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## Validity Of A Culturally Sensitive Depression Scale For Native American Youth

Todd Phelps

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VALIDITY OF A CULTURALLY SENSITIVE DEPRESSION SCALE FOR NATIVE  
AMERICAN YOUTH

by

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A Thesis

Submitted to the Graduate Faculty

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Master of Arts

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This thesis, submitted by Todd Phelps in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisor Committee under whom the work has been done and is hereby approved.

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This thesis is being submitted by the appointed advisory committee as having met all of the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.

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Chris Nelson  
Dean of the School of Graduate Studies

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Date

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Title	Validity of a Culturally Sensitive Depression Scale for Native American Youth
Department	Psychology
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Todd Phelps  
August 20, 2020

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This piece is dedicated to the many Native American youth who think of, attempted, or have taken their lives. Your journey is one of struggle and deserves acknowledgement, validation, and light. May this piece serve as a gesture letting you know you do not go unnoticed.

## **ABSTRACT**

This research investigated the validity of a Culturally Sensitive Depression Scale (CSDS). Data were collected on 30 Native American youth living throughout South Dakota. Participants underwent a condensed semi-structured clinical interview for Major Depressive Disorder to confirm diagnosed (n=16) or undiagnosed (n=14). Participants completed two depression scales: the Columbia Depression Scale (CDS) and the CSDS. Both scales were tested for criterion-related validity via concurrent validity which analyzed each scale's accuracy in categorizing diagnosed and undiagnosed individuals. Construct validity was tested via convergent validity through the Pearson product-moment correlation between the CDS and CSDS. Area Under Curve (AUC) analysis tested each scale's separability capability and optimal cutoff score. Results indicated both the CDS and CSDS have fair criterion-related validity. Construct validity was middling between the CDS and CSDS. AUC analysis indicates fair separability for each scale with a CDS cutoff score of 6.5 and a CSDS score of 7. Qualitative analysis showed undiagnosed individuals felt more comfortable with CDS items than diagnosed individuals. Results suggest culturally sensitive psychometrics should be made available for diverse clients and utilized by clinicians for a more thorough client understanding. By doing so, clinicians can enhance their client-centered approach by co-creating a treatment plan rooted in culture rather than doing therapy-as-usual. Study limitations and future directions of research are included.

## **Validity of a Culturally Sensitive Depression Scale for Native American Youth**

Research within Native American communities is sparse. Despite some strides in the last few decades, the advancement of Native research, in comparison to other racial and ethnic minorities, has been sluggish. Anyone cognizant of health disparity statistics has seen the asterisk with a chart footnote explaining Native American exclusion from analysis due to small sample size.

The exclusion of Native Americans from country-wide data has many implications. First, it perpetuates the idea Natives are of the past. Second, it excludes one of the country's populations with the most health disparities from equity conversations. The results include misappropriated resources, lack of understanding, and stigma perpetuation. This research attempted to shine a light on this resilient population by exploring cultural understandings of depression and validating this experience through psychometric properties.

### **Literature Review**

#### *Significance of Culture in Mental Health*

Research suggests understanding culture is vital to researching mental health in diverse communities (Office of the Surgeon General, 2001). Culture is a social determinant of health impacting how people perceive and seek out mental health services (Campbell & Long, 2014). Clinical expression of mental health disorders across cultures varies significantly, with mental health outcomes being better for those in developing countries than in developed countries (Viswanath & Chaturvedi, 2012).

Culture may even impact gene expression as research shows having higher levels of social sensitivity alleles produces higher levels of collectivism when compared to individualistic cultures (Way & Lieberman, 2010).

Depression specifically has been described as a cultural experience.

Depression's construct theory as a mood, symptom, or illness is faulty because the theory lacks distinguished constructs (Levine, 2010). If depression as a diagnostic category had validity and utility, it could be a universal, transcultural concept. But it has neither. There is no sound evidence for a discrete pathophysiological basis (Dorwick, 2013). Cultural identity influences expression of depressive experiences (Chang, Jetten, Cruwys, & Haslam, 2016). A low degree of cultural models incorporated into one's own life is associated with higher depressive symptoms (Dresler et al., 2016). In a study on Aboriginal men, researchers identified depression as a symptom of injury to the spirit exacerbated by the loss of aboriginal social and cultural connections (Brown et al., 2012).

Youth depression expression varies across races (Anderson & Mayes, 2010). Native American youth identified emotionality as a primary component of their depressive experience (Phelps, 2013). Knowing primary components ensures needs are being met through mental health resources, something Western-American approaches have consistently had difficulty meeting throughout history (Wanberg, Milkman, & Timken, 2004). Cultural components of depression for Native America are

crucial as it is the most common diagnosis for Native American youth in mental health outpatient settings (Richmann, Wadsworth, & Deyhle, 2004).

### *Native American Mental Health*

Generally, Native Americans lack studies determining incidence and prevalence rates for psychopathology (McDonald & Gonzalez, 2006). However, research shows depression is a social disparity rampant in Native America. Native American youth report the highest rates of depression for any American ethnic group (Centers for Disease Control and Prevention [CDC], 2013). Young Native women are more prone to depression (Nolen-Hoeksema, 2001). Both urban and reservation Native Americans are highly likely to be diagnosed as depressed (Duran and Duran, 1996), indicating more than geography aggravates the disparity. Despite alarming statistics, depression within Native American contexts continues to be understudied (Tann et al., 2007).

One disturbing outcome of untreated or mistreated depression in Native American communities is the exorbitant rate of suicide. Suicide is the third leading cause of death for all youth worldwide with Native Americans having the highest attempted and completed rate in the United States (Cash & Bridge, 2010). The Sioux Nation, nestled within Aberdeen IHS area, reports a death rate from adolescent suicide second only to the Alaska IHS area (Centers for Disease Control and Prevention [CDC], 2003). Comprising some of the poorest counties in America, one out of every three adolescents from the Great Sioux Nation have suicidal ideation (Freedenthal & Stiffman, 2004). Though plagued by this outcome, suicide remains a neglected research field

within Native American communities with research conducted suffering from substantive and methodological issues (Olson & Wahab, 2006).

Research has identified risk and protective factors for Native American communities. Perceived burdensomeness is a risk for suicidality (O’Keefe et al., 2014). Family connectedness and discussing problems with close relations are protective factors against suicidality for Native American youth (Borowsky, Resnick, Ireland, & Blum, 1998). Irrespective of the identification of risk and protective factors through research and community efforts, Native suicide has been increasing since 2003 (Centers for Disease Control and Prevention [CDC], 2018).

The inability to decrease or maintain a constant rate of suicide may be due to the covarying factor of mental health workers. Mental health workers may have conscious or unconscious judgments of diverse individuals which can dictate modes of patient support or lack thereof (Johnson, 2020). For Native Americans, conventional psychological approaches may harbor implicit proselytization (Gone, 2008). These historical and current indecencies by the federal government and non-native practitioners perpetuate mistrust within these communities and aggravate Native Americans’ reluctance to seek out mental health resources (Office of the Surgeon General, 2001).

### *Culturally Tailored Interventions*

Mainstream mental health services are oftentimes ineffective with Native American clients and can be viewed as a vector for Western colonization (Hodge, Limb,

& Cross, 2009). Some psychological studies have taken an anthropological approach with Native American communities, establishing western assessment tools incomprehensible, unacceptable, irrelevant, and environmentally incomplete (Manson, 1997). Others acknowledge psychology's lack of embracing Native American worldviews (McDonald & Chaney, 2013). Such monocultural mental health resources misinterpret Native Americans when lacking cross-cultural knowledge (McDonald, Morton, & Stewart, 1993). However, non-western culturally sensitive materials could help restore mental health in diverse groups (Voss et al., 1999). In return, this could aid in identifying information not readily known to better treat culturally diverse patients.

Research emphasizes the importance of culture for mental health outcomes. Culturally tailored behavioral health interventions have promising positive effects on mental well-being (Barrera, Castro, Strycker, & Toobert, 2013). Evidence-based practices have become the pinnacle of mental health programming, given their cost-effectiveness and proven outcomes (Pew-MacArthur, 2017). Research shows mixed outcomes for diverse communities.

Some researchers suggest evidenced-based practices rely on cultural assumptions overlooking ethnic cultures, creating potential bias and inappropriateness (Kirmayer, 2012). Others found evidence-based practices capable of being tailored to fit diverse groups for better health outcomes (Rodriguez, Baumann, & Schwartz, 2010). While there are no culturally rooted evidenced-based practices for Native Americans, scholars suggest overreliance on these foreign practices perpetuate Native American



youth behavioral health disparities (Goodkind Et al., 2010). Within Native America, treatment outcomes have not been rigorously assessed or reported for Native American persons, producing uncertainty in the positive therapeutic outcomes for this population (Gone & Alcantara, 2007).

Broadly speaking, culture is not unidimensional. However, most research focuses on operationalizing culture via one factor, linguistics. Native Americans experienced cultural genocide, including forced boarding school attendance where children were beaten for speaking their native tongue (Yellow Horse Brave Heart & DeBruyn, 1998). This resulted in a significant decrease in traditional fluent speakers (Mcarty, Romaro, & Zepeda, 2006), a loss perpetuating historical trauma within these communities (Evans-Campbell, 2008). For the Great Sioux Nation, linguists have seen a 66% decrease in traditional speakers over a ten-year period, re-designating the language to moribund (Lakota Language Consortium, 2016). Given this, tailoring universal measures based on language may be ineffective for this population's majority.

For Native Americans, culture in the context of mental health resources emphasizes perspective (Hodge, Limb, & Cross, 2009; Hill, 2006). Native American communities realize the disconnect with western mental health practices and are advocating for addressing mental health on Native American terms (Gone & Trimble, 2012). Research on cultural adaptation for evidence-based practices is limited in Native America (Kumpfer, Magalhães, & Xie, 2016), with research showing both symptom improvement and attrition depending on diagnosis (Goodkind, LaNoue, & Milford, 2010).

Inclusion of indigenous culture in western science is difficult as the two cultures operate on distinctive philosophies, methodologies, and criteria (Durie, 2004). However, efforts are being made to identify western assumptions to mental health problems conflicting with cultural perspective and understanding (Wexler & Gone, 2012). Evaluating value differences is crucial to understanding behavioral responses because values clarify cultural experiences and serve as an information-processing schema (McDonald & Chaney, 2013). While there is progress, culturally tailored interventions remain in their infancy for Native American youth, with a call for more rigorous outcome studies to determine their efficacy (Jackson & Hodge, 2010).

The misunderstanding of mental health across cultures produces difficulties in accurate diagnosing. Mental illness may stem from unique triggers for young Native Americans. Concepts, such as historical loss, have unique effects on depressive symptoms which go unacknowledged by most western assessment tools (Whitbeck et. al, 2009). Anything harming community participation and belonging can instigate depression for Native Americans (O'Neil, 1998). Such misunderstanding and inaccurate diagnosing may perpetuate the suicide problem within these diverse communities.

### *Culture and Psychometrics*

Research supporting culturally tailored psychometrics can be divided into three groups: research validating universal scales in diverse communities, research tailoring universal scales, and research constructing new scales. Outcomes are mixed.

Universal scales do not identify symptoms of depression equally across racial/ethnic groups with researchers urging clinicians to be cognizant of the differences (Kim, DeCoster, Huang, Chiriboga, 2011). Some universal scales have adequate construct validity but come with cultural response bias producing higher depression scores among culturally diverse individuals (Li & Hsaio-Rei Hicks, 2010). Assessment tools possibly measure psychiatric symptoms inaccurately for Native Americans, requiring cross-cultural validation of westernized instruments (Kisely et. al, 2017). Cross-cultural validation creates cultural-group norms, which is pertinent to an accurate understanding of people from non-dominant cultures (McDonald, Jackson, Mcdonald, 1991).

Numerous studies found universal scales translated into traditional languages to be promising (Chiu, Chung, & Kwong, 1994; Daza et al., 2002; Weibe & Penley, 2005). Translated universal scales produce uncommon cutoff points requiring utilization of a multidimensional model for mood disorders in cross-cultural contexts (Leung et al., 1993). Other studies show using both universal and culturally sensitive scales provide more information pertinent to the individual and allows for more detailed treatments (Cheung et al., 2008). Research constructing new culturally defined scales has been promising (Castillo et al., 2009). A Chinese culturally sensitive geriatric depression scale was found to have both high reliability and construct validity (Xie et al., 2015).

Regardless of mixed outcomes, psychological resources should include some components of culture as evidence shows culture and context influence almost every aspect of the diagnostic and treatment process (Bernal et al., 2009). Studies in

ethnically diverse communities found both reliability and validity for culturally sensitive depression scales measuring both universal and culture-specific variables (Dihn et al, 2009; Wong et al., 2012).

### *Culture of the Great Sioux Nation*

The Great Sioux Nation comprises seven divisions referred to as the Seven Council Fires: The Mdewakantons, Wakpekutes, Wahpetons, Sissetons, Yanktons, Yantonaise, and Tetons (Hassrik, 2012). The Great Sioux Nation is culturally identical besides linguistic differences. There are three dialects: Dakota, Lakota, and Nakota. Their communal culture emphasizes tribal identity with a philosophy of working hard for the betterment of the people (Anderson, 2005). This is in opposition to the individualistic culture of America, which focuses heavily on distinctively defining oneself and focusing on personal control (Bennett, 2005).

Kinship is considered the primary identifier for the Sioux. The connection with others makes one human and it need not be through lineage. The hunka - or adoption - ceremony is a prime example of Sioux's societal structure focused on creating relations via sacred rituals that not only assigns title but promotes positive reciprocal social interactions (Simkins, Risch, 2008). This is different from the concept of a westernized family, which heavily focuses on the nuclear family (White, 2001). This depicts the distinct western constructs of community and family.

### *Thesis*

To date, there have been few, if any, psychometric scales created for Native Americans based on culturally defined notions of already established mental health disorders. This study hoped to fill this research gap by exploring the validity of a culturally sensitive depression scale (CSDS). This study used a correlational design to test both criterion and construct validity for the CSDS. Criterion validity was assessed via concurrent validity by statistically exploring the CSDS's ability to correctly classify depression diagnosed and undiagnosed participants. Construct validity was assessed via convergent validity with an already established universal depression scale, the CDS.

The researcher expected the CSDS to correlate moderately to highly with the criterion-referenced (e.g. depression diagnosis) for concurrent validity. The researcher expected the CSDS to correlate moderately to highly for construct validity via convergent validity. There were no particular expected outcomes for Negative and Positive Predictive Rate beyond identifying optimal cutoff scores.

## **Method**

### *Participants*

The study recruited Native American youth ages 12-19 living in South Dakota. Participants were geographically confined because all tribes within the state are from the Great Sioux Nation of which the scale's cultural context was extracted. No prerequisites or exclusions regarding mental health diagnoses were included. Recruitment utilized social media as a means to get participants which turned into a snowball procedure where participants referred acquaintances. No personal information

was shared on social media. No health information was provided outside the telephone call.

### *Materials*

Two psychometric instruments were used. One instrument included the Columbia Depression Scale for Teens (CDS) (Columbia.edu, 2004). The CDS is a 22-item self-report scale for adolescents 11 years or older focused on feelings and behaviors over the past two weeks. Scoring is dichotomous, meaning they respond in a yes or no fashion with yes indicating a score of one and no indicating a score of zero. A yes indicates the participant has experienced the symptom explained in the question within the last two weeks. The CDS provides a risk level in addition to the prevalence rate within the youth population. Higher scores indicate greater risk for clinical depression. The CDS was used in prior research testing the reliability of the culturally sensitive scale in this study because it is the most commonly reported universal depression scale used for youth assessment of Native Americans in South Dakota (Phelps, 2013). This prior research found a CDS Cronbach's reliability index of .84 for Native American youth living throughout the state of South Dakota (Phelps, 2013). The CDS is being tested in the current study for use within this Native American youth population.

The second instrument was the culturally sensitive depression scale (CSDS) investigated in this study. The CSDS was constructed in prior research utilizing a community based participatory research (CBPR) approach. The investigator conducted ethnographic interviews on the depressive experience for Native American youth living

throughout South Dakota. From these interviews, depression definitions were created and placed onto flashcards which were later used for categorization. Five individuals familiar with psychology and Native American culture sorted the definitions into five distinct categories with each category being labeled.

Analysis of definition categorization found definitions consistently categorized across the five raters. Consistent categorization means items were grouped together under one of the five distinct categories across all five individuals. These definitions were placed on the initial draft of the CSDS and tested for reliability. Native American high school students in South Dakota aged 12-19 participated in this initial study (n=96). Exploratory Factor Analysis (EFA) found the scale to be unidimensional with 39 of the 40 items having modest factor loadings ( $r \geq .30$ ) on the dimension. Correlation between the CDS and CSDS was .29, which was expected as depression should have some universal symptoms overlapping on scales.

Running analysis on the 39-item CSDS found reliability for the scale to be high, with a Cronbach's alpha of .92. Creating psychometrics that are too long may result in loss of information due to mortality of the participant because the client may complete the survey haphazardly or not at all (McDonald, 2000). The researcher believed a 39-item scale seemed too taxing for the responder, so reliability for shortened scales was investigated. Shortened scales included questions with the highest factor loadings from the EFA. After checking three different shortened versions of the scale, the 20-item

CSDS was chosen as the final scale due to its brevity yet moderately high Cronbach's Alpha of .88 (Phelps, 2013).

To test criterion-related validity, a health outcome had to be produced from a well-established gold standard. This study's health outcome was a confirmed diagnosis of Major Depressive Disorder (MDD). The well-established gold standard was a condensed semi-structured clinical interview for depression pulled from Attention-Deficit Hyperactivity Disorder: A Clinical Workbook (Barkley & Murphy, 2006). The interview categorized participants as diagnosed or undiagnosed for MDD, which was later used to determine classification capabilities for both the CDS and CSDS via concurrent validity.

One qualitative survey was provided to participants with questions asking about comfortability, relatability, and how much the CDS and CSDS scale explained the participant's mental state. A few questions asked about comfortability, relatability, and preference while plotting the CDS against the CSDS (e.g. strongly prefer CDS versus strongly prefer CSDS) in hopes of understanding the needs and desires of Native American youth.

### *Procedures*

Procedures for the research study took a unique approach due to the COVID-19 pandemic. Procedures followed the teletherapy modality. Teletherapy is delivering therapy via technology including telephones and camera-based care. Details on how teletherapy was utilized in this study is provided below. The researcher used social media to recruit Native American youth via flyers. The researcher posted a recruitment



flyer on social media with contact information and community members reshared the post requesting interested individuals to contact the researcher directly. Most participants contacted the researcher via text messaging. The participants provided their personal email along with their caretaker's email via text message. The researcher emailed the caretaker and participant requesting initial consent and a phone number to contact the caretaker. A combined electronic consent-assent form was sent via a confidential online document signing platform.

The researcher called the caretaker and participant to review the e-consent form and answer any questions. Once reviewed and all questions were answered for both the caretaker and participant, the caretaker and participant electronically signed the consent-assent form. The caretaker left the room so the researcher could conduct the experiment. The client first completed a demographic scale then completed the virtual interview, using the Barkley's semi-structured clinical interview for MDD. The interview classified the participant as a confirmed diagnosis of major depressive disorder or not (e.g. diagnosed vs. undiagnosed).

Following the clinical interview, the researcher continued completing the CDS and CSDS through a question-response style. The researcher would verbally provide each question singularly to the participant who would respond yes or no. The researcher would document the answers on a printed CDS or CSDS. At closing, the participant finished the qualitative scale on comfort and preference. When all scales were completed, the researcher calculated total scores for the depression scales to

assess risk. The researcher also looked at any items specifically related to suicidality to assess imminent danger. The researcher checked in with the participant to assess any negative impacts due to research participation. The researcher provided a local resource guide via email to each participant for future use if necessary. The participant was physically or electronically sent their participation compensation after completion.

While there was no imminent danger regarding suicidality, there were some cases with medium risk based on total scores on the CDS. In these situations, participants were requested to have their caretaker come back to the room to talk with the researcher. The researcher informed the caretaker of the risks identified and inquired if a referral to a local behavioral health program was desired. In this study, the caretakers denied referral but did indicate they would follow up on the issue in a matter they see fit. The researcher also sent the local resource guide to the caretaker for later use.

The researcher recorded scale answers on printed scales. These scales will be kept in a locked storage case for a period of three years as required by IRB and then destroyed. Data were extracted from the physical paper scales and moved onto an Excel spreadsheet utilizing only participant ID for confidentiality. This Excel spreadsheet was used for statistical analysis at a later time.

#### *Assessment of Validity*

Two types of validity were assessed in the study. Criterion-related validity was assessed via concurrent validity for both the CDS and CSDS and MDD diagnosis using

point biserial correlation. Construct validity was tested via convergent validity between the CDS and CSDS using Pearson product-moment correlations. Diagnostic utility and optimal cutoff points were assessed using the area under curve (AUC) procedure.

## **Results**

### *Participant Characteristics*

Participants included Native American youth ages 12-19 (n=30). The average participant age was 16. The median age was 16.5. The mode age was 18. 90% of participants identified only as Native American. 7% identified as Native American and Latino. 3% identified as Native American and Caucasian. 53% lived off the reservation while 47% lived on a South Dakota reservation.

47% belonged to the Oglala Sioux Tribe. 27% belonged to the Sisseton-Wahpeton Oyate. 13% belonged to the Cheyenne River Tribe. 10% belonged to Crow Creek Tribe. 3% belonged to the Lower Brule Tribe. 53% were male while 47% were female. 40% identified as woman, 50% identified as man, 7% identified as gender non-binary, and 3% identified as LGBTQ2S+.

70% were single, 20% of participants were in a relationship, 7% were recently single, while 3% identified as 'other.' 50% of participants went to schools off the reservation while 50% went to schools on the reservation. 26% of participants were in 9<sup>th</sup> grade, 27% were in 12<sup>th</sup> grade or above, 20% were in 8<sup>th</sup> grade, 10% were in 10<sup>th</sup> grade, 10% were in 7<sup>th</sup> grade, and 7% were in 11<sup>th</sup> grade. 83% were unemployed.

Family income data showed 64% of families made less than \$50,000 annually with 27% of all participant families making less than \$25,000 annually. Family size was not accounted for and thus evaluation of SES compared to poverty guidelines could not be conducted. From the initial semi-structured clinical interview for adolescent depression, 60% of the participants indicated clinically significant depression while 40% indicated no depression. These numbers were used to assess the criterion-related validity of the two scales.

#### *Frequency Data*

Both scales had comparatively similar frequency data. The CSDS had a mean score of 9.33 with a standard deviation of 6.733. The CDS had a mean score of 9.07 with a standard deviation of 6.198. The median for both the CSDS and CDS was 9.

#### *Criterion-Related Validity*

Criterion-related validity is a scale's ability to correlate to a specific outcome related to the construct under study. This is measured in two predominant ways which are based on temporality. For the purpose of this study, concurrent validity was used as a means to test criterion-related validity. Concurrent validity defines outcomes and collects data on the new scale and the already established scale concurrently, or at the same time. The condensed semi-structured clinical interview was delivered at the same time participants completed both the CDS and CSDS.

Binary logistic regression was performed to determine if depression scale scores could predict a clinical depression diagnosis from the semi-structured clinical interview.

The dependent variable was the clinical diagnosis and the independent variable was the total score on the CDS and CSDS. The CDS and CSDS each had exclusive binary logistic regressions ran on their total scale scores and relation to clinical diagnosis.

Overall model fit was assessed using three statistics. -2 Log Likelihood represents the sum of probabilities associated with the predicted and actual outcomes for each case (Mertler & Reinhart, 2017). The closer to 0 -2 Log Likelihood is, the better fit. Nagelkerke  $R^2$  indicates the amount of the dependent variable's (e.g. diagnosis outcome) variation is explained by the model (Mertler & Reinhart, 2017). Chi-Square ( $\chi^2$ ) represents the difference between the constant-only model and the model generated including the independent variable (e.g. scale score). The constant only model assumes all sample means are equivalent whereas the generated model includes independent variables as a means to explain variance. Chi-square significance indicates the generated model with the independent variable is significantly better at predicting group membership than the constant model (Mertler & Reinhart, 2017). Overall model fit for both the CDS (-2 Log-Likelihood = 25.342, Nagelkerke  $R^2$  = .416,  $\chi^2$  = 5.070,  $p < .001$ ) and CSDS (-2 Log-Likelihood = 30.634, Nagelkerke  $R^2$  = .404,  $\chi^2$  = 2.957,  $p < .001$ ) were statistically significant, meaning the produced model fits and explains the data. Please see table 1 for summary.

**Table 1***Criterion Related Validity Overall Model Fit Statistics*

Scale	-2 Log-Likelihood	Nagelkerke R <sup>2</sup>	Chi-Square*
CDS	35.342	.416	5.070
CSDS	30.634	.404	2.957

\* p &lt; .05

Participant classification was conducted by applying the generated regression model for group membership predictions. The predictions are compared to actual participant values. The percentage of participants correctly classified is calculated and serves as an indicator for model fit (Mertler & Reinhart, 2017). Classification analysis suggests both the CDS and CSDS are statistically significant. The CDS model correctly classified 76.7% of cases while the CSDS model correctly classified 70% of cases.

Please see Tables 2 and 3 for classification results.

**Table 2***CDS Criterion Related Validity Classification Results*

		Scale Prediction		n (% Correct)
		Diagnosed	Undiagnosed	
Clinical Interview	Diagnosed	11	3	14 (78.6)
	Undiagnosed	4	12	16 (75.0)
	Total	15	15	30 (76.7)

**Table 3***CSDS Criterion Related Validity Classification Results*

		Scale Prediction		
		Diagnosed	Undiagnosed	n (% Correct)
Gold-Standard Outcome	Diagnosed	9	5	14 (54.3)
	Undiagnosed	4	12	16 (75.0)
	Total	15	15	30 (70.0)

Wald statistic, representing the contribution of the IV to the model, was statistically significant, meaning greater than 50% chance, for both the CDS (Wald = 8.144,  $p < .01$ ) and the CSDS (Wald = 6.997,  $p < 0.01$ ). This suggests both scales significantly classify individuals as diagnosed or undiagnosed. Odds ratio, representing the increase in odds of being classified in a category when the predictor variable increases by one, were statistically significant for both the CDS (Odds = 1.422,  $p < .01$ ) and CSDS (Odds = 1.255,  $p < .01$ ). Odds ratios for both scales indicate little change in the likelihood of depression diagnosis. Please see table 4 for a summary of classification statistics.

**Table 4**

*Classification Analysis*

Statistic Name	CDS	CSDS
Wald	8.144	6.997
Odds Ratio	1.422	1.255
Classification Rate	76.7%	70.0%

*Construct Validity*

With the construction of a new psychometric scale, the new scale must be tested for correlation with other well-established scales to ensure it is measuring similar constructs adequately. This process is known as convergent validity, which is a subtype of construct validity. Construct validity is the new scale's ability to actually measure what it claims to measure within the study. In the case of this study, construct validity is testing whether the CSDS measures clinical depression and is validated by correlating the CSDS to the already established CDS. The correlation was conducted via the Pearson product-moment correlation. Correlation analysis suggests moderate but statistically significant convergent validity between the CSDS and CDS (Pearson correlation = .766,  $p < .01$ ). This suggests the CSDS has validity as a depression-screening instrument.

*Diagnostic Utility*

Evaluation of both scales diagnostic utility was conducted for the population of interest. Area Under the Curve (AUC) analysis evaluates whether the score on a scale



is useful in classifying the individual into one of two conditions or, in other words, distinguishing between two conditions. The higher the AUC, the better the model is at distinguishing between the two conditions. The AUC ranges from 0 to 1. In the case of this study, AUC is utilized to determine if scale scores can classify a person as diagnosed or undiagnosed. In addition, AUC can assist with determining the optimal cutoff value for classification. Cutoff Values are determined by balancing the true positive rate with the false positive rates, with the optimal value being the value with the highest true positive rate and the lowest false positive rate.

For the CDS, the diagnostic utility of the scale was significant at .879 ( $p < .01$ ). For the CSDD, the diagnostic utility of the scale was also significant at .828 ( $p < .01$ ). Optimal cutoff values indicate a CDS cutoff score of 6.5 will result in 93.8% of true positives being correctly classified while simultaneously expecting a 28.6% false-positive rate. Optimal cutoff values for the CSDD suggest a score of 7 indicates 81.3% of true positives will be correctly classified with a 35.7% false-positive rate. Please see table 5 for a summary of AUC statistics.

**Table 5***Diagnostic Utility Statistical Analysis*

Diagnostic Utility	CDS	CSDS	Diagnostic Utility	CDS	CSDS
Area Under Curve	.879	.828	Optimal Cutoff Point	6.5	7
Prevalence	46.7%	46.7%	Accuracy Rate	76.7%	70%
F1 Score	82.2%	74.8%	Diagnostic Odds Ratio	11.6	4.8
False Discovery Rate	26.7%	30.8%	False Omission Rate	4.6%	29.4%
True Negative Rate	75.0%	75.0%	True Positive Rate	93.8%	81.3%
Negative Likelihood Rate	.285	.476	Positive Likelihood Ratio	3.3	2.3
False Negative Rate	21.4%	35.7%	False Positive Rate	28.6%	35.7%
Negative Predictive Value	20.0%	70.6%	Positive Predictive Value	73.3%	69.2%

*Qualitative Data*

A Likert scale was provided to participants to understand comfort, relatability, and preference for the CDS and CSDS. 87% of participants felt comfortable filling out the CDS. 63% would enjoy filling out the CDS when seeking out mental health services. 40% believed the CDS items were relatable while 30% of participants believed the CDS explained their mental state. 87% of participants felt comfortable filling out the CSDS. 56% would enjoy filling out the CSDS when seeking out mental health services. 40%

indicated the CSDS items were relatable. 30% suggested the CSDS explained their mental state. Most participants had no stronger preference, comfort, or relatability for the CDS or CSDS.

Non-parametric analysis of qualitative data was conducted to detect statistically significant differences between diagnosed and undiagnosed participants. The only significant difference found on the scale’s twelve questions was question 1, “I felt comfortable answering the questions on Scale 1.” According to Mann-Whitney Test, the undiagnosed participants had statistically significant higher agreeableness with Scale 1, the CDS, than their diagnosed counterpart ( $z = -3.020$ ,  $p < .01$ ). One other scale item, “I related to the items on Scale 2,” was almost significant ( $z = -1.791$ ,  $p = .073$ ) suggesting diagnosed participants had higher levels of agreeableness to the statement than their undiagnosed counterparts. Please see table 6 for a summary.

**Table 6**

*Mann-Whitney Test Results for Qualitative Data*

Item	Diagnosed	Undiagnosed	Z-Score
I felt comfortable answering the questions on Scale 1	3.94	4.79	-3.020*
I related to the items on Scale 2	3.44	2.641	.791**

\*  $p < .01$

\*\*  $p = .073$

## Discussion

The present study explored whether a culturally sensitive depression scale (CSDS) could be deemed valid through psychometric statistical analysis for Native

American youth ages 12-19 living throughout the state of South Dakota. Statistical analysis showed promise for CSDS validity. Correlation between the established CDS provides the CSDS with construct validity meaning the CSDS was measuring the construct, depression, in a moderately accurate manner.

The CSDS also classified by diagnosis at a rate similar to the established CDS, suggesting the CSDS could predict depression with decent accuracy. The CSDS, based on AUC analysis, was considered a good test when it comes to sensitivity and specificity characteristics. Qualitatively speaking, individuals who were undiagnosed MDD had a stronger level of comfortability filling out the CDS than their diagnosed counterparts

Given this work's novelty of constructing culturally sensitive psychometrics within the Native American community, little literature is available for comparative outcomes specific to this community. However, a comparison of study outcomes on the construction of psychometrics for other cultural groups emphasizes alignment. For example, the creation of the Lee and Rhee Depression Scale in Korea had comparable results for validity and diagnostic utility as presented in this study (Hwang et. al., 2012). Studies cited in the introduction had comparable outcomes to this study (Dihn et al, 2009; Wong, Wu, Guo, Lam, & Snowden, 2013; Castillo, Perez, Castilo, & Gosheh, 2009; Xie, Lv, Hu, & Ma, 2015).

This study not only looked at the validity of the CSDS but also assessed the validity of the CDS within a Native American sample. Results for the CDS show decent

accuracy for predicting depression and is a good test for sensitivity and specificity. Research establishing the validity of universal scales, such as the CDS, in Native American communities shows promise. The Center for Epidemiological Studies Depression Scale (CES-D) content fits depression within American Indian communities but only when condensed to a 12-item structure instead of 20 (Chapleski, Lamphere, Kaczynski, Lichtenberg, & Dwyer, 1997).

The utilization of universal scales with minor tweaks can increase efficiency and maintain accuracy levels for detection in diverse settings (Kohrt, Luitel, Acharya, & Jordans, 2016). Other universal scales have limitations; however, they can still have favorable sensitivity and specificity across cultural groups (Leung, Wing, Kwong, & Shum, 2007). Results from this study do converge with prior research findings of the diagnostic utility of universal scales across cultural settings.

Cultural psychology definitions have historically been generated through formal and informal qualitative studies (Ratner, 2008). Specific to the CBPR approach utilized in this study, qualitative research approaches can be powerful at integrating researcher and community perspectives for holistic community health research outcomes (Grieb, Eder, Smith, Calhoun, & Tandon, 2015). The stronger levels of comfortability for undiagnosed individuals with the CDS scale does deserve attention. This may be due to the fact that describing a psychological phenomenon (e.g. emotion) does not substitute for the subjective experience of it meaning adequate understanding of what is experienced is required to explain it properly (Barrett, Mesquita, Ochsner, & Gross,

2007). Perhaps the undiagnosed individuals had no subjective concept of depression and thus relied on psychological terminology to understand depression. The already held psychological notions of depression may have felt more familiar. This familiarity may lead to a stronger sense of comfort. Individuals can mentalize psychological disorders as a means to explain constructs or behaviors (Fonagy & Target, 2006).

While both scales demonstrated validity, the use of both scales may assist with better therapeutic outcomes. When evaluating the content on the CDS and CSDS, item content can vary significantly. Prior research on depression suggests depression is a culturally bound syndrome with different points of emphasis in Native American communities (O'Neil, 1998). Culturally bound syndromes impact everything from whether a person seeks assistance, where they seek assistance, what type of assistance is sought, as well as coping styles and social supports they use to fight the illness (Office of Surgeon General, 2001). Developing interventions based on subjective experiences of psychological disorders allows adaptations for the client and their environment (Abarzua, Venegas, & Hidalgo, 2016). Utilizing both a universal and culturally specific scale may allow providers to construct more detailed treatments (Cheung et al., 2008).

Study limitations must be accounted for to fully understand this current research. The study must be contextualized. The research project took place during a global pandemic which caused significant changes in research methodologies. The project, which would have been conducted in person, had to be conducted virtually. Initial

research on the pandemic's impact on healthcare visits shows a significant decrease in visits in comparison to utilization prior to the pandemic (Mehrotra, Chernew, Linetsky, Hatch, & Cutler, 2020).

The pandemic made it extremely difficult for engagement which had an impact on recruitment. Initially, the researcher planned to go into school settings for engagement and recruitment. Since schools were closed, this was impossible and had to be done virtually. The results from the lack of in-person engagement were low recruitment, which impacted the power of the study. While power is sufficient (.85), it is not optimal. Continuation research should be conducted to include more participants to explore the validity with more rigor.

The results of this study provide the psychological community insight on what depression means within Native American communities. This is crucial for delivering proper care to Native American youth as physical and mental health issues for Native Americans have consistently been under addressed (McDonald et al., 1998). Cited research throughout this paper suggests psychological phenomena can be and are culturally influenced. This research looks at depression through the eyes of Native American youth coming from South Dakota.

The CSDS was constructed from definitions extracted from ethnographic definitions provided by this population. The definitions focused on their experiences with depression. Statistics prove CSDS validity, which has implications not only on how depression is measured but also how the treatment is constructed and delivered. The

tool can be useful for creating a client-centered modality focused on client-therapist engagement.

For example, when looking at the CSDS one will see some scale items are abstract and/or metaphorical. This sets the stage for a therapist to engage with clients asking them for clarification of what the item means. This allows the client to state their experience in their own words instead of forcing clinical definitions. Such dialogue can assist the therapist in creating a more culturally responsive treatment plan because dialogue may allow for co-creation rather than a therapy-as-usual approach.

Future research for the CSDS should include capturing more data to test the validity of the scale at higher power. Capturing more data may also assist with finding a more optimal cutoff point with higher true positive and lower false-positive rates. Qualitative research in the future may want to remove neutrality (e.g. neutral and either) from the Likert Scale responses. Doing so will force people to truly identify with one scale or the other as a means to rigorously assess the need and desire for culturally sensitive psychometrics.

Furthermore, the utility for the clinician should also be assessed. In particular, the CSDS should be tested for its effects on cultural competency, client-therapist relationship, and culturally competent treatment. Perhaps by infusing cultural sensitivity into the initial assessment tools licensed mental health professionals use, each following step in the process may follow suit. Future research will need to test how upstream changes affect downstream processes.



### Culturally Sensitive Depression Scale (CSDS)

Participant ID : \_\_\_\_\_ Age: \_\_\_\_\_ Sex: M or F. Date: \_\_\_\_\_

Instructions: If the answer to the question is “No,” circle the 0; if it is “Yes,” circle the 1.

In the last 2 weeks...	No	Yes
Have you often felt sad or depressed?	0	1
Have you felt like nothing is fun for you and you just aren't interested in anything?	0	1
Have you often felt grouchy or irritable and often in a bad mood, when even little things would make you mad?	0	1
Have you lost weight, more than just a few pounds?	0	1
Have you lost your appetite or often felt less like eating?	0	1
Have you gained a lot of weight, more than just a few pounds?	0	1
Have you felt much hungrier than usual or eaten a lot more than usual?	0	1
Have you had trouble sleeping, that is, trouble falling asleep, staying asleep, or waking up too early?	0	1
Have you slept more during the day than you usually do?	0	1
Have you often felt slowed down ... like you walked or talked much slower than you usually do?	0	1
Have you often felt restless ... like you just had to keep walking around?	0	1
Have you had less energy than you usually do?	0	1
Has doing even little things made you feel really tired?	0	1
Have you often blamed yourself for bad things that happened?	0	1
Have you felt you couldn't do anything well or that you weren't as good-looking or as smart as other people?	0	1
Has it seemed like you couldn't think as clearly or as fast as usual?	0	1
Have you often had trouble keeping your mind on your [schoolwork/work] or other things?	0	1
Have you often thought about death or about people who had died or about being dead yourself?	0	1

Have you thought seriously about killing yourself?	0	1
Have you tried to kill yourself in the last two weeks?	0	1
Have you EVER, in your WHOLE LIFE, tried to kill yourself or made a suicide attempt?	0	1

### Columbia Depression Scale for Teens (CDS)

Participant ID : \_\_\_\_\_ Age: \_\_\_\_\_ Sex: M or F Date: \_\_\_\_\_

Instructions: If the answer to the question is “No,” circle the 0; if it is “Yes,” circle the 1.

In the last 2 weeks...	No	Yes
Have you often felt sad or depressed?	0	1
Have you felt like nothing is fun for you and you just aren't interested in anything?	0	1
Have you often felt grouchy or irritable and often in a bad mood, when even little things would make you mad?	0	1
Have you lost weight, more than just a few pounds?	0	1
Have you lost your appetite or often felt less like eating?	0	1
Have you gained a lot of weight, more than just a few pounds?	0	1
Have you felt much hungrier than usual or eaten a lot more than usual?	0	1
Have you had trouble sleeping, that is, trouble falling asleep, staying asleep, or waking up too early?	0	1
Have you slept more during the day than you usually do?	0	1
Have you often felt slowed down ... like you walked or talked much slower than you usually do?	0	1
Have you often felt restless ... like you just had to keep walking around?	0	1
Have you had less energy than you usually do?	0	1
Has doing even little things made you feel really tired?	0	1
Have you often blamed yourself for bad things that happened?	0	1
Have you felt you couldn't do anything well or that you weren't as good-looking or as smart as other people?	0	1
Has it seemed like you couldn't think as clearly or as fast as usual?	0	1
Have you often had trouble keeping your mind on your [schoolwork/work] or other things?	0	1
Have you often thought about death or about people who had died or about being dead yourself?	0	1

Have you thought seriously about killing yourself?	0	1
Have you tried to kill yourself in the last two weeks?	0	1
Have you EVER, in your WHOLE LIFE, tried to kill yourself or made a suicide attempt?	0	1



### Qualitative Survey

Please complete the questions below. You can rate your answers from “Strongly Disagree” to “Strongly Agree.”

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I felt comfortable answering the questions on Scale 1.					
2. I felt comfortable answering the questions on Scale 2.					
3. I would enjoy filling out Scale 1 when seeking out mental health services.					
4. I would enjoy filling out Scale 2 when seeking out mental health services.					
5. I relate to the items on Scale 1.					
6. I relate to the items on Scale 2.					
7. Scale 1 explains my mental state.					
8. Scale 2 explains my mental state.					

Please complete the questions below. You can rate your answers from “Strongly Scale 1” to “Strongly Scale 2.”

Question	Strongly Scale 1	Scale 1	Either	Scale 2	Strongly Scale 2
1. Which scale did you feel more comfortable with?					
2. Which scale would you enjoy filling out when seeking mental health services?					
3. Which scale did you relate to more?					

4. Which scale better explains your mental state?					
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