco use, stress	Native Americans of the Albuquerque and Tucson area, Hispanic peoples of this region	Primary care clinic	Talking circles to reduce alcohol, tobacco, and drug use during pregnancy	Quasi-experimental design	IMPROVED CARE: Improved retention and support; decreased utilization of acute services thus off setting high cost care. IMPROVED HEALTH STATUS: Improvement in physical health outcomes. Positive substance use disorders outcomes. Decreased health complications during and after delivery for mother and baby; reduced the risk of cesarean delivery, and improved infant Apgar scores. Decreased substance use behaviors.
Mendenhall et al. (2012)	Diabetes	Midwestern urban community occupied heavily by the Ojibwe, Dakota & Hocak peoples	Community-based	Informal talking circles around diabetes with physicians, nurses, and mental health professionals	Quasi-experimental design	IMPROVED CARE: Significant success found for the cultural component. IMPROVED HEALTH STATUS: Improvement in physical health outcomes. Improved blood pressure, A1C, and weight loss.
Parker et al. (1997)	Mental health	Urban and rural Pueblo tribes and rural Navajo Nation tribes	Indian Health Services	Primary care physicians and nurses implement a mental health screening tool at clinic appointments	Follow-up barriers	IMPROVED CARE: Increased access to care and screening. More accurate diagnosing.
Saylors (2003)	Substance Abuse; woman's health issues	Anchorage, Alaska Natives	Primary care clinic	Nurse case mangers complete medical and mental health assessment and refer as necessary	Limited to self-report; Quasi-experimental design	IMPROVED CARE: Significant success found for the cultural component. IMPROVED HEALTH STATUS: Improvement in physical health outcomes. Decreased substance use behaviors. Physical health outcomes were measured or reported by claims of good health. Decline in patient involvement with the criminal justice system. Improved in their functioning in education and employment.

Table 2
Motivation for Integration

Study	Health disparities		Discord between care and needs				Problems with standard of care					Financial/poverty barriers		Effective-ness of integrated care
	High MH/SA prevalence	High PH prevalence	HT related to MH	HT related to PH	Treatment discordant with cultural beliefs; Treatment lacks cultural context	NA cultural, spiritual, social strengths that can be utilized in BPS care	IHS/Primary care see many MH symptoms	Stigma of seeing MH provider	Mistrust of physician and/or system	Standard of care/EBT is less effective	Lack of HC resources (treatment, medication, or providers)	Travel barriers	Insurance barriers	Evidence that IC is validated as an effective MH, SA, & PH intervention for NA people
Davis et al. (2011)					✓	✓	✓	✓	✓	✓		✓	✓	✓
Davis et al. (1989)	✓								✓	✓	✓	✓	✓	
Duran et al. (2010)		✓		✓		✓		✓	✓	✓	✓	✓	✓	✓
Fenn et al. (2007)	✓												✓	
Maar et al. (2009)	✓		✓	✓	✓	✓						✓	✓	✓
Mehl-Madrona (2000)		✓			✓									
Mendenhall et al. (2012)		✓		✓	✓	✓								✓
Parker et al. (1997)	✓		✓	✓	✓		✓	✓		✓				
Saylors (2003)	✓				✓								✓	
Total by Article	5	3	2	4	6	4	2	3	3	4	2	4	6	4
Total by Category	8		7				4					6		4