

Positive Mental Health: A Concept Mapping Exploration

A DISSERTATION

SUBMITTED TO THE FACULTY OF THE

UNIVERSITY OF MINNESOTA

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

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July 2015

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ACKNOWLEDGEMENTS

A step forward, no matter how small, is a step in the right direction.

-Kara Goucher

I would like to thank the people who encouraged me to take the many small steps forward during the writing of this dissertation. First, I would like to thank my advisor, Melissa Walls, for her advice, inspiration, and encouragement during the entirety of my graduate school experience. She kept me on track through difficulties, read many drafts of my writing, and taught me to think beyond what I thought I knew.

Additionally, I would like to thank the CRC members who generously participated in this project. I am indebted to them for the wisdom and perspective they shared during the group concept mapping meetings.

I am appreciative of the time that the members of my dissertation committee put towards advising me during the writing of my dissertation. I am also thankful for the encouragement and advice that graduate students, staff and faculty shared with me during my time at the College of Pharmacy—Duluth.

Thank you to Laura Palombi, my friend and colleague, who cheered me on through pharmacy and graduate school, and helped me get through many a writer's block. I look forward to more evenings of inspired writing.

I would like to thank my family for their ongoing encouragement and support—it means more to me than I could possibly express. Thank you also to Kurt, who spent

many hours serving as a sounding board through various aspects of this project and dissertation. I'm glad you're around.

DEDICATION

This dissertation is dedicated to my grandma,

Mary Louise Isakson

ABSTRACT

American Indian (AI) people experience higher rates of depressive symptoms, psychological distress, and poor mental health than non-Native Americans. Despite a 17.1% prevalence of Anishinabe (an indigenous people who live in the Midwest of the United States and Canada) adults living with type 2 diabetes and meeting the PHQ-9 cutoff for depression, half (51.3%) of those surveyed were flourishing according to Keyes' Mental Health Continuum—Short Form (MHC-SF). A unique paradox appears to exist for AI people more so than that documented for other groups: despite historical trauma, various social stressors, ongoing marginalization, and depression and chronic diseases, a disproportionately large number of AI people met criteria for flourishing mental health.

In order to better understand Anishinabe concepts of mental wellness and the utility of the MHC in this population, the specific aim of the study was to gain a deeper understanding of indigenous interpretations of positive mental health (PMH) by engaging in a group concept mapping session with Anishinabe community members from two communities.

The resulting concept map varied somewhat from the three aspects of PMH presented in Keyes' MHC-SF (emotional, psychological, and social wellbeing).

According to the map, PMH included the following clusters: 1) Values Gained with Maturity, 2) Motivated, 3) Traditional Spirituality/Culture, 4) Culturally Competent/Accept Others, 5) Take Care of Self, 6) Financial Health/Organized, 7)

Ethical/Moral Leadership, 8) Community, and 9) Family/Relationships. Many of the clusters were related at least in part to the MHC-SF, but some differences were evident. Additionally, themes of harmony and balance, resilience and coping, and connection and interconnectedness, while not found in the MHC-SF, were prominent aspects in this concept map, lending support to their importance in indigenous PMH. Overall, the theme of interconnection is key to understanding the results of the concept map.

The focus of this study fulfilled calls for strengths-based (as opposed to deficit-based) research for indigenous people. This was significant not only for better understanding Anishinabe perspectives of PMH, but also for understanding the ways in which all groups of people can learn lessons about PMH through cross-cultural research.

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CHAPTER 1: INTRODUCTION

A number of scholars have emphasized strength-based research in indigenous studies (Kirmayer, Dandeneau, Marshall, Phillips, & Williamson, 2011; Mohatt, Hazel, Allen, & Stachelrodt, 2004). Given that research with (or on) indigenous communities has a long history of focusing solely on the health deficits and disparities that may occur, the emphasis on strengths has been encouraged in order to provide a more holistic picture of indigenous health.

For example, mental distress and diabetes have traditionally been prominent aspects of health disparities research in indigenous communities. It is true that American Indian/Alaskan Native (AI/AN) people experience higher rates of depressive symptoms, psychological distress, and poor mental health than non-Native Americans (Barnes, Adams, & Powell-Griner, 2010; Urban Indian Health Institute [UIHI], 2012). In 2006, the prevalence of serious psychological distress (25.9%) and major depressive episode (12.1%) within the last year was higher in AI/ANs than in any other race (UIHI, 2012). Complicating psychological distress, comorbid conditions like diabetes are associated with poorer mental and physical health outcomes (Bullock, 2011; Calhoun et al., 2010). Diabetes is about two times more common in AI/AN communities (15.3%) than in the general population (7.3%) and can lead to an increased number of poor mental health days (UIHI, 2011).

My prior work (Kading et al., 2015) based on Keyes' model of positive mental health (PMH) and the Mental Health Continuum—Short Form (MHC-SF) (Keyes, 2002; 2009a) has shown that despite a 17.1% prevalence of Anishinabe (an indigenous people

who live in the Midwest of United States and Canada) adults living with type 2 diabetes and meeting the PHQ-9 cutoff for depression, many participants were considered to be flourishing; in fact, half (50.3%) of those surveyed were flourishing *and* were not depressed (Kading et al., 2015). In comparison, only 17.2% of respondents in a broader population sample were flourishing and not depressed (Keyes, 2009b). Evidence of paradoxically high positive mental health despite disparate mental distress underscores the need for additional research on positive mental health in this population.

In the general United States population, those who were in the highest level of positive mental health experienced lowered risk of cardiovascular disease and fewer chronic diseases (Keyes, 2004; 2005a). Thus, the influence of positive mental health on physical health (and vice versa) has great potential for health promotion by healthcare professionals.

Why do Anishinabe people have such a high level of flourishing mental health despite high levels of depressive symptoms? Perhaps Anishinabe people have resilience against the unique stressors they experience. Perhaps academic and Western perspectives of mental health and mental illness do not reflect how indigenous people view these concepts. Perhaps current perspectives in positive psychology can contribute to explaining the health and illness paradox. It is important that we consider these issues and the meaning of PMH in Anishinabe communities. A unique participatory method of research, group concept mapping, has been used to better understand perspectives on depression, coping, neighborhood influences on well-being, and other areas (Burke,

O'Campo, Salmon, & Walker, 2009; Daughtry & Kunkel, 1993; Gol & Cook, 2004), and this method may prove to be useful in exploring Anishinabe views on mental wellness.

The specific aim of the study was to gain a deeper understanding of indigenous interpretations of positive mental health by engaging in a group concept mapping session with Anishinabe community members from two specific communities: Lac Courte Oreilles (LCO) and Bois Forte (BF). This goal is important for better understanding Anishinabe concepts of mental wellness and the utility of Keyes' model of PMH in this population. To my knowledge, no previous study had focused on the use of group concept mapping in developing an understanding of PMH from the perspective of indigenous people, or any group of people. Furthermore, the focus of this study fulfills calls for strengths-based (as opposed to deficit-based) research for indigenous people (Kirmayer et al., 2011; Mohatt et al., 2004). This is significant not only for better understanding Anishinabe perspectives of PMH, but also for understanding the ways in which all groups of people could learn lessons about PMH through cross-cultural research. Thus, this area of study was both innovative in topic as well as in methodology.

Future uses of the results of this project may include use in community organizations (Boys and Girls Club and 12-step programs were specifically mentioned). Additionally, future community presentations of the concept map may be scheduled in each community in order to further disseminate the information and promote discussion of other uses. New culturally-relevant measures of PMH may also be developed based on the results of this or future concept mapping projects.

CHAPTER 2: LITERATURE REVIEW

The goal of this literature review is to frame the context in which positive mental health (PMH) sits within an indigenous or American Indian (AI) experience and within positive psychology in general. I include a review of literature for the following domains:

1. Positive psychology
2. PMH as defined by Keyes
3. The prevalence and outcomes of PMH in the general U.S. population, and
4. The prevalence, paradox, and potential reasons for PMH among Anishinabe community members.

Positive Psychology

Positive psychology is the study of “what is ‘right’” about a person (Kobau et al., 2011, p. e1) and consists of three general areas of study: positive subjective experiences (pleasure, happiness, fulfillment, gratification), positive individual traits (talents, values, interests, strengths of character), and positive institutions (families, businesses, schools, communities, societies) (Peterson, 2006). Within this area of study, important factors include positive mental health (as opposed to mental illness), strengths, wellbeing, and functioning (Canadian Institute for Health Information, 2009; Duckworth, Steen, & Seligman, 2005; Seligman & Chikszentmihalyi, 2000). The absence of negative aspects such as depressive symptoms does not indicate wellbeing or mental health (Duckworth, Steen & Seligman, 2005; WHO, 2001a); instead, a person must have positive aspects of

mental health in order to have wellbeing or positive mental health (Duckworth et al., 2005; Keyes, 2002).

The World Health Organization (WHO) defines mental health as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2001b, p. 1). The Public Health Agency of Canada has a similarly holistic definition: “Mental health is the capacity of each and all of us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face. It is a positive sense of emotional and spiritual well-being that respects the importance of culture, equity, social justice, interconnections and personal dignity” (2006, p. 2).

Researchers have identified several components that are considered important parts of mental wellbeing: positive affect, happiness, hope and optimism, good character, values, interests and abilities, and good relationships (Peterson, 2006). Character strengths and virtues, subjective well-being, and social and emotional intelligence have also been postulated as components of mental health (Vaillant, 2003). Within all these components, interpersonal relationships are essential to mental health (Peterson, 2006).

Jahoda (1958) proposed that six processes produce mental health: acceptance of oneself; autonomy (freedom from social pressures); accurate perception of reality; environmental mastery; integration of personality; and growth, development, and becoming. This work was expanded upon by Ryff and colleagues, who proposed the following six “points of convergence” found within mental well-being literature: self-

acceptance, autonomy, environmental mastery, personal growth, purpose in life, and positive relations with others (Ryff, 1989; 1995; Ryff & Keyes, 1995; Ryff & Singer, 1996; 1998).

Overall, positive psychology has much to offer in the understanding of what mental health or wellness is in general and may guide the exploration of PMH, though consideration must also be given to community- and culturally-specific factors, which will be discussed in subsequent sections.

Positive Mental Health and the Mental Health Continuum—Short Form

Within the field of positive psychology, the construct of PMH/mental wellness has been specifically defined and operationalized in a number of ways (Canadian Institute for Health Information, 2009). Keyes (2002, p. 207) defined PMH as not just the absence of mental illness, but as “a syndrome of symptoms of positive feelings and positive functioning in life.” Keyes developed the Mental Health Continuum-Short Form (MHC-SF) to measure flourishing, moderate, and languishing mental health (Keyes, 2009a). The MHC-SF includes five items of social wellbeing, six items of psychological wellbeing, and three items to represent emotional wellbeing (Keyes, 2009a). The 14 items and their associated category of wellbeing (social, psychological, and emotional) are displayed in Table 1. Additional detailed information on the MHC-SF can be found in Appendix 1: Mental Health Continuum—Short Form.

Table 1: Mental Health Continuum—Short Form Items and Their Respective Categories

(Keyes, 2009a)

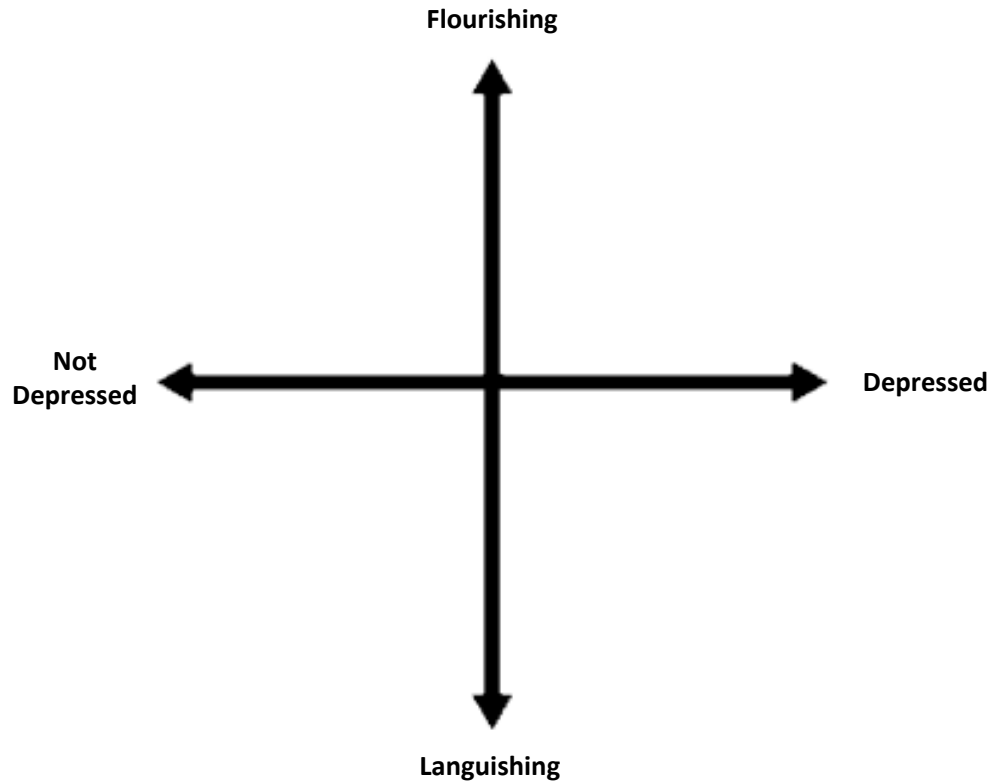
Item	Category
Happy	Emotional (<i>Happy</i>)
Interested in life	Emotional (<i>Interested in Life</i>)
Satisfied	Emotional (<i>Satisfied</i>)
That you had something important to contribute to society	Social (<i>Contribution</i>)
That you belonged to a community (like a social group or your neighborhood)	Social (<i>Integration</i>)
That our society is becoming a better place for people like you	Social (<i>Actualization</i>)
That people are basically good	Social (<i>Acceptance</i>)
That the way our society works made sense to you	Social (<i>Coherence</i>)
That you liked most parts of your personality	Psychological (<i>Self-Acceptance</i>)
Good at managing the responsibilities of your daily life	Psychological (<i>Environmental Mastery</i>)
That you had warm and trusting relationships with others	Psychological (<i>Positive Relationships with Others</i>)
That you had experiences that challenged you to	Psychological (<i>Personal</i>

grow and become a better person	<i>Growth)</i>
Confident to think or express your own ideas and opinions	Psychological (<i>Autonomy</i>)
That your life has a sense of direction or meaning to it	Psychological (<i>Purpose in Life</i>)

Mental Health and Illness as Continuums

While some have conceptualized PMH and mental wellness as uni-dimensional or circular (Alberta Health and Wellness, 2006; Barry, 2001), Keyes' and others' view of mental health incorporates a continuum that focuses on *positive* mental health in addition to negative affective states (Canadian Mental Health Association, 2006; Keyes 2002; 2005a; Lakaski, 2006). According to this view, mental health and mental illness are separate but correlated, unipolar dimensions (Keyes, 2005a). Empirical evidence substantiates the concept that flourishing mental health and depressive symptoms are only moderately negatively correlated (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2010). Thus, the absence of depression does not equate to mental health (Keyes, 2005a; Westerhof & Keyes, 2010). A person may be languishing while not being clinically depressed. Likewise, a person may be moderately mentally healthy while having clinical depression. Some people may even be flourishing while being clinically depressed. The two separate unipolar dimensions, from depressed to not depressed, and from flourishing to languishing coexist, but do not form one continuum, according to this view, depicted in Figure 1 (Keyes, 2002; 2005a; Westerhof & Keyes, 2010).

Figure 1: Flourishing-Languishing Continuum and Depressed-Not Depressed Continuum



Despite the evidence for a two-continuum model of mental health and wellness, flourishing mental health can also serve as a protective mechanism against mental illness. This perspective is consistent with the concept of a single continuum from languishing/depressed to flourishing/not depressed. A 2010 study showed that the absence of flourishing mental health led to a seven times greater likelihood of developing depression within 10 years (Wood & Joseph, 2010). After various factors were controlled for, this risk of developing depression within 10 years remained at a two times greater likelihood (Wood & Joseph, 2010). Thus, Keyes (2005a) wrote:

“Conceptually, one can think of mental health as the continuum at the top of the cliff where most individuals reside. Flourishing individuals are at the healthiest and therefore farthest distance from the edge of this cliff; languishing places individuals very near the edge of the cliff. Hence, languishing may act as a diathesis that is activated by stressors that push individuals off the cliff and into mental illness.” (p. 547)

It is difficult to reconcile the evidence for the two-continuum model with the evidence for a single-continuum model. Possibly, both models exist: during highly stressful times, the single-continuum model may predominate, while the two-continuum model may be predominant during lower stress times (Zautra, Affleck, Tennen, Reich, Davis, 2005).

Prevalence and outcomes of PMH in general U.S. population

Keyes’ analysis of midlife Americans (MIDUS study) showed that 17.2% of individuals in the study were flourishing without depression and 56.6% were moderately mentally healthy. Additionally, major depressive episode was two times more likely in languishing individuals than in moderately mentally healthy people, and there was a six times greater likelihood of depression among languishing than flourishing (Keyes, 2002). The study illustrated that, generally, as PMH improved, mental illness decreased. Additional research has shown that those in “complete mental health” (defined as flourishing and free of a mental disorder for the last 12 months) experienced a number of positive outcomes that included fewest health limitations to activities of daily living and fewest half-day work cutbacks and missed days of work. They also experienced the healthiest psychosocial functioning (as defined by low helplessness, clear life goals, high intimacy in personal relationships, and resilience), fewer chronic diseases, a lower risk of cardiovascular disease, and decreased health care utilization (Keyes 2004; 2005a; 2005b).

Therefore, those with complete mental health experienced the greatest overall health and wellbeing.

People with increased PMH had a decreased incidence of mental illness, while those who had lower levels of PMH were more likely to experience mental illness (Keyes, Dhingra, & Simoes, 2010). Additionally, people who rated themselves as having high levels of PMH were more likely to report excellent physical and mental health and less likely to report reduced activity and mental illness (WHO, 2005). Because of PMH's association with physical health and mental illness, promotion of mental health is an important public health endeavor (Keyes, 2007). In addition, community pharmacists, as the most accessible healthcare providers (World Health Organization, 1994), may have an opportunity to utilize strategies that promote mental health, and thus improve other aspects of health.

Prevalence of PMH among Anishinabe community members

My research with the Mino Giizhigad (MG) study (see Appendix 2: Mino Giizhigad Study) showed that despite a 17.1% prevalence of meeting criteria for depression in two Anishinabe communities, about half (50.3%) of participants were flourishing and were not depressed (see Table 2; Kading et al., 2015).

Table 2: Mino Giizhigad Study: Crosstabulation of PHQ-9 Score of 10 or Greater by MHC-SF Three Category of Positive Mental Health

	Languishing	Moderate	Flourishing	Total
Not depressed	1.6% (n=3)	32.1% (n=62)	50.3% (n=97)	83.9% (n=162)
Depressed	1.6% (n=3)	13.5% (n=26)	1.0% (n=2)	17.1% (n=31)
Total	3.1% (n=6)	45.6% (n=88)	51.3% (n=99)	100.0% (n=193)

This is important to note in comparison to results from a study of adults who participated in regular yoga practice in which 48.3% were in flourishing mental health (based on the MHC-SF) and 24.8% reported a history of depression (Ross, Friedmann, Bevans, & Thomas, 2013). A study of over 5,000 college students showed that 51.8% met criteria for flourishing mental health (based on the short form) while 7.9% were depressed (PHQ-9; 15-19) (Keyes et al. 2012). Another study utilizing the short form showed that 34.9% of Dutch adults were flourishing, while 12.9% had a mean score of 0.7 or higher according to the Brief Symptom Inventory (indicating mental illness) (Westerhof, 2010). The rate of flourishing in the MG sample is about equal to or higher than documented in these three studies of adults who would be less likely to be exposed to the stressors experienced in AI communities. Further, given evidence documenting the healthful effects of yoga practice, we might have expected the yoga sample to be even healthier than the MG population (Ross et al., 2013).

It is also useful to consider these results in light of benchmark results of the MIDUS study mentioned previously (using the MHC-LF and tertile cutoffs) in which

20.7% of African American and 17.2% of white respondents were flourishing and not depressed (Keyes, 2009b). This also contrasts with a sample of Setswana-speaking South Africans, in which only 20% met criteria for flourishing mental health (Keyes et al., 2008). However, caution needs to be used in these comparisons because both studies used the long form of the MHC (which utilizes sample-specific tertile cutpoints; Keyes, 2002; see Appendix 1: MHC-SF for details) whereas the short form was used in the MG study (which utilized a specific categorization of levels of mental health; see Appendix 2: Mino Giizhigad Study for details).

Paradox. The high rates of PMH in this population were particularly intriguing given characteristics of the sample. AI/AN people experience higher rates of depressive symptoms, psychological distress, depression, and poor mental health than non-Native Americans (Barnes et al., 2010; Urban Indian Health Institute [UIHI], 2012) though the prevalence of depression may actually be similar to the general population in some communities (based on diagnostic category; Beals et al., 2005). AI/AN people are also more likely to have depressive symptoms, and over a five-year period, 15.1% of AI/AN living in Urban Indian Health Organization services areas reported 14 or more poor mental health days in the last month, in comparison to 9.9% of people in the general population (UIHI, 2011; 2012). Giving further evidence of psychological distress in this population, posttraumatic stress disorder is experienced at higher rates in AI people (Beals et al., 2005). Notably, suicide rates are also higher among AI/ANs (16.93 per 100,000) than the general U.S. sample (12.08 per 100,000; Suicide Prevention Resource Center, 2013).

Complicating psychological distress, comorbid conditions like diabetes are associated with poorer mental health outcomes. Diabetes is about twice as common in AI/AN communities and diabetes control and outcomes are influenced by depression: A1C levels are higher in people with depression and risk of micro- and macrovascular-complications are increased (Bullock, 2011; Calhoun et al., 2010). People with diabetes are more likely to be depressed or have depressive symptoms (Anderson, Freedland, Clouse, & Lustman, 2001; Kruse, Schmitz, and Thefeld, 2003; Lloyd et al. 2003; Musselman, Betan, Larsen, & Phillips. 2003), so a lower level of mental health was expected in this population (the MG sample consisted of people living with a chronic disease, type 2 diabetes).

Among the explanations for these health disparities is historical trauma, which includes events like prohibition of cultural or spiritual activities, forced relocation of communities, forced attendance of children at boarding schools, massacres of entire communities, and other traumas (Evans-Campbell, 2008; Stannard, 1992; Thornton, 1987). The effect of historical trauma is directly and/or indirectly related to contemporary disempowerment through various social and psychological responses and has had a harmful impact on social and family structures in AI communities (Brave Heart, 1999a; 1999b; 2000; Brave Heart & DeBruyn, 1998; Evans-Campbell, 2008; Walters, Simoni, & Evans-Campbell, 2002).

Various contemporary sources of marginalization continue to impact AI communities. Perceived discrimination is associated with poorer health outcomes in AI people (Whitbeck, Hoyt, McMorris, Chen, and Stubben, 2001; Whitbeck, McMorris,

Hoyt, Stubben, LaFromboise, 2002), and unemployment, homelessness, and poverty are some of the socioeconomic factors that influence the prevalence of health disparities in these communities (Roubideaux, 2005).

A unique paradox appears to exist for AI people more so than that documented for other groups: despite historical trauma, various social stressors, ongoing marginalization, and depression and chronic diseases, a disproportionately large number of AI people met criteria for flourishing mental health.

Reasons for a paradox. Overall, results of disproportionately high positive mental health highlight a source of strength and wellness for AI people in the MG study, and thus, it is important to also study the positive phenomena that exist in AI communities (Kirmayer et al., 2011; Mohatt et al., 2004). Strengths-based research, especially when centered within the field of positive psychology, provides a basis for understanding strengths in individuals and communities (Saleebey, 2009) and may help frame why some groups experience wellbeing despite exposure to stressors.

Minority group paradoxes. People in minority groups are more likely to have greater levels of wellbeing (Keyes & Ryff, 2003). Some minority populations in the United States appear to experience paradoxically higher levels of PMH compared to the majority population, despite differential exposure to correlates of increased psychological distress, such as discrimination and poverty (Kessler, Mickelson, & Williams, 1999; Turner & Avison, 2003; Turner & Lloyd, 1995). For example, an analysis of the 1995 Midlife in the US study showed that despite experiencing discrimination (60.9% prevalence day-to-day), increased risk of chronic physical disease, and shorter life

expectancies, black Americans had lower rates of some mental disorders and higher rates of flourishing mental health than whites: 27 percent more blacks than whites were free of mental illness and flourishing (Keyes, 2009b). Controlling for discrimination increased this “black advantage” in 12 out of 13 signs of flourishing: social coherence, social growth, social integration, self acceptance, autonomy, environmental mastery, positive affect, positive relations with others, personal growth, social contribution, life satisfaction, and purpose in life. Social acceptance was the only sign that did not show black advantage (Keyes, 2009b); in other words, blacks would have had “even better mental health” if no discrimination had occurred (Keyes, 2009b, p. 1677). Mexican Americans in Chicago, African Americans in New York, and Hispanics¹ in the United States have also been found to have higher levels of mental wellbeing and resiliency than the general population, despite experiencing discrimination (Gallo et al., 2009; Ryff et al., 2003).

This greater mental wellbeing seen in all of these groups may be due, in part, to a larger reserve capacity against stress, religiosity, familism, and allocentrism, but could also be due to the concept that mental wellbeing can exist at the same time as mental illness or other negative health outcomes (Gallo et al., 2009; Ryff et al., 2003). Similar factors may also have a role in AI mental health: engagement in traditional activities is associated with greater levels of PMH (Kading et al., 2015).

Resilience and coping. Within the field of positive psychology, the study of resilience and coping may also offer another explanation for wellness and the ability to overcome adversity (Bonnano, 2004; Linley & Joseph, 2004; Masten, 2001; Rutter, 1985;

Werner, 1982). Resilience is composed of hardiness, persistence, goal-directedness, achievement motivation, healthy success orientation, a sense of coherence, educational aspiration, a sense of purpose, a belief in the future, and a sense of anticipation (Benard, 1991). A number of factors are important in ensuring resiliency: access to material resources; sense of identity and purpose; engagement with cultural beliefs, practices, and values; connections with others; social justice; connection with the surroundings; and the ability to change circumstances in life (Ungar et al, 2007; Ungar, 2008). Resilient people are able to adapt to difficult situations or stressors with flexible and healthy approaches (Luthar, Cicchetti, & Becker, 2000), which may contribute to increased wellness. Both adversity and protective factors can impact the development of resiliency, and these factors may have an additive effect over time (Condly, 2006; Fergus & Zimmerman, 2005; Rutter, 1999).

Following a traumatic event or life stressor, some people find greater meaning and purpose and may experience spiritual and/or emotional growth, an example of resiliency (Ai, Cascio, Santangelo, & Evans-Campbell, 2005; Joseph, 2012; King, 2001). This may be due in part to the reframing of the negative event(s) in a positive manner (Folkman & Moskowitz, 2000) or the utilization of spiritual beliefs as a way of coping (Folkman, 1997).

Coping is one approach people use to adapt to difficult situations or stressors. Various coping methods can be used when facing these stressors and challenges, and some responses can result in greater resiliency in both individuals and communities (Lyons et al, 1998). People may cope with difficulties in life by utilizing either engaging

strategies (actively doing something about it, for example, exercising or working together as a community to address an issue) or disengaging strategies (avoiding doing anything about it, for example, drinking alcohol or sleeping) (Austen, 2003; Canadian Institute for Health Information, 2009; Compas et al, 2001; Lyons et al., 1998). The use of engaging methods of coping is associated with greater physical and mental health (Canadian Institute for Health Information, 2009). For example, self-esteem, adaptive coping strategies, and self-efficacy correlate with improved management of diabetes and better glycemic control (Yi-Frazier, Hilliard, Cochrane & Hood, 2012). People who are able to find challenge and meaning in the difficulty and stress of life (a personality dimension called hardiness) are less likely to be overwhelmed when facing stressful events (Kobasa, 1979, 1982; Kobasa, Maddi & Courington, 1981; Kobasa, Maddi & Kahn, 1982).

Additionally, social support, in the form of a mutual caring relationship (Berkman, Glass, Brisette, & Seeman, 2000), helps people cope with stressors in life and includes the following aspects: appraisal support (affirmation, social comparison, constructive feedback), informational support (suggestions, solutions, advice), emotional support (empathy, caring, trust, nurturance), and instrumental support (service, tangible aid) (House, 1981). Social support is associated with increased health due to its buffering effect against the effect of stress (Cassel, 1976). Further, one of the most important contributors to emotional well-being and life satisfaction may be good relationships (Berscheid & Reis, 1998; Klinger, 1977; Sears, 1977).

Thus, resilience and the utilization of adaptive coping strategies may contribute to the wellness that sometimes occurs in minority groups despite their disproportionate exposure to stressors.

AI views on mental health/wellness. Another explanation for the paradoxical mental wellness found in AI people, despite exposure to stressors, may be due in part to culturally-specific views on mental wellness and health. For example, some Aboriginal People in Canada consider some important aspects of resilience to include the following: connection to the land or environment, group and individual activism, and the reclamation of cultural traditions and languages (Kirmayer et al., 2011). Indigenous people may also view concepts like PMH and wellness in a holistic manner: for example, the Assembly of First Nations in Canada defined mental wellness as a balance between the mind, body, and spirit, and included within the definition self-esteem, personal dignity, identity with culture, connectedness, and harmony between physical, mental, emotional, and spiritual wellness (Mental Health Working Group, 2002). The importance of respecting cultural differences also frames indigenous views on health and mental wellness (Canadian Institute for Health Information, 2009).

According to Smye and Mussell, individual physical, emotional, mental, and spiritual wellbeing are considered important aspects of health and mental wellness (2001). Examples include balance and wellness between the interconnectedness of mind, spirit, body, and heart; a dedication to complete health in government and leadership activities; understanding the relationship between past, present, and future; being empowered; and the connections and between cultures (Mussell, 2005). Additionally, AI

and indigenous people worldwide may incorporate a focus on spirituality, balance, and harmony as important in mental wellness (Canadian Institute for Health Information 2009).

Understanding the paradox. The potential for AI or Anishinabe-specific understanding of PMH results in a need to better explore the construct in this population. This area of study is important for better understanding Anishinabe concepts of PMH as well as understanding the utility of Keyes' model of PMH in this population. A unique participatory method of research, group concept mapping, has been used to better understand perspectives on depression, coping, neighborhood influences on well-being, and other areas (Burke, et al, 2009; Daughtry & Kunkel, 1993; Gol & Cook, 2004) and this method is a useful approach to exploring Anishinabe views on PMH.

NOTES

1. "Hispanic" was the term used by the authors.

CHAPTER 3: METHODS

This project fits within an already-existent community based participatory research (CBPR) project: Mino Giizhigad (MG) (see Appendix 2: Mino Giizhigad Study for details on the MG project). I refined the approach to this group concept mapping project based on recommendations from existing Community Research Council (CRC) members in effort to adhere to CBPR principles (see Appendix 3: Methodological Background and Details for more details on the methodological background and principles that grounded the MG study). A detailed step-by-step process, supply list, and timeline is outlined in Appendix 4: Step-by-Step Process.

Ethical Research

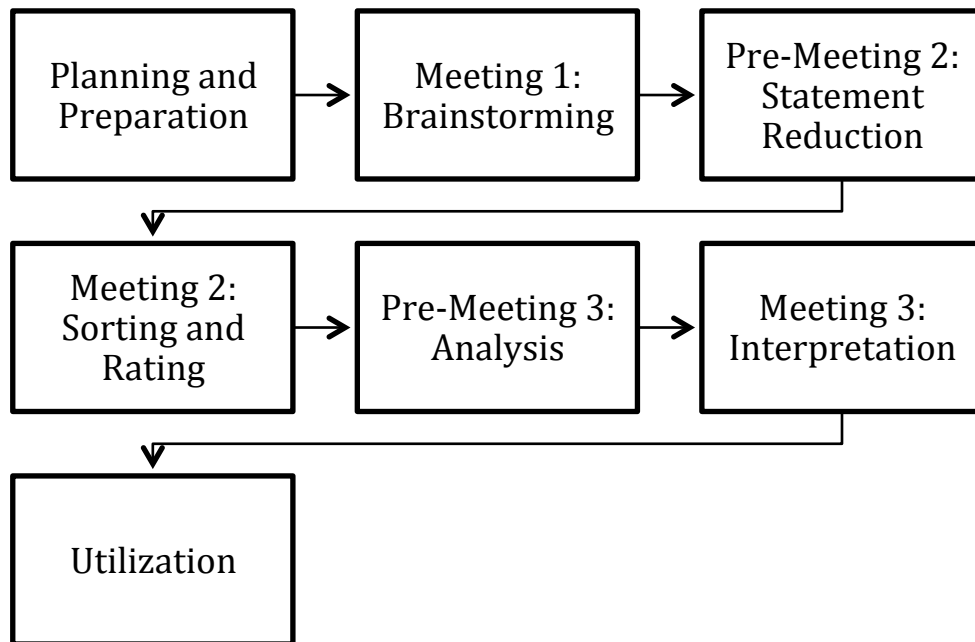
This group concept mapping project did not meet the regulatory definition of research with human subjects and thus did not fall under the review of the Internal Review Board at the University of Minnesota (see Appendix 5: Internal Review Board Letter). Tribal governments from both communities gave their approval for the MG study and group concept mapping was used as a structured way to understand PMH from the perspective of CRC members during normal MG CRC meetings. Therefore, this study fell within the boundaries of the tribal agreements.

Group Concept Mapping

Group concept mapping is a unique participatory method of data collection that utilizes multidimensional scaling and hierarchical cluster analysis (Kane & Trochim, 2007). As shown in Figure 2, the concept mapping method involves six different steps: preparation, generation, structuring, analysis, interpretation, and utilization (Kane &

Trochim, 2007; Trochim, 1989). This research method brings a group of participants together to collectively brainstorm words or phrases in response to a *focus statement* (generation), individually group the words/phrases into *clusters* (structuring), and individually *rank* each word/phrase and cluster (structuring). After analysis, participants interpret relationships between the *clusters* and word/phrases as a group (Burke et al., 2005; Kane & Trochim, 2007). Using these steps, group concept mapping has been used as both a method of data collection and as a method of data analysis and can also be used in developing conceptual frameworks (Burke et al. 2005; Flicker, Travers, Guta, McDonald, & Meagher, 2007; Rosenberg & Kim, 1975; Trochim, 1989; Vaughn, Jacquez, & McLinden, 2012)

Figure 2: Group Concept Mapping Steps



Concept mapping is ideal for use in participatory research because participants are encouraged, and in some ways required, to be involved in the collection, interpretation, and discussion of data (Kane & Trochim, 2007). It has been used in various CBPR projects and is widely considered to be a qualitative data collection approach mixed with quantitative analysis (Flicker et al., 2007; Kane & Trochim, 2007; Vaughn, Jacquez, & McLinden, 2012).

Group concept mapping has been used to better understand perspectives on depression, coping, neighborhood influences on well-being, as well as other areas (Burke et al., 2009; Daughtry & Kunkel, 1993; Gol & Cook, 2004). It is ideal for exploring Anishinabe perspectives on PMH because it allows for participants to share their own perspectives in the form of generated statements, rankings, and interpretations of relationships.

The description of the methods has been broken down into the following parts:

- Planning and Preparation
- Meeting 1: Brainstorming
- Pre-Meeting 2: Statement Reduction
- Meeting 2: Sorting and Ranking
- Meeting 3: Interpretation
- Utilization

Planning and Preparation

Software

Concept Systems Global MAX software was used for this group concept mapping project. The software had the statistical capabilities to analyze the brainstormed data, sorting data, and ranking data. The software was also specially designed to display interactive concept maps for use during the interpretation session.

Concept Systems, Inc. offered a certified Concept Systems facilitator course, held in Ithaca, NY. The course was held over two-and-a-half days and consisted of training on facilitating a group concept mapping session as well as operating the software. I completed this course and received certification as a Concept Systems facilitator in April 2014.

Participants

The sample consisted of CRC members from two communities. Whenever community-specific data is shared, it is referred to as “Community 1” and “Community 2.” The desired sample size for group concept mapping is at least 15 people overall, which is the minimum number of participants recommended (Rosas & Kane, 2012; Trochim, 1993). A minimum of 10 - 12 participants are needed at the sorting step in order to ensure a reliable concept map (Jackson & Trochim, 2002).

The inclusion criteria included: being a member of one of the two reservation communities, being a member of the CRC, and being over the age of 18. CRC members were encouraged, but not required, to participate in every session of group concept mapping.

The role of CRC members was to collaborate on the planning and implementation of the MG study (already existent CBPR project, see Appendix 2: Mino Giizhigad Study for details) as well as review and collaborate on any publications that arose from the MG study data. One publication reviewed by the CRC was the previously-mentioned article on the mental health paradox (and results of the MHC-SF; Kading et al., 2015). CRC members reviewed the paper and offered their perspective, which was incorporated into the final version. The inclusion of the MHC-SF in the study was in great part due to the CRC members' request for a focus on strength-based research on mental health.

CRC members were invited to be part of the group concept mapping session on positive mental health because of their experience as members in their communities, because they had insight that might inform the understanding of positive mental health as Anishinabe people, and because their participation in this structured discussion fell within the boundaries of previous tribal resolutions. Additionally, following my explanation of the group concept mapping process to CRC members (see Appendix 6: Invitation Letter), they showed interest in meeting with me about the project.

The concept mapping exercise occurred during regular CRC meetings and was within the typical scope of the role of CRC members. Thus, CRC members received the usual honoraria, mileage reimbursement, and meal provided at all project meetings. The main difference between regular CRC meetings and the group concept mapping CRC meetings was that I utilized a structured methodology to track CRC members' perspectives.

Concept Mapping Process

This group concept mapping project occurred during face-to-face meetings and incorporated non-computerized (pen and paper) collection and computerized analysis of data. The non-computerized collection of data included participant brainstorming using large sheets of paper, easels, and markers; participant sorting using paper cards printed with each brainstormed idea; and ranking using printed sheets with all of the brainstormed ideas and a ranking directive. After the meetings, the computer software was used to analyze the brainstormed, sorted, and ranked data. By using the pen and paper approach to data collection, I was responsible for data input into the software.

The group concept mapping sessions took place from November 2014 to February 2015. Each community held three concept mapping sessions locally, and sessions occurred about once per month for each community. Each community held their sessions separately at their respective regular CRC meetings, and data from both communities was combined into a single final concept map.

The final concept map presentation to CRC members included a variety of iterations of the data: a point map, cluster maps and rating maps.

Meeting 1: Brainstorming

At the first meeting in each community, CRC members brainstormed in response to a focus statement prompt. The focus statement was “In my community, when people have mental wellness, they ____.” This particular wording was chosen after analysis of the literature: Keyes referred to the MHC-SF as measuring wellness (though he frequently referred to it as PMH) and multiple sources focusing on indigenous health and

mental health referred to the term “wellness” (Canadian Institute for Health Information, 2009; Evans-Campbell, 2008; Keyes, 2009a). The addition of the word “mental” was chosen in order to convey the focus on mental health.

During the brainstorming session, which was limited to 60 minutes, CRC members were invited to share as many ideas as possible. Brainstorming rules (Adams, 1979; Kane & Trochim, 2007; Osborn, 1948) were shared prior to starting the generation of statements and included the following:

- Everyone is encouraged to think of and share many statements.
- Please reserve discussion or criticism of statements to encourage open sharing during the brainstorming session.
- Only one person may talk at a time.
- Everyone has something useful to offer.
- If you would like to share an idea anonymously, there will be an option to submit ideas in writing at the end of the session.
- There are no right or wrong ideas (Concept Systems, Inc., 2014; Kane & Trochim, 2007).

CRC members generated nearly 200 statements during the brainstorming session. The goal was to limit the final number of statements to 100 or fewer prior to the sorting and rating steps. This was important because the list of statements would form a representative and manageable list of CRC members’ ideas.

Pre-Meeting 2: Statement Reduction

I reduced the list of items after both communities had completed Meeting 1, using the following process: First, any items that were identical, redundant, or represented the same concept were combined or reduced to one representative statement. Ideas that were not relevant to the focus prompt were removed. Then, each item was coded with a keyword. Groups of similar ideas (identified by their keyword) were consolidated, with the intent of maintaining diversity of ideas, yet reducing the number of statements for the sorting and rating phase. This process was repeated until nearly 100 items were left (112 final). Additionally, each statement was modified to be in correct syntax with the brainstorming prompt, which provided easier to understand statements for the sorting and rating process.

At the conclusion of the second meeting or the beginning of the third meeting, each community CRC was given a copy of the original, verbatim statements brainstormed at their respective meetings. The final list of 112 items was entered into Concept Systems software, and sorting and rating sheets (See Appendix 7 and 8) and sorting cards were printed.

Meeting 2: Sorting and Ranking

The sorting and ranking process took place during the second meeting. Following each meeting, I entered the card sort and ranking data into GlobalMAX for analysis.

Sorting

Each participant individually structured the list of 112 statements by grouping similar ideas together (Coxon, 1999; Rosenberg & Kim, 1975; Weller & Romney, 1988).

The prompt was, “Group the ideas into piles ‘in a way that makes sense to you.’” (Kane & Trochim, 2007, p. 12). Rules (See Appendix 7: Sort Recording Sheet; Kane & Trochim, 2007) were shared and included the following:

- Group the statements for how similar in meaning they are to one another.
- Do not group the statements according to how important they are, etc.
- There is no right or wrong way to group the statements. You may find that you could group the statements in several sensible ways. Pick the arrangement that feels best to you.
- You cannot put one statement into two stacks at the same time. Each statement must be put into only one stack.
- People differ on how many stacks they wind up with. I recommend no fewer than 5 stacks.
- A statement should be put alone in its own stack if you think it is unrelated to the other statements or it stands alone as a unique idea.
- Do not create stacks that mix unrelated ideas, such as stacks called “Miscellaneous” or “Other” (Concept Systems, Inc., 2014; Kane & Trochim, 2007).

CRC members were also invited to individually label each group with a title they deemed representative of the ideas within.

The sorting process took about an hour in each community. While the sorting process and rules were the same, the recording process was performed differently in each community. This was due to an effort to adhere to principles of community-engaged

research—to be responsive to community preference and needs. At the Community 1 meeting, participants recorded the results of their card sorting as detailed in the “Instructions for Sorting” template onto the recording sheet (Appendix 7: Sort Recording Sheet). The process was recommended during the concept mapping training; however, this approach was time-consuming for participants, and several participants recorded a card more than once or missed recording a card. One participant recorded numerous cards twice (duplicate item numbers were removed from the data set; see Appendix 9: Technical Description of Methods, Analysis, Discussion and Future Research for details). Because of Community 1 participants’ comments of fatigue in combination with the recording problems mentioned above, an alternative approach was selected for the Community 2 participants. Community 2 participants sorted the cards in the same manner as Community 1 participants, but recorded the results differently. Community 2 participants were asked to clip their sorted groups together, write their title on the top card of each pile, and place all clipped piles into an envelope. This approach required more time for data entry on my part, but participants did not experience as much fatigue. Additionally, it was possible to verify each pile’s accuracy in the data entry.

Ranking

Each CRC member used pen and paper to individually rank each item of the 112-statement list based on “degree of impact.” The ranking prompt was, “Rank each statement based on the degree of impact it has on mental wellness for people in your community.” The ranking of “1” indicated “least degree of impact,” “2” indicated “moderate degree of impact,” and “3” indicated “greatest degree of impact.” CRC

members were encouraged to utilize the full range of the Likert scale when ranking the list of statements.

Pre-Meeting 3: Analysis

Prior to Meeting 3, I analyzed the data to form the concept maps. The analysis consisted of three main steps (Kane & Trochim, 2007): 1. A similarity matrix was created based on CRC members' sorting data. This matrix depicted the number of times each pair of statements was sorted together. 2. Multidimensional scaling was utilized to place a point representing each statement on a two-dimensional map (Davison, 1983; Kruskal & Wish, 1978). 3. Hierarchical cluster analysis was utilized through the use of Ward's algorithm to divide the multidimensional scaling coordinates into clusters (Everitt, 1980). More detail on this analysis can be found in Appendix 9: Technical Description of Methods, Analysis, Discussion, and Future Research.

The ranking data was analyzed and a mean value for each item was calculated. In addition, a mean value for each cluster was calculated based on the mean values of all items contained within. Statistically significant differences between clusters were tested for through the use of t-tests (Caracelli, 1989; Kane & Trochim, 2007).

Additionally, a number of maps were produced based on these three analysis steps.

Meeting 3: Interpretation

During Meeting 3, the maps were interpreted with the input of the CRC. At the beginning of the third meeting, the original list of 112 statements were once again shared with CRC members. Then, the various maps were explained, and CRC members were

invited to share their interpretations of the content of each cluster in the form of titles, representative statements, or phrases. CRC members were also invited to share their perspectives on the overall content of the map, the ratings of each cluster, and the potential utility of the results of the map. All interpretations and perspectives were recorded with pen/marker and paper.

Additionally, GlobalMAX software suggested titles for some clusters based on the closest fitting labels that CRC members had selected for each pile during the sorting process. Following the third meeting, I determined the final cluster titles by analyzing CRC members' interpretations, titles suggested by the software, and content of each cluster in a grounded theory approach (Kane & Trochim, 2007).

Utilization

Following the interpretation session, a community report was prepared for each CRC. The report was disseminated to each CRC with an offer to provide further community presentations on the results. Additionally, each CRC was encouraged to think of ideas for utilizing the results.

CHAPTER 4: FINDINGS

In addition to the positive mental health (PMH)-related results of the concept mapping sessions presented below, a detailed technical analysis of findings can be found in Appendix 9: Technical Description of Methods, Analysis, Discussion, and Future Research. Item numbers found in the text or in maps can be referenced in Appendix 10: Final List of Statements. Throughout this section, unless otherwise specified, results display both communities' data in a combined map. Whenever community-specific data is shared, it is referred to as "Community 1" and "Community 2." These titles have been randomly assigned to each community to avoid stigmatizing one community against the other.

Participants

In this project, members from Bois Forte (BF) and Lac Courte Oreilles (LCO) CRCs were the participants. The Community Research Council (CRC) members were combined into one group for analysis purposes. Table 3 displays the number of CRC members from each community involved at each step of the group concept mapping process.

Table 3: Number of Community Research Council Members from Each Community

Community	Brainstorming	Sorting/Rating	Interpretation
Community 1	6	7*	7
Community 2	7	6	8

*One member did not sort enough items to be included in the sorting analysis. See Appendix 9: Technical Description of Methods, Analysis, Discussion, and Future Research for details.

While group concept mapping does not require the same participants (or same number of participants) to be present at each step of the process, CRC members in this project were fairly consistent from step to step. Additionally, the minimum ideal number of participants needed for a reliable concept map, 10-12 (Jackson & Trochim, 2002), was met at each step. Thus, this concept map was considered reliable.

Brainstorming

Community 1 CRC members brainstormed 106 items and Community 2 CRC members brainstormed 79 items, for a total of 185 items.

This list was reduced to 112 representative statements consisting of ideas generated from both communities (i.e. only one list was generated). Reduction of the original brainstormed list was done as described above in the Methods section.

Clusters

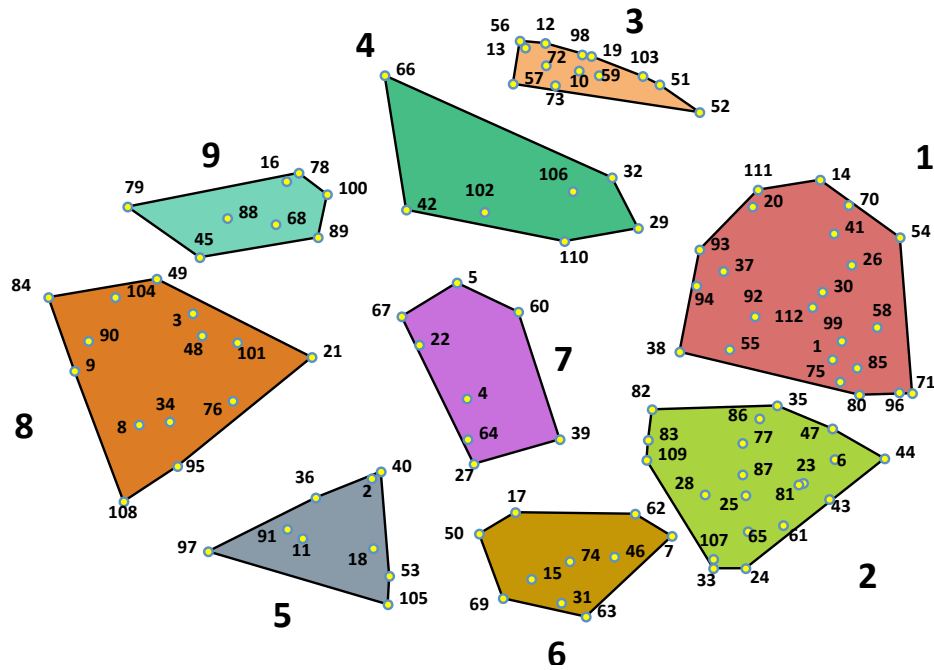
Following analysis of sort data, the 112 items were sorted into a point map with nine clusters as shown in Figure 3 (using multidimensional scaling and hierarchical

cluster analysis; see Appendix 9: Technical Description of Methods, Analysis, Discussion, and Future Research for detailed information on this process). Items (points) situated close to each other on the map (for instance, items #56 and #13) were sorted together more often by CRC members, indicating their similarity. Items situated further from each other on the map (for instance, items #63 and #12) were not sorted together often or ever by CRC members, indicating their dissimilarity. When reviewing the map, relative distance between points is meaningful, while orientation (top, bottom, center, etc.) is not.

Each cluster contains statements that share a common theme, details of which can be found in Appendix 11: Statements by Cluster. For example, Cluster 3 (Traditional Spirituality/Culture) contains multiple statements associated with traditional spiritual or cultural aspects (e.g. items #13, #56, #103) and Cluster 9 (Family/Relationships) contains multiple items related to family or relationships (e.g. items #45, #68, #79). Larger sized clusters represent broader concepts and smaller sized clusters indicate more specific concepts.

Figure 3: Cluster Map with Points

Cluster Map with Points

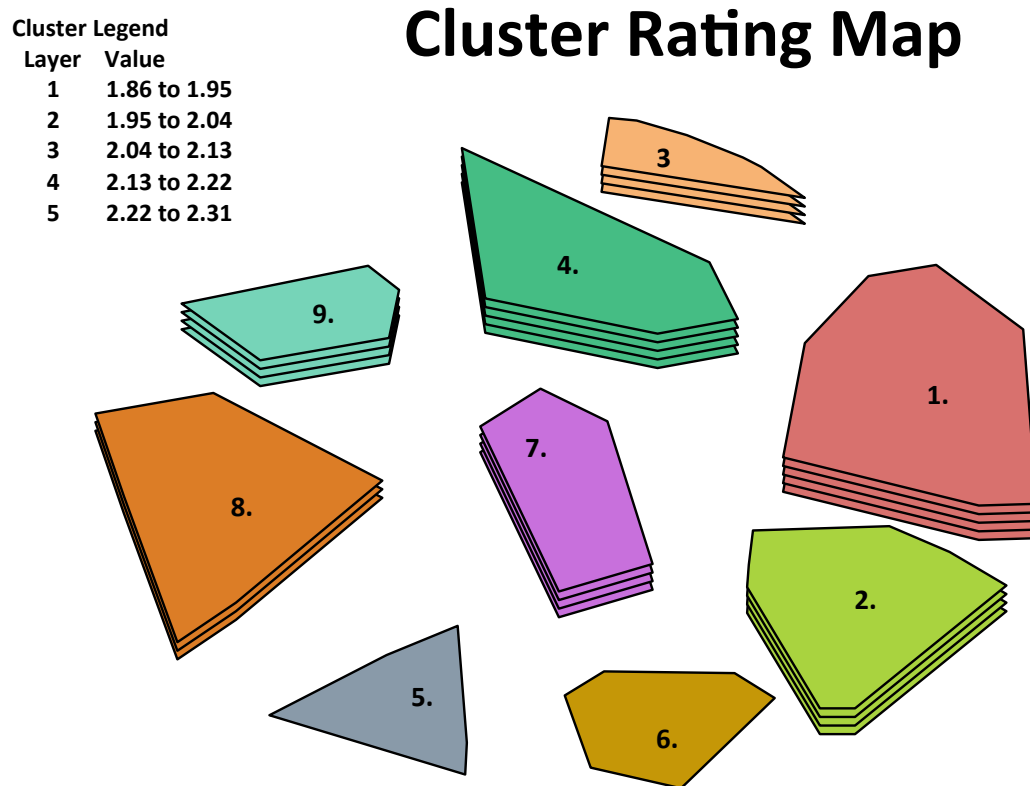


Ratings

The rating information was used to determine each cluster's relative level of impact on PMH according to CRC members. Figure 4 displays the point map overlaid on a three-dimensional rating map of the clusters. Clusters with larger numbers of layers were rated as having a greater impact on PMH while clusters with a smaller number of layers were rated as having a lesser impact on PMH. For example, Cluster 1 has five layers, indicating it was rated as having a greater impact on PMH. In contrast, Cluster 5 has only one layer, indicating it was rated as having a lesser impact on PMH. The rating

value for each cluster was calculated based on the mean value of each of the included items in the cluster.

Figure 4: Cluster Rating Map and Cluster Legend Depicting Relative Rating Values for Each Cluster



The highest ranked cluster was Cluster 1 and the lowest ranked was Cluster 5.

See Table 4 for a display of Student's *t* and significance level for each cluster pair based on the degree of impact rating. For example, the ranking of Cluster 1 is statistically significantly greater than that of Cluster 5 ($t = 4.53, p > 0.001$).

Table 4: T-values and Statistical Significance of Difference in Degree of Impact Rating Between Clusters

Cluster	1	2	3	4	5	6	7	8	9
1	--								
2	2.01	--							
3	2.14*	0.74	--						
4	0.43	1.09	1.49	--					
5	4.53***	3.44**	2.45*	3.77**	--				
6	4.37***	3.24**	2.24*	3.60**	0.25	--			
7	1.95	0.61	0.08	1.35	2.46*	2.25*	--		
8	2.04*	0.88	0.23	1.52	2.01	1.80	0.29	--	
9	1.27	0.11	0.42	0.84	2.55*	2.36*	0.34	0.58	--
Mean	2.31	2.19	2.14	2.27	1.86	1.89	2.14	2.11	2.18
(rating variance)	(0.04)	(0.03)	(0.06)	(0.03)	(0.07)	(0.07)	(0.04)	(0.10)	(0.06)

* p-value < 0.05; ** p-value < 0.01; *** p-value < 0.001

Interpretation

CRC members contributed a number of interpretations of the clusters on the map, and GlobalMAX software suggested a number of labels based on CRC members' work during the sorting session. These interpretations and suggested titles, as well as the final cluster names, are shown in Table 5.

Table 5: Cluster Names, Software Title Suggestions, and Community Interpretations of Clusters

Cluster	Software Suggestions	Community Interpretations of Cluster
1—Values Gained with Maturity	Satisfied with life, mentally healthy	Personal values, positive mental outlook, positive mental health, positive mental values, Holistic, positive attitude, congeniality, humility, amiable, ecstatic, balanced, how elders should be (takes a while to get there), grandparents, mature, balanced maturity
2—Motivated	Work hard, motivated, self-awareness	Motivational self-awareness, effective behavior, Proud/prideful (in a positive way), self-reliant, positivity, confidence, proactive, higher self-esteem
3—Traditional Spirituality/Culture	Religion, spiritual, culture	Traditional, Anishinabe strength, spiritual values, traditional beliefs, comes from original teachings, traditional spiritual beliefs,

		Spirituality/Spirit, faith, religion
4—Culturally Competent/Accept Others	Accepting others, culturally competent	Respect for everything, positive living, good values, self-esteem, confident, positive living values, community oriented well-rounded positive living, positive living values, strong values, well-rounded, positive personal values, comes from within, strong personal values, Other people, empathy, social, integrated
5—Take Care of Self	Take care of selves, organized	Better family planning, taking care of self, life principles and standards, Yuppie, change agent, self-focused, self-confident, higher self worth, self worth, respect their life
6—Financial Health/Organized	Financial, economical	Self-sufficient, Responsible, tribal counsel, financial stability, professionalism, higher self esteem
7—Ethical/Moral Leadership	Other focused, ability to change	Community encouragement, good social skills, motivator, leadership skills, leadership, human behavior, moral integrity, ability to change,

		ethical/moral values, community leadership skills, Gandhi, confident, wolf clan, self-confident, enlightened
8—Community	Community	Healthy behaviors, positive traditional behavior, positive lifestyles, Positivity, self-sufficient, humble, community minded, building community, sense of others, good neighbor, sense of community, community oriented, connected to community
9—Family/ Relationships	Relationships, family	Family values, individual and family values, Family, togetherness, family oriented, all kinds of families

Utilization

A report containing the maps was produced for dissemination to each community.

CHAPTER 5: DISCUSSION/LIMITATIONS/FUTURE DIRECTIONS

Discussion

The specific aim of the study was to gain a deeper understanding of indigenous interpretations of positive mental health (PMH) by engaging in a group concept mapping session with Anishinabe community members. The concept mapping process resulted in nine clusters that represented the two communities' interpretations of PMH or wellness: 1) Values Gained with Maturity, 2) Motivated, 3) Traditional Spirituality/Culture, 4) Culturally Competent/Accept Others, 5) Take Care of Self, 6) Financial Health/Organized, 7) Ethical/Moral Leadership, 8) Community, and 9) Family/Relationships.

In comparison, Keyes' Mental Health Continuum—Short Form (MHC-SF) incorporated 14 aspects of PMH within three categories: 1) emotional (*happy, interested in life, satisfied*); 2) social (*contribution, integration, actualization, acceptance, and coherence*), and 3) psychological (*self-acceptance, environmental mastery, positive relationships with others, personal growth, autonomy, and purpose in life*). While many aspects of the MHC-SF were reflected in some fashion in the concept map, others were not prominent (social aspects of *actualization* and *coherence*). Additionally, the concept map incorporated some components of PMH that are not included in the MHC-SF; a novel cluster was traditional spirituality/culture.

In addition to the clusters found in the concept map, a number of themes were also present: harmony and balance, resilience and coping, and connection and interconnectedness. Overall, some clusters and themes have been referenced in other

areas of positive psychology, but others appear to be novel (or are uniquely focused) in these two communities, as will be described in the following discussion.

Cluster 1 (Values Gained with Maturity) was ranked as the cluster having the greatest level of impact on PMH in these communities, while Cluster 5 (Take Care of Self) was ranked as having the least level of impact on PMH in the communities.

Community Research Council (CRC) member interpretations provided some explanation for these rankings, as described below.

CRC Interpretations of Cluster Meanings

Nine clusters resulted from this concept mapping project: 1) Values Gained with Maturity, 2) Motivated, 3) Traditional Spirituality/Culture, 4) Culturally Competent/Accept Others, 5) Take Care of Self, 6) Financial Health/Organized, 7) Ethical/Moral Leadership, 8) Community, and 9) Family/Relationships.

Cluster 1: Values Gained with Maturity. One CRC member felt that Cluster 1 was focused on “learning how to value each other” and to “value different knowledge” (specifically referring to practical knowledge as opposed to book knowledge). Additional interpretations included the concept of balance, which has been noted as important in indigenous health (Canadian Institute for Health Information 2009; Mental Health Working Group, 2002; Mussell, 2005). During the third meeting, one of the interpretations of values within this cluster included “how elders should be” or the idea that it “takes a while to get there.” Other interpretations of this cluster included “grandparents” and “mature,” further supporting the idea that the items in this cluster took time to develop, or possibly alluding to the cycle of life or seasons of life. Values in

general have been previously considered as important components of wellbeing (Peterson, 2006). Values that take time to develop is an area of PMH that doesn't specifically relate to Keyes' MHC-SF interpretation; however, the psychological aspect of MHC-SF, *personal growth*, may be related in part to Cluster 1. Three of Cluster 1's statements relate to the aspect of *personal growth* represented in the MHC-SF as "that you had experiences that challenged you to grow and become a better person":

- #37 "work out negative situations into more positive situations,"
- #80 "overcome difficulties," and
- #92 "can handle stressful situations better."

Thus, while this aspect of psychological health does not fully represent this cluster, it does relate to some of its statements.

Cluster 2: Motivated. Cluster 2 was interpreted in a variety of ways by the CRCs. "Effective behavior," "confidence," "proactive," and "self-reliant" were all suggested as interpretations for this cluster. Each of these interpretations referred to people who were able to motivate themselves to achieve the things they wished to. The World Health Organization's definition of mental health is holistic in nature, and includes the phrasing, "the individual...can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO, 2001b), which aligns with the content of this cluster. The concept of motivation is not directly related to any component in Keyes' MHC-SF, though could be influenced by some parts of the psychological domain (*personal growth, environmental mastery, purpose in life*). For example, Cluster 2

contains the following items, which are all related to *personal growth* and could be associated with *purpose in life*:

- #6 “motivate themselves,”
- #25 “have a good work ethic,”
- #43 “value constructive criticism,” and
- #107 “go forward in life,”

Items related to *environmental mastery* included the following:

- #23 “have academic achievement,”
- #24 “are responsible,”
- #61 “have a can-do attitude,” and
- #81 “take better care of themselves.”

Cluster 3: Traditional Spirituality/Culture. Cluster 3 is focused on traditional spirituality and culture. Members of the CRC interpreted this cluster as representing traditional aspects of beliefs, spirituality, values, and strengths. Of note, CRC members stressed the importance of “spirituality” as well as “Spirit” as a way to refer not just to spirituality, but also to the *Spirit* (emphasis on capitalization), an aspect of traditional belief systems.

While traditional spirituality/culture is not included in the MHC-SF, it has been suggested by other authors as being important in indigenous mental health and wellness (Canadian Institute for Health Information, 2009; Mental Health Working Group, 2002). Religiosity, a construct somewhat related to traditional spirituality, and engagement with cultural beliefs, practices and values, have also been recognized as possible factors in

increasing a person's resilience (Gallo et al., 2009; Ryff et al., 2003; Ungar, 2008; Ungar et al., 2007). The inclusion of traditional spirituality/culture, especially as defined by this map (the cluster includes specific traditional aspects of indigenous spirituality and culture as well as aspects of being connected to the earth) aligns with the notion that the reclamation of cultural traditions and being connected to the land or environment could promote resilience in indigenous people and communities (Kirmayer et al., 2011).

Cluster 4: Culturally Competent/Accept Others. Cluster 4 contained items relating to cultural competence, or the concept of accepting others. CRC members interpreted the content of the cluster as having a focus on other people, personal values, and values for living. Additionally, CRC members considered this cluster as representing values that displayed respect for everything as well as empathy for others. While Cluster 1 focused on values that took time to develop (or developed with maturity), Cluster 4 incorporates values focused on accepting and respecting other people, which may be related to recognition of harmony and respect for differences between cultures as being important in mental wellness (Canadian Institute for Health Information, 2009). Further, this focus on accepting others and cultural competence aligns with the notion that the connections between cultures are important in indigenous mental wellness (Mussell, 2005).

Cluster 4 aligns with both the social and psychological domains of the MHC-SF. Within the psychological domain, *positive relationships with others* is aligned with this cluster (e.g. #32 have respect for others), while *integration* (e.g. #102 have a sense of belonging) and *acceptance* (e.g. #42 see the good in everybody), both social components,

are also present. However, these aspects of the MHC-SF are also present in other clusters.

Cluster 5: Take Care of Self. Cluster 5 contained items related taking care of oneself. CRC members also interpreted the content of this cluster to represent higher self worth, and respect for one's life. Interestingly, some CRC members felt that the term "yuppie" was a fitting interpretation for this cluster. "Yuppie" is short for "young upwardly-mobile professional" (Childs & Storry, Eds., 2002), and CRC members felt it was fitting for this cluster based in part on the combination of item #2 "have a nice house," item #18 "spend more time exercising," and the general concept that the items within the cluster tended to represent a person who acted and possessed things that improved their own life. Another related interpretation was "self-focused." While the term, "yuppie," and the phrase, "self-focused" may have some negative connotations and seem somewhat antagonistic to traditional communal values, CRC members felt that a focus on self and the drive for a better life were also positive values. Further, the content and interpretation of these clusters is in line with mental wellness as defined by the Assembly of First Nations of Canada: that self-esteem and personal dignity are components of mental wellness (Mental Health Working Group, 2002). Within the MHC-SF, *environmental mastery* (psychological), has some parallels with the items in this cluster: #2 "have a nice house" and #91 "are more compliant with healthcare." Indigenous wellness definitions have included physical health (Mental Health Working Group, 2002; Mussell, 2005; Smye & Mussell, 2001). However, in this concept mapping project, physical health was not specifically represented as a cluster. Cluster 5 included

some aspects of physical health, but no items or interpretations were included addressing the idea of “being healthy” or “not being sick.” Two items from Cluster 5 (#11 “better health outcomes,” #18 “spend more time exercising”) and one item from Cluster 8 (#95 “eat healthier”) were related to physical health, but no cluster was directly associated with this area. While some chronic health conditions like diabetes are more prevalent in indigenous communities (Bullock, 2011), it is not clear how health disparities impact perceptions of PMH.

Cluster 6: Financial Health/Organized. Cluster 6 contained items related to financial health or organization. Members of the CRC interpreted the content of this cluster to include aspects of self-sufficiency, responsibility, and financial stability. Additionally, some CRC members felt that members of the tribal council represented the collection of items included in Cluster 6. Another interpretation of this cluster, professionalism, was related to the idea of self-sufficiency: a person who is responsible and has financial stability would also be self-sufficient. Like Cluster 5, the content of this cluster was most closely aligned with the *environmental mastery* aspect of the psychological part of the MHC-SF. Relevant items included the following:

- #7 “are able to confront difficult situations,”
- #15 “are more organized,”
- #62 “have financial stability,” and
- #63 “are able to negotiate more readily.”

However, financial health/organization is not a specific component of the MHC-SF, but is rather aligned with the concept that a person who is able to successfully master the environment of daily life would likely also have some financial health/organization. Additionally, the financial health/organization aspect of this cluster may also be related to the concept of resilience, specifically the goal-directedness aspect of resilience (Benard, 1991). Unger et al. (2007; 2008) proposed that resiliency is in part dependent on access to material resources, which adds credence to the idea that financial health/organization is an aspect of PMH.

Cluster 7: Ethical/Moral Leadership. Cluster 7 incorporated items related to leadership, but was also focused on others. CRC members interpreted this cluster as representing ethical-moral values and a person who was enlightened, motivating, or being a leader, and suggested Gandhi as being representative of the content of the cluster. It is important to note that a focus on others/community, as well as moral/ethical integrity were key parts of the interpretation of this cluster. The items in the cluster (e.g. #5 “are positive role models,” #22 “motivate others,” #27 “are more generous,” #39 “are always looking for new solutions,” and #67 “seek advice more readily”) support the idea of an ethical/moral leader, but say nothing about requiring a leadership position.

Aspects related to ethical/moral leadership have been referenced as key in mental health. For instance, the WHO’s definition of mental health includes the phrase, “is able to make a contribution to his or her community” (WHO, 2001b). Moreover, previous importance placed on holistic health in government and leadership activities supports the focus on ethical and moral leadership (Mussell, 2005). This cluster may also be related

to the *contribution* component (“That you had something important to contribute to society”) of the MCH-SF’s social category.

Cluster 8: Community. Cluster 8 focused on positive items that were related to community. CRC interpretations of this cluster addressed a wide range of ideas. CRC members felt the cluster represented various aspects of community (e.g. community oriented, connected to community, community minded) and values (e.g. positivity, good neighbor, positive lifestyles). It is important to consider that CRC members may have perceived these values as something that included aspects of community, which may also align with the concept that interconnectedness may be valued in indigenous cultures (Mussell, 2005). Cluster 8 also aligns with the definition put forth by the Assembly of First Nations of Canada: that togetherness is part of mental wellness (Mental Health Working Group, 2002). Further, the WHO includes “able to make a contribution to his or her community” (WHO, 2001b) as a part of mental health.

Within the social category of the MHC-SF, *integration* (“that you belonged to a community [like a social group or your neighborhood]”) and *contribution* (“that you had something important to contribute to society”) were most represented by Cluster 8.

Integration was represented by item #104 “have a sense of community.” Several items were related to *contribution*:

- #9 “are more open to sharing with the community,”
- #49 “give back to their community,” and
- #84 “are willing to help others.”

While Keyes' focus was on society, the results of the concept map were focused on community. Thus, while the cluster aligns with Keyes' conceptualization, the two communities' understanding of PMH seems to be focused primarily at the community level as opposed to the societal level. Thus, as in Keyes' model, there appears to be a social, or community, aspect to PMH in both communities.

Cluster 9: Family/Relationships. Cluster 9 focused on items related specifically to family, but also included relationships in general. CRC members interpreted this cluster primarily in reference to family. However, during the interpretation session, one CRC member felt that item #100, "have a partner or companion" was judgmental of people who didn't have spouses or partners, and consequently, the group chose to include an interpretation referencing both individual and family values. Because scholars have previously referenced good personal relationships as being essential to mental health (Peterson, 2006) and social support within a mutual caring relationship as being important in helping people cope (Berkman et al., 2000), the focus of this cluster is logical and aligns with previous research. Further, the inclusion of family relationships as being important in PMH is substantiated by previous research showing family's importance in indigenous communities (Whitbeck, Hartshorn, & Walls, 2014).

While the MHC-SF does not specifically include family relationships as an important component of PMH, the psychological category includes the component *positive relationships with others*, which can be an aspect of family or relationships.

MHC-SF Categories and Content of Cluster Map

Keyes' MHC-SF incorporated 14 aspects of PMH within three categories: 1) emotional (*happy, interested in life, satisfied*); 2) social (*contribution, integration, actualization, acceptance, and coherence*), and 3) psychological (*self-acceptance, environmental mastery, positive relationships with others, personal growth, autonomy, and purpose in life*). Some aspects of the MCH-SF were included in this concept map, but others were missing. Table 6 summarizes how the MHC-SF and results of the concept map are connected, as discussed in the previous discussion on independent clusters.

Table 6: MHC-SF Items, Categories, and Related Clusters

Item	Category	Cluster
Happy	Emotional (<i>Happy</i>)	▪
Interested in life	Emotional (<i>Interested in Life</i>)	▪
Satisfied	Emotional (<i>Satisfied</i>)	▪
That you had something important to contribute to society	Social (<i>Contribution</i>)	<ul style="list-style-type: none"> ▪ 5 (Take Care of Self) ▪ 7 (Ethical/Moral Leadership) ▪ 8 (Community)

That you belonged to a community (like a social group or your neighborhood)	Social <i>(Integration)</i>	<ul style="list-style-type: none"> ▪ 4 (Culturally Competent) ▪ 8 (Community)
That our society is becoming a better place for people like you	Social <i>(Actualization)</i>	<ul style="list-style-type: none"> ▪
That people are basically good	Social <i>(Acceptance)</i>	<ul style="list-style-type: none"> ▪ 4 (Culturally Competent/Accept Others)
That the way our society works made sense to you	Social <i>(Coherence)</i>	<ul style="list-style-type: none"> ▪
That you liked most parts of your personality	Psychological <i>(Self-Acceptance)</i>	<ul style="list-style-type: none"> ▪ Various Clusters
Good at managing the responsibilities of your daily life	Psychological <i>(Environmental Mastery)</i>	<ul style="list-style-type: none"> ▪ 2 (Motivated) ▪ 5 (Take Care of Self) ▪ 6 (Financial Health/Organized)
That you had warm and trusting relationships with others	Psychological <i>(Positive Relationships with Others)</i>	<ul style="list-style-type: none"> ▪ 4 (Culturally Competent/Accept Others) ▪ 9 (Family/Relationships)
That you had experiences	Psychological	<ul style="list-style-type: none"> ▪ 1 (Values Gained with

that challenged you to grow and become a better person	<i>(Personal Growth)</i>	Maturity) <ul style="list-style-type: none"> ▪ 2 (Motivated)
Confident to think or express your own ideas and opinions	Psychological <i>(Autonomy)</i>	<ul style="list-style-type: none"> ▪ 5 (Take Care of Self)
That you life has a sense of direction or meaning to it	Psychological <i>(Purpose in Life)</i>	<ul style="list-style-type: none"> ▪ 2 (Motivated)

Emotional. In this concept map, emotional aspects of PMH were not prominent. While individual items (e.g. #55 “are playful and #99 “are happier”) addressed aspects of emotional health, no clusters emerged with strong emotional aspects of the MHC-SF (*happy, interested in life, and satisfied*). Emotional health has been included in previous indigenous understandings of health and mental wellness (Smye & Mussell, 2001), and one definition states that emotional wellness should be in harmony with physical, mental, and spiritual wellness (Mental Health Working Group, 2002). Thus, it is possible that emotional health is a component that is interconnected throughout PMH but might not be a specific cluster.

Social. Three of the aspects of social health (*contribution, integration, and acceptance*) were represented in the concept map. Two aspects (*actualization and coherence*) were not represented in the map. *Actualization* was represented in the MHC-

SF by the statement “that our society is becoming a better place for people like you” while *coherence* was represented by “that the way our society works makes sense to you.” It is possible that these two aspects of social health were not represented in the concept map due to societal stressors like discrimination (Kading et al., 2015).

Psychological. Five aspects of psychological health (*environmental mastery, positive relationships with others, personal growth, autonomy, and purpose in life*) were represented at least in part by clusters in the map. Some statements related to aspects of psychological health were also located in different areas of the map. For example, *environmental mastery* (MHC-SF item “good at managing the responsibilities of your daily life”) was represented by a number of statements across the map even though *environmental mastery* was most closely aligned with Clusters 2, 5 and 6. These additional statements included the following:

- #92 “can handle stressful situations better” (Cluster 1),
- #27 “work out negative situations into more positive situations” (Cluster 7),
- #39 “are always looking for new solutions” (Cluster 7),
- #108 “clean the house more” (Cluster 8), and
- #88 “are more patient with children” (Cluster 9).

The inclusion of aspects of *environmental mastery* across the map may be due in part to the importance and existence of interconnectedness and connection in indigenous cultures (Mental Health Working Group, 2002; Mussell, 2005).

Self-acceptance was the only aspect of psychological health not directly represented by a cluster in the map; however, statements related to *self-acceptance* (represented by “that you liked most parts of your personality” in the MHC-SF) were present in both Clusters 1 and 2. Statements included #75 “accept themselves” (Cluster 1); #35 “have self esteem,” and #47 “take pride in themselves” (Cluster 2). During the third session, CRC members included interpretations based on higher self-esteem/self-worth, both concepts somewhat related to *self-acceptance*, for multiple clusters (2, 4, 5 and 6). It is therefore possible that self-esteem/self-worth may be an interconnected aspect of PMH in these communities (Mental Health Working Group, 2002; Mussell, 2005).

Overall Themes Represented Across Cluster Map

While nine clusters were identified through the concept mapping process, some themes were also evident and stretch across different parts of the concept map, indicating further support for the idea that connection and interconnectedness may impact PMH (Mental Health Working Group, 2002; Mussell, 2005). These themes included harmony and balance, resilience and coping, and connection and interconnectedness. While none are directly related to the MHC-SF, positive psychology in general makes mention of these themes.

Harmony and balance. Definitions of PMH have previously included concepts of balance and harmony (Canadian Institute for Health Information, 2009; Mental Health Working Group, 2002). These concepts did not specifically form clusters in the concept map; however, the following individual items addressed these concepts:

- #8 “acceptance of other lifestyles,”
- #20 “have a balanced lifestyle,”
- #32 “have respect for others,”
- #34 “have healthier relationships,”
- #72 “accept and respect nature,”
- #83 “have a balanced relationship with possessions (money),” and
- #89 “get along with each other.”

It is interesting to note that these harmony- and balance-focused items were grouped into a variety of clusters (Clusters 1, 2, 3, 4, 8, 9). One possible explanation is that balance and harmony weave through many of the components of PMH and mental wellness, as defined by these two communities’ CRCs (Mental Health Working Group, 2002; Mussell, 2005).

Resilience and coping. Multiple clusters (1, 2, 5, 6, 7, and 9) include statements related to resilience and coping. Statements related to resilience (Benard, 1991; Luthar, Cicchetti, & Becker, 2000) included the following:

- #37 “work out negative situations into more positive situations” (Cluster 1),
- #80 “overcome difficulties” (Cluster 1),
- #92 “can handle stressful situations better” (Cluster 1),
- #107 “go forward in life” (Cluster 2),
- #36 “plan better for future for self (and family)” (Cluster 5),
- #40 “are tolerant of change” (Cluster 5),

- #7 “are able to confront difficult situations” (Cluster 6),
- #64 ”persevere” (Cluster 7), and
- #79 “plan for future generations” (Cluster 9).

Statements related to various methods of coping (Austen, 2003; Canadian Institute for Health Information, 2009; Compas, Connor-Smith, Saltzman, Harding Thomsen, & Wadsworth, 2001; Lyons, Mickelson, Sullivan, & Coyne, 1998) included the following:

- #86 “have coping skills” (Cluster 2),
- #57 “find strength in stories (where you come from)” (Cluster 3),
- #110 “are less susceptible to alcohol and drug abuse” (Cluster 4),
- #18 “spend more time exercising” (Cluster 5) and
- #97 “go home and drink alcohol when they feel good” (Cluster 5).

Thus, it is possible that resilience and coping are indeed important aspects of PMH in these communities, but are woven throughout various parts of the map, another piece of evidence supporting interconnectedness of various aspects of PMH (Mussell, 2005).

Connection and interconnectedness. Additionally, while no clusters are directly labeled as connection or interconnectedness, associated with indigenous wellness (Kirmayer et al., 2011; Mental Health Working Group, 2002), two clusters include aspects of connection: 3 (Traditional Spirituality/Culture) and 4 (Culturally Competent/Accept Others). These clusters include the following related statements:

- #98 “are connected to the earth,”

- #103 “are spiritually connected,” and
- #102 “have a sense of belonging.”

Thus, while some themes are interconnected across the map, connection, as a theme, is also evident in the map. The interconnection of themes as well as the presence of connectedness as an aspect of PMH gives further support for the importance and inclusion of connection and interconnectedness in indigenous understandings of PMH (Mental Health Working Group, 2002; Mussell, 2005).

Rankings of Clusters by CRC Members

Cluster 1 (Values Gained with Maturity) was ranked as the cluster having the greatest level of impact on PMH in these communities. During the third session, CRC members included a number of interpretations for this cluster that included maturity, grandparents, and the way elders should be. It is possible that this cluster was ranked so highly due to the great honor placed on elders in indigenous communities (Lewis, 2011). Interestingly, some research has found that older people in general tend to have greater levels of wellbeing (Gove, Ortega, and Style, 1989), lending support to this cluster’s importance.

Cluster 5 (Take Care of Self) was ranked as having the least level of impact on PMH in the communities. One CRC member felt that Cluster 5 contained items that were “hard to have” in life due to their relative unattainability. For example, “hard to have” items in life could include #2 “have a nice house,” #11 “have better health outcomes,” and #18 “spend time exercising.” Because this cluster may have been perceived as

relatively unattainable, CRC members may have ranked it lower since fewer people in the community would be likely to be impacted by these aspects of PMH.

Summary

The specific aim of the study was to gain a deeper understanding of indigenous interpretations of PMH by engaging in a group concept mapping session with Anishinabe community members, and the results of this concept mapping project provide some insight. According to the map produced from CRC members' perspectives, PMH includes 1) Values Gained with Maturity, 2) Motivated, 3) Traditional Spirituality/Culture, 4) Culturally Competent/Accept Others, 5) Take Care of Self, 6) Financial Health/Organized, 7) Ethical/Moral Leadership, 8) Community, and 9) Family/Relationships. Additionally, a number of themes were also present in the map: harmony and balance, resilience and coping, and connection and interconnectedness. The concept map shows that PMH, as defined by CRC members from the Bois Forte (BF) and Lac Courte Oreilles (LCO) communities, has some similarities and some differences from Keyes' definition of PMH, operationalized in the MHC-SF. Many of the clusters were related at least in part to the MHC-SF, but some differences were evident: social aspects of *actualization* and *coherence* were not present in the concept map, and Traditional Spirituality/Culture was a novel component not found in the MHC-SF. Additionally, the themes of harmony and balance, resilience and coping, and connection and interconnectedness, while not found in the MHC-SF, were prominent aspects in this concept map, lending support to their importance in indigenous PMH.

Thus, based on the results of the concept map, the MHC-SF may not fully measure PMH in these communities.

Overall, the theme of interconnection is key to understanding the results of the concept map. CRC members' interpretations of the map support this focus. Several CRC members felt that the map represented a broad definition of PMH, indicating PMH's presence across a variety of aspects of life. Another CRC member felt that the clusters and items in the map represented many aspects of life and were not specific to PMH alone. These interpretations relate to previous definitions of PMH/mental wellness in indigenous communities as being holistic, interconnected, and balanced in nature (Kirmayer et al., 2011; Mental Health Working Group, 2002). Additionally, the holistic nature of PMH aligned with the idea of *mino bimaadiziwin*, a good way of life for Anishinabe people (Gross, 2002). Based on these interpretations and definitions, as well as the content of the concept map, PMH would indeed be represented in a wide variety of aspects of life.

In conclusion, based on this group concept mapping project, a person with PMH in these communities would have the following:

- values gained with maturity,
- motivation,
- traditional spirituality/culture,
- cultural competence/acceptance of others,
- taking care of self,
- financial health/organization,

- ethical/moral leadership,
- community, and
- family/relationships.

Additionally, the following aspects are part of PMH for people in these communities:

- harmony and balance,
- resilience and coping, and
- connection and interconnectedness.

Limitations

I may have brought certain biases to the study. First, I served as the facilitator for the group concept mapping session, which could have resulted in non-intentional biasing of participants towards responses, clusters, or interpretations. Second, from a community based participatory research perspective, I may have had bias and perceived power based on education and ethnicity (not Anishinabe) (Minkler & Wallerstein, 2003).

Additionally, because only one group of people, CRC members, were involved in this group concept mapping session, the results may not be reflective of the entire community's perspective. However, as the purpose of this exercise was to engage the CRC members in a structured exploration of PMH, future projects could address this limitation by focusing on gaining a broader understanding of PMH by incorporating non-CRC members in group concept mapping sessions.

Further, because higher levels of civic engagement and involvement in social causes have been associated with perceptions of greater meaning and purpose in life (Zita & Chamberlain, 1992), CRC members may have represented a sample with higher levels

of PMH than the general population. It is uncertain how this may have affected their perception of PMH as portrayed in the concept mapping results.

Additionally, the approach to data collection may add to limitations in this study. CRC members from Community 1 recorded their own sort data, which resulted in some lost data (See Methods section for details). The Community 2 group did not record their own data but paper-clipped their piles together, and I recorded the data. This may have contributed to participant fatigue in the Community 1 group, as well as incomplete sort data collection and duplicate sort data entry. While it is possible that both groups were fatigued during the sorting and rating portion of the meeting, it is likely that Community 1 was more fatigued.

Future directions

During the third session, CRC members thought of multiple ways to utilize the results of the group concept mapping project. One CRC member recalled how sugar bushing was an important part of bringing people together, and that it seemed to be something that fit into the concept of PMH. However, it was uncertain if this suggestion was raised due to specific relation to PMH or because it was an upcoming activity in the community (meeting was in January).

Other CRC members thought of a number of applications for the information presented in the map. They felt the nine clusters represented qualities of a good mentor, and could possibly have application in the Boys and Girls Club setting—both to teach children about the qualities, but also to stress the qualities to mentors. Another CRC member suggested that the nine clusters could be useful as a potential application in 12-

step program settings and thought it could be presented as another set of attitudes to strive for.

Additionally, the CRCs will be able to use the maps to develop pertinent interventions, programing, or publications for their communities. Because the maps are visual representations of data, a presentation in each community may be appreciated. This would be done in collaboration with CRC members. Possible uses of the concept maps in the communities include informing community education, developing pertinent interventions, determining funding/program priorities, and better understanding PMH in Anishinabe communities.

While the results of the concept map, in combination with the differences between the concept map and Keyes' MHC-SF, may not fully explain the high rates of flourishing coexisting with high rates of mental distress found in BF and LCO communities (Kading et al., 2015), these results provide a more detailed understanding of what PMH is in these communities. Ultimately, a better understanding of PMH may help us better understand the mental health paradox that appears to exist in these communities. Thus, future studies that focus on mental health and illness may benefit from utilization of a community- or culturally- specific version of the MHC-SF, which does not currently exist.

To this end, a larger and more representative concept mapping project could be conducted with greater numbers of people and could possibly include more than just these two communities. A new model and/or measure of indigenous PMH could also be developed using the nine-cluster map (or a future more-representative map) as a basis and could be used in future survey-based projects exploring PMH in Anishinabe

communities. Additionally, this particular group concept mapping approach could be replicated in future studies but focus on other areas of health in AI communities, perhaps as an addition to or alternative to preliminary focus group meetings.

Finally, the mental health paradox may ultimately be explained in part based on the evidence showing that the flourishing/languishing and depressed/not depressed continuums may exist as separate continuums (see Figure 1), but collapse to a single continuum in times of stress (Keyes, 2002; 2005a; Westerhof & Keyes, 2010; Zautra et al., 2005). One specific stressor that could be focused on is the potential impact of health disparities on perceptions of PMH as well as on levels of flourishing mental health. Thus, future studies measuring markers of stress (and markers of health disparities in particular) as well as the MHC-SF or a community/culturally-specific measurement of PMH may provide some insight to the impact of stress on PMH and the utility of the one and two continuum models in understanding the mental health paradox.

Conclusion

The cluster map that resulted from this project provided better understanding of the conceptual framework of LCO and BF CRC members' perspectives of PMH (Trochim, 1989). Because the clusters and themes varied somewhat from the three aspects of PMH presented in Keyes' MHC-SF (emotional, psychological, and social wellbeing), there is evidence to suggest the two communities of people may view PMH and wellbeing in a unique way. While this concept mapping project does not fully explain the potential mental health paradox in BF and LCO, it does provide a more complete picture of what PMH is in these communities. Community-specific utilization

or interventions focused on PMH as well as development of a culturally relevant PMH measure may be appropriate next steps.

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APPENDICES

Appendix 1: Mental Health Continuum—Short Form

This construct, used in multiple studies across various cultural groups, has been operationalized as the Mental Health Continuum—Short Form (MHC-SF), a scale that measures emotional, psychological, and social wellbeing (Keyes, 2009a). The MHC-SF is a shortened version of the Mental Health Continuum—Long Form (MHC-LF). The MHC-LF includes three components: Keyes' model of five dimensions of social wellbeing (five 3-item scales; 15 items), Ryff's model of six dimensions of psychological wellbeing (six 3-item scales; 18 items), and a 7-item measure of emotional wellbeing based on Bradburn's affect balance scale (Bradburn, 1969; Keyes, 1998; Ryff, 1989). The shortened version, the MCH-SF, includes a subset of the items included in the MHC-LF: five items of social wellbeing (one item to represent each of the five dimensions of social wellbeing), six items of psychological wellbeing (one item to represent each of the six dimensions of psychological wellbeing), and three items to represent emotional wellbeing (Keyes, 2009a).

In the MHC-SF, self-reported positive mental health (PMH) symptoms are measured by scored responses (0 to 5, where 0 = never, 1 = once or twice, 3 = 2 or 3 times a week, 4 = almost every day, and 5 = every day) of PMH experienced in the two or four weeks prior to survey participation. Individuals are then classified as having flourishing, moderate, or languishing mental health. Flourishing mental health is a high level of emotional, psychological, and social wellbeing. To meet criteria for flourishing,

participants have to report at least one of the three hedonic (emotional) well-being symptoms and six or more of the eleven positive functioning (social and psychological well-being) symptoms “every day” or “almost every day.” Individuals who meet criteria for languishing have to report at least one of the three hedonic (emotional) well-being symptoms and six or more of the eleven positive functioning (social and psychological well-being) symptoms “never” or “once or twice.” Those who did not meet criteria for either “languishing” or “flourishing” were classified as having “moderate” mental health. A maximum summed score of 70 is possible. In contrast, the MHC-LF utilizes tertile cut points: To meet criteria for flourishing, participants have to score in the upper tertile for at least one of two measures of emotional well-being and six or more of the eleven positive functioning (social and psychological well-being) symptoms. Individuals who meet criteria for languishing have to score in the lower tertile of one of the two emotional well-being measures and six or more of the eleven positive functioning (social and psychological well-being) symptoms. Those who did not meet criteria for either “languishing” or “flourishing” were classified as having “moderate” mental health.

The MHC-SF has been shown to have good discriminant validity and internal consistency in adults in South Africa, the United States, and in the Netherlands as well as in adolescents (aged 12 – 18; Keyes, 2005b; 2006; Keyes et al., 2008; Lamers, Westerhof, Bohmeijer, ten Klooster, & Keyes, 2011; Westerhof & Keyes, 2009). The MHC-SF has also been shown to be reliable over time (Lamers et al., 2011) and the three-factor structure has been upheld in various groups of people (adults, college students, and adolescents in the United States, adults in South Africa, adults in the

Netherlands, and adults in Iran) (Gallagher et al., 2009; Joshanloo, Wissing, Khumalo, & Lamers, 2013; Keyes, 2005b; 2009a; Keyes et al., 2008; Lamers et al., 2010; Robitschek & Keyes, 2009).

Appendix 2: Mino Giizhigad Study

Used with permission: Melissa Walls, Ph.D., Primary Investigator of Mino Giizhigad Study

“RESEARCH DESIGN AND METHODS

The Mino Giizhigad (A Good Day) Study was a community-based participatory research (CBPR) project with the Lac Courte Oreilles and Bois Forte Bands of Chippewa¹ and the University of Minnesota Medical School-Duluth. Both tribal communities consented to be named in public dissemination of research findings. The purpose of the study was to identify and describe the impact of mental and behavioral health factors on diabetes treatment and outcomes among Ojibwe adults with type 2 diabetes. Tribal resolutions from both communities were obtained prior to application submission for funding. The project began with community feasts and forums to discuss the study goals, obtain community feedback, and establish Community Research Councils (CRC). CRC and University team members were active participants in the entire research process, from methodological planning to final data collection and analysis. The University of Minnesota IRB and Indian Health Services National IRB reviewed and approved the methodology included in this study.

SAMPLE

Potential participants were randomly selected from each reservation’s health clinic records. Inclusion criteria were patients 18 years or older, type 2 diabetes diagnosis, and self-identified as American Indian. Clinic partners were trained on

probability sampling methods to generate a random sample of 150 patients from their lists. Selected patients were mailed a welcome letter, an informational project brochure, and a contact information card with mail and phone-in options to decline participation. Trained community interviewers contacted non-declining recruits to schedule interviews. Consenting participants were given a pound of locally cultivated wild rice and a \$30 cash incentive. Paper-and-pencil interviewer administered surveys were completed in participants' location of choice, most often in private spaces within homes. The time to complete each survey ranged between approximately 1.5 - 3 hours.

Identifying information linked to surveys (i.e., names, address) was removed and replaced with an identification number by on-site project coordinator prior to sending to the university-based team. All survey data was entered and verified in electronic format by University research assistants. Out of a total initial eligible sample of 289 individuals, 218 participants completed surveys for a final study response rate of 75.4%.”

NOTES

1. “While the term “Chippewa” is a corruption of “Ojibwe,” “Chippewa” has been used by the federal government in all major treaty negotiations, government-to-government negotiations, and legal cases involving Ojibwe bands. Although many members of this group prefer the term “Anishinabe” or “Ojibwe,” the term “Chippewa” has been used in relatively recent court cases and is currently incorporated into a number of tribal and band names (Treuer 2010).”

Appendix 3: Methodological Background and Details

The Mino Giizhigad (MG) project was grounded in the transformative emancipatory framework and utilized principles of community based participatory research, both of which will be discussed in this Appendix.

Transformative Emancipatory Framework

In order to best serve this population, the transformative emancipatory framework provides a perspective that considers socioeconomic, racial, or other social and power relationships and includes the view that the purpose of research is to improve society (Mertens, 2003). The transformative approach was appropriate with this population because people who are indigenous often have been taken advantage of by researchers in the past. For example, “helicopter research,” where the researcher(s) literally or figuratively fly in, collect data, and leave without ensuring any benefit for the community, led to distrust of researchers in many indigenous communities (Deloria, 1992). This framework, in combination with the principles of community-based participatory research, provided a more respectful and collaborative approach to research (Minkler & Wallerstein, 2003).

The transformative approach can result in findings or initiatives that lead to social change, social justice, and improvement of a community (Minkler & Wallerstein, 2003; Cresswell & Plano Clark, 2011). The transformative framework is appropriate to use when working with groups of people who have been or are currently being marginalized (Sweetman, Badiie, & Cresswell, 2010). This group of people (relatively low economic status, indigenous) has traditionally been marginalized, so this framework provides a way

to address power relationships and enable community development of applicable interventions (Sweetman et al., 2010).

Community based participatory research

Community-based participatory research (CBPR) is an example of an approach to research using a transformative emancipatory framework. CBPR is distinct from conventional research approaches because it stresses the importance of a partnership between researcher and community, thereby decreasing the impact of power differences due to race, socioeconomic status, education level, gender, and other factors.

Communities that may have had negative experiences with researchers in the past (perhaps minority groups, lower socioeconomic groups, etc.) often prefer this method of research (Minkler & Wallerstein, 2003). This is a particularly important approach for the researcher and community working to overcome common ethical challenges in research: “(a) achieving a true ‘community-driven’ agenda; (b) insider-outsider tensions; (c) real and perceived racism; (d) the limitations of ‘participation;’ and (e) issues involving the sharing, ownership, and use of findings for action” (Minkler, 2004, p. 684).

CBPR has been called a “research paradigm that bridges the gap between science and practice through community engagement and social action to increase health equity” (Wallerstein & Duran, 2010, p. S40). This guides the data collection, data interpretation, dissemination, and sustainability of a given project (Minkler & Wallerstein, 2003).

CBPR utilizes the standard steps of research, but emphasizes the importance of forming a community research council (CRC) prior to beginning the study. Ideally, a CRC should be formed and included prior to the design of the study, applying for

funding, or determining the research question (Minkler & Wallerstein, 2003; Horowitz, Robinson, & Seifer, 2009). In this way, the community has the opportunity for involvement to the extent of their interest. Incidentally, though “community” essentially consists of a group of people who share a common identity, the definition of the community may vary from project to project, and it is essential that the researcher-community partnership define who is included in the “community” at the beginning of a project (Minkler & Wallerstein, 2003). The CRC is an essential partner in the entire research process, and researchers work closely with the CRC throughout the planning, implementation, and dissemination of study results. Members of the CRC or participants in the community may be involved in developing research questions and sampling decisions, participate in analysis of data, or participate in the dissemination by writing or presenting results (Horowitz et al., 2009; Minkler & Wallerstein, 2003).

CBPR is ideal for public health research in indigenous communities as the emphasis on partnership with and inclusion of community members can lead to culturally relevant, community-specific studies and interventions, which may help ensure intervention efficacy and benefit to the community.

Appendix 4: Step-by-Step Process

Both communities followed this format of group concept mapping sessions. Both communities had to complete Session 1 before either community could start Session 2. This was to ensure that the complete list of brainstormed ideas (reduced to the top 100 ideas) was available for both communities to sort. Both communities had to complete Session 2 before either community could start Session 3. This was to ensure that the complete sort data and rating data was available for the analysis and interpretation, which was done during Session 3.

- File for UMN IRB approval
- Facilitator Task 1: Preparation
 - Schedule dates of Sessions 1 through 3 in both communities
 - Reserve venues (Angie)
 - Create agenda for Session 1
 - Print 15+ copies
 - Choose a method of recording ideas (pens/markers, whiteboard, computer/projector, large Post-It notes, etc.)
 - Ensure backup method is available
- Session 1: Brainstorming, 60+ minutes
 - Materials needed
 - Easel, markers, large paper
 - Agenda
 - Post brainstorming prompt so all can see
 - Activity
 - Introduction
 - Overview of concept mapping process

- Example of concept map
 - Share guidelines and brainstorming prompt
 - Brainstorming session
 - Closing
 - Thank you
 - Next steps

- Facilitator Task 2: Input Data
 - Create agenda for Session 2
 - Print 15+ copies
 - Create top 100 items list from the brainstorming session
 - Input the top 100 items into Concept Systems software
 - Print 15+ copies of card decks with the top 100 items
 - Print 15+ copies of sorting sheet (Appendix 7)
 - Print 15+ copies of rating sheet (Appendix 8)

- Session 2: Sorting and Rating, 60-90 minutes
 - Materials
 - Agenda
 - Card decks
 - Sorting sheets
 - Rating sheets
 - Pens/pencils
 - Table space for sorting
 - Activity
 - Introduction
 - Sorting and rating directions
 - Sorting
 - Rating questions

- Closing
 - Thank you
 - Next Steps

- Facilitator Task 3: Input Data, Create Maps
 - Create agenda for Session 3
 - Print 15+ copies
 - Input sorting and rating data into Concept Systems software
 - Create Maps
 - Point map
 - Cluster map
 - Determine most likely cluster solution
 - Cluster rating map
 - Prepare presentation of maps for Session 3
 - Print 15+ copies of maps for handouts

- Session 3: Analysis and Interpretation, 120 minutes
 - Materials
 - Agenda
 - Pens/pencils
 - Maps handouts
 - Activity
 - Introduction
 - Share steps so far
 - Present Maps
 - Guide discussion on the maps' content
 - Record ideas and requests
 - Closing
 - Thank you

- Next Steps

- Facilitator Task 4 (optional)
 - Create and print agenda if Session 4 is to be held
 - Create any maps or analysis requested by CRC members
 - Share the additional results with CRC members

- Session 4 (optional): Further Analysis, Interpretation and/or Presentation
 - May be an additional meeting with CRC members to share and discuss results or could be a community presentation to share results.

- Facilitator Task 5
 - Follow up with any additionally requested maps or analysis

Appendix 5: Internal Review Board Letter

5/6/2015

University of Minnesota Duluth Mail - IRB Review Not Required



IRB Review Not Required

Fri, Sep 5, 2014 at 2:26 PM

To: [Redacted]
Cc: [Redacted]

TO: [Redacted]

PI: Margarette Kading

IRB HSC: 1404P50125

Title:

Positive Mental Health: A Concept Mapping Exploration

From: Institutional Review Board (IRB) The IRB determined your planned activities described in this application do not meet the regulatory definition of research with human subjects and do not fall under the IRB's purview for one or both of the following reasons:

1) The proposed activities are a) not a systematic investigation and/or b) not designed to develop or contribute to generalizable knowledge [45CFR46.102(d)].

Quality assurance activities and evaluation projects designed for self-improvement or program evaluation, not meant to contribute to "generalizable" knowledge, do not meet the threshold of research with human subjects.

Although IRB review may not be required for case studies, you still may have HIPAA obligations. Please contact the Privacy Office at 612-624-7447 for their requirements.

and/or

2) You will not obtain private identifiable information from living individuals [45 CFR 46.102(f)].

Interviews of individuals where questions focus on things not people (eg. questions about policies) do not require IRB review.

You will be analyzing aggregate data that cannot be linked to a living individual.

The above referenced IRB Human Subjects Code (HSC) will be inactivated in the database and you will have no further obligations for this project. Please do not hesitate to contact the IRB office at 612-626-5654 if you have any questions. Thank you for allowing the IRB to make the determination about whether or not review is required.

HRPP Staff

<https://mail.google.com/mail/u/0/?ui=2&ik=fda66ec346&view=pt&q=irb&qo=true&search=query&msg=1484748089cf4dc7&siml=1484748089cf4dc7>

1/1

Appendix 6: Invitation Letter

To the members of the Lac Courte Oreilles and Bois Fort CRC:

My name is Maggie Kading and I am a graduate student at the University of Minnesota in the Social and Administrative Pharmacy program. Over the last two years, I have had the opportunity to learn a lot with you from the Mino Giizhigad (A Good Day) Study. For my Doctoral dissertation, I am interested in learning more about positive mental health in the Lac Courte Oreilles and Bois Forte communities, and am wondering if you would be interested in sharing your perspectives.

Concept Mapping Idea

During the Mino Giizhigad (A Good Day) Study, we learned that more than half of Anishinabe adults with type II diabetes in the Lac Courte Oreilles and Bois Forte communities had flourishing (the highest level) mental health. This is a very high level of positive mental health, especially when compared to rates found in other cultural groups (White Americans, African Americans, etc.).

Positive mental health can help to protect people in difficult times. You can think about positive mental health like a cliff. The person with low mental health may be standing right at the edge of the cliff. When something bad or hard happens, they might “fall” off the edge of the cliff into depression or other mental illness. The person with flourishing mental health may stand far from the edge of the cliff. When the bad or hard

thing happens, they may not “fall” off the side of the cliff into depression or other mental illness. In other words, flourishing mental health acts as a buffer to the stressful demands in life.

Interestingly, the results of the Mino Giizhigad study showed that both flourishing mental health *and* depression were happening in the communities *at the same time*. I would like to try and understand this paradox. I know that you, members of the CRC, know a great deal about your communities. If you are interested, I would like to use a unique community-based participatory research method to explore this paradox. Specifically, I am learning a new technique called “group concept mapping.” I hope to use this technique to write my Doctoral dissertation and would like to work with you as CRC members to learn more about positive mental health and depression in your communities. This could happen in 1 – 2 CRC meetings, and I would ensure ethics approval before we proceed.

What is group concept mapping?

Group concept mapping is a research method that allows individuals to share their perspective on a topic. For some stages of the research, people work alone. During other stages, people work in a group. Concept mapping involves brainstorming, ranking ideas, and organizing the ideas into groups. Computers or a paper and pencil can be used.

The result of concept mapping is several charts. These charts can be used to understand a topic. They can even be used to make plans or interventions.

What would happen during a GCM session?

A concept mapping session is led by someone who has been trained as a facilitator. For this project, I can attend training to learn how to lead a concept mapping session. Then, I will be able to guide us through the process of concept mapping.

Here is what the concept mapping process looks like:

- First, a brainstorming prompt, or topic, is shared by the facilitator.
- Then, each person shares their responses with the group. This is called a brainstorming session.
- Next, the facilitator takes the brainstormed answers and makes a list on paper or on the computer.
- By themselves, each person looks at every item on the list and ranks each one on a scale of 1 to 4. For example, the ranking can be based on importance (1 means very important, 2 means important, 3 means less important, and 4 means not important).
- By themselves, each person looks at the list and separates the items into groups. Each group should contain items that are similar to each other.

- The facilitator uses computer software to analyze the brainstorming list, rankings, and groups.
- Then, everyone works in a group again. As a group, participants analyze and interpret the results of their rankings and grouping. The computer software makes charts that represent the perspectives of the entire group.
- Then, the facilitator and group can use the information to understand a topic better, make plans for their community, or create interventions.

If you are interested in this kind of project, I can learn how to lead the group concept mapping session, but I would need your help on several important decisions:

- Would you rather use the computer or a pen and paper to collect and sort the data?
- If you would like to use the computer, one option would be to do part of the concept mapping session (the individual part) before we meet as a group. This would mean we would not have to meet as a group for so long.

There are multiple ways to schedule the concept mapping session. We could have as few as one meeting or as many as three meetings. These meetings could be held on evenings or weekends, and could be as short as one hour or as long as 8 to 10 hours. If you are interested in completing some of the process before we meet, we would not need to meet as much or for as long.

- For example: we could plan to meet in the evening for three sessions. The first session would last one hour, the second would last 90 minutes, and the third would last two hours.
- An alternate approach would be to have two sessions. The first session would have two 75 minute phases, with a long break (2 hours suggested) in between (4 ½ hours total). The second session would have two phases, one 90 minutes, and one 60 minutes, with a 30 minute break in between (3 hours total).
- Or, we could have the entire session all in one day (about 8 hours).

The concept mapping sessions will be considered a CRC meeting, and a meal, honoraria, and mileage will be provided, as usual.

Thank you for considering this idea. I am happy to answer any questions you might have. My contact information is below:

Maggie Kading

----@-----.edu

(XXX) XXX-XXXX

Appendix 7: Sort Recording Sheet

Modified with permission for this project from:

Concept Systems, Inc.: Templates for Concept Mapping Projects, 2014.

Group Concept Mapping Meeting #2 Directions

Task 1 - Instructions for Sorting

Step 1 - Sorting the Statement Cards. Enclosed in your package is a set of cards. Each card has a statement and an ID number. ***Group the statements into stacks in a way that makes sense to you,*** following these guidelines:

- Group the statements for how ***similar in meaning*** they are to one another. **Do not** group the statements according to how important they are, etc.
- **There is no right or wrong way to group the statements. You will probably find that you could group the statements in several sensible ways. Pick the arrangement that feels best to you.**
- **You cannot put one statement into two stacks at the same time. Each statement must be put into only one stack.**
- **People differ on how many stacks they wind up with. We recommend no less than 5 stacks.**
- **A statement should be put alone in its own stack if you think it is unrelated to the other statements or it stands alone as a unique idea.**
- **Do not** create stacks that mix unrelated ideas, such as stacks called “Miscellaneous,” “Other,” or the like.

Step 2 - Recording the Results. You also have in this packet a **Sort Recording Sheet** for recording the results of your groupings. On that sheet, please write the results of your

sorting as described below. An example of how to record a stack of statements is shown in the first box on the Sort Recording Sheet.

- **Pick up any one of your stacks of statements. It does not matter what order the stacks are recorded in.**
- Quickly scan the statements in this stack, and write down a short phrase or title that describes the contents of the stack on the line provided after ***Stack Title or Main Topic*** in the first available box on the Sort Recording Sheet.
- **In the space provided under the stack name, write the statement ID number of each card in that stack. Separate the numbers with commas. When you finish with the stack, put it aside so you don't mistakenly record it twice.**
- **Move on to your next stack and repeat the three actions above, recording the statement numbers in the next available box on the Sort Recording Sheet. Continue in this way until all your stacks have been named and recorded.**
- *Please write legibly and clearly.*

Sort Recording Sheet

This sheet is to be used for **Task 1, Step 2 - Recording the Results**. Specific directions for recording your sorts are included in the Instructions for Task 1 - Sorting and Recording. **Remember that you do not have to have as many groups as there are boxes on this sheet. The space is provided to allow for variability among participants in the way they group the items. The first box (Example Stack) is filled out to serve as a guide for you.**

<p><i>Example Stack Title or Main Topic:</i> _____ Program Management</p> <p>Record here the identifying number of each item in this stack, separating the ID numbers with commas.</p> <p style="text-align: center;">1, 4, 29, 43, 12</p>
--

<p><i>Stack Title or Main Topic:</i> _____</p> <p>Record here the identifying number of each item in this stack, separating the ID numbers with commas.</p>

<p><i>Stack Title or Main Topic:</i> _____</p> <p>Record here the identifying number of each item in this stack, separating the ID numbers with commas.</p>

<p><i>Stack Title or Main Topic:</i> _____</p> <p>Record here the identifying number of each item in this stack, separating the ID numbers with commas.</p>

Stack Title or Main Topic:

Record here the identifying number of each item in this stack, separating the ID numbers with commas.

Stack Title or Main Topic:

Record here the identifying number of each item in this stack, separating the ID numbers with commas.

Stack Title or Main Topic:

Record here the identifying number of each item in this stack, separating the ID numbers with commas.

Stack Title or Main Topic:

Record here the identifying number of each item in this stack, separating the ID numbers with commas.

Appendix 8: Rating Recording Sheet

Modified with permission for this project from:

Concept Systems, Inc.: Templates for Concept Mapping Projects, 2014.

Group Concept Mapping Meeting #2 Degree of Impact

Rank each statement based on the degree of impact it has on mental wellness for people in your community.

The ranking of "1" indicates "least degree of impact," "2" indicates "moderate degree of impact," and "3" indicates "greatest degree of impact."

Least degree of impact	Greatest degree of impact	Greatest degree of impact	
1	2	3	1. are not as easily angered
1	2	3	2. have a nice house
1	2	3	3. avoid negative people
1	2	3	4. are more relaxed
1	2	3	5. are positive role models
1	2	3	6. motivate themselves
1	2	3	7. are able to confront difficult situations
1	2	3	8. acceptance of other lifestyles
1	2	3	9. are more open to sharing with the community
1	2	3	10. find strength in Anishinabe (or Christian) name
1	2	3	11. have better health outcomes
1	2	3	12. engage in cultural activities
1	2	3	13. are guided by dreams
1	2	3	14. are able to forgive
1	2	3	15. are more organized
1	2	3	16. find more meaning in the holidays
1	2	3	17. accept help
1	2	3	18. spend more time exercising
1	2	3	19. seek out spiritual advisors
1	2	3	20. have a balanced lifestyle
1	2	3	21. have pets
1	2	3	22. motivate others
1	2	3	23. have academic achievement
1	2	3	24. are responsible
1	2	3	25. have a good work ethic
1	2	3	26. are more humble
1	2	3	27. are more generous
1	2	3	28. are less envious of others
1	2	3	29. stay with people who also have good mental health
1	2	3	30. are always smiling
1	2	3	31. project a better image
1	2	3	32. have respect for others
1	2	3	33. are stable
1	2	3	34. have healthier relationships
1	2	3	35. have self esteem
1	2	3	36. plan better for future for self (and family)
1	2	3	37. work out negative situations into more positive situations

Group Concept Mapping Meeting #2 Degree of Impact

1	2	3	38. show appreciation
1	2	3	39. are always looking for new solutions
1	2	3	40. are tolerant of change
1	2	3	41. have a sense of identity
1	2	3	42. see the good in everybody
1	2	3	43. Value constructive criticism
1	2	3	44. are more positive
1	2	3	45. are more family oriented
1	2	3	46. have improved job prospects
1	2	3	47. take pride in themselves
1	2	3	48. have a person in their life who is confident in them
1	2	3	49. give back to their community
1	2	3	50. are not afraid to make a mistake
1	2	3	51. are more traditional
1	2	3	52. accept death
1	2	3	53. don't take negativity personally
1	2	3	54. have a sense of humor
1	2	3	55. are playful
1	2	3	56. talk to their ancestors
1	2	3	57. find strength in stories (where you come from)
1	2	3	58. listen a lot more
1	2	3	59. know they will see ancestors again
1	2	3	60. have improved energy levels
1	2	3	61. have a can-do attitude
1	2	3	62. have financial stability
1	2	3	63. are able to negotiate more readily
1	2	3	64. persevere
1	2	3	65. take pride in their appearance
1	2	3	66. acceptance of other cultures
1	2	3	67. seek advice more readily
1	2	3	68. make sure their children are well taken care of
1	2	3	69. have a good car
1	2	3	70. have less stress
1	2	3	71. express themselves artistically
1	2	3	72. accept and respect nature
1	2	3	73. live in the woods
1	2	3	74. ignore gossip
1	2	3	75. accept themselves
1	2	3	76. communicate in relationships
1	2	3	77. have healthier sexuality
1	2	3	78. children have mental wellness too
1	2	3	79. plan for future generations

Group Concept Mapping Meeting #2 Degree of Impact

1	2	3	80. overcome difficulties
1	2	3	81. take better care of themselves
1	2	3	82. are outgoing
1	2	3	83. have a balanced relationship with possessions (money)
1	2	3	84. are willing to help others
1	2	3	85. are leaders
1	2	3	86. have coping skills
1	2	3	87. are proactive instead of reactive
1	2	3	88. are more patient with children
1	2	3	89. get along with each other
1	2	3	90. are less likely to provoke others
1	2	3	91. are more compliant with healthcare
1	2	3	92. can handle stressful situations better
1	2	3	93. think beyond themselves
1	2	3	94. enjoy the simple things in life
1	2	3	95. eat healthier
1	2	3	96. are more focused
1	2	3	97. go home and drink alcohol when they feel good
1	2	3	98. are connected to the earth
1	2	3	99. are happier
1	2	3	100. have a partner or companion
1	2	3	101. are more open in relationships
1	2	3	102. have a sense of belonging
1	2	3	103. are spiritually connected
1	2	3	104. have a sense of community
1	2	3	105. are always looking for ways to improve
1	2	3	106. have more empathy for others' situation
1	2	3	107. go forward in life
1	2	3	108. clean the house more
1	2	3	109. have a person in their life that they can trust
1	2	3	110. Are less susceptible to alcohol and drug abuse
1	2	3	111. are more caring
1	2	3	112. have patience

Appendix 9: Technical Description of Methods, Analysis, Discussion, and Future Research

Technical Description of Methods

Similarity Matrix

GlobalMAX software was used to form a similarity matrix from participants' sorted data. In this project, one participant's (Community 1) sort data was not included in the similarity matrix. The participant recorded numerous cards multiple times on the sorting recording sheet. Consequently, all items sorted into more than one pile had to be removed from that participant's sort data. Thus, the participant successfully completed sorting for 86 of the 112 statements: the remaining 26 statements were either not recorded by the participant or were removed due to duplicate sorting. Because of the missing data and because of GlobalMAX's inability to calculate sort data if greater than 20 items are missing, this participant's sort data was not included in the similarity matrix and thus was not included in the point or cluster maps; however, this participant's ranking data was complete, and was thus included in the calculation of item ranking.

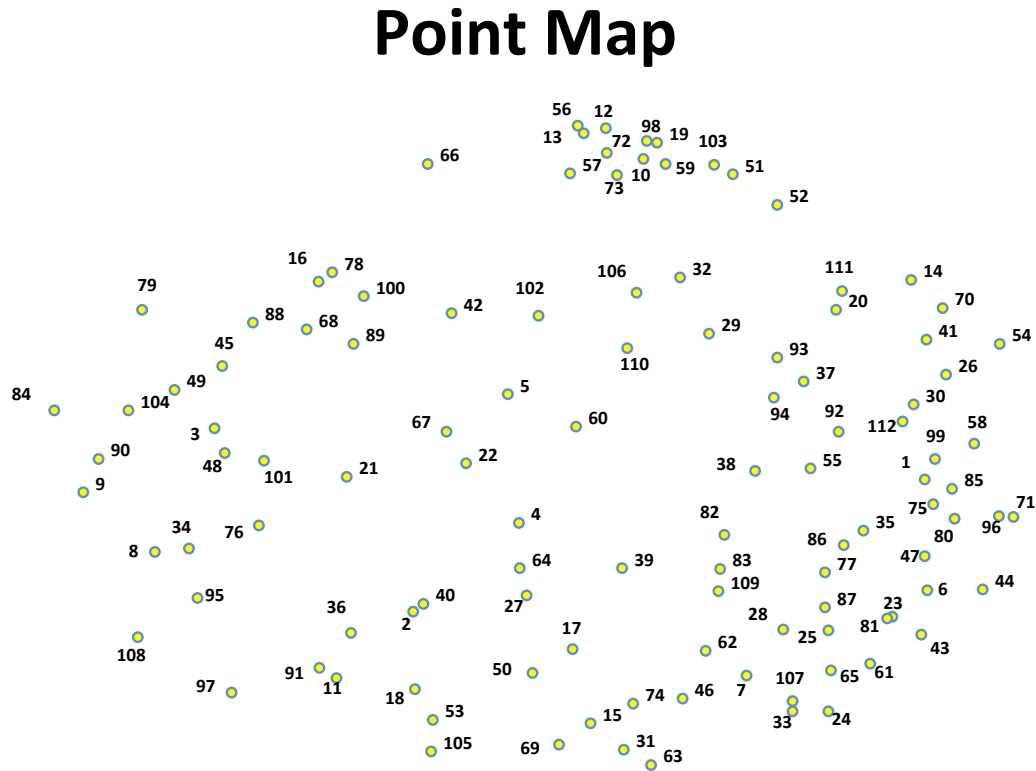
Additionally, five CRC members sorted more than a third of the items into a single pile. These sorts were included in the map analysis. While some scholars (Trochim, Cook, & Setze, 1994) have cautioned against including sort data from sorters who group more than a third of the items together (clumpers), more recent publications have found this not to be an issue in group concept mapping (Kane & Trochim, 2007). The issue stems from the way people sort: some people group many items together

(clumpers) while others form smaller, more distinct groups (splitters). Some scholars found that maps were difficult to interpret when data from a combination of clumpers and splitters were used in a concept map (Trochim et al., 1994). One recommendation to address this issue was to direct participants on how many piles they should end up with (constrained sort) (Kane & Trochim, 2007; Weller & Romney, 1988). However, when this was tested, maps from participants who were directed as to the number of groups were comparable to maps from participants who were allowed to sort as many or as few groups as they wanted (unconstrained sort) (Burton 1975; Freeman, Romney, Ferrera-Pinto, Klein, & Smith, 1981; Kane & Trochim, 2007; Romney, Smith, Freeman, Kagan, & Klein, 1979; Weller & Romney, 1988).

The similarity matrix was formed based on all but one participants' sort data (excluding the participant who was missing more than 20 items in the sort). The similarity matrix collated the number of times each statement pair was sorted together by participants. First, a binary square similarity matrix for each participants' sort data was formed. Each statement pair sorted together received a "1," and each statement pair not sorted together received a "0." Once this was done for each individual participant, all binary square similarity matrices were combined into a group total square similarity matrix (TSSM) (Coxon, 1999; Weller & Romney, 1988). The TSSM represented an additive matrix of the total number of times each statement pair was sorted together by all participants. Statements sorted together more often had larger numbers in the group TSSM, indicated more similarity, and were ultimately placed near each other on the point map. Statements sorted together less often had smaller numbers in the group TSSM,

indicated less similarity, and were ultimately sorted further from each other on the point map. Figure 5 displays the placement of points in the map.

Figure 5: Point Map



Multidimensional Scaling

Multidimensional scaling (Davison, 1983; Kruskal & Wish, 1978) was used to form the actual point map. This process utilized two-dimensional nonmetric multidimensional scaling to determine X-Y coordinates for each point (representing a statement) based on the sorting data in the group TSSM. For this analysis, a two-

dimensional map was created. Theoretically, it would have been possible to create as many as $N-1$ dimensions (where N =number of statements sorted), but a map with more than two dimensions would have posed difficulties for interpretation and utilization, especially in context of using hierarchical cluster analysis in later steps (Davison, 1983; Hair, Tatham, Anderson, & Black, 1998; Kruskal, 1964; Kruskal & Wish, 1978; Levy, 1994).

The two-dimensional point map created by multidimensional scaling represented the best possible fit for all points. The measure of fit is called the stress index (Kruskal & Wish, 1978), which measured the discrepancy between the group TSSM and the distances between points on the map. Therefore, a large stress value would represent higher levels of stress, or greater discrepancy between the group TSSM and the X-Y coordinates of points on the map. A smaller stress value would indicate lower levels of stress and less discrepancy between the group TSSM and the X-Y coordinates between points on the map.

The location of each point was based on the results of multidimensional scaling. Within concept mapping, the use of multidimensional scaling results in some statements being considered anchoring statements, while others are considered bridging statements. Anchoring statements are placed near each other due to the frequency with which they were sorted together. Because anchoring statements are frequently sorted near other statements in the vicinity, they are thus considered to “anchor” the content of the map in that area. Bridging statements are frequently sorted with two or more areas of the map, and multidimensional scaling places these statements in an equidistant location from the

statements with which they were most often sorted. Bridging statements therefore “bridge” between different areas of the map and help to show how parts of the map are related. Anchoring and bridging values were calculated through the use of Global MAX software proprietary indexes (Kane & Trochim, 2007).

Clusters can also anchor or bridge different areas of a map. Anchoring clusters are highly descriptive of the specific area of the map they are placed in. Bridging clusters are more descriptive of how different areas of the map are linked. Anchoring and bridging values for clusters were also calculated with Global MAX.

Hierarchical Cluster Analysis

The hierarchical cluster analysis (Anderberg, 1973; Everitt, 1980) map was formed based on the point map in order to visually depict concepts that were similar to each other (See Figure 3). The X-Y coordinates and Ward’s algorithm (Anderberg, 1973; Hair et al., 1998) were used in the cluster analysis. The use of X-Y coordinates in hierarchical cluster analysis allowed points that were near each other on the map to be grouped into similar clusters, which provided a cluster map useful for concept mapping analysis (Kane & Trochim, 2007). Ward’s algorithm ensured that the minimum sum of squares of the distances between all points was maintained when joining or splitting clusters, a useful approach when working with data that is distance-related (Anderberg, 1973; Hair et al., 1998; Kane & Trochim, 2007).

The output of the analysis was a hierarchical tree structure, meaning there was no overlap between items in each cluster at any step (unique clusters) (Kane & Trochim, 2007). This process grouped the data as follows: it ranged from one cluster at the top of

the “tree” down to a cluster level at the bottom of the “tree” with N number of clusters (when N = the number of statements on the sorted item list; 112). Thus, the most inclusive level included all of the statements in one cluster, and the least inclusive level included the same number of clusters as statements (i.e. each statement was considered its own cluster at this level).

The following process was used to determine the most appropriate number of clusters for the map (as recommended by Kane and Trochim (2007)). I viewed various cluster solutions beginning with 20 clusters and then reviewed the content being merged at each step progressing down the hierarchy until ending at a small (4) number of clusters. The goal was to identify the cluster level that maintained detail while merging related content. At each step progressing down the hierarchy, I recorded if the merging of content made logical sense. The final number of clusters was set at the point where merging no longer made logical sense while retaining detail of the content. For example, merging a cluster containing spiritual items with a cluster containing financial items would not necessarily be logical or retain the detail of the concept map. On the other hand, merging a cluster containing items focused on spiritual activities with a cluster containing items focused on spiritual beliefs might make logical sense, while retaining some detail in the map. A concept map has been compared to looking at a slide under a microscope (Kane & Trochim, 2007): a person can “zoom in” (i.e. concept map with many clusters) or “zoom out” (i.e. concept map with fewer clusters) depending on the level of detail desired. Concept mapping must strike a balance between maintaining

detail and ensuring a manageable number of clusters for each project or research question.

Technical Analysis and Discussion

Similarity Matrix and Multidimensional Scaling

This section covers the stress value and its interpretation as well as the outcome of the bridging/anchoring analysis.

Stress Value. The final stress value of the point map was 0.3473 after 10 iterations, which fell within recommended parameters (Rosas & Kane, 2012), indicating an acceptable fit of the sort data. The stress value is somewhat comparable to the concept of reliability: the lower the value, the better the statistical fit of the sort data. Kruskal and Wish (1978) stated that a stress value of 0.10 or less was desirable, but others have argued that a higher stress value is acceptable in non-controlled environments like group concept mapping (as opposed to the controlled psychometric testing environments used in Kruskal and Wish's work) (Kane & Trochim, 2007). Two pooled meta-analyses of group concept mapping projects resulted in average stress values of 0.28 (sd = .04) and 0.285 (sd = .04) (Rosas & Kane, 2012; Trochim, 1993). In this project, the stress value was 0.3473, which was somewhat higher than average reported stress values but still fell within recommended parameters. In a two-dimensional group concept mapping project with 100 items, a stress value of 0.39 or less ensured that there was less than 1% probability of random configuration or lack of structure in a map (Rosas & Kane, 2012). Typically, a larger number of statements (average was 96.32 [s.dev. = 17.23]) and a greater number of sorting participants (average was 24.63 [s.dev. = 15.30]) were

associated with lower stress values (Rosas & Kane, 2012). In contrast, this project had 112 statements (more than the average) and 13 participants (fewer than the average), which may explain the relatively higher stress value in this project. Additionally, when the focus of the group concept map was a generally agreed upon phenomenon or was simple in structure, the stress value tended to be lower (Kane & Trochim, 2007). However, positive mental health, as a concept, was unlikely to be a simple or generally agreed upon phenomenon, as Bois Forte (BF) and Lac Courte Oreilles (LCO) Community Research Council (CRC) members' understanding what PMH was represented the purpose of this whole project. Consequently, this may explain, in part, why the stress value was somewhat high. Additionally, a relatively higher stress value may have indicated that participants tended to sort statements in somewhat different ways, or simply may have indicated that more dimensions (i.e. three or more, which would not have been feasible in a concept mapping project) would have fit the data better (Kane & Trochim, 2007).

Bridging/Anchoring Analysis. Anchoring/bridging values for each cluster can be found in Table 7. Anchoring/bridging values can be differentiated in the following way: anchoring values are closer to 0, while bridging values are closer to 1. Kane and Trochim (2007) do not recommend a specific cutoff between anchoring and bridging; however, the relative relationship between statements or clusters is meaningful. Thus, in this map, six clusters (1, 2, 3, 4, 6, 7) are anchoring clusters and three (5, 8, 9) are bridging clusters.

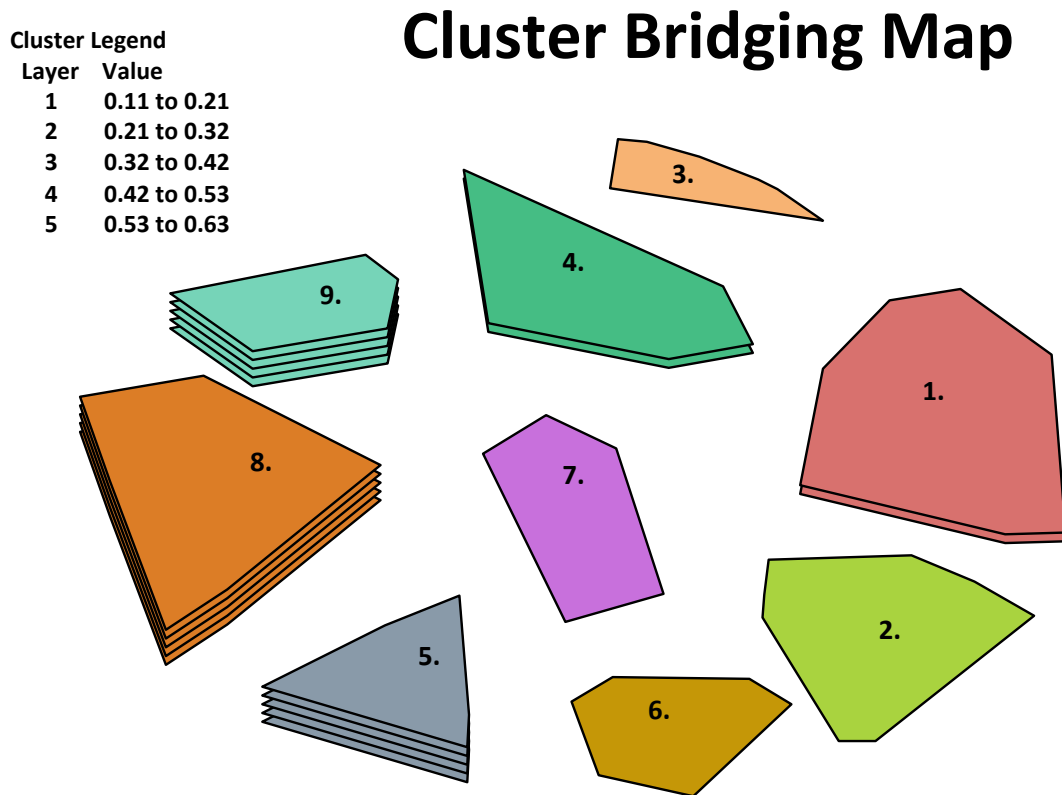
Table 7: Cluster Anchoring/Bridging Values

Cluster	Anchoring/Bridging Value
1—Values Gained with Maturity	0.24
2—Motivated	0.11
3—Traditional Spirituality/Culture	0.11
4—Culturally Competent/Accept Others	0.28
5—Take Care of Self	0.53
6—Financial Health/Organized	0.26
7—Ethical/Moral Leadership	0.18
8—Community	0.63
9—Family/Relationships	0.57

A map showing the cluster anchoring/bridging map is shown in Figure 6. The cluster legend shown on the map relates to the values presented in Table 7: clusters with more layers have higher anchoring/bridging values relative to clusters with fewer layers. Clusters on the left-hand side of the map (5, 8, 9) tend to have more layers than the rest of the map (i.e. bridging clusters), indicating that they bridge across the map. Clusters on the remainder of the map (1, 2, 3, 4, 6, 7) generally have fewer layers (i.e. anchoring clusters), indicating that they strongly represent that specific area of the map. Statements from clusters 5 (Take Care of Self), 8 (Community), and 9 (Family/Relationships) may be more related to each other than the rest of the map (according to how CRC members

sorted these statements), as each of these clusters bridge, or connect, parts of the left side of the map.

Figure 6: Cluster Anchoring/Bridging Map with Cluster Legend Depicting Relative Anchoring/Bridging Values



Future Research

Future studies could focus on further developing the research available on the methodology and statistical analysis of concept maps, particularly in the application of using concept mapping for understanding social constructs. Concept mapping has been

used extensively for planning and evaluation, but has not been used as frequently as an approach to understanding constructs (Kane & Trochim, 2007). This research represents an addition to literature focused on using concept mapping for understanding social constructs. The potential for using group concept mapping as the basis for measure development is a particularly intriguing area of future research as results of a group concept mapping have not traditionally informed measure development.

Appendix 10: Final List of Statements

1. are not as easily angered
2. have a nice house
3. avoid negative people
4. are more relaxed
5. are positive role models
6. motivate themselves
7. are able to confront difficult situations
8. acceptance of other lifestyles
9. are more open to sharing with the community
10. find strength in Anishinabe (or Christian) name
11. have better health outcomes
12. engage in cultural activities
13. are guided by dreams
14. are able to forgive
15. are more organized
16. find more meaning in the holidays
17. accept help
18. spend more time exercising
19. seek out spiritual advisors
20. have a balanced lifestyle
21. have pets
22. motivate others
23. have academic achievement
24. are responsible
25. have a good work ethic
26. are more humble
27. are more generous
28. are less envious of others
29. stay with people who also have good mental health
30. are always smiling
31. project a better image
32. have respect for others
33. are stable
34. have healthier relationships
35. have self esteem
36. plan better for future for self (and family)
37. work out negative situations into more positive situations
38. show appreciation
39. are always looking for new solutions

40. are tolerant of change
41. have a sense of identity
42. see the good in everybody
43. Value constructive criticism
44. are more positive
45. are more family oriented
46. have improved job prospects
47. take pride in themselves
48. have a person in their life who is confident in them
49. give back to their community
50. are not afraid to make a mistake
51. are more traditional
52. accept death
53. don't take negativeness personally
54. have a sense of humor
55. are playful
56. talk to their ancestors
57. find strength in stories (where you come from)
58. listen a lot more
59. know they will see ancestors again
60. have improved energy levels
61. have a can-do attitude
62. have financial stability
63. are able to negotiate more readily
64. persevere
65. take pride in their appearance
66. acceptance of other cultures
67. seek advice more readily
68. make sure their children are well taken care of
69. have a good car
70. have less stress
71. express themselves artistically
72. accept and respect nature
73. live in the woods
74. ignore gossip
75. accept themselves
76. communicate in relationships
77. have healthier sexuality
78. children have mental wellness too
79. plan for future generations
80. overcome difficulties
81. take better care of themselves
82. are outgoing

83. have a balanced relationship with possessions (money)
84. are willing to help others
85. are leaders
86. have coping skills
87. are proactive instead of reactive
88. are more patient with children
89. get along with each other
90. are less likely to provoke others
91. are more compliant with healthcare
92. can handle stressful situations better
93. think beyond themselves
94. enjoy the simple things in life
95. eat healthier
96. are more focused
97. go home and drink alcohol when they feel good
98. are connected to the earth
99. are happier
100. have a partner or companion
101. are more open in relationships
102. have a sense of belonging
103. are spiritually connected
104. have a sense of community
105. are always looking for ways to improve
106. have more empathy for others' situation
107. go forward in life
108. clean the house more
109. have a person in their life that they can trust
110. Are less susceptible to alcohol and drug abuse
111. are more caring
112. have patience

Appendix 11: Statements by Cluster

Statement	
CLUSTER 1	Values Gained with Maturity
1	are not as easily angered ^a
14	are able to forgive
20	have a balanced lifestyle
26	are more humble
30	are always smiling ^a
37	work out negative situations into more positive situations
38	show appreciation
41	have a sense of identity
54	have a sense of humor
55	are playful
58	listen a lot more ^a
70	have less stress
71	express themselves artistically ^a
75	accept themselves ^a
80	overcome difficulties ^a
85	are leaders ^a
92	can handle stressful situations better
93	think beyond themselves
94	enjoy the simple things in life
96	are more focused ^a
99	are happier ^a
111	are more caring
112	have patience ^a
CLUSTER 2	Motivated
6	motivate themselves
23	have academic achievement
24	are responsible
25	have a good work ethic
28	are less envious of others
33	are stable
35	have self esteem
43	Value constructive criticism
44	are more positive

47	take pride in themselves
61	have a can-do attitude
65	take pride in their appearance
77	have healthier sexuality
81	take better care of themselves
82	are outgoing
83	have a balanced relationship with possessions (money)
86	have coping skills
87	are proactive instead of reactive
107	go forward in life
109	have a person in their life that they can trust
CLUSTER 3	Traditional Spirituality/Culture
10	find strength in Anishinabe (or Christian) name
12	engage in cultural activities
13	are guided by dreams
19	seek out spiritual advisors
51	are more traditional
52	accept death
56	talk to their ancestors
57	find strength in stories (where you come from)
59	know they will see ancestors again
72	accept and respect nature
73	live in the woods
98	are connected to the earth
103	are spiritually connected
CLUSTER 4	Culturally Competent/Accept Others
29	stay with people who also have good mental health
32	have respect for others
42	see the good in everybody
66	acceptance of other cultures
102	have a sense of belonging
106	have more empathy for others' situation
110	Are less susceptible to alcohol and drug abuse
CLUSTER 5	Take Care of Self
2	have a nice house
11	have better health outcomes
18	spend more time exercising
36	plan better for future for self (and family)

40	are tolerant of change
53	don't take negativeness personally
91	are more compliant with healthcare
97	go home and drink alcohol when they feel good
105	are always looking for ways to improve
CLUSTER 6	Financial Health/Organized
7	are able to confront difficult situations
15	are more organized
17	accept help
31	project a better image
46	have improved job prospects
50	are not afraid to make a mistake
62	have financial stability
63	are able to negotiate more readily
69	have a good car
74	ignore gossip
CLUSTER 7	Ethical/Moral Leadership
4	are more relaxed
5	are positive role models
22	motivate others
27	are more generous
39	are always looking for new solutions
60	have improved energy levels
64	persevere
67	seek advice more readily
CLUSTER 8	Community
3	avoid negative people
8	acceptance of other lifestyles
9	are more open to sharing with the community
21	have pets
34	have healthier relationships
48	have a person in their life who is confident in them
49	give back to their community
76	communicate in relationships
84	are willing to help others
90	are less likely to provoke others
95	eat healthier
101	are more open in relationships

104	have a sense of community
108	clean the house more
CLUSTER 9	Family/Relationships
16	find more meaning in the holidays
45	are more family oriented
68	make sure their children are well taken care of
78	children have mental wellness too
79	plan for future generations
88	are more patient with children
89	get along with each other
100	have a partner or companion

a. At the step of 10 clusters, these items were in a separate group than other items in Cluster 1