The International Indigenous Policy Journal

Volume 2
Issue 1 *Health and Well-Being*

Article 3

May 2011

Validation of a Culturally Appropriate Social Capital Framework to Explore Health Conditions in Canadian First Nations Communities

Javier Mignone
The University of Manitoba, mignonej@cc.umanitoba.ca

Brenda Elias
The University of Manitoba, elias@cc.umanitoba.ca

Madelyn Hall
The University of Manitoba, mkhall@cc.umanitoba.ca

Recommended Citation
Mignone, J. , Elias, B. , Hall, M. (2011). Validation of a Culturally Appropriate Social Capital Framework to Explore Health Conditions in Canadian First Nations Communities. *The International Indigenous Policy Journal,* 2(1) . Retrieved from: http://ir.lib.uwo.ca/iipj/vol2/iss1/3
DOI: 10.18584/iipj.2011.2.1.3

Validation of a Culturally Appropriate Social Capital Framework to Explore Health Conditions in Canadian First Nations Communities

Abstract
An earlier study of our research group formulated a conceptual framework of social capital for First Nation communities and developed a culturally appropriate instrument for its measurement. We tested this instrument further with the Manitoba (Canada) First Nations Regional Health Survey, 2003. Using data from this survey, we investigated the bonding dimension of the social capital conceptual framework, with a total sample of 2,765 First Nations individuals living in 24 Manitoba First Nations communities. Twenty seven Likert-scale survey questions measured aspects of bonding social capital, socially-invested resources, ethos, and networks. Validation analyses included an evaluation of internal consistency, factor analyses to explore how well the items clustered together into the components of the social capital framework, and the ability of the items to discriminate across the communities represented in the sample. Cronbach's Alpha was computed on the 27 scale items, producing an Alpha of 0.84 indicating high internal consistency. The factor analyses produced five distinct factors with a total explained variance of 54.3%. Lastly, a one-way analysis of variance run by community produced highly significant F-ratios between the groups on all twenty-seven bonding items. The culturally-sensitive items included in the social capital framework were found to be an appropriate tool to measure bonding aspects among Manitoba First Nations communities. Research and policy implications are discussed.

Keywords
Social capital, First Nations, Social Determinants of Health

Acknowledgments
The authors wish to acknowledge Ms. Lyna Hart and Mr. Garry Munro for their feedback to the manuscript. The study was funded in part by the Canadian Institutes of Health Research.

Introduction

Despite a rise in life expectancy among Aboriginal people in Canada over the last few decades, the health of Aboriginal people is worse than that of the overall Canadian population on virtually every health status measure and for every health condition (Young, 1994; Health Canada, 2004; Canadian Population Health Initiative, 2004). Nonetheless, there are significant differences in health status across Aboriginal communities. For instance, a province-specific study (British Columbia) has highlighted a notable variability in youth suicide rates across different First Nations communities (Chandler & Lalonde, 1998). In Manitoba this variability across communities was apparent among several health indicators when observed by Tribal Councils (Martens, et al., 2002). This evidence raises a significant question from a social epidemiological point of view: What are the factors at play that explain this variability? More specifically, are there community-level factors that may be playing a role in these differential health outcomes? The answer to these questions has potentially important policy implications.

As Richmond (2009) explains, "population health refers to a conceptual framework for thinking about why some people are healthier than others and urges health research agendas to consider dimensions beyond healthcare such as education, employment and social support." This means recognizing that "socio-economic and environmental structures can support or constrain community health", what is referred broadly as social determinants of health. Along these lines, albeit critically, First Nations health planners had indicated that "analytical frameworks that attempt to associate factors such as poverty with health outcomes are insensitive to the complex socio-economic conditions that exist in First Nations communities." (O'Neil, et al., 1999). In other words, there may be features of the communities that, above and beyond individual level characteristics, are impacting health and well-being. It was in this context that the Health Information and Research Governance Committee (HIRC)[1] of the Assembly of Manitoba Chiefs (AMC) together with the Manitoba First Nations Centre for Aboriginal Health Research (MFN-CAHR) at the University of Manitoba developed a program of research to identify community-level determinants of health that are consistent with Indigenous health models. Social capital was deemed promising to explore for further development, specific to First Nations communities. Furthering this approach, an Assembly of First Nations document on holistic health policy (Reading, et al., 2007) has incorporated the notion of social capital as a potential determinant of health. From a policy and programmatic point of view, having tools that may better identify less tangible aspects of community that may lead to well-being and health is invaluable. The validation of a social capital framework for First Nations communities is an important step in this direction.

It has been argued that social capital adds to the understanding of community-level factors that impact health, and numerous empirical inquiries have provided some support for considering social capital as a health determinant (Mignone, 2009). There have been a number of tentative formulations seeking to explain plausible pathways through which social capital may affect health. For instance Kawachi and Berkman (2000) suggest three ways: by influencing health-related behaviours; by influencing access to services and amenities; and by affecting psychosocial processes. Social capital may operate as a community-level determinant of health in that the social fabric (for instance the quality of the interactions among community members) may play a significant role in the above mentioned pathways.

[1] The HIR Committee is mandated by the Chiefs of Manitoba to represent the health research and information interests of all 62 First Nations communities in Manitoba. The members of the HIR Committee are all Health Directors (or designates) representing all Tribal Councils, independent First Nations and other First Nations' political organizations in Manitoba.

An earlier study of our research group formulated a conceptual framework of social capital for First Nations communities and developed a culturally appropriate instrument for its measurement (Mignone, 2003; Mignone et al., 2004). Subsequently, the Manitoba First Nations Regional Health Survey (MFN-RHS) of 2003 incorporated the bonding portion of this instrument in the questionnaire that collected data from 32 First Nations communities in Manitoba. Using data from the MFN-RHS the paper reports on findings related to empirical validations and refinements of the bonding dimension of the social capital conceptual framework. It then discusses the implications of the findings in relation to the theoretical basis of our research program studying the social determinants of First Nations health, identifies future steps in this program[2], and outlines potential policy implications.

Social Capital

Social capital, to the extent that it is a property of the social environment, takes the form of a relational resource. A common understanding amongst most authors is that social capital is a resource composed of a variety of elements, most notably social networks, social norms and values, trust, and shared resources (Bourdieu & Wacquant, 1992; Bourdieu, 1983; Loury, 1992; Putnam, et al., 1993; Putnam, 2000; Woolcock, 1998a; Woolcock, 1998b; Woolcock & Narayan, 2000; Narayan, 1999; Schuller, et al., 2000; Lin, 2001). Its function appears to be related to the enabling of some societal good within the boundary of that specific societal level (Coleman, 1988; Coleman, 1990). It is mostly considered an aggregate feature that can aid in the characterization of a social system. For Bourdieu (1983), social capital relates to actual or potential resources within a social structure that collectively supports each of its members, and is linked to the possession of a durable network of relationships of mutual acquaintance and recognition.

Social capital has been studied in relation to education, labour markets (Department of Economics, 1999), local economic development (Midgley & Livermore, 1998), microfinance (Rankin, 2002), sustainable community development (Dale, 2005), economic performance (Casey & Christ, 2005), health (Kawachi, et al., 1997; Gooden, 1998; Veenstra, 2000; Rose, 2000; Campbell, et al., 2002; Bolin, et al., 2003), identity, transition to work (Fevre, 2000), communicative competence and human resources (Szreter, 2000), information and communication technology (Huysman & Wulf, 2004) among numerous other outcomes.

It was not until the year 2000 that research concerning social capital and Aboriginal peoples picked up pace. The First Nations Social Cohesion Project of the Population Studies Centre at the University of Western Ontario was one of the first attempts to examine social capital in First Nations communities in Canada. This group contributed several papers and pursued a research agenda to address the ways in which variations among forms of capital and cohesiveness within First Nations communities generate different outcomes at a population level (White, et al., 2000; Maxim, et al., 2003). As well, Levitte (2004) researched social capital in the context of Aboriginal economic development in Canada. Social capital has been used to analyze traditional forms of Indigenous governance (Hunter, 2000; Schwab & Sutherland, 2001), sustainable development (Altman, 2001), and

[2] This paper is the first of three papers that empirically explore First Nations social capital as a potential determinant of health using the MFN Regional Health Survey data. The authors considered that it was necessary to initiate the presentation of findings with an initial paper that explained in detail the conceptual formulations, presented the empirical evidence validating the concept and tools, and formulated plausible linkages between social capital and health, including its policy implications. Two papers currently being developed will provide empirical evidence for the association between social capital and health in First Nations communities and will explore in more detail the different pathways that may explain this relationship.

Indigenous learning communities (Schwab & Sutherland, 2001). Social capital has also been used as a means to better understand the disconnect between the management of waste in nine First Nations communities in Northwest British Columbia and their traditional relationship with the land (Moody & Cordua-von Specht, 2005). Memmott and Meltzer (2005) suggested that "Indigenous people actually invest significant time and energy into building social capital, but that it often manifests in ways that are not registered in terms of 'economic development' or that do not match the mainstream criteria of 'good governance'." Nonetheless, the fact that social capital is a concept heavily embedded in cultural understandings (Brough, et al., 2006) must be addressed "if it is be of value in understanding, and most importantly taking action to improve, Indigenous health status." (Baum, 2007, p. 121)

In a previous study our research group formulated a conceptual framework of social capital for First Nations communities and developed a culturally appropriate instrument for its measurement (Mignone, 2003; Mignone et al., 2004). The study was conducted in three First Nations communities in Manitoba. The following conceptual framework of social capital for First Nations communities emerged from an iterative analysis between existing literature and the ethnographic evidence from the fieldwork. The operational definition of Social Capital derived from the study was the following:

> Social capital characterizes a community based on the degree that its resources are socially invested, that it presents an ethos of trust, norms of reciprocity, collective action, and participation, and that it possesses inclusive, flexible and diverse networks. Social capital of a community is assessed through a combination of its *bonding* (within group relations), *bridging* (inter-community ties), and *linking* (relations with formal institutions) dimensions.[3]

The relevance of the distinction between bonding, bridging and linking social capital that was initially developed by other authors (Woolcock & Narayan, 2000) was corroborated by the ethnographic evidence of our previous study, resulting in three central dimensions of the conceptual framework. *Bonding* social capital refers to internal community relations. It addresses the networks, ethos, and socially invested resources within a particular society, community or group in question (intra-community ties). *Bridging* social capital is essentially a horizontal notion, implying connections between societies, communities or groups (inter-community ties). *Linking* social capital refers to a vertical dimension (relations with formal institutions beyond the community) (Mignone, 2009). Specifically to our study, bonding social capital refers to relations within each Aboriginal community. Bridging refers to horizontal links with other communities, be they other Aboriginal communities, or other communities of place (e.g., urban centres). Linking refers to connections between particular Aboriginal communities and institutions like federal/provincial government departments and public/private corporations (e.g., Indian and Northern Affairs Canada, Industry Canada, Manitoba Hydro, banks).

Table 1 summarizes the bonding social capital framework, showing each dimension as consisting of the three components and their descriptors. For *socially invested resources* (SIR) the descriptors are physical, symbolic, financial, human or natural. The central notion is that these resources be socially invested, meaning that they be potentially accessible or of future benefit to any member of the community. Each descriptor captures the resource investment at a particular stage of its development. Physical refers to tangible resources produced by human beings (e.g., roads). Symbolic refers to

[3] Although this definition was derived from an analysis that tested broad theoretical ideas against the specific ethnographic realities of First Nations communities, we believe it is arguably relevant beyond the specific communities from which it arose. This current definition includes minor revisions post publication of papers reporting on the above mentioned study.

resources that pertain to the identity of the community as such, and for the most part are intangible (e.g., traditional language). Financial refers to monetary resources under the control of the community. Human resources mean human capacity as a product of formal and informal education. Natural resources are those provided by nature shaped with or without human intervention. Resources are essentially mutable. For example a financial resource becomes a physical resource when money is used to build houses. Similarly, a human resource becomes a financial resource when income potential increases due to the attainment of an education degree. Consequently, these five descriptors seek to capture the different facets of socially invested resources at a given point in time. These descriptors are distinct from other forms of capital (e.g., human capital, financial capital) because they refer to the degree of social investment of resources at the community level.

Ethos[4] as a component of social capital expresses the notions of trust, norms of reciprocity, collective action, and participation. Trust means that community members have confidence in one another as well as in community leaders. Norms of reciprocity, although also potentially negative, are considered in this framework as a positive value. Collective action represents the notion that community members may pursue actions that seek to benefit the collective. Finally, an ethos of participation implies the willingness of community members to be involved with others in common activities.

Networks are understood as "structures of recurrent transactions" (Aldrich, 1982) and are described according to their inclusiveness, diversity, and flexibility. More inclusiveness, diversity, and flexibility would imply higher levels of social capital. Inclusiveness of networks refers to the notion that these structures of interactions are relatively open to the possibility of newcomers and to the exchange of information with newcomers. Diversity implies the co-existence of networks that differ from one another, composed of distinct elements or qualities, but that are capable of interacting in a meaningful way. Flexibility of networks implies a ready capability to adapt to new, different, or changing requirements. Inclusiveness, diversity and flexibility are actually interrelated qualities. They are different aspects of the same phenomenon. In general, a correlation among these three descriptors of networks should be expected.

TABLE 1

Bonding Social Capital Framework

SIR*	Ethos	Networks
Physical	Trust	Inclusive
Symbolic	Norms of Reciprocity	Flexibility
Financial	Collective Action	Diverse
Human	Participation	
Natural		

*SIR = Socially Invested Resources

The study reported here focused on empirically testing and refining the bonding dimension of the framework. Our previous study testing the reliability and validity of the questionnaire and the conceptual framework was conducted with a total sample of 462 respondents from three First Nations communities from Manitoba (Mignone, 2003). The bonding scale had good internal consistency (alpha

[4] In earlier published versions of the framework this component was called "culture." The term "ethos" better reflects the meaning of this component (in the sense of character or disposition of a community), whereas "culture" was somewhat misleading in that it could be interpreted as related to distinct Aboriginal cultural aspects which it does not address.

DOI: 10.18584/iipj.2011.2.1.3

0.84), and factor analyses identified seven factors explaining 56% of the variance. With a larger sample size (2,765) and more First Nations communities (24) the paper reports on the psychometric (ecometric[5] to be exact) properties of the scale and on the empirical evidence related to the hypothesized dimensionality of the bonding social capital framework (Socially Invested Resources, Ethos, and Networks).

Methods

Survey and Sample

In partnership with the Assembly of Manitoba Chiefs, the Manitoba First Nations Centre for Aboriginal Health Research (MFN-CAHR) initiated in 2002 the second wave of the Manitoba regional component of the national First Nations Regional Health Survey (MFN-RHS) (completed in 2003). The national-regional survey is comprised of three independent surveys. Each survey includes a national core set of questions asked in 10 provincial and territorial regions in Canada, and for Manitoba, a regional set of theoretically-informed questions were developed to address critical social determinants and health areas not collected in the national sample (e.g., social capital, cultural continuity, spirituality, economic insecurity, discrimination, mental health, health behaviours, protective factors, and health status). The survey provides cross-sectional estimates of health determinants, health status and health system utilization for children, youth and adults. A multi-stage stratified random sampling approach (tribal community affiliation and community size) was used to select a representative sample of Manitoba on-reserve First Nations communities. Small (pop. < 500), medium (pop. 500 - 999), and large communities (pop. > 1000) were randomly selected from seven Tribal Council regions. The sample in each community was stratified by age and sex (Child survey: 0-11 years; Youth survey: 12 - 17 yrs; Adult survey: 18 - 54 yrs and 55 yrs and over). The survey was implemented in 27 communities for the adult survey, and 28 communities for the youth and child surveys. In each community, interviewers randomly selected households and interviewed, where possible, two adults living in the household (one male and one female) and all adults age 55 years and older. In each household, one child or youth under 18 years of age were selected. All respondents aged 14 and over provided written consent and a legal guardian consented for youth and children under the age of 14. Interviewers administered the survey to adults and youth, and a primary caregiver answered on behalf of the child (proxy interview). The questionnaire consisted of 175 items and took on average between 1 ½ to 2 hours to administer face to face.

The adult survey achieved a response rate of 77% (n = 3,301 sample; 4,330 target sample; n = 27 communities), with 60% of the communities achieving a response rate of over 80%. Slightly more adult females (55%; nf = 1,815), as opposed to males (45%; nm = 1,485), participated in the survey. The sample size of the adult survey is sufficiently large to provide community level data. All databases were adjusted to reflect regional sampling differences and age and sex distributions. The source of population data used to weight the data was the Department of Indian Affairs public use band membership database. This database provided age and sex counts, by age categories for males and females, within each population-sampling unit to weight the survey data to reflect the age and gender distribution within each region according to the sample design used. Each survey database represents an individual level dataset nested within communities.

For this validation study, three communities were eliminated due to sampling differences, leaving a total of 2,765 individuals surveyed in 24 communities who responded to the majority of the bonding items (described below). Fifty five percent of respondents were female and 45% were male.

[5] (Raudenbush, 2003)

Forty percent were between 18 and 34 years of age, 38% between 35 and 49, and 22% were aged 50 or older.

Social Capital Items and Analyses

The MFN-RLHS adult survey included 27 bonding social capital items that had been developed in our previous study (Mignone, 2003). (See Appendix I for details). Table 2 shows the 27 Bonding Social Capital items matched with the components of the original social capital framework they sought to tap into. The first seven items refer to Socially Invested Resources (SIR), the 11 items that follow to Ethos, and the last 10 to Networks.

TABLE 2

Social Capital: Bonding items in the MFHRHS

	Components		
Label	**SIR**	**Ethos**	**Networks**
1) Equal access to housing	physical		
2) Equal business funding	financial		
3) Recreation/sports equally available	human		
4) Daycare equally available	human		
5) Support for job training	human		
6) I will protect land/water	natural		
7) Chief/council protect land	natural		
8) Chief/council do best for community		trust	
9) Most people try to be helpful		trust	
10) Most people can be trusted		trust	
11) Most people are friendly		norm of reciprocity	
12) People respect elders		norm of reciprocity	
13) I am proud of community		norm of reciprocity	
14) No crime in the community		norm of reciprocity	
15) I am willing to make community better		collective action	
16) I have influence in making community better		collective action	
17) I talk about problems in community		collective action	
18) People should vote		participation	
19) Easy to have different groups of friends			inclusiveness
20) Concerns of some heard more than others			inclusiveness
21) Mostly visit with others my own age			inclusiveness
22) Different groups don't mix			inclusiveness
23) People associate with same groups			flexibility
24) Some people in the community I don't talk to			flexibility
25) Once part of group, don't associate with others			flexibility
26) Only visit people known for a long time			flexibility
27) Do not feel comfortable with others with different means			diversity

DOI: 10.18584/iipj.2011.2.1.3

For the present study, validation analyses included an evaluation of the internal consistency of the overall scale and of the subscales. Analyses of variance were conducted to assess the ability of the items to discriminate across the communities represented in the sample and a principal component factor analysis (direct oblimin rotation) to explore how well the items clustered together into the components of the social capital framework.

Results

Cronbach's alpha for the 27-item social capital scale was 0.84, more than sufficient measure of internal consistency of a scale for group comparisons. For each of the original sub-scales, Cronbach's alpha was as follows: SIR 0.79; Ethos 0.71, and Networks 0.81.

Another test of the acceptability of items was whether or not they could discriminate differences across communities. Mean values for each item would be expected to be significantly different across communities. A one-way analysis of variance by community was performed (df, 23). The results were highly significant (less than 0.001, with F-ratios ranging from 17.86 to 3.26) between the communities on all 27 items.

The factor analysis produced five distinct factors, with a total explained variance of 54.3%. Table 3 shows the five factors and their loadings, highlighting a minimum loading of 0.4. The intent of these analyses was to examine whether there was empirical support for the hypothesized multi-component conceptualization of Bonding Social Capital. Nunnally and Bernstein (1994) explain that the distinction between exploratory and confirmatory factor analysis "is a continuum rather than a sharp dichotomy." Our factor analyses were more confirmatory in nature than exploratory, given that a hypothesized structure had been developed, and it sought to observe how well it fits the data. However, to use more specific confirmatory factor analytic methods, a much more developed theoretical framework (including path analysis specifications) would have been necessary. As Kline (2000) suggests, a valid approach to confirmatory analysis is to perform a simple structure rotation seeking to find if there is congruence between simple structure analysis and the hypothesized structure.

A comparison between Table 2 and Table 3 is instructive in this regard. With the exception of item 6, all items within Socially Invested Resources loaded together as Factor One. One item from Ethos (item eight) also loaded as Factor One. High loadings on Factor Two correspond well with the inclusiveness aspect of the Networks component, and Factor Three with the flexible aspect of the Networks component. Factor Four high loadings match almost perfectly with the Trust and Norms of Reciprocity aspects of the Ethos component, whereas Factor Five corresponds exactly with the Collective Action and Participation aspects of this component.

These results are suggestive of a number of issues. The fact that item six does not load on Socially Invested Resources but does so with Trust and Norms of Reciprocity aspects of Ethos makes sense in that the item seems to be tapping into generic trust towards Chief and Council rather than into their specific management of natural resources. Consequently, one option could be to consider item six as an Ethos factor. What is clear is that it does not address Socially Invested Resources issues. However, it is somewhat contradictory that item eight loads with Socially Invested Resources when it supposedly taps into trust towards Chief and Council. This is difficult to interpret, and one might consider eliminating this item altogether. Aside from these two irregularities, Factor One can clearly be considered the *Socially Invested Resources* factor.

Factor analysis results divide the Networks component in two distinct aspects. Factor Two relates to items tapping into how inclusive community networks are, and Factor Three to how flexible they are. This suggests that Networks as a component of Bonding Social Capital is somewhat more

nuanced and that inclusiveness does not necessarily imply flexibility. As such, the factors could be renamed *Inclusive Networks* and *Flexible Networks*.

A similar finding was evidenced with the Ethos component, where two distinct aspects emerged. Factor Four relates to trust and norms of reciprocity, whereas Factor Five relates to collective action and participation. The former mostly reflects how other community members are perceived, whereas the latter seems to address personal and community involvement (thus more action oriented). This may explain the emergence of these two distinct aspects of Ethos.

TABLE 3

Factor Analysis Results

Pattern Matrix[a]

	Component - Factor Loadings				
	Socially Invested Resources	Inclusive Networks	Flexible Networks	Trust & Norms Ethos	Collective Action Ethos
1) Equal access to housing	**.665**	.132	-.052	-.044	-.064
2) Equal business fund	**.723**	-.005	.037	.004	-.051
3) Recreation/sport available	**.709**	-.035	.007	-.027	-.012
4) Daycare available to all	**.742**	-.162	.079	.101	-.030
5) Support for job training	**.744**	-.029	.025	-.045	-.003
6) Will protect land/water	.108	.052	-.038	.041	**.672**
7) Chief/council protect land for future	**.553**	.240	-.173	-.153	.240
8) Chief/council try do best for community	**.535**	.223	-.112	-.173	.251
9) Most people try to be helpful	.101	-.107	.069	**-.724**	.078
10) Most people here can be trusted	.037	.019	-.047	**-.803**	-.004
11) Most people are friendly	.042	-.119	.123	**-.803**	.025
12) People/adult respect elders	.143	-.092	.101	**-.570**	.112
13) Proud of community	.196	-.184	.169	**-.400**	.227
14) No crime problem in community	.040	.270	-.322	**-.427**	.012
15) Willing to make community better	-.084	-.017	.032	-.050	**.808**
16) Have influence making community better	.020	.137	.003	-.157	**.688**
17) Talk about problems in community	-.074	-.087	.047	.011	**.704**
18) People should vote	.010	-.305	.050	.053	**.550**

19) Easy to have different groups of friends	.055	**-.732**	.041	-.184	.034
20) Concerns of certain groups heard more than other groups	.099	**.730**	.067	.012	-.122
21) Mostly visit people of my age	-.009	**.448**	.369	.251	.092
22) Different groups don't mix	.045	**.568**	.272	-.081	-.126
23) People tend to associate with same groups	-.068	**.447**	.339	-.261	-.159
24) Some people in the community I won't talk to	.006	.099	**.670**	-.209	-.060
25) Once part of group, don't associate with others	.035	.277	**.584**	-.232	-.102
26) Only visit people known for a long time	.009	.076	**.752**	-.059	.021
27) Do not feel comfortable with people with different means	.034	-.060	**.737**	.143	.179

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 16 iterations.

The results of the factor analyses are revealing in that they partially confirm the component structure of the conceptual framework formulated by our previous study. Simultaneously it also suggests a more nuanced reality behind what community networks may reflect and behind what we can consider as ethos of a community. The factors identified in Table 3 suggest a new way that the Bonding dimension of Social Capital could be formulated as component structure. In the section that follows we discuss possible meanings and implications of these findings from a conceptual point of view and how they may play a role as health determinants.

The assessment of the internal consistency of each of the five new factors as a scale resulted in the following. SIR (alpha = 0.834); Inclusive Networks (alpha = 0.364); Flexible Networks (alpha = 0.752); Trust & Norms Ethos (alpha = 0.798); Collective Action Ethos (alpha = 0.747). The low alpha level of Inclusive Networks puts some caution in our interpretation of the Networks component that is discussed in the next section.

To test how well these factors could discriminate differences across communities, mean values for each component would be expected to be significantly different across communities. A one-way analysis of variance by community was performed (df, 4). The results were significant (0.001, with F-ratios ranging from 5.35 to 15.29) between the communities on all five factors.

Discussion

The understanding of community-level factors that may play a role in the health and well-being of Aboriginal communities is of crucial importance. There is sufficient evidence of the poorer health status among many of these communities as compared to the general population of Canada. At the

same time, the variability across Aboriginal communities suggests that a simple generalization is misleading and does little to inform policy to improve the conditions of Aboriginal communities. The importance of understanding the various social determinants of health above and beyond the individual level cannot be over stated.

The notion of social capital has been explored as a tool to better grasp how social dynamics may be playing a positive or negative role in health and well-being. Our previous study provided a grounded formulation of a conceptual framework of social capital for First Nations communities using ethnographic methodology in three First Nations communities. It also developed and conducted a first round of validation of a culturally appropriate measurement tool. Building on this initial work, the study reported here further tested the bonding social capital aspect of the tool as well as the conceptual framework itself with data from 24 First Nations communities.

The reliability of the scales and its discriminant validity were confirmed. The factor analytical results provided interesting evidence partially confirming the conceptual structure of our initial study, while simultaneously providing compelling information that may enable a more nuanced understanding of what we are capturing under the notion of bonding social capital. Five distinct factors emerged that merit a conceptual discussion about their plausible meaning as features of community and as potential determinants of health and well being.

Socially Invested Resources was confirmed as a single factor. The central notion is that these resources be socially invested, meaning that they be potentially accessed by, or of potential future benefit to, any member of the community. Socially Invested Resources refer to the degree of social investment of resources at the community level, and these may be of different albeit mutable types (physical, financial, symbolic, natural, and human). Despite the limitation of tapping into this aspect of community only through a survey, it does provide a sense from the community members' perspective of how this is operating based on their experience. It seems to address the experience of fairness and the assessment that there are resources that may provide benefits in the future for the community as a whole.

The initial formulation of networks as a component with various descriptors (inclusive, flexible and diverse) was only partially confirmed. An interesting split emerged, where inclusiveness of networks became distinct from flexibility and diversity. Inclusiveness refers to the notion that these structures of interactions are relatively open to the possibility of newcomers and to the exchange of information with newcomers. Flexibility on the other hand implies a ready capability to adapt to new, different, or changing circumstances. It incorporates the aspects of time and change. Diversity implies the co-existence of networks that differ from one another, composed of distinct elements or qualities, but that are capable of interacting in a meaningful way. The implications of the distinction that emerged from the factor analysis are still not clear. The initial idea of the framework was that higher degrees of these three characteristics would imply higher levels of social capital. Although this has not changed, what is evident is that we are measuring somewhat different features. Inclusiveness might refer to more immediate experiences, whereas diversity and flexibility may be viewed as somewhat more removed.

In relation to the ethos component, the experience of trust and norms of reciprocity emerged as a distinct factor vis-à-vis that of collective action and participation. Part of the reason may be that the latter may be tapping into more subjective aspects of the experience of community, whereas the former is a somewhat more arm's length perspective. The initial model expected a degree of correlation among these aspects of the ethos component. Although the distinction that emerged does not rule this out, it does make it clear that trust and norms of reciprocity as character of a community need not be strictly connected to the collective action and participation that occurs among the members of the community.

The evidence of our study offers a number of interesting windows from where to continue to theoretically formulate how community features may operate as determinants of health and well-being,

DOI: 10.18584/iipj.2011.2.1.3

as well as the possibility to empirically test these assumptions, and hopefully better guide policy and programmatic interventions at the community level.

There have been a number of tentative formulations seeking to explain plausible pathways through which social capital may affect health. For instance Kawachi and Berkman (2000) suggest three ways: by influencing health-related behaviours; by influencing access to services and amenities; and by affecting psychosocial processes. In relation to mental health in particular, Kirmayer and colleagues (1999), following ideas formulated by the Royal Commission on Aboriginal People's Special Report on Suicide among Aboriginal People (RCAP, 1995), categorized risk factors associated with suicidal behaviour in Aboriginal communities: psychobiological factors; life history factors; situational factors; socioeconomic factors; culture stress. Additionally, they listed protective factors that can act to decrease the risk of suicide: a strong sense of the value and meaning of life; individual and collective self-esteem; belief in survival and coping; fear of suicide and moral objections to suicide; skills in stress management, communication and problem solving; support from peers and family; family responsibilities; community support networks; and a sense of belonging. A frequently quoted study by Chandler and Lalonde (1998) has shown that local control and the preservation and continuation of culture among Native bands of British Columbia are associated with substantially lower youth suicide rates. Cultural continuity may be contributing to a sense of self-continuity that may be vital for adolescents.

Socioeconomic risk factors refer to poverty at the individual and family level, community instability or lack of prosperity, limited opportunities for employment, lack of proper housing and inadequate sanitation and water quality (RCAP, 1995). The more the resources are socially invested, even in situations of scarce resources, the more the possibility of mitigating the effects of poverty and increasing the social infrastructure that will reduce these types of risk factors. In terms of protective factors, socially invested resources can have an impact in the sense of value and meaning of life, and skills in stress management, communication, and problem solving, particularly when there has been a high investment in human and symbolic resources, like culture, language, education, parenting, relationship, and conflict resolutions programs. Communities that have invested heavily in these types of initiatives among youth have reported positive results in reducing feelings of anomie among youth, as well as violent or self-destructive behaviours (Mignone, 2003).

Our study of social capital in First Nations communities allows us to continue this path of research with more precise characterizations of community features as potential pathways to health and well-being that will be able to be empirically tested in future analyses. For instance, culture stress factors are defined as "the loss of confidence by individuals or groups in the ways of understanding life and living (norms, values and beliefs) that were taught to them within their original culture(s), and the personal or collective distress that may result." (RCAP, 1995, p. 21). This includes loss of control over land and living conditions, breakdown of cultural values and belief systems, loss of identity and self-esteem, and discrimination. The decision of a community to invest in cultural camps and Aboriginal language programs for their children has the potential of increasing the cultural identity of its youth, thus strengthening the community (socially invested resources). One of the central effects of colonization was to disrupt the cultural continuity of First Nations and destroy their sense of pride as people. This resulted in serious effects on the well-being of generations. The resurgence of Aboriginal ceremonies, practices and values has already shown powerful healing qualities, all of which requires community investment.

A community with higher levels of social capital would be expected to have an ethos of trust, and positive norms of reciprocity. There has been increasing evidence in population health studies that communities where people tend to trust each other live under less stressful conditions. Stress has been recognized as an important pathway to health or illness (McEwen, 1998). A community where families can help each other due to strong norms of reciprocity, where different community sectors and

leadership offer support to families in need, where youth sense that they can trust adults before or during moments crisis, can have an important effect in diminishing suicide ideations and attempts.

A community with significant collective action and participation is expected to reduce the sense of instability or hopelessness that particularly may affect youth leading to self-destructive behaviours (Mignone & O'Neil, 2005). Additionally, higher levels of an ethos of participation and collective action would be expected to increase support from peers and family, individual and collective self-esteem and sense of belonging.

The quality of social networks has been studied as having impacts on health in general and in mental health in particular. For instance inclusive networks increase the opportunities of information and employment, and thus may play a mitigating role among socioeconomic risk factors. Rigid social networks that exclude others from information or from meaningful social contact are deleterious to emotional well-being. The feeling of exclusion or social isolation has a powerful impact on self-esteem, and the lack of access to information about resources or opportunities will limit the access to basic resources and thus to well-being. Studies have related social isolation to an array of adverse health outcomes (House, et al., 1999). Communities with flexible, inclusive and diverse networks tend to develop a social environment that is more conducive to health because fewer community members will be left out of opportunities, dialogue, information, and resources. Finally, more inclusive, flexible and diverse networks would be positively related to increased support from peers and family, stronger community support networks, and good sense of belonging.

Although the notion of social capital has been increasingly used to examine community-level factors as determinants of health, the studies that have empirically tested the association appeared to be mostly data driven rather than properly developing a theoretical and empirical base from where to interpret this association. Further, there are numerous scholars who have argued that social capital can have potentially negative effects (Kay & Bernard, 2006; Portes & Landolt, 1996). There are two different issues at play. One, that high social capital within a certain group does not imply high social capital for the entire community (it may well be the opposite) (Paxton, 1999). Two, that high social capital may not have a positive impact on certain outcomes, for instance health. In relation to the former, our framework specifies that the estimation of the degree of social capital should be anchored in the appropriate societal level of which it is a feature. Referring to the entire community, communities with more social capital would be those characterized by having more potential or actual resources collectively backing all its members, more extended networks of mutual acquaintance and recognition, higher levels of trust and possibilities of association. In relation to the potential negative effects of social capital on health status, our research program will precisely seek to empirically assess if the association between social capital and health is positive or negative.

Our initial study is the only one to our knowledge that has formulated a conceptual framework of social capital in First Nations communities using ethnographic evidence, and then developed and validated a tool for its measurement and conceptual refinement. This paper reported on a new round in the process of validation, with promising results. Our research program will proceed by testing the association between the five social capital factors identified in this study (together with other factors) and health and well-being of 24 First Nations communities in Manitoba. Using multilevel models we will assess the role of individual, family and community-level factors on health.

The findings from this program of research may provide better guidance to understand how policies and programs at different levels of government, corporations, and Aboriginal leadership impact community social capital and as such the health and well-being of community members. This framework may lead to a more explicit consideration of how policies and programs impact the social fabric of communities. Furthermore, it is expected that the knowledge generated through this program of research within Manitoba First Nations may well provide some applicability that may be extrapolated to Indigenous communities in other countries. For instance our research group currently collaborates with

DOI: 10.18584/iipj.2011.2.1.3

Indigenous health organizations in Colombia that face a number of similar experiences as that of Manitoban First Nations. The collaboration with these Indigenous organizations has shown that their holistic notion of health and well-being fits well with some of the findings from our research. The strength of these organizations (Mignone et al., in press) appears to be a clear expression of high stocks of social capital.

Finally, the social capital framework may provide guidance for policy initiatives of different types. For instance, assessing the situation of the communities from a community social capital perspective can help identify and develop policy strategies related to particular aspects of social development, and can assist in assessing the impact of these policies and program. Policy and program initiatives may range from fostering the creation of cooperatives or self-help collectives related to business or household matters, to the enhancement of cultural, recreational, artistic and sports activities, increased voluntarism and broader community infrastructures.

Appendix I – Questionnaire Items

The items appeared on the survey in Likert scale format and response categories were *1='strongly disagree', 2='disagree', 3='neither disagree or agree', 4='agree', and 5='strongly agree'*. A blank was considered a non-response (non-responses ranged from 2.4% to 8.2%). The questions were:

1. Everyone has equal access to housing in this community.
2. If I wanted to start a small business and need to borrow money, I know that there are funding opportunities available in this community
3. Recreation and sports activities are available to everyone in this community
4. Day care is available in this community to all children who need it.
5. If myself, or someone in my family, wanted to receive job training, we could receive support within this community.
6. I am willing to make some effort to protect the land and water.
7. Chief and Council work to protect our land and its resources for future generations.
8. Chief and Council try to do the best of my community.
9. Generally speaking, most people here try to be helpful to each other.
10. Generally speaking, most people living here can be trusted.
11. People in this community are friendly to each other.
12. People in this community respect Elders.
13. I am proud of the community I live in.
14. There are no crime problems in our community.
15. I am willing to help make my community better.
16. Overall, I have some influence in making my community a better place to live
17. I often talk with friends and/or family about problems in my community.
18. People should make every effort to vote when there is a Band election for Chief and Council.
19. It is easy for people in this community to have different groups of friends.
20. *The concerns of certain groups of people in this community are heard more than those of other groups.
21. *Outside of my family, I visit mostly with people of my age.
22. *I find that different groups in this community don't mingle much with each other.
23. *People in this community tend to always associate with the same group of people.
24. *There are people in this community who I won't talk with, even if I need information or help.
25. *Once people are part of a group in this community, they don't associate much with others outside of the group.
26. *I only visit with people in this community that I have known for a long time.
27. *Outside of my family, I don't feel comfortable dealing with people from this community who have much more or much less money than me.

* Reversed scoring for analyses

DOI: 10.18584/iipj.2011.2.1.3

References

Aldrich, H. (1982). The origins and persistence of social networks. In P. Marsden & N. Lin (Eds.), *Social structure and network analysis* (pp. 281-293). Beverly Hills: Sage.

Altman, J. C. (2001). *Sustainable development options on Aboriginal land: The hybrid economy of the twenty-first century*. Canberra: CAEPR, Australia National University: Centre for Aboriginal Economic Policy Research.

Baum, F. (2007). Social capital. In B. Carson, T. Dunbar, R.D. Chenhall & R. Bailie (Eds.) *Social determinants of Indigenous health*. Crows Nest NSW: Allen & Unwin.

Bolin, K., Lindgren, B., Lindström, M., & Nystedt, P. (2003). Investments in social capital-implications of social interactions for the production of health. *Social Science & Medicine*, *56*, 2379-2390.

Bourdieu, P. (1983). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York: Greenwood Press.

Bourdieu, P. & Wacquant, J. D. (1992). *An invitation to reflexive sociology*. Chicago: The University of Chicago Press.

Brough, M., Bond, C., Hunt, J., Jenkins, D., Shannon C., Schubert, L. (2006). Social capital meets identity. *Journal of Sociology*, *42* (4): 396-411.

Campbell, C., Williams, B., & Gilgen, D. (2002). Is social capital a useful conceptual tool for exploring community level influences on HIV infection? An exploratory case study from South Africa. *AIDS Care*, *14*, 41-54.

Canadian Population Health Initiative. (2004). *Improving the health of Canadians*. Ottawa: Canadian Institute for Health Information.

Casey, T. & Christ, K. (2005) . Social Capital and economic performance in the American states. *Social Science Quarterly,* 86, 826-845.

Chandler, M. J. & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry*, *35*, 191-219.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, S95-S120.

Coleman, J. S. (1990). *Foundations of social theory*. Cambridge: The Belknap Press of Harvard University Press.

Dale, A. (2005). Social capital and sustainable community development: Is there a relationship? In A. Dale & J. Onyx (Eds.), *A dynamic balance: Social capital and sustainable community development*. Vancouver: UBC Press.

Department of Economics, University of Amsterdam. (1999). Creation and returns of social capital: social networks in education and labour markets. In *Social Capital: Abstracts*; pp. 158-162.

Fevre, R. (2000). Socializing social capital: Identity, the transition to work, and economic development. In S. Baron, J. Field, & T. Schuller (Eds.), *Social capital: Critical perspectives* (pp. 94-110). Oxford: Oxford University Press.

Gooden, B. I. (1998). *Social capital, stress and the health of rural African-Americans in central Virginia*. Ph.D. dissertation. The University of North Carolina at Chapel Hill.

Health Canada. (2004). *A statistical profile on the health of First Nations in Canada*. Ottawa, Ontario: Health Canada.

House, J. S., Landis K. R., Umberson D. (1999). Social relationships and health. In I Kawachi, B. P. Kennedy & R. G. Wilkinson (Eds.), *The society and population health reader: Income inequality and health* (pp. 161-170). New York: The New Press.

Hunter, B. (2000). *Social exclusion, social capital, and Indigenous Australians: Measuring the social costs of unemployment*. Centre for Aboriginal Economic Policy Research. Discussion Paper No. 204/2000. Canberra: CAEPR, Australian National University.

Huysman, M. & Wulf, V. (Eds.). (2004). *Social capital and information technology*. Cambridge: The MIT Press.

Kawachi, I. & Berkman, L. F. (2000). Social cohesion, social capital, and health. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 174-190). New York: Oxford University Press.

Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health*, *87*, 1491-1498.

Kay, F. & Bernard, P. (2006). The Dynamics of social capital: Who wants to stay in if nobody is out? In F. Kay, & R. Johnston (Eds). *Social Capital, Diversity, and the Welfare State.* Vancouver: UBC Press.

Kirmayer, L., Boothroyd, L., Laliberté A, Laronde, S. B. (1999). *Suicide prevention and mental health promotion in First Nations and Inuit communities* (Rep. No. 9). Montreal: Culture & Mental Health Research Unit, Institute of Community & Family Psychiatry, Sir Mortimer B. Davis-Jewish General Hospital.

Kline, P. (2000). *Handbook of psychological testing*. (2nd ed.) London: Routledge.

Levitte, Y. (2004). Bonding social capital in entrepreneurial developing communities - Survival networks or barriers? *Journal of the Community Development Society*, *35*, 44-64.

Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge, UK: Cambridge University Press.

Loury, G. C. (1992). The economics of discrimination: Getting to the core of the problem. *Harvard Journal of African American Public Policy*, *1*, 91-110.

Martens, P., Bond, R., Jebamani, L., Burchill, C., Roos, N. P., . . . O'Neil, J. (2002). *The health and health care use of registered First Nations people living in Manitoba: A population-based study*. Winnipeg, MB: Manitoba Centre for Health Policy.

Maxim, P., White, J., & Beavon, D. (2003). Dispersion and polarization of income among Aboriginal and non-Aboriginal Canadians. In J. White, P. Maxim, & D. Beavon (Eds.), *Aboriginal conditions: Research as a foundation for public policy* (pp. 222-247). Vancouver: UBC Press.

McEwen B. S. (1998). Protective and damaging effects of stress mediators. *The New England Journal of Medicine*, *338*, 171-79.

Memmott P. & Meltzer, A. (2005). Modelling social capital in a remote Australian Indigenous community. In A. Dale & J. Onyx (Eds.), *A dynamic balance: Social capital and sustainable community development*. Vancouver: UBC Press.

Midgley, J. & Livermore, M. (1998). Social capital and local economic development: Implications for community social work practice. *Journal of Community Practice*, *5*, 29-40.

DOI: 10.18584/iipj.2011.2.1.3

Mignone, J. (2003). *Measuring social capital: A guide for First Nations communities*. Ottawa, Ontario, Canadian Institute for Health Information.

Mignone, J., Longclaws, J., O'Neil, J., Mustard, C. (2004). Social capital in First Nations communities: Concept and measurement. In J. White, P. Maxim, & D. Beavon (Eds.), *Aboriginal policy research: Setting the agenda for change* (pp. 125-139). Ottawa: Thompson Educational Publishing, Inc.

Mignone, J. & O'Neil, J. (2005). Social capital and youth suicide risk factors in First Nations communities. *Canadian Journal of Public Health*, *96*, S51-S54.

Mignone, J. (2009). Social capital and Aboriginal communities: A critical assessment. *The Journal of Aboriginal Health, 5* (3), 100-147.

Mignone, J., Nállim, J., Gómez Vargas, J.H. (In press) Indigenous control over health care in the midst of neoliberal reforms in Colombia: An uneasy balance. *Studies in Political Economy.*

Moody, L., & Cordua-von Specht, I. (2005). Stones: Social capital in Canadian Aboriginal communities. In A. Dale & J. Onyx (Eds.), *A dynamic balance: Social capital and sustainable community development*. Vancouver: UBC Press.

Nunnally, J. & Bernstein, I. (1994). *Psychometric theory*. (3d ed.) New York: McGraw-Hill.

Narayan, D. (1999). *Bonds and bridges: Social capital and poverty*. Washington, DC: The World Bank.

O'Neil, J. D., Kaufert, P. T., Reading, J. R., Kaufert, J., Young, TK., & Manitoba First Nations Health Research and Information Committee. (1999). *Why are some First Nations communities healthy and others are not?: Constituting evidence in First Nations health policy*. Unpublished Work

Paxton, P. (1999). Is social capital declining in the United States? A multiple indicator assessment. *American Journal of Sociology, 105*, 88-127.

Portes, A. & Landolt, P. (1996). The downside of social capital. *The American Prospect*, *26*, 18-21.

Putnam, R. D. (2000). *Bowling Alone; the collapse and revival of American community*. New York: Touchstone.

Putnam, R. D., Leonardi, R., & Nanetti, R. Y. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton, New Jersey: Princeton University Press.

Rankin, K. N. (2002). Social capital, microfinance, and the politics of development. *Feminist economics*. 8(1), 1-24.

Raudenbush, S. W. (2003). The quantitative assessment of neighborhood social environments. In I. Kawachi & L. F. Berkman (Eds.), *Neighborhood and health* (pp. 112-131). Oxford: Oxford University Press.

Royal Commission on Aboriginal Peoples. (2005). *Choosing life: Special report on suicide among Aboriginal People*. Ottawa: Canada Communication Group.

Reading, J. L., Kmetic, A., Gideon, V. (2007). *First Nations wholistic policy & planning model: Discussion paper for the World Health Organization Commission on Social Determinants of Health*. Ottawa: Assembly of First Nations.

Richmond, C. A. M. & Ross, N. A. (2009) The determinants of First Nation and Inuit health: A critical population health approach. *Health & Place, 15, 403-411.*

Rose, R. (2000). How much does social capital add to individual health? A survey study of Russians. *Social Science & Medicine*, *51*, 1421-1435.

Schuller, T., Baron, S., & Field, J. (2000). Social capital: A review and critique. In S. Baron, J. Field, & T. Schuller (Eds.), *Social capital: Critical perspectives* (pp. 1-38). Oxford: Oxford University Press.

Schwab, R. & Sutherland, D. (2001). *Building Indigenous learning communities. Centre for Aboriginal Economic Policy Research*. Discussion Paper No. 225/2001. Canberra: CAEPR, Australian National University.

Szreter, S. (2000). Social capital, the economy, and education in historical perspective. In S. Baron, J. Field, & T. Schuller (Eds.), *Social capital: Critical perspectives* (pp. 56-77). Oxford: Oxford University Press.

Veenstra, G. (2000). Social capital, SES and health: An individual-level analysis. *Social Science & Medicine*, *50*, 619-629.

White, J., Maxim, P., & Whitehead, P. (2000). *Social capital, social cohesion and population outcomes in Canada's First Nations communities* (Rep. No. 00-7). London, Canada: Population Studies Centre, University of Western Ontario.

Woolcock, M. (1998a). Social capital and economic development: Toward a theoretical synthesis and policy framework. *Theory and Society*, *27*, 151-208.

Woolcock, M. (1998b). *Social theory, development policy, and poverty alleviation: A comparative-historical analysis of group-based banking in developing economies*. Doctor of Philosophy Sociology, Brown University.

Woolcock, M. & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The World Bank Research Observer*, *15*, 225-249.

Young, TK. (1994). *The health of Native Americans: Toward a biocultural epidemiology*. New York: Oxford University Press.

DOI: 10.18584/iipj.2011.2.1.3