

Research report

Measuring social capital within health surveys: key issues

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With growing recognition of the social determinants of health, social capital is an increasingly important concept in international health research. Although there is relatively little experience of measuring social capital, particularly in developing countries, there are now a number of studies that allow the identification of some key issues that need to be considered when measuring social capital.

After summarizing definitions and the rise of interest in the link between social capital and health, measures used in key studies of social capital and health are presented. Some important issues are then considered: obtaining a sufficiently comprehensive measure which empirically captures the latest theoretical developments in the field (particularly the concepts of cognitive, structural, bonding and bridging social capital); moving from the individual to the ecological level; consideration of confounding factors, and validity and reliability.

Key words: social capital, methods, surveys, measurement, developing countries

Introduction

With growing recognition of the social determinants of health, social capital is an increasingly important concept in international health research. Although there is relatively little experience of measuring social capital, particularly in developing countries, there are now a number of studies that allow the identification of some issues that need to be considered when measuring social capital. As this ‘work in progress’ article is intended primarily for a health audience, it assumes that the measurement of social capital will be part of a broader health survey. It also assumes that there is interest in measuring social capital across countries and that a cross-cultural measure would be useful.¹ The focus here is on a quantitative measure in order that research can test for significant associations between social capital and health outcome measures (e.g. physical and mental morbidity). However, the authors recognize the importance of developing qualitative methods for exploring social capital that will be important in setting the issue within local context.

After summarizing definitions and the rise of interest in the link between social capital and health, several quantitative studies of social capital and health are presented. Some key issues are then considered: obtaining a sufficiently comprehensive measure which empirically captures the latest theoretical developments in the field; moving from the individual to the ecological level; consideration of confounding factors, and validity and reliability. While Lochner et al. (1999) have usefully identified the range of disciplines which may contribute to a measure of social capital, this article is complementary in that it teases out issues which cut across disciplines.

Definitions

While there are a number of definitions that draw upon the seminal work of Putnam (1995) and Coleman (1990), and while there is no ‘set’ definition of the concept in use, this paper understands social capital to refer to the degree of connectedness and the quality and quantity of social relations in a given population. One model of social capital (Bain and Hicks 1998, cited in Krishna and Shrader 2000) disaggregates the resource into two components: structural and cognitive. The structural component includes extent and intensity of associational links or activity, and the cognitive component covers perceptions of support, reciprocity, sharing and trust. At the simplest level, these two components can be respectively characterized as what people ‘do’ and what people ‘feel’ in terms of social relations. An additional important construct is the difference between bonding and bridging social capital (attributed by Woolcock and Narayan 2000 to Gittel and Vidal 1998). Narayan (1999) describes ‘bonding’ capital as meaning social cohesion within the group structure, whilst ‘bridging’ capital refers to the type of social capital that links, or cuts across, different communities/groups. The ‘bonding and bridging’ construct partially overlaps with the horizontal/vertical construct of social capital, which views social capital as either vertically based, meaning that it inheres in the relationships between different levels of society (e.g. community, local government), or horizontally based, meaning that it inheres in the relationships between similar individuals or groups in the same social context, such as between communities or between youth groups. The ‘bonding and bridging’ construct is important as it highlights the role of government and the state within social capital, and hence the relevance of political context. Moreover, it illustrates the importance of

balancing both components: without vertical social capital connecting communities to local government or groups with resources, social networks, norms and trust may not be able to actually improve any aspect of wellbeing of a community. Equally, without horizontal links to other groups or communities, important information channels, support channels or other benefits of solidarity will be lost.

When defining social capital, it is important to differentiate social capital from social networks and support. Lochner et al. (1999) suggest that 'social capital is a feature of the social structure, not of the individual actors within the social structure; it is an ecologic characteristic. In this way social capital can be distinguished from the concepts of social networks and support, which are attributes of individuals' (p. 260). The challenges this presents for measurement are considered below.

The rise of interest in the link between social capital and health

Public health research has long known about the association between social networks, social support and health (House and Kahn 1985). However, it is only recently that the link between social capital and health has been established (for example, see Lomas 1998; Hawe and Shiell 2000). Seminal research in the USA has demonstrated that elements of social capital (trust, reciprocity and membership of voluntary organizations) explain a significant proportion of life expectancy, infant mortality rate (IMR), heart disease, violent crime and self-rated health (Kawachi et al. 1997). These associations persist after controlling for income. While work in developing countries has demonstrated the link between social capital and general household welfare (expenditure, assets, credit access, savings and employment) (Narayan and Pritchett 1997; Grootaert 1999; Grootaert and Narayan 1999; Grootaert et al. 1999), there has been little research on the link between social capital and overall health in developing countries.

The links between social capital and mental health have not been empirically tested, although conceptual links have been documented (currently in press by US National Institute of Mental Health). It can be hypothesized that social capital could reduce negative life events (e.g. loss of a job) and long-term difficulties (e.g. poor physical health). It may also enhance social support, which can buffer the effects of life events on mental health. Whilst the 'bonding' social capital intensifies existing support networks, the 'bridging' social capital extends potential opportunities through the support network. Alternatively, the 'structural' aspects of social capital provide access to institutions, formal and informal, which reduce the negative impact of life events, and thus provide additional support. On the other hand, the cognitive aspects, such as social trust and shared values, can increase feelings of security and self-esteem within and between communities. Thus there are hypotheses that social capital may influence mental health status, but empirical research is needed.

Baum (1999) suggests that the increased interest in social capital provides an opportunity for the public health

community to advance social agendas which have been evident in public health for some time but have not captured popular or political imaginations as much as would be desirable. Others argue that focusing on social relations diverts attention from material structural inequalities and that interest in the subject might be as short-lived as 'third way' politics (Muntaner et al. 2000).

One of the obvious next steps after examining the association between social capital and health is for intervention studies to examine whether social capital can be increased/strengthened and, if so, whether this increased social capital leads to better health. To the authors' knowledge, there is not yet a study of this kind.

Measures used in key social capital and health studies

The two most widely quoted and copied measures of social capital that have been used in the health-related field are those of Sampson et al. (1997) and Kawachi et al. (1997). In a quantitative study on violence and social capital in Chicago, USA, Sampson et al. (1997) measured what was termed 'collective efficacy', which measured both 'social cohesion' and 'informal social control'. Cohesion has five items, asking respondents how strongly they agree (on a five point Likert scale) that:

- 'people in this neighbourhood can be trusted';
- 'this is a close-knit neighbourhood';
- 'people around here are willing to help their neighbours';
- 'people in this neighbourhood generally don't get along with each other';
- 'people in this neighbourhood do not share the same values'.

Informal social control was measured by asking respondents about the likelihood that their neighbours would intervene if:

- children were skipping school and hanging out on the street;
- children were writing graffiti on a local building;
- children were disrespectful to an adult;
- a fight broke out in front of their house;
- their closest fire station was threatened with closure.

Individual responses were aggregated to the neighbourhood level and were analyzed as an ecologic, rather than an individual characteristic.

In a quantitative study on social capital and mortality in the USA, Kawachi et al. (1997) measured social capital by:

- per capita membership in voluntary groups;
- inter-personal trust ('Most people can be trusted/You can't be too careful in dealing with people');
- perceived norms of reciprocity ('Most of the time people try to be helpful/They are mostly looking out for themselves').

Individual responses were aggregated to the USA state level and were analyzed as an ecologic, rather than an individual

characteristic. Kawachi et al. (1997) were constrained in that they used only secondary (existing) data, and were therefore unable to design their own measures of social capital.

Social capital is a complex construct so simple proxies cannot be used. However, unless a survey is designed for the express purpose of measuring social capital, it is difficult to capture the concept in a comprehensive manner. Most of the studies that have had a major objective of measuring social capital have been in developed countries. The important analysis of social capital and health commissioned by the UK Health Education Authority (Cooper et al. 1999) suffered a similar constraint to Kawachi et al. (1997), i.e. it retrospectively analyzed selected questions from the 1992 National Health and Lifestyle Survey. Social capital was represented by: six questions about satisfaction, security and levels of facilities in the neighbourhood; whether the respondent had been a victim of crime in the last year; the length of residence; and community activity in the last two weeks (adult education, voluntary group, religious and other community group). These questions are problematic in that they measure both *consequences* and *outcomes* of social capital and only capture a limited range of components of social capital. Cooper et al. (1999) acknowledge the limited number of components of social capital and suggest that future health surveys that aim to measure social capital should also include measures of perceptions of trust and value of life as have been used in American and Australian surveys of social capital. As some survey evidence shows that membership of organizations is not closely associated with trust (Newton and Norris 2000), it is particularly important to capture these two components of social capital in an independent manner.

While the current authors support a comprehensive approach, it is important to note that some authors argue for a narrower conceptualization of social capital. For example, Edwards and Foley (1998) suggest leaving aside the 'trust' aspects as they are more appropriately viewed as cultural capital. It is also sometimes argued that trust is a *predisposing* factor which leads to the *creation* of social capital. Stone (2001) highlights the importance of avoiding 'distal indicators' of social capital (e.g. life expectancy, suicide rates, crime rates etc.) in order to avoid tautological analyses whereby social capital is associated with outcomes that are incorporated into its own index.

In sum, every study will have to grapple with this need to explicitly 'draw the boundary' of social capital and exclude 'causes' and 'consequences' of social capital in the measurement of the concept itself. Decisions about this will have to be made on the basis of current theory and the conceptual framework of the specific study. However, in order to fully capture the relationship between social capital and health, we advocate a comprehensive measure of social capital, as explored below.

Getting a sufficiently comprehensive measure

A general pattern is emerging whereby large-scale (often national) studies (in which social capital is a necessarily small component) tend to use one or two measures of social capital

(typically trust and membership of groups, or 'civic engagement'), whilst smaller scale studies focusing specifically on this issue have the opportunity to measure social capital in a more holistic, comprehensive manner. An example of the latter was carried out in Australia by Bullen and Onyx (1998). They applied a questionnaire to 1211 respondents in Australia, and used factor analysis of the questionnaire to identify eight distinct elements of social capital:

- (1) Participation in local community;
- (2) Neighbourhood connections;
- (3) Family and friends connections;
- (4) Work connections;
- (5) Proactivity in social context;
- (6) Feelings of trust and safety;
- (7) Tolerance of diversity;
- (8) Value of life.

The first five explanatory factors (numbers 1–5) are about participation and connections (analogous to the theoretical construct of structural social capital) and numbers 6–8 are about security, trust and norms (analogous to cognitive social capital). It is interesting to note the good match of the theory and empirical evidence in this case. The web site (<http://www.mapl.au/12.htm>) provides details on the questions for each of these eight elements (usually about five questions for each element).

Another example of an in-depth social capital study is the Social Capital Community Benchmark Survey (Saguaro Seminar 2001) administered in the USA and directed by Putnam. Eleven different facets of social capital are measured: social trust; inter-racial trust; diversity of friendships; political participation; civic leadership and associational involvement; informal socializing; giving and volunteering; faith-based engagement; equality of civic engagement across the community; and variation between communities/community analysis. The lengthy and detailed questionnaire allows for interesting cross-tabulation and association of different social capital variables.

All the measures mentioned in this paper are quantitative and nearly all authors acknowledge that the measures are simplistic and that this is both a strength and a weakness. As Bullen and Onyx (1998: 8) state: 'In an economic rationalist world where ideology says "if you can't measure it, you can't manage it", some form of quantitative indicator of social capital is essential. Quantitative methods need to be fleshed out with other more qualitative methods such as the use of case studies and thick descriptions.'

While the above measures have only been used in developed countries, Krishna and Shrader (2000) have developed a lengthy measure of social capital intended for use in developing countries. The measure combines a community profile, an organizational profile and a household survey, and has been used in Panama and India. It draws upon many empirical quantitative measures of social capital in developed and developing countries (Narayan and Pritchett 1997; inter alia Krishna and Uphoff 1999). This instrument, named the Social Capital Assessment Tool (SCAT), has the unique advantage

Table 1. The Adapted Social Capital Assessment Tool (A-SCAT)

A. Structural ('connectedness')	B. Cognitive (reciprocity, sharing, trust)
(1) Participation in organizations.	(1) General social support.
(2) Institutional linkages (connections to services, facilities and organizations).	(2) Emotional support (enabling people to 'feel' things).
(3) Frequency of general collective action.	(3) Instrumental support (enabling people to 'do' things).
(4) Specific collective action (whether people would get together to address named hypothetical situations).	(4) Informational support (enabling people to 'know' things).
(5) Degree of citizenship (whether the respondent has voted/campaigned/taken part in other neighbourhood or city-wide activity).	(5) Trust.
(6) Links to groups with resources (such as local government or aid agencies).	(6) Fellow feeling. ^a
(7) Links to parallel groups (namely other communities).	(7) Reciprocity and co-operation.
	(8) Social harmony.
	(9) Sense of belonging.
	(10) Perceived fairness (would others in the community take advantage of people).
	(11) Perceived social responsibility (would others in the community return lost items).

^a Phrase coined by Adam Smith (1759) in *The Theory of Moral Sentiments*. Fellow feeling was a term used to refer to principles in man's nature which interest him in the fortunes of others.

of clearly distinguishing between cognitive and structural components of social capital. However, the household survey part of SCAT is time-consuming (over 60 questions), it has not yet been tested for validity or reliability, includes questions relating to the determinants and outcomes of social capital, has overlapping questions and fails to incorporate the successfully used questions designed by Sampson et al. (1997). Nevertheless, it provides a useful range of questions from which to develop alternative measures.

The current authors have designed and used an adapted version of SCAT (A-SCAT) which has seven questions on structural social capital and 11 questions on cognitive social capital. The elements that the questions represent are shown in Table 1.

An addition and strength of the A-SCAT is the full treatment of the concept of support which matches the theoretical treatment of the concept, i.e. measuring emotional, informational and instrumental support (House and Kahn 1985). As in SCAT, which separates social capital into the two components, structural and cognitive, A-SCAT allows analysis of the independent associations of these components with health variables (for example, mental health status might have a stronger association with cognitive rather than structural social capital). The A-SCAT is designed for application in low-income developing country settings with low literacy levels (i.e. it is interviewer administered). The questions were designed in order to be applicable in a wide variety of developing country settings, but as emphasized by Krishna (forthcoming), local pre-testing and adaptation will always be necessary to make the tool culturally relevant. The instrument is being used in Durban (South Africa), Lusaka (Zambia) and Cali (Colombia). The typical interview duration of the A-SCAT is 15 minutes. The data collected using A-SCAT can be analyzed using factor analysis to identify a number of dimensions² constituting social capital, as has been done successfully by others (Onyx and Bullen 2001; Krishna forthcoming), and has the potential to yield a single summary

number (measure), or at most two numbers, one for structural and one for cognitive social capital. Individual data can then be aggregated to the geographic area of interest (e.g. neighbourhood) or into groups of individuals with particular characteristics for comparative purposes. For example, the Durban and Lusaka studies allow the comparison of social capital scores between those who are emotionally resilient and the more emotionally vulnerable, while the social capital scores between volunteers and marginalized women are compared in the Australian study by Onyx and Bullen (2001). Although cognitive social capital is conceptually more complex than structural social capital (and has more items in A-SCAT), factor analysis can generate social capital dimensions and allows the two components to be weighted equally.

While empirical measures are, in some respects, moving towards a comprehensive treatment of social capital, there remain challenges, as we see below.

Adding 'bonding' and 'bridging' to the equation

While the previous section has emphasized the importance of capturing both structural and cognitive social capital, an additional challenge remains: measuring both bonding and bridging social capital. As pointed out in the section on definitions, bonding implies *within* community relations and bridging implies *extra* (outside) community relations. Few studies measure this distinction, although it is both theoretically and practically important. One importance is related to the role of bridging capital as a potential benefit of empowerment/development projects. Another importance stems from the fact that the distinction gives clues as to the cultural and/or geographical frame of reference and to the types of institutions that may be important in strengthening social capital. For example, some projects, such as that being implemented by the Cali Department of Health in Colombia, explicitly try to strengthen both types of social capital, working with groups within communities but also linking (bridging) those groups with municipal institutions.

In order to capture the difference between the two concepts each question would need to specify whether the social contacts referred to come from within the community or outside the community. The distinction emphasizes the importance of defining the meaning of community, i.e. is it a geographical expression such as neighbourhood, area, ward, district or a shared cultural identity? This distinction will clearly be context dependent and is often best generated by obtaining local constructs of what 'community' means to people.

One of the few studies that explores the bonding/bridging construct is that by Onyx and Bullen (2001: 15) in Australia:

'Of particular interest is the evidence for a distinction between bridging and bonding social capital. The factor Tolerance of Diversity is probably a good indicator of bridging social capital. In our studies Tolerance of Diversity typically correlates most with Social Agency and Feelings of Trust and Safety. It correlates least with Neighbourhood Connections and Participation in Local Community. . . . However the two sets of factors are not negatively correlated, suggesting that it is at least possible to hold high levels of both community connectedness and tolerance of diversity. Our findings appear to confirm the distinction between bonding (within group) social capital and bridging (between group) social capital (Woolcock 1998).'

Getting to the ecological level

Sampson et al. (1997) and Kawachi et al. (1997) aggregate individual responses up to the community level in order to achieve an ecologic perspective (since social capital is meant to be a public, rather than individual, good). However, Lochner et al. (1999) call for something more than that – a measure of community characteristics that does not rely on the aggregation of individual responses. The only apparent means of achieving the latter is through observation, and Lochner et al. (1999) give examples of observing the extent to which pavements are cleared after a snowstorm (suggested as an indicator of reciprocity), or whether local petrol stations demand prepayment before motorists can fill their tanks (suggested as an indicator of trust). Such ecologic observations (sometimes called 'integral variables') have yet to be empirically tested (Kawachi and Berkman 2000). Culturally specific measures such as those suggested by Lochner et al. are inherently problematic in developing an instrument for international use. Thus the challenge remains of developing valid, widely applicable and truly ecologic measures. One aspect that needs to be explored further is that of developing a framework of generic social capital themes (such as reciprocity, trust of one's neighbours, sanction of crime, etc.), which can be taken further into culturally and geographically appropriate questions.

Which confounders to include?

Naturally, in a health survey, measures of social capital will be accompanied by health variables (e.g. self-reported health status, mortality, morbidity, nutritional status, mental health status, disability status, health-seeking behaviour). It is also important to measure potential confounders of the possible

association between social capital and health. Some of the main confounding factors which need to be considered and which have been included in studies cited in this article are: socioeconomic status (typically measured by a proxy like quality of housing or commodity ownership, as the measurement of income and/or expenditure is problematic and costly in time); education status; length of residence in the community of interest; gender (where cultural norms impact on levels and type of social interaction according to sex); and number of people per household (as a proxy measure of the degree of within-household social interaction). This latter confounder raises the point that most studies of social capital ignore intra-household social interaction and are interested only in extra-household relations. Indeed, social capital studies are often criticized on this basis. Having employment is probably important but can be hypothesized to have both positive effects on social capital (by increasing numbers and types of people to interact with) and negative effects (by decreasing time available for social interaction). Place of work (within or outside community of interest) is also potentially important. Previous health status is important to record (but difficult due to recall problems) as it may be argued that health is a determinant as well as a consequence of social capital. This tricky, almost circular, argument will only be illuminated by prospective, longitudinal (expensive) studies that can 'time' events and levels of social capital, and therefore move us away from mere associations to causal pathways.

Validity and reliability

Given the level of interest in measuring social capital it is surprising that, to the authors' knowledge, none of the new measures emerging has measured validity and/or reliability. Here we briefly consider the validity of A-SCAT according to the traditional sub-categories of validity (Moser and Kalton 1971). A similar checklist could be used for any new measure. The *face validity* (intuitive appeal) of A-SCAT appears credible as it encompasses all components of social capital. The *construct validity* (convergent and discriminant; theoretically postulated links with other variables) has not yet been tested but is hypothesized to have high convergence with mental health. *Content validity* (representativeness of questions in instrument) is good in that all structural social capital questions concern connectedness, and all cognitive social capital questions concern feelings about others/neighbourhood. No one category is focused upon too heavily. No component is omitted. Measurements of outcomes of social capital or explanatory factors are avoided. *Concurrent validity* (agreement with results from other instruments) is not currently possible to assess as no 'gold standard' is available. *Predictive validity* (predictive of a future event) would be expensive to demonstrate as it would require a prospective (longitudinal) design, and is rarely measured for instruments like this. In terms of reliability, every application of A-SCAT will include a repeat interview with 5% of respondents to measure the reliability coefficient.

Conclusion

Although there have been several weaknesses in early attempts to measure social capital, instruments are rapidly

becoming more sophisticated and, hopefully, more valid and reliable. Only recently have social capital methods started to catch up with the theory. Retrospective analyses of surveys which were not originally designed to capture social capital have produced conflicting results: 'Social capital and social support influenced health, reported stress and health behaviour differently according to how they were measured' (Cooper et al. 1999: 147). Acknowledging that the definition and measurement of social capital is still in the development stage, it is only when we have more tailor-made health and social surveys, which include measures of reliability and validity, that we will be able to more confidently understand the association between social capital and health. This will allow public health researchers to further advance social agendas and to propose appropriate policy responses.

Endnotes

¹ One example of this application is the UK Department for International Development's 'Young Lives' project, which is a cohort study of children born into poverty in the year 2000 in five different countries. The project will measure social capital as well as traditional health indicators.

² A dimension is a composite of related variables that are manifestations of a single underlying factor.

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