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DEVELOPING AN INDIGENOUS MEASURE OF OVERALL HEALTH AND WELL-BEING: THE WICOZANI INSTRUMENT

Heather J. Peters, PhD, Teresa R. Peterson, EdD, and the Dakota Wicohan Community

Abstract: A Native community developed the Wicozani Instrument, a 9-item self-report measure, to assess overall health and well-being from an Indigenous epistemology. The Wicozani Instrument measures mental, physical, and spiritual health and their importance to an individual's quality of life. The instrument's validity and reliability was examined through two studies. Study 1 utilized standardized measures from Native (i.e., Awareness of Connectedness Scale) and Western (i.e., Psychological Sense of School Membership and Suicide Ideation Questionnaire) epistemologies with Native and non-Native youth. Study 2 utilized a community created measure (i.e., Indigenous Healing Strategies Scale) with Dakota women. Results suggest the Wicozani Instrument is valid and reliable. The development of an Indigenous measure of overall health and well-being addresses Western atomistic frameworks, which often perpetuate the perception of Native identity as a risk factor for poor health, and works to disrupt the Cycle of Native Health Disparities.

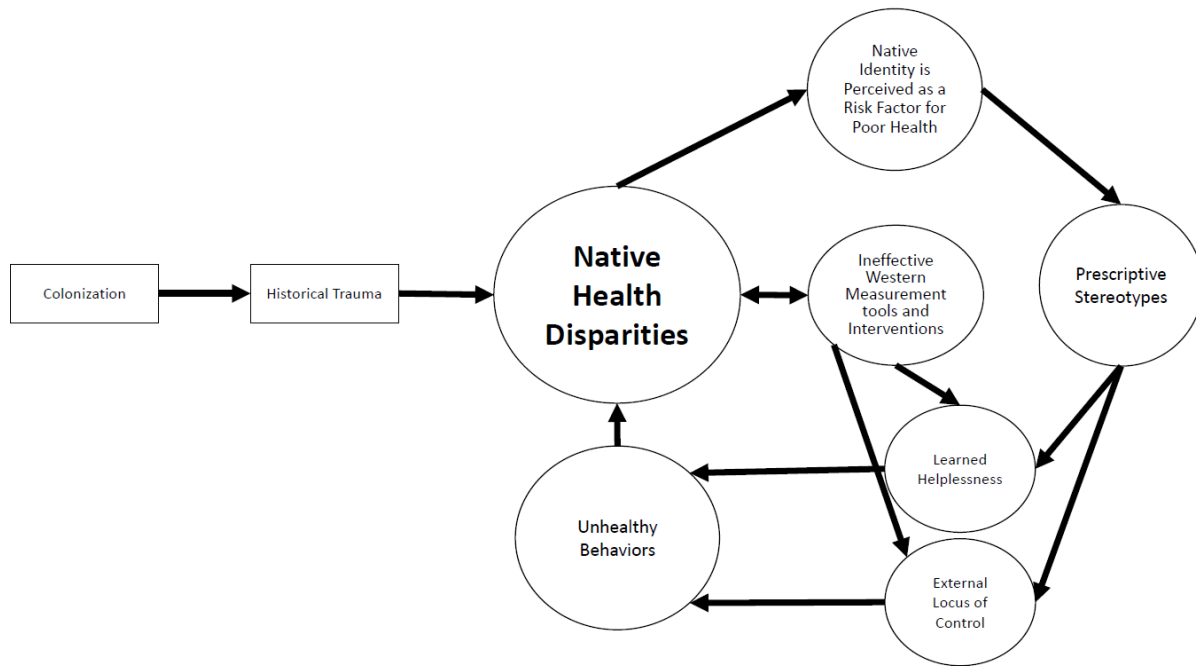
INTRODUCTION

Wicozani (i.e., overall health and well-being) has long been a central factor in Dakota life ways. Despite the long standing importance of health and well-being, the decimation of Native culture and life ways, through colonization and assimilation policies, and subsequent historical trauma (Mohatt, Thompson, Thai, & Tebes, 2014) have been linked to health disparities¹ between Natives and the broader United States population (e.g., Espey et al., 2014; Minnesota Department of Health, 2014). These health disparities persist despite mental and physical health professionals' efforts and funding from government agencies, foundations, and universities dedicated to addressing these health disparities, in part because of the use of measurement tools and interventions created from Western paradigms. Persistent health disparities have created a state in

¹ According to the U.S. Department of Health and Human Services (USDHHS, n.d.) disparity refers to the “differences in health outcomes that are closely linked with social, economic, and environmental disadvantage - are often driven by the social conditions in which individuals live, learn, work, and play” (p. 4).

which Native identity is perceived as a risk factor for poor health, in turn, leading to prescriptive stereotypes, an external locus of control, learned helplessness, and a self-fulfilling prophecy, which perpetuates these health disparities. To address these problems, and disrupt the Cycle of Native Health Disparities (see Figure 1), a Dakota community created the Wicozani Instrument to assess overall health and well-being from an Indigenous paradigm.

Figure 1. The Cycle of Native Health Disparities



Colonization led to historical trauma and subsequent health disparities between Native communities and the broader U.S. population. Health professionals and researchers have primarily used Western-based measurement tools and interventions to address the health disparities. These ineffective strategies have led to the persistence of health disparities in Native communities. The persistence of these health disparities has created a state in which Native identity is perceived as a risk factor for poor health, which, in turn, leads to prescriptive stereotypes and subsequent external locus of control and learned helplessness. The Western-based measurement tools and interventions also directly contribute to a Native person's learned helplessness and external locus of control. Individuals with learned helplessness and external locus of control engage in unhealthy behaviors that perpetuate the health disparities between Native communities and the broader U.S. population.

One of the reasons health disparities between Natives and the broader U.S. population persist today is that most government, foundation, and university researchers and health providers approach their work from a Western, rather than the Native communities', paradigm. Paradigms are the beliefs (i.e., ontology, epistemology, axiology, and methodology) that guide the actions of researchers when developing and testing measurement tools and interventions. For example, most researchers and health professionals attempt to address a health disparity in a Native community

by using culturally adapted interventions, designed for and normed from non-Native populations, or culturally based interventions, designed for specific Native cultural groups (Allen et al., 2011). Although both of these approaches include cultural content and activities, the measurement tools, intervention, and content of the intervention are all grounded in a Western theoretical system (Allen et al., 2011). Approaching health disparities in Native communities from a Western paradigm is problematic.

The Western ideology used to create most measurement tools and interventions can never be truly removed, even when measurement tools and interventions are culturally adapted or culturally based. Complete removal of Western ideology is challenging because Western beliefs (e.g., individualism, rationalism, dualism, objectivity, universal truths) are often incompatible with Indigenous beliefs (e.g., collectivism, relationality, subjective knowledge, multiple truths or realities; Bear, 2000; Burnette & Billiot, 2015). For example, Western ideology indicates that objective experts can use the scientific method to uncover universal truths, whereas Native ideology indicates that all people have valuable subjective knowledge and multiple realities and truths co-exist. These paradigms are fundamentally incompatible and produce drastically different interventions. For example, an intervention from Western ideology would likely focus on treating the individual who has the health problem, whereas an intervention from Native ideology would likely work with the individual along with their family, community, and environment. Case in point, Barker, Goodman, and DeBeck (2017) recently wrote that suicide interventions that stem from Western approaches, which often focus on individual frameworks, are ineffective, and a growing body of research indicates they are culturally discordant. Incompatibilities such as these leads to distrust of measurement tools, interventions, and people associated with these efforts. Further, use of Western-based measurements and interventions intentionally or unintentionally impose Western values, beliefs, and systems of care upon Native individuals, families, and communities (Goodkind et al., 2011) and serve as a further means of colonization (Lucero, 2011). The use of mainstream measurement tools and interventions can also be seen as an infringement on Native sovereignty and a violation of Native self-determination (Nebelkopf & Wright, 2011). Further, creating measurement tools and interventions without Native involvement privileges the dominant mainstream researchers' perspectives and relegates Native practice professionals and participants to the receiving end of the research dissemination process. These factors help explain why health disparities in Native communities still exist.

The persistence of health disparities in many Native communities has created a state in which simply being Native is considered a risk factor for poor health (e.g., diabetes, suicidality, obesity, substance abuse, coronary heart disease). Perceiving a person's Native identity as a risk factor attacks the person's culture and is in direct opposition to how many Native people view their culture as a source of strength. Further, most health professionals and researchers perceive health and culture as unrelated concepts even though Indigenous researchers have called for the use of cultural revitalization to create health equity for Indigenous populations (e.g., Blaisdell, Denniston, & Miller, 1998; Eggington, 2012). Unfortunately, rather than viewing Native culture as integral to health and part of the solution, most health professionals and researchers perceive Native identity and culture as a risk factor for poor health. These messages, when seen and heard often enough, actually begin to prescribe future unhealthy behaviors. Prescriptive stereotypes falsely inform individuals how a specific group should think, feel, and behave (Terborg, 1977), thus leading to a self-fulfilling prophecy (Madon, Jussim, & Eccles, 1997; Merton, 1948). For example, when a Native youth consistently hears "Native people are overweight and have diabetes," they may begin to believe that their Native identity has sentenced them to a life of obesity and diabetes. This belief leads to an external locus of control (Rotter, 1966), the belief that their behavior has no impact on their health, as well as learned helplessness (Seligman, 1975), learning that they are helpless and unable to affect their health. Thus, Native youth may see no reason to engage in healthy behaviors and may more easily fall prey to the appeal of unhealthy behaviors, thereby increasing the likelihood of poor health. We contend the ineffective use and over reliance on Western-based measurement tools and interventions have contributed to the consistent health disparities between Natives and the broader U.S. population and created a state in which Native identity is perceived as a risk factor for poor health, which in turn, leads to prescriptive stereotypes, external locus of control, learned helplessness, and a self-fulfilling prophecy which further perpetuates these health disparities (see the Cycle of Native Health Disparities, Figure 1).

Research and theories support connections between the variables found in the Cycle of Native Health Disparities. For example, higher levels of external locus of control predict higher levels of stress, depression, intake of junk food, substance abuse, and physical illness symptoms (Gore, Griffin, & McNierney, 2016). This research clearly links external locus of control to poor health outcomes. Other researchers have demonstrated the influence of health professionals' stereotypes on individual patient's learned helplessness. For example, elderly persons accepted nurses' negative stereotypes (i.e., elderly patients are dependent, psychopathological, and sick)

and, as a result, became more passive and developed learned helplessness (Solomon, 1982). The Theory of Reasoned Action (Fishbein & Ajzen, 1975) and its successor, the Theory of Planned Behavior (Ajzen 1991), provide theoretical support for the Cycle of Native Health Disparities. Health professionals and researchers should understand that colonization, historical trauma, and social determinants of health, and not Native identity, contribute to health disparities found in Native communities.

Western approaches, which perceive Native identity as a risk factor for poor health, work from a deficit-based model by focusing on the negative (e.g., diabetes, suicide), thus perpetuating the prescriptive stereotypes and the very health disparities they are trying to address. Further, Western approaches typically place power in the hands of the perceived experts (e.g., doctor, researcher, nurse, or psychologist), which further contributes to an external locus of control and learned helplessness. Additionally, Western approaches tend to address one health disparity at a time and predominantly use “objective” measures (e.g., weight, blood pressure, suicidal ideation) to evaluate a Native person’s health. The Western approach often disempowers Native people, both individually and collectively, and devalues their strengths and ways of knowing.

To address the above mentioned problems, and to disrupt the Cycle of Native Health Disparities, a Dakota community used an Indigenous paradigm to create the Wicozani Instrument, a 9-item self-report measure. To support this work funding was secured from the Collaborative Research Center for American Indian Health (CRCAIH). This project aligned with CRCAIH’s vision to “promote collaborative research partnerships with tribal communities, research institutions, and health care entities through capacity building to conduct innovative research that improves American Indian health” and core values (i.e., transdisciplinary, sustainability, and tribal sovereignty). For example, this project supported tribal sovereignty by utilizing CRCAIH’s Tribal IRB Toolkit, located at <https://crcaih.org/irb-toolkit.html>, to create an IRB process that Dakota Wicohan now uses when new research is being proposed or previous research is being disseminated.

In Dakota language, *wicozani* means overall health and well-being. From a strength-based approach, the Dakota co-researchers focused on overall health and well-being, rather than on measuring a specific health disparity. By focusing on overall health and well-being, rather than on ailments and sickness, individuals have space to consider what health looks and feels like. While there is diversity among Native communities, the Wicozani Instrument may appeal to many Native communities because health is defined from an Indigenous perspective, in that it is viewed through a holistic lens and relies upon the understanding of relationality and interdependence between

physical, mental, and spiritual health. Dakota people have always understood the interconnectedness of health. Further, Indigenous ways of knowing indicate that the power belongs in the hands of the individual because everyone has the capability of knowing (e.g., gauging their own level of health), and their perspective is valid. The Wicozani Instrument gives agency to the individual because they, rather than experts, describe how they know if someone's mind, body, and spirit are healthy, and asks the individual to assess their own mental, physical, and spiritual health and to indicate how important these aspects are to their quality of life.

Members from the Dakota Wicohan community expressed being tired of health practitioners defining, measuring, and viewing their health solely through a deficit-based lens and wanted the opportunity to define health for themselves, assess their own health, and determine its importance to their quality of life. This paper describes the development and preliminary validation of the Wicozani Instrument. The validity and reliability of the Wicozani Instrument was assessed in two studies. Study 1 utilized standardized Native and Western measures with Native and non-Native youth whereas Study 2 utilized a community created measure with Dakota women.

GENERAL METHOD

Overview

In both studies, we assessed the validity and reliability of the Wicozani Instrument. We will provide an overview of our research team and the Wicozani instrument followed by descriptions of each of the studies' methods, materials, and results.

Research Team

Dakota Wicohan research partners and a research team used Indigenous epistemologies and Community Based Participatory Action Research to inform their work. Dakota Wicohan research partners included several staff, elder advisors, and board members, all from the Dakota community. The research team, consisted of the two primary investigators (i.e., one Dakota, one European American) and six research assistants (i.e., two Dakota, one biracial Dakota and European American, three European American). The Dakota research partners shaped all phases of the research projects (e.g., conceptualization, design, data collection, data analysis, and writing).

Materials

The Wicozani Instrument

The Wicozani Instrument was created in order to measure the impact Dakota Wicohan programming (e.g., Wikoska & Wiciyena, girl leadership programs; Koska, boy leadership program; Sunktanka Wicayuhapi, they care for horses program; Tiwahe, family gatherings) had on community members' *wicozani*. Dakota Wicohan research partners wanted to create a simple measure that was easily accessible to both youth and elders. After numerous discussions with Dakota research partners and Dakota Wicohan community members, the two primary investigators proposed an instrument and sought feedback from the Dakota Wicohan research partners. This collaborative process resulted in the Wicozani Instrument, a 9-item measure (see Appendix A) that is grounded in Indigenous paradigms such as focusing on *wowasake*, an individual's strengths, valuing the individual's self-knowledge, and the Dakota concept of *wicozani*, overall health and well-being. Overall health and well-being from a Dakota perspective emphasizes the relationality and interconnectedness of mental, physical, and spiritual health. Interconnectedness between mental, physical, and spiritual health acknowledges that when one aspect of health is affected, all aspects of health are affected. Thus, the concept of *wicozani* recognizes interdependency as a crucial relational aspect of health.

Individuals were asked to answer, in writing, the question, "How does someone know if their "Mind" is healthy (your thoughts and emotions)?" Then they were asked, "How do you rate your mental health" on a 5-point scale ranging from *extremely poor* (1) to *excellent* (5). Individuals were asked to answer the same questions for their body and physical health and for their spirit (your religious or spiritual beliefs) and spiritual health. Lastly, individuals were asked to indicate "How important is your mental health to your quality of life?" on a 5-point scale ranging from *very unimportant* (1) to *very important* (5). Individuals were asked to answer the same question for their physical health and spiritual health. The Wicozani Instrument has two subscales. The first, the Wicozani Self-Knowledge subscale, consists of three items (questions two, four, and six) and assesses an individual's perception of their *wicozani*, their current overall health and well-being. The second, the Importance of Wicozani to Quality of Life subscale, consists of three items (questions seven, eight, and nine), is the antecedent subscale, and assesses how important an individual's *wicozani* is to their quality of life. The antecedent subscale was designed to capture an individual's desire for overall health and well-being.

DATA ANALYSIS

One research assistant entered data directly into a statistical software program called, Statistical Package for the Social Sciences (SPSS). A second research assistant cleaned the data. The validity and reliability of the Wicozani Instrument was examined through the use of Pearson correlations, coefficient alphas, and paired-samples *t*-tests.

Study 1

Overview

Study 1 examined the relationship between the Wicozani Instrument and the Awareness of Connectedness Scale (ACS; Mohatt, Fok, Burket, Henry, & Allen, 2011), the Psychological Sense of School Membership Scale (PSMM; Goodenow, 1993), and the Suicidal Ideation Scale (SIQ; Reynolds, 1988). The ACS was chosen because it incorporates the Lakota concept of *mitakuye oyas'in*, the awareness of connectedness to family, community, and environment. This concept mirrors the Dakota philosophy of *mitakuye owas'in*, which loosely translates as ‘all my relatives’ and conveys the interconnectedness between all things. The PSMM was chosen because sense of belonging is a central feature of Indigenous worldview (Wilson, 2008), and the very fabric of Dakota culture is based on relationality (Deloria, 1998; Friesen et al., 2015). Further, researchers contend that sense of belonging is important to everyone because it is a basic human function and a component of well-being that leads to positive emotions, behaviors, and outcomes (Hagerty, Lunch-Bauer, Patusky, Bouwsema, & Collier, 1992; Strayhorn, 2012). The SIQ was chosen because American Indian youth have the highest rate of suicide-related fatalities in Minnesota and in the nation (Centers for Disease Control & Prevention, 2010; Minnesota Department of Health, 2014). Thus, suicide in Native communities is the type of health disparity that health professionals have been trying to address primarily from a Western perspective. Further, we wanted to explore if using an Indigenous measure of overall health could be used in place of a Western measure, which puts the power in the hands of perceived experts rather than Indigenous people, takes a deficit rather than a strengths-based approach, focuses on one health disparity (i.e., suicidal ideation) instead of the interconnectedness of health, and uses an “objective” measure rather than a measure that taps into Indigenous peoples’ self-knowledge. Lastly, from a Dakota epistemology, strong *wicozani* and suicidal ideation cannot co-exist.

Method

Participants

Dakota Wicohan's Board of Directors, the partnering school, and the university's institutional review board approved Study 1. Participants included sixth and tenth grade social studies students. The school partner was located within a rural/tribal community area in Minnesota and at the time of the study had a 25.7% Native and 65.6% White student population (Minnesota Department of Education, 2014). A total of 147 students, 93 sixth-grade students (age $M = 11.17$, $SD = .423$; 47 females, 44 males, 2 missing data) and 54 tenth-grade students (age $M = 15.21$, $SD = .412$; 28 females, 26 males), completed the in-class questionnaire (i.e., the Wicozani Instrument, ACS, PSMM, and demographic information). The sixth-grade students identified their racial and ethnic backgrounds as Native ($n = 23$), Native and European American ($n = 1$), Native and another cultural background ($n = 5$), European American ($n = 57$), Latino American ($n = 1$), African American ($n = 1$), or other ($n = 1$). Four sixth-grade students had missing racial and ethnic background data. The tenth-grade students identified their racial and ethnic backgrounds as Native ($n = 10$), Native and European American ($n = 9$), Native and another cultural background ($n = 2$), European American ($n = 31$), or Latino ($n = 2$). Students who indicated that they had either full Native cultural background or biracial Native cultural background were combined into one Native American group for data analysis. Students who had missing cultural background data ($n = 4$) or whose cultural background was something other than Native or European American ($n = 10$) were excluded from analyses. All students in the sixth and tenth grade social studies classes were invited to complete the SIQ either before or after school. Twenty-five of the 147 students (17.0%) completed the SIQ (20 sixth-grade students; 12 Native, 8 European American, and 5 tenth-grade students; 5 Native, 0 European American).

Materials

Awareness of Connectedness Scale. The Awareness of Connectedness Scale (ACS) (Mohatt et al., 2011) is a 12-item scale which is grounded in Indigenous philosophies such as the Yup'ik concept of *ellanaq*, the Lakota concept of *mitakuye oyas'in*, and general knowledge of pan-Indian concepts such as the medicine wheel. The scale uses a Likert-style scoring system with five options ranging from *not at all* (1) to *a lot* (5). The ACS assesses awareness of self as a member of a broader human and natural community, including an awareness of connections between one's own well-being and the well-being of other entities in the various ecological spheres that one occupies. The ACS assesses the degree to which a person endorses the concept of interrelatedness between

self, family, community, and natural environment. The scale includes two-item Awareness-Individual and Awareness-Family subscales, and four-item Awareness-Community and Awareness-Natural Environment subscales. Cronbach's alpha for the final 12-item ACS was an acceptable .85. Alpha coefficients for the 4-item subscales were in the conventionally acceptable range (Nunnally & Bernstein, 1994), but alphas for the 2-item subscales were lower (.54 and .61).

Psychological Sense of School Membership. The PSSM was developed by Goodenow (1993) to measure belongingness within schools. All 18 items of the PSSM were written in a 5-point Likert format, with choices ranging from *not at all true* (1) to *completely true* (5). The PSSM total scale was initially tested through three separate studies with internal reliability Cronbach alpha coefficients of .88, .88, and .82 (Goodenow, 1993). The PSSM subscales were tested through exploratory and confirmatory factor analyses. The Cronbach's alpha scoring provided the following results: perceptions of caring adult relationships .73, acceptance or belongingness at school .72, and rejection or disrespect .70, indicating internal reliability (You, Ritchey, Furlong, Shochet, & Boman, 2011). These studies also found good predictive and construct validity.

Suicide Ideation Questionnaire. The Suicidal Ideation Questionnaire (SIQ) screens people for severity or seriousness of suicidal ideation (Reynolds, 1988). There are two self-report forms: a 30-item version designed for 10th- to 12th-grade students, named SIQ, and a 15-item version originally designed for seventh- to ninth-grade students, named the SIQ-JR. Although the SIQ-JR was originally designed for youth between the ages of 12-14 years, it has been used with other adolescents as well (Hovey & King, 1996; Sieman, Warrington, & Magano, 1994). The questionnaire utilizes a Likert-style scoring system with seven options ranging from *I never had this thought* (0) to *almost every day* (6). The SIQ-JR has been utilized with American Indian adolescents (e.g., Keane, Dick, Bechtold, & Manson, 1996; LaFromboise, Medoff, Lee, & Harris, 2007; Novins, Beals, Roberts, & Manson, 1999). The SIQ-JR had a test retest reliability of .89 over approximately three weeks (Reynolds & Mazza, 1999). The SIQ-JR was found internally consistent ($\alpha = .96$) in a sample of Native American boarding school high school students (Dick et al., 1994).

Procedure

The superintendent of the school partner sent letters and e-mails to all parents/guardians describing the purpose of the study, information regarding what and when data would be collected, and the voluntary nature of participation. Students completed the Wicozani Instrument, ACS, PSSM, and demographic information during class. Research assistants provided directions for filling out the questionnaire, answered any student questions, and explained that participation was

voluntary. Survey completion times ranged from ten to twenty minutes. Students needing assistance with reading or writing completed the questionnaire with the help of a paraprofessional. After students completed the questionnaire, the research assistant invited them to complete the SIQ/SIQ-JR outside of class. Parents/guardians completed and returned a consent form prior to their student(s) completion of the SIQ/SIQ-JR. Students had four opportunities, either before or after school, to complete the SIQ/SIQ-JR. The following protocol was initiated once a student completed the SIQ/SIQ-JR. Dakota researchers scored the SIQ/SIQ-JR. If an adolescent scored at or above the cut off scores for the SIQ/SIQ-JR, or endorsed a specific number of critical items, Dr. Peters, a licensed psychologist and one of the primary investigators, was notified and performed an immediate assessment utilizing the Teen Suicide Risk Assessment Worksheet and the Risk Factor Checklist for Teen Suicidal Behavior and Suicide (King, Foster, & Rogalski, 2013). When imminent risk was identified a parent/caregiver, along with an appropriate local authority (i.e., school counselors and or tribal social services department), were informed of the student's suicidal ideation, and a referral was made to a mental health professional for a more comprehensive suicide risk assessment. Additionally, Dr. Peters, mailed a follow-up letter to the parent/caregiver that included local mental health resources along with additional information (e.g., local resources; Questions to Ask about Suicidal thoughts; Suicide Prevention Resources for schools; Suicide Warning Signs for Parents; Tips for Communicating with Teens; King et al., 2013). If no imminent risk was present, Dr. Peters provided the individual with referral information and encouraged them to talk to their parent/caregiver and a school counselor.

Results

The means, standard deviations, and intercorrelations for questions two (i.e., mental health), four (i.e., physical health), six (i.e., spiritual health), seven (i.e., importance of mental health to quality of life), eight (i.e., importance of physical health to quality of life), and nine (i.e., importance of spiritual health to quality of life) on the Wicozani Instrument are presented in Table 1 for Native ($n = 50$) and European American ($n = 88$) students. Internal consistency reliability was examined for the Wicozani Self-Knowledge subscale (i.e., questions two, four, and six) with a coefficient alpha of .79 for Native students, which is acceptable, and .80 for European American students, which is good. Internal consistency reliability was examined for the Importance of Wicozani to Quality of Life subscale (i.e., questions seven, eight, and nine) with a coefficient alpha of .74 for Native students, which is acceptable and .66 for European American students, which is

questionable. A paired-samples *t*-test was conducted to compare Native students’ scores on the Wicozani Self-Knowledge subscale ($M = 2.88, SD = .78$) and the Importance of Wicozani to Quality of Life subscale ($M = 3.39, SD = .59$), $t(49) = -6.95, p = .00$. A paired-samples *t*-test was conducted to compare European American students’ scores on the Wicozani Self-Knowledge subscale ($M = 2.85, SD = .84$) and the Importance of Wicozani to Quality of Life subscale ($M = 3.34, SD = .63$), $t(85) = -5.62, p = .00$. For both groups, participant scores were significantly higher on the Importance of Wicozani to Quality of Life subscale than the Wicozani Self-Knowledge subscale.

Table 1
Means, standard deviations, and intercorrelations of the Wicozani Instrument’s questions

Question	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Native Students (<i>N</i> = 50)								
1. Mental health	2.84	.89	-	.55***	.66***	.51***	.48***	.52***
2. Physical health	2.92	.85		-	.47**	.58***	.54***	.27
3. Spiritual health	2.88	1.04			-	.49***	.47**	.72***
4. Imp. of mental	3.40	.73				-	.49***	.57***
5. Imp. of physical	3.46	.61					-	.43**
6. Imp. of spiritual	3.32	.82						-
European American Students (<i>N</i> = 88)								
1. Mental health	2.81	.99	-	.55***	.58***	.34**	.13	.15
2. Physical health	2.99	.94		-	.57**	.03	.29**	.22*
3. Spiritual health	2.76	1.04			-	.34**	.23*	.53***
4. Imp. of mental	3.43	.68				-	.31**	.47***
5. Imp. of physical	3.48	.69					-	.45***
6. Imp. of spiritual	3.08	1.05						-

Note. Higher scores for items one through three indicates a higher self-rating of that aspect of health. Higher scores for items four through six indicates a higher perceived importance of that aspect of health to their quality of life.
* $p < .05$. ** $p < .01$. *** $p < .001$.

The Wicozani Self-Knowledge subscale score had a significant positive correlation with the ACS total scale and all ACS subscales for both Native (r 's $\geq .32, p$'s $\leq .02$) and European American students (r 's $\geq .23, p$'s $\leq .04$; see Table 2). The Importance of Wicozani to Quality of Life subscale score had a significant positive correlation with the ACS total scale and all ACS subscales for both Native (r 's $\geq .35, p$'s $\leq .01$) and European American students (r 's $\geq .36, p$'s $\leq .001$; see Table 2).

Table 2
Intercorrelations between the Wicozani Instrument's subscales and the ACS

Question	1	2	3	4	5	6	7
Native Students (<i>N</i> = 50)							
1. Wicozani Self-Knowledge	-	.74***	.59***	.32*	.41**	.59***	.61***
2. Imp. of Wicozani		-	.58***	.35*	.53***	.55***	.57***
3. ACS Total			-	.83***	.75***	.95***	.90***
4. ACS Family				-	.50***	.77***	.59***
5. ACS Individual					-	.65***	.64***
6. ACS Community						-	.76***
7. ACS Natural Environment							-
European American Students (<i>N</i> = 88)							
1. Wicozani Self-Knowledge	-	.41***	.56***	.23*	.40***	.56***	.53***
2. Imp. of Wicozani		-	.54***	.44***	.36**	.47***	.43***
3. ACS Total			-	.74***	.77***	.95***	.89***
4. ACS Family				-	.43***	.69***	.50***
5. ACS Individual					-	.72***	.59***
6. ACS Community						-	.78***
7. ACS Natural Environment							-

Note. Wicozani Self-Knowledge = Wicozani Self-Knowledge subscale; Imp. of Wicozani = Importance of Wicozani to Quality of Life subscale; ACS = Awareness of Connectedness Scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

For Native students the Wicozani Self-Knowledge subscale score and the Importance of Wicozani to Quality of Life subscale score had a significant positive correlation with the PSSM total scale and two PSSM subscales (r 's $\geq .29$, p 's $\leq .05$). For European American students the Wicozani Self-Knowledge subscale score and the Importance of Wicozani to Quality of Life subscale score had a significant positive correlation with the PSSM total scale and all three PSSM subscales (r 's $\geq .23$, p 's $\leq .05$; see Table 3).

For Native students, the Wicozani Self-Knowledge subscale score had a significant negative correlation with the SIQJR ($n = 12$, $r = -.58$, $p = .05$) and a negative correlation that approached significance with the SIQ ($n = 5$, $r = -.87$, $p = .06$). For Native students the Importance of Wicozani to Quality of Life subscale had a significant negative correlation with the SIQ ($n = 5$, $r = -.93$, $p = .02$) and a non-significant correlation with the SIQJR ($n = 12$, $r = -.45$, $p = .12$). For European American students, the SIQJR had a negative non-significant correlation with the Wicozani Self-Knowledge subscale ($n = 7$, $r = -.44$, $p = .32$) and a negative correlation that approached significance with the Importance of Wicozani to Quality of Life subscale ($n = 8$, $r = -.69$, $p = .06$).

Table 3
Intercorrelations between the Wicozani Instrument's subscales and the PSSM

Question	1	2	3	4	5	6
Native Students (N = 50)						
1. Wicozani Self-Knowledge	-	.74***	.52***	.35*	.53***	.24
2. Imp. of Wicozani		-	.45**	.29*	.47**	.16
3. PSSM Total			-	.78***	.85***	.74***
4. PSSM Caring Relationship				-	.59***	.50***
5. PSSM Acceptance					-	.36**
6. PSSM Rejection						-
European American Students (N = 88)						
1. Wicozani Self-Knowledge	-	.41***	.58***	.44***	.61***	.25*
2. Imp. of Wicozani		-	.42***	.48***	.23*	.23*
3. PSSM Total			-	.78***	.86***	.77***
4. PSSM Caring Relationship				-	.54***	.47***
5. PSSM Acceptance					-	.45***
6. PSSM Rejection						-

Note. Wicozani Self-Knowledge = Wicozani Self-Knowledge subscale; Imp. of Wicozani = Importance of Wicozani to Quality of Life subscale; PSSM = Psychological Sense of School Membership.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Study 2

Overview

Study 2 examined the relationship between the Wicozani Instrument and the Indigenous Healing Strategies Scale (Peterson, Peters, & the Dakota Wicohan Community, 2013). The Dakota Wicohan research partners decided to create their own scale to measure the influence of their programming on concepts important to the Dakota Community. This approach is similar to other successful social movements led by local and grassroots Indigenous peoples who have accessed their own ideas and cultural practices (Smith, 1999) rather than utilizing colonial methods and strategies. Dakota Wicohan's program strategies are rooted in decolonizing and revitalizing approaches that aim to restore cultural traditions and language use among individuals, families, and community. Dakota Wicohan's program strategies are designed to facilitate *kiksuya* (remembering), *kiyuwaste* (reclaiming), and *kiciyuwaste* (reconnecting) to Dakota history,

language, relatives, and relationship to *Mni Sota Makoce*². It was important to Dakota Wicohan leadership to gauge both participant's desire to engage in a behavior and their actual engagement in a behavior, in these three areas (i.e., *kiksuya*-remembering, *kiyuwaste*- reclaiming, and *kiciyuwaste*- reconnecting) in order to evaluate programming effectiveness. Further, the Dakota Wicohan community believes that the actual behavior of reclamation (i.e., returning value to something that has been devalued) of cultural lifeways and values positively contributes to *wicozani*. Thus, we expected correlations between the Wicozani Self-Knowledge subscale and the Indigenous Healing Strategies subscales, that measure actual engagement in a behavior, and no correlations with the Indigenous Healing Strategies subscales, that measure participant's desire to engage in a behavior. Considering many believe the stripping away of cultural lifeways have contributed to historical trauma and health disparities, there is reason to believe the reintroduction of cultural lifeways will bring about healing and address health disparities.

Method

Participants

Dakota Wicohan's Board of Directors and the university's institutional review board approved Study 2. Participants included 35 women, who were members of the Dakota Wicohan community, (age $M = 40.7$, $SD = 14.8$) and ranged in age from 18 to 73 years of age.

Materials

The Indigenous Healing Strategies Scale. The Indigenous Healing Strategies Scale has three sections, *kiksuya* (remember), *kiyuwaste* (reclaim), and *kiciyuwaste* (reconnect). Each section is comprised of two parts: desire to engage in a behavior (i.e., do you want to) and actual engagement in a behavior (i.e., do you actually). Section 1 asks participants, "In your day to day life to what degree do you want to (or actually) *kiksuya* (remember): Remember our Dakota history; Remember our Dakota language; Remember our Dakota relatives; and Remember our relationships to Mnisota makoce (our land)?" Section 2 asks participants, "In your day to day life what degree do you want to (or actually) *kiyuwaste* (reclaim; i.e., recover, redeem, restore): Reclaim our Dakota language; Reclaim our Dakota life ways; Reclaim our relationship with land; and Reclaim our relationship with people?" Section 3 asks participants, "In your day to day life to what degree do you want to (or actually) *kiciyuwaste* (reconnect; i.e., reconcile, heal, made whole

² *Mni Sota Makoce* translates to the land that reflects the skies or land of cloudy waters and is used to refer to the land in Minnesota.

again) with: Reconnect with myself as a Dakota person; Reconnect with our *tiwahe* (family); Reconnect with our *tiospaye* (extended family); Reconnect with our *oyate* (Dakota community); and Reconnect with our Global Indigenous community?” Participants answered each question on a 6-point scale ranging from *never* (1) to *very frequently* (6). The questions related to desire to engage in a behavior (i.e., do you want to) were combined within each of the three sections resulting in three Indigenous Healing Strategies Desire (IHSD) subscales: IHSD Kiksuya ($n = 4$, remember); IHSD Kiyuwaste ($n = 4$, reclaim); and IHSD Kiciyuwaste ($n = 5$, reconnect). The questions related to actual engagement in a behavior (i.e., do you actually) were combined within each of the three sections resulting in three Indigenous Healing Strategies Actual Engagement (IHSAE) subscales: IHSAE Kiksuya ($n = 4$, remember); IHSAE Kiyuwaste ($n = 4$, reclaim); and IHSAE Kiciyuwaste ($n = 5$, reconnect).

Procedure

At a Tiwahe³ gathering, women from the Dakota Wicohan community were invited to fill out a questionnaire that included demographic information, the Wicozani Instrument, and the Indigenous Healing Strategies Scale. Research assistants provided directions for filling out the questionnaire, answered any questions, and explained that participation was voluntary. Participants were not requested to sign a consent form given the history of broken treaties between Indigenous communities and government agencies. The women took the questionnaires home and returned them within a two-week period.

Results

The means, standard deviations, and intercorrelations for questions two (i.e., mental health), four (i.e., physical health), six (i.e., spiritual health), seven (i.e., importance of mental health to quality of life), eight (i.e., importance of physical health to quality of life), and nine (i.e., importance of spiritual health to quality of life) on the Wicozani Instrument are presented in Table 4 ($N = 35$). Internal consistency reliability was examined for the Wicozani Self-Knowledge subscale (i.e., questions two, four, and six) with a coefficient alpha of .72, which is acceptable, and the Importance of Wicozani to Quality of Life subscale (i.e., questions seven, eight, and nine) with a coefficient alpha of .98, which is excellent. A paired-samples *t*-test was conducted to compare participants' scores on the Wicozani Self-Knowledge subscale ($M = 2.90$, $SD = .61$) and

³ Tiwahe (family) gatherings are one of Dakota Wicohan's programs, rooted in the strategy of reclaiming and reconnecting family through social gatherings (e.g., meals, fun, and social events rooted in language).

the Importance of Wicozani to Quality of Life subscale ($M = 4.30$, $SD = 1.29$), $t(33) = -6.09$, $p = .00$. Participant scores were significantly higher on the Importance of Wicozani to Quality of Life subscale than the Wicozani Self-Knowledge subscale.

Table 4
Means, standard deviations, and intercorrelations of the Wicozani Instrument's questions

Question	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Mental health	3.18	.63	-	.44**	.71***	-.12	-.12	-.14
2. Physical health	2.44	.93		-	.35*	-.17	-.06	-.19
3. Spiritual health	3.09	.70			-	.04	-.06	.07
4. Imp. of mental	4.34	1.14				-	.94***	.98***
5. Imp. of physical	4.23	1.14					-	.92***
6. Imp. of spiritual	4.40	1.14						-

Note. Higher scores for items one through three indicates a higher self-rating of that aspect of health. Higher scores for items four through six indicates a higher perceived importance of that aspect of health to their quality of life.
* $p < .05$. ** $p < .01$. *** $p < .001$.

The Wicozani Self-Knowledge subscale score had significant positive correlations with all three IHSAE subscales (r 's $\geq .37$, p 's $\leq .03$) and non-significant correlations with all three IHSD subscales (r 's $\leq -.34$, p 's $\geq .053$; see Table 5). The Importance of Wicozani to Quality of Life subscale had non-significant correlations with all IHSAE and IHSD subscales (r 's $\leq -.06$, p 's $\geq .75$; see Table 5).

Table 5
Intercorrelations between the Wicozani Instrument's Subscales and the Indigenous Healing Strategies Scale

Question	1	2	3	4	5	6	7	8
1. Wicozani Self-Knowledge	-	-.11	.02	.37*	.25	.53**	.34	.53**
2. Imp. of Wicozani		-	.03	-.06	-.00	-.05	-.05	-.13
3. IHSD <i>Kiksuya</i>			-	.49**	.62***	.21	.69***	.44**
4. IHSAE <i>Kiksuya</i>				-	.56**	.69***	.39*	.55**
5. IHSD <i>Kiyuwaste</i>					-	.42*	.56**	.50**
6. IHSAE <i>Kiyuwaste</i>						-	.27	.51**
7. IHSD <i>Kiciyuwaste</i>							-	.82***
8. IHSAE <i>Kiciyuwaste</i>								-

Note. Wicozani Self-Knowledge = Wicozani Self-Knowledge subscale; Imp. of Wicozani = Importance of Wicozani to Quality of Life subscale; IHSD = Indigenous Healing Strategies Desire subscale; IHSAE = Indigenous Healing Strategies Actual Engagement subscale; *Kiksuya* = remember; *Kiyuwaste* = reclaim; *Kiciyuwaste* = reconnect.
* $p < .05$. ** $p < .01$. *** $p < .001$.

DISCUSSION

The results from Study 1 and Study 2 provide evidence of the reliability and validity of the Wicozani Instrument and the usefulness of assessing *wicozani*, overall health and well-being, from an Indigenous epistemology. Results indicate that Native and European American youth and Dakota Women perceive a strong inter-relatedness between mental, physical, and spiritual health, providing empirical evidence for the Dakota concept of *wicozani* (overall health and well-being). The idea that overall health or well-being is reflective of physical, spiritual, and mental health is in line with other definitions of holistic health (Matthews, Kilgour, De Rossi, & Crone, 2011). Regarding reliability, the coefficient alpha scores for Native and European American youth and Dakota women suggest adequate to good internal consistency for the Wicozani Self-Knowledge subscale and adequate to excellent internal consistency for the Importance of Wicozani to Quality of Life subscale. The consistent results, between the Wicozani Instrument and the ACS and PSSM, across Native and European American youth, except for one PSSM subscale, provides evidence that the Wicozani Instrument possesses external validity. The measure possesses strong face validity because on the surface it appears to measure (i.e., *wicozani*, overall health and well-being) what it does measure (i.e., mental, physical, and spiritual health). The Wicozani Instrument demonstrates strong convergent validity in that its subscales correlated with measures (i.e., ACS, PSSM, SIQ, IHSAE subscales) that it should theoretically correlate with. Further, as expected, the Wicozani Instrument demonstrates discriminant validity because both subscales did not significantly correlate with the IHSD subscales. This finding is in line with Dakota worldview because desire to engage in a behavior, in and of itself, will not improve health. Together, these findings provide evidence of the reliability and validity of the Wicozani Instrument.

Although only a few Native ($n = 17$) and European American ($n = 8$) youth completed the SIQ, three out of the six possible correlations were significant. Further, the non-significant correlations ranged from moderate (e.g., $-.44$) to quite strong (e.g., $-.87$; Evans, 1996). These results demonstrate, in line with Dakota worldview, a strong inverse relationship between suicidality and *wicozani*. Thus, preliminary evidence suggests, youth at risk for suicidal ideation may be identified from a strengths-based approach by focusing on *wicozani* and using the Wicozani Instrument. However, given the small sample size further research is warranted before health professionals begin using the Wicozani Instrument in place of currently used measures of suicidal ideation.

The fact that only 17% of youth who completed the Wicozani Instrument completed the

SIQ highlights some advantages of taking a strengths- versus deficit-based approach. Specifically, our school partner allowed the administration of the Wicozani Instrument during class but required that the SIQ be administered outside regular school hours. Further, IRB protocols required parental consent and student assent before completion of the SIQ but not the Wicozani Instrument. Further, stigma regarding suicidal ideation still exists (e.g., Scocco, Castriotta, Toffol, & Preti, 2012) and may have prevented youth participation. Thus, our results suggest that taking a strengths-based approach (e.g., overall health and well-being; the Wicozani Instrument) is more appealing to community partners, provides more data, and is less stigmatizing than taking a deficit-based approach (e.g., health disparity; SIQ).

The significant differences found between participants' scores on the Wicozani Self-Knowledge subscale and the Importance of Wicozani to Quality of Life subscale can be used to facilitate healthy behaviors and address health disparities from an Indigenous perspective. For example, health professionals often work from a Western approach (i.e., value expert opinion and objective data) when they provide empirical evidence as to why Native people or communities should eat healthy foods, exercise, or monitor their glucose levels. Alternatively, from an Indigenous perspective, health professionals could incorporate the Native person's self-knowledge and subjective truth. By completing the Wicozani Instrument participants demonstrate to themselves that they believe their *wicozani* is important to their quality of life, yet they rate their *wicozani* lower than its importance. Thus, health professionals can illicit from the client information about why and how their *wicozani* is important to their quality of life and strategies they would like to engage in to increase their *wicozani*. This approach is in line with some of the central tenants of motivational interviewing, such as raising awareness of the discrepancy between the goal and actual behavior, an emphasis on personal choice, and facilitating change. Motivational interviewing is an effective strategy for increasing healthy behaviors (Miller & Rollnick, 1991) and suggests the usefulness of the Wicozani Instrument and its potential positive impact on Native people and their communities.

The Wicozani Instrument begins to disrupt the Cycle of Native Health Disparities. Specifically, the Indigenous view of multiple realities is at the center of the Wicozani Instrument in that each person has the opportunity, and ability, to define what a healthy mind, body, and spirit mean to them. Giving Native people the opportunity to create their own definitions and factors of health, and valuing their perspective and knowledge, gives the individual power to create their own narrative, identify where they are at on their continuum of health, and take ownership over

their health. This strengths-based approach, which focuses on overall health and well-being, facilitates Native people seeing themselves as healthy and as having the ability to build on existing areas of healthy behavior. Further, this approach assumes that Native people innately possess strength and “a natural capacity for behaving, thinking, or feeling in a way that allows optimal functioning and performance in the pursuit of valued outcomes” (Linley & Harrington, 2006, p. 88). This agency begins to disrupt the external locus of control and learned helplessness that has emerged from decades of health professionals perceiving Native identity as a risk factor for poor health. After witnessing the negative impact health care workers’ prescriptive stereotypes had on elderly residents, Solomon (1982) recommended that health care workers be educated in order to destroy the myths and work in a growth-oriented context. These recommendations are similar to our calls for health professionals to stop perceiving Native identity as a risk factor for poor health and to begin viewing culture as integral to Native health and part of the solution to health disparities.

Limitations and Future Research

One limitation of the two studies is that the populations included participants from two Native communities from a limited geographical area. Further, the composition of our non-Native youth were all European American. This over- and under-representation of identities within society is problematic. Thus, future researchers should replicate this work with different Native and non-Native communities. Although the findings between the Wicozani Instrument and the SIQ were strong, only 17% of youth completed the SIQ. Thus, further research is warranted before health professionals begin using the Wicozani Instrument in place of currently used measures of suicidal ideation. Additionally, future researchers should examine the relationship between the Wicozani Instrument and other measures of health disparities, which are less stigmatizing than suicidal ideation, in an attempt to gather more participation. Also, future researchers could utilize qualitative approaches to work with community and health professionals to gather feedback regarding their perspectives of the Wicozani Instrument. A next step for our research team entails examining the qualitative data provided on the Wicozani Instrument, specifically, participants’ definitions of a healthy mind, body, and spirit (i.e., “How does someone know if their Mind (body or spirit) is healthy”). Lastly, although, we focused on an Indigenous-based measurement tool, there is great need for cultural interventions (Allen et al., 2011) that disrupt the Cycle of Native Health Disparities and focus on the actual causes of health disparities (e.g., colonization, historical

trauma, social determinants of health) rather than the symptoms.

CONCLUSION

The results demonstrate the Wicozani Instrument is a valid and reliable measure of overall health and well-being, is in line with Native epistemology, and disrupts the Cycle of Native Health Disparities. Taking an Indigenous, rather than Western approach, to address health disparities can begin changing the current perception that Native identity is a risk factor for poor health and disrupt the ensuing cycle of prescriptive stereotypes, external locus of control, learned helplessness, and the self-fulfilling prophecy which perpetuates health disparities between Natives and the broader U.S. population. Further, the Wicozani Instrument begins to address the frustration of those who feel like they are overly-measured solely by narrowly-defined and compartmentalized instruments (e.g., weight, blood pressure). The Wicozani Instrument focuses on overall health and well-being through a holistic lens and relies upon the understanding of relationality and the interdependence between physical, mental, and spiritual health. This instrument gives health professionals an additional measurement tool that places the power in the hands of the individual, values their ways of knowing, and views their perspective as valid. Further, health professionals can use the discrepancy between a participant's Wicozani Self-Knowledge subscale score and their Importance of Wicozani to Quality of Life subscale score, to increase an individual's internal motivation for healthy behavior change. Additionally, the Wicozani Instrument, because of its strengths-based approach and focus on overall health and well-being, was more appealing to our community partners, provided more data, and was less stigmatizing than the deficit-based approach which focused on suicidal ideation. Approaches which place Native people and their ideologies at the center of the solution, rather than on the receiving end of Western ideology and health care, support a movement of decolonization and reclamation of Native identity and epistemologies as strengths and facilitate effective approaches that align with community-defined health and well-being.

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Appendix A

The Wicozani Instrument

Please complete each question to the best of your ability.

1) How does someone know if their “*Mind*” is healthy? (your thoughts and emotions)

2) How do you rate your “*mental health*” (please circle)? (your thoughts and emotions)

Extremely Poor	Below Average	Average	Above Average	Excellent
1	2	3	4	5

3) How does someone know if their “*body*” is healthy?

4) How do you rate your “*physical health*” (please circle)? (your body)

Extremely Poor	Below Average	Average	Above Average	Excellent
1	2	3	4	5

5) How does someone know if their “*spirit*” is healthy? (your religious or spiritual beliefs)

6) How do you rate your “*spiritual health*” (please circle)? (your religious or spiritual beliefs)

Extremely Poor	Below Average	Average	Above Average	Excellent
1	2	3	4	5

7) How important is your “*mental health*” to your quality of life (please circle)?

Very Unimportant	Unimportant	Neither Important or Unimportant	Important	Very Important
1	2	3	4	5

8) How important is your “*physical health*” to your quality of life (please circle)?

Very Unimportant	Unimportant	Neither Important or Unimportant	Important	Very Important
1	2	3	4	5

9) How important is your “*spiritual health*” to your quality of life (please circle)?

Very Unimportant	Unimportant	Neither Important or Unimportant	Important	Very Important
1	2	3	4	5