City, University of London Institutional Repository

Social capital and health: The problematic roles of social networks and social surveys

ABSTRACT

Social capital, social networks, social support and health have all been linked, both theoretically and empirically. However, the relationships between them are far from clear. Surveys of social capital and health often use measures of social networks and social support in order to measure social capital, and this is problematic for two reasons. First, theoretical assumptions about social networks and social support being part of social capital are contestable. Second, the measures used inadequately reflect the complexity and ambivalence of social relationships, often assuming that all social ties and contacts are of similarly value, are mutually reinforcing, and, in some studies, are based on neighbourhoods. All these assumptions should be questioned. Progress in our understanding requires more qualitative research and improved choice of indicators in surveys; social network analysis may be a useful source of methodological and empirical insight.

Stephen Abbott

School of Community and Health Sciences
City University, London, United Kingdom

Introduction

A considerable body of work claims that high levels of social capital are associated with better health (e.g. Kennedy *et al* 1998; Rose 2000; Islam *et al* 2006; Khawaja *et al* 2006). Thus, social capital has come to be widely considered to be one of the many social determinants of health. Social capital has a variety of definitions; so wide a variety indeed that its usefulness has been questioned:

> … *the concept has been stretched, modified, and extrapolated to cover so many types of relationships at so many levels of individual, group, institutional, and state analyses that the term has lost all heuristic value… there does not appear* to be consensus on the nature of social capital, its appropriate level of analysis, or the appropriate means of measuring it (Macinko and Starfield 2001:394–410).

This alone should mean that claims about the association of social capital and health should be treated judiciously. Additionally, the literature on social capital and health (SCH) reveals a set of conceptual and methodological problems that arise from the dominance in this literature of survey research that looks for associations between social capital and health indicators (e.g. Onyx and Bullen 2000; Rose 2000). The difficulty is that, as Bowling (2005) points out, most measures have not been validated. Furthermore, many studies are often based on secondary analysis of data sets gathered by research not designed to measure or explore social capital (e.g. Chavez *et al* 2004; Pevalin and Rose 2003). In these cases, researchers use answers to questions that may be regarded as proxy measures for social capital.

For example, Pevalin and Rose (2003) select as indicators of social capital questions from the British Household Panel Survey on the following topics:

- social participation (meaning participation in organisations and associations);
- frequency of contact with three closest friends;
- perceptions of crime in the neighbourhood; and
- neighbourhood attachment.

They also include questions on social support. However, aspects of social capital emphasised elsewhere, such as trust and reciprocity, are absent. This illustrates how the way that social capital is conceptualised and operationalised may be influenced by the nature of the proxy indicators available.

One effect of such methods is to give social networks and social support (SNSS) a greater importance in the empirical SCH literature than they do in the theoretical literature on social capital. The three most commonly cited theorists offer rather less certainty about the central role of social networks. For Bourdieu (1986), it is not the pleasures and benefits of sociability that constitute social capital, but the resources that social contact and networking can bring to members of affluent and powerful elites. For Coleman (1988), social networks are valued for their normative effects in generating and policing rules of behaviour ('obligations, expectations and trustworthiness; information channels; norms and effective sanctions': S102). For Putnam *et al* (1993) the key features of social capital are participation in local activities and organisations, and generalised trust and reciprocity. Thus, there is no theoretical consensus about the importance of SNSS.

It would be misleading to imply that there is such a consensus in the empirical literature either. Some studies omit SNSS altogether (Kawachi *et al* 1997; Lochner *et al* 2003); some include social networks and social support as separate concepts (Pevalin and Rose 2003); some include social support as part of social networks (Coulthard *et al* 2002); some understand social networks and/or social support as the primary component of social capital (Snijders 1999); others explicitly exclude social support from social capital but include social networks (Cooper *et al* 1999); others do the reverse (Looman 2006). This variety illustrates the extent to which SNSS is included in the empirical literature on SCH and the various, and frequently inconsistent ways, in which it is employed in that literature.

It is understandable that SNSS attracts the attention of those interested in SCH, as there is substantial evidence about the effects of social contacts and relationships on health (Cohen 1988). Close, caring, confiding relationships are good for health (Cohen and Wills 1985); loneliness can cause anxiety and depression (Reis and Shaver 1988). In alleviating such negative emotions, SNSS appear to protect health by offering practical or emotional help that improve or protect the functioning of the immune and neuroendocrine systems; by reducing allostatic load; or by affecting hypothalamic–pituary–adrenalin and cardio-pulmonary functions (Berkman *et al* 2000). Indeed, it is arguable that the evidence for associations with health of SNSS are a good deal stronger than that for associations between other elements of social capital such as trust, reciprocity and participation (Abbott and Freeth 2008; Abbott in press).

Even if one is sceptical about the centrality of SNSS in social capital, it is arguable that SNSS is at the least a mechanism that promotes key elements of social capital such as trust, reciprocity, participation in local activities and information-sharing, and that SNSS is therefore a proxy for social capital. Certainly, it is hard to imagine how social networks and social support could exist in the absence of trust and reciprocity, that information could be shared without any degree of social contact, or that participation could not generate social contact.

However, the validity of such a proxy indicator needs to be argued for and supported with empirical evidence. Some evidence suggests that SNSS may not correlate with other aspects of social capital. Coulthard *et al* (2002) show that socio-economic factors (like having had higher education, car and home ownership and non-manual employment status) decrease the likelihood of speaking to or knowing neighbours, while at the same time increasing the likelihood of reporting reciprocity and trust

among neighbours. Thus actual interaction is not necessarily the antecedent of interaction's supposed consequences, and behaviour and attitude are not necessarily correlated. Similarly, Ginn and Arber (2004) found that better health was associated on the one hand with higher measures of trust in neighbours but on the other hand with lower levels of actually knowing and speaking to neighbours. Ziersch (2005) found that whereas trust increases with age, social support decreases (though it is true that she claims to measure not social support but reciprocity, a point returned to below). So, separate components of social capital do not necessarily work in concert.

Furthermore, the use of SNSS as a proxy indicator for social capital assumes confidence in the means of measurement. The purpose of this paper is to enquire whether such confidence is justified in the case of measures used in the SCH literature. It argues that the relatively simple questions usually included in surveys are not able adequately to capture the complexities of social relationships. It follows, therefore, that such measures of SNSS should not be taken to indicate social capital.

How is SNSS measured?

Within the SCH literature, SNSS is measured in a diversity of ways. Some writers ask about social contact alone (Onyx and Bullen 2000; Ziersch et al 2005). Others include measures of social support in its place (Snijders 1999) or as well (Coulthard et al 2002; Chavez et al 2004). Different studies include different sorts of social support: for example, Poortinga (2006) includes only emotional and psychological support; Veenstra (2000) includes only practical and financial support; and others include emotional, practical and financial assistance (Ziersch 2005).

Another difference is whether an emphasis is given to place: for some writers on social capital, it is the social contacts that take place within a context of geographical proximity that are most important (Ziersch et al 2005; Chavez et al 2004). Thus, survey questions may focus more on relationships with neighbours, or with family and friends who live nearby. For example, Pevalin and Rose (2003) ask for respondents to agree or disagree with the statement that friendships in the

neighbourhood mean a lot, while Coulthard et al (2002) include neighbours as well as relatives and friends, and ask about how far friends and relatives live from the respondents. Other writers give no particular emphasis to geographically-based relationships (Cooper et al 1999). However, there is no reason to assume that the same impact on individual well-being can be expected to follow from both local and distant relationships: for example, from relationships with neighbours and with family members who have moved away.

The limitations of measures are well discussed in Cooper et al (1999) in critiquing their own methods. They analyse data from the Health and Lifestyles Survey (HALS), in particular that elicited by questions about whether respondents see or speak regularly to close friends and relatives (with 'regularly' being defined by respondents). They acknowledge that as a measure of social support, these questions are inadequate: they assume that close contact entails social support, and fail to distinguish different kinds of support. The HALS also asks respondents whether they have had contact with family and friends in the last two weeks (visiting/going out with/by telephone/being visited by). As Cooper et al (1999) point out, however, this fails to capture the frequency of contact within that period.

Furthermore, the frequency of contacts reveals little about their quality. Cooper et al (1999) also analyse data from the General Household Survey, which asked whether or not respondents go to see or call in on friends or relatives at all. Those who answer 'yes' to this question are asked whether they do this every day, 2–3 times a week, once a week, 1–2 times each month or less than once a month. Although those questions do capture frequency, they do not capture the quality of the contact (duration, purpose, degree of mutual enjoyment or benefit, etc.).

Moreover, as Stone (2001) notes in her review of social capital measurement, many questions nominally about reciprocity actually measure social support. For example, Pollack and von dem Knesebeck (2004:384) seek to measure reciprocity by asking people to respond to the statement, 'In my neighbourhood, most people are willing to help others'. Lochner et al (2003:1799) use a

variant of the same measure, '*People around here are willing to help their neighbours'*. Ziersch (2005:2123) explores reciprocity by gauging response to the assertion: '*By helping others you help yourself in the long run'*. This statement has more face validity as a question about attitudes to social support than to reciprocity (the benefit for the helper may be a feeling of virtue or the assumption of a place in heaven, rather than reciprocal acts of helping). Such questions measure belief in the helpfulness of others, or the perceived general availability of social support, rather than reciprocity. This is not to deny that some theories of social support associate it closely with reciprocity (Antonucci *et al* 1990), but it does illustrate how conceptual clarification is needed.

A more general but very important point is that to base the study of SNSS on simple counting is to assume that different sorts of SNSS are 'all of a kind': there are so many different kinds of relationship that we cannot assume that they all make cumulative and similarly benign contributions to social support. An account of some of these different kinds follows.

The ambivalence of SNSS

This section suggests a number of reasons why simply counting social relationships or social contacts is unlikely to represent the true nature of SNSS. This applies to relationships with family, with friends and with neighbours. First, family relationships are not necessarily cordial and loving (Ell 1996). Cornwell (1984) found that while public accounts of family life reflected the ideology of the loving family, private accounts told of indifference, dislike and hostility. Families are arenas for domestic violence and child abuse as well as for solidarity and love. The quality of the relationship, and the care that may or may not ensue, is crucial for health (Rogers 1996): poor quality family relationships predict poor future physical and mental health (Stewart-Brown and Shaw 2004).

Even where support is provided and benefits the recipient, it may compromise the health of care-givers by the burden it imposes on them (Kunitz 2001). Supporters may also be burdened with the negative emotions of the person being supported: for example, women suffer psychologically if their partners are unemployed (Bartley *et al* 2004). Since the family is the most usual source of personal support, this burden is one reason why family ties may not always support health. Outside the family, too, there may be great differences in the amount of support that social contact brings. For example, the word friendship covers a great variety of relationships. It might be used to describe, for example, my relationships with:

- the school friends with whom I now only exchange cards at Christmas;
- the friends with whom I share confidences and turn to in times of trouble;
- the friends I meet in the pub once a week.

The social support provided by such different sorts of friends is likely to vary significantly, and surveys that do not make such distinctions will give us results that are hard to interpret, as we will not know what respondents mean by friendship. Also, in Bourdieu's framework, different kinds of friendships will yield different kinds of resources, while Coleman might argue that different friendship networks will enforce different sets of norms. Both of these factors suggest that different forms of friendship might have varied impacts on health status.

Furthermore, the assumption that social contacts are likely to be positive ignores the fact that social conflict is ubiquitous. Theorists and researchers of social capital pay little attention to social conflict within social groups (MACSES 1999). Social contacts between the same people can be alternately or simultaneously positive and negative: for example, Campbell (2001:6–7) describes how South African sex workers depend on mutual support to survive poverty and extreme violence, but also compete fiercely and sometimes violently for business. Thus, simply counting the quantity of social contacts, while ignoring their quality, may in some instances be misleading.

Instances of SNSS may not simply accumulate. Though in many cases it is likely that an individual's relationships contribute to his or her well-being both separately and together, some relationships may compete rather than complement each other. It is not unusual for family and non-family ties to place competing demands on individuals and they

may satisfy one set of demands by ignoring others. Adams and Allan (1998:8) found that '… extensive involvement with kin living outside their household limits participation in (non-kin) friendship ties'. Similarly, Putnam *et al* (1993) argue that social capital is low in southern Italy because heavy dependence on family networks 'crowds out' other sorts of social links. The same is true of different sorts of friendship:

> … people involved in relatively dense friendship networks are likely to develop fewer newer friendships at any time than those whose friendship networks are more dispersed
> (Adams and Allan 1998:8).

Theoretical discussions of social capital have sought to reflect the variety of social relationships. For example, Putnam (2000:22–23) distinguishes between bonding and bridging social capital. He writes of bonding social capital as exclusive:

> Some forms of social capital are, by choice or necessity, inward looking and tend to reinforce exclusive identities and homogeneous groups. Examples of bonding social capital include ethnic fraternal organisations, church-based women's reading groups, and fashionable country clubs.

Bridging social capital is more inclusive:

> Other networks are outward looking and encompass people across diverse social cleavages. Examples of bridging social capital include the civil rights movement, many youth service groups, and ecumenical religious organisations
> (Putnam 2000:22).

However, this theoretical insight is little used in SCH surveys (Whitley and McKenzie 2005): measures of social capital used in empirical research are almost exclusively of bonding social capital (Islam *et al* 2006).

Another distinction that Putnam makes is between thick and thin social capital:

> Some forms of social capital are closely interwoven and multistranded, such as a group of steelworkers who work together every day at the factory, go out for drinks on Saturday, and go to mass every Sunday. There are also very thin, almost invisible filaments of social capital, such as the nodding acquaintance you have with the person you occasionally see waiting in line at the supermarket, or even a chance encounter with another person in an elevator
> (Putnam and Goss 2002:10–11).

The thick/thin and bonding/bridging formulations are sometimes confused: for example, Islam *et al* (2006) 'operationalise' bridging social capital as 'weak ties'. But bridging social capital could be thick as well as thin (for example, some socially diverse churches promote a large number of social activities for their members), and bonding social capital could be a good deal thinner than Putnam's example of the steelworkers (for example, a group of steelworkers who work together but who do *not* share social networks).

Furthermore, SCH surveys fail to explore some of these forms: for example, there is a notable absence of survey questions about workplace relationships. Presumably, Putnam's assumption that, '*workplace ties tend to be casual and enjoyable, but not intimate and deeply supportive*' (Putnam 2000:87) is shared by others. However, workplace ties may help to buffer against the effects of occupational stress, and Terry and Jimmieson (1999) and Mackay *et al* (2004) have found evidence that relationships at work do affect health.

Having said all of that, there are in fact good theoretical reasons to use simple counting as one means of investigating SNSS. It appears that both the quality and the quantity of an individual's social contacts affect health (Cohen 1988), and may do so independently of each other (Thoits 1995). That good quality social support contributes to health is supported by evidence already cited. The quantity of social contacts, regardless of their quality, also contributes: there appear to be greater health benefits for those with larger networks (Stansfeld *et al* 1998) and with a wider variety of social ties (Cohen *et al* 1997). This may be in part because a variety of social ties allows individuals to draw

on a range of support and to sustain multiple identities which buffer against stress (Thoits 1983). Berkman *et al* (2000) suggest that social network size may be inversely related to risk-related health behaviours: presumably, a larger number of contacts reduces the power of peer group pressure to encourage such behaviours. Thus, the counting of SNSS is necessary but not sufficient. However, the SCH literature rarely explains why counting does make sense with respect to the effect of contact quantity, nor seeks to address the reasons why it is insufficient with respect to the effect of contact quality.

The geography of social networks

As suggested above, another assumption underlying some of the SCH literature is that social networks characterised by geographical proximity are of particular importance. To ask about social contacts that are local or to analyse data at the level of localities makes sense if one assumes that social networks are primarily local. But the view that communities are created by proximity has long been questioned:

> There has been a determined effort [in community studies] to detach the study of social relationships from the study of spatial relationships – two themes which are hopelessly jumbled together in the traditional idea of community... any attempt to tie particular patterns of social relationships to specific geographical milieux is a singularly fruitless exercise
> (Abrams and Brown 1984:25).

Of course, geographical boundaries are pragmatically useful in deciding sampling frames, but they are all artificial to some degree, and may either divide people with a shared identity, or bring together people who feel mutually alien, or both. Also, it is not clear what size of area should be chosen to represent communities that reflect the experience and understanding of their members as social groupings to which they belong.

Also, there may be substantial differences between sub-groups in their perception of the local community: for example, between men and women (Cornwell 1984). East (2002) found that people with very different attitudes and habits can share the same geographical space (for example, pensioners, professional home owners, youth club members, boys, Muslim girls). Morrow (2001) describes how children's perceptions and use of places are different from those of adults. Raudenbush also points to differences in behaviour which create different experiences of the same geographical space:

> Younger adults spend more time out of the house on the streets and at later hours of the night. The difference in routine activities would produce a different in perceptions
> (Raudenbush 2003:116).

Moreover, relationships between neighbours are rarely intimate (Wellman *et al* 1988). Indeed, to assume that relationships with neighbours are positive ignores the:

> ... small politics' of everyday life which encourage enmity as much as friendship, and in which gossip and flattery, one-upmanship and ostracization are all powerful weapons
> (Cornwell 1984:42–43).

Of course, some neighbours do become friends. But good relations between neighbours require more than proximity:

> Those neighbours who interacted with each other as neighbours were those who had other roles in common: kinship; common stage in the family cycle; having children at home; place of origin, especially residence in the area
> (Stacey et al 1975:93).

This is not to deny that neighbours may help each other out in some ways. James and Gimson (2007) found that over half of English parents would ask neighbours for practical help in certain circumstances (watering plants while on holiday; lending something; brief periods of childcare). That is, some sorts of social support may be commoner than the social relationships that are supposed to foster it. In terms of social support, the relative importance of those living near and distant is important in terms of what support is looked for: clearly, emotional support

could be given over the phone or by e-mail, and financial support can take the form of a cheque in the post; but babysitting or helping to put up a fence requires a physical presence that will be easier to arrange with those living nearby.

It is also true that certain aspects of social capital and its effects are necessarily place-based. Social networks that create or are created by community activities like Neighbourhood Watch or Parent Teacher Associations necessarily have a strong geographical basis. However, participation in such activities appears to be a minority activity (Baum *et al* 2000; Cattell 2001). If participation is not a widespread activity, then it may be a poor indicator for collective social capital.

Conclusion

This paper has set out to show that SCH survey methods embody assumptions about SNSS that do not reflect either the empirical literature on SNSS or the theoretical literature on social capital. This is not to say that the data captured by such surveys is without value. But it does suggest that if we are to increase our understanding of the relationships between social capital, social networks, social support and health, we need to go beyond current methods. More qualitative research is needed, building on what already exists to explore those relationships: Cattell (2001), for example, used qualitative interviews to explore in detail the complex and contrasting patterns of networks on two housing estates in East London. Ethnographic work could examine closely how actual networks of individuals are created and sustained, and the variety of ways in which they affect the lives of those individuals. Such work would be of great value in its own right, and could also be used to generate more discriminating survey questions. Specifically, it could help to clarify:

- the relationships between social networks and social support;
- the relationships between social support and reciprocity;
- the relationships between SNSS and social capital, and
- the contribution of SNSS to the effect of social capital on health.

A particular method that could help is social network analysis, in which individuals are asked to identify the social networks of which they are members, and the nature of their contacts and relationships with other network members. These data are then used to create a matrix of relationships between individuals (Hawe *et al* 2004). This work has identified many important aspects of social networks: size, density, multiplexity, reciprocity, durability, intensity, frequency, dispersion and homogeneity. Such research, used in conjunction with measures of health, promises a richer understanding of how SNSS impacts on the health and well-being of individuals and groups.

References

Abbott, S. (in press) 'Social capital and health: The role of participation' accepted by *Social Theory and Health*.

Abbott, S. and Freeth, D. (2008) 'Social capital and health: Do trust and reciprocity have an effect, and if so, how?' *Journal of Health Psychology* 13:874–883.

Abrams, P. and Brown, R. (eds) (1984) *UK Society. Work, Urbanism and Inequality* Weidenfeld and Nicholson: London.

Adams, R.G. and Allan, G. (1998) *Placing Friendship in Context* Cambridge University Press: Cambridge.

Antonucci, T.C.; Fuhrer, R.; and Jackson, J.S. (1990) 'Social support and reciprocity: A cross-ethnic and cross-national perspective' *Journal of Social and Personal Relationships* 7:519–530.

Bartley, M.; Martikainen, P.; Shipley, M.; and Marmot, M. (2004) 'Gender differences in the relationship of partner's social class to behavioural risk factors and social support in the Whitehall II study' *Social Science and Medicine* 59:1925–1936.

Baum, F.; Bush, R.A.; Modra, C.C.; Murray, C.J.; Cox, E.M.; Alexander, K.M.; and Potter, R.C. (2000) 'Epidemiology of participation: An Australian community study' *Journal of Epidemiology and Community Health* 54:414–423.

Berkman, L.F.; Glass, T.; Brissette, I.; and Seeman, T.E. (2000) 'From social integration to health: Durkheim in the new millennium' *Social Science and Medicine* 51:843–857.

Stephen Abbott

Bourdieu, P. (1986) 'The forms of capital' in Richardson, J.G. (ed) *Handbook of Theory and Research for the Sociology of Education* Greenwood Press: New York.

Bowling, A. (2005) *Measuring Health. A Review of Quality of Life Measurement Scales* Open University Press: Buckingham.

Campbell, C. (2001) 'Putting social capital in perspective: A case of unrealistic expectations?' in Morrow, G. (ed) *An Appropriate Capitalisation? Questioning Social Capital. Research in Progress* Gender Institute, London School of Economics: London.

Cattell, V. (2001) 'Poor people, poor places, and poor health: The mediating role of social networks and social capital' *Social Science and Medicine* 52:1501–1516.

Chavez, R.; Kemp, L.; and Harris, E. (2004) 'The social capital: Health relationship in two disadvantaged neighbourhoods' *Journal of Health Services Research and Policy* 9 supplement 2:S2:29–34.

Cohen, S. (1988) 'Psychosocial models of the role of social support in the etiology of physical disease' *Health Psychology* 7:269–297.

Cohen, S. and Wills, T.A. (1985) 'Stress, social support and the buffering hypothesis' *Psychological Bulletin* 98:310–357.

Cohen, S.; Doyle, W.J.; Skoner, D.P.; Rabin, B.S.; and Gwaltney, J.M. (1997) 'Social ties and susceptibility to the common cold' *Journal of the American Medical Association* 277:1940–1944.

Coleman, J.S. (1988) 'Social capital in the creation of human capital' *American Journal of Sociology* 94:Supplement 595–512.

Cooper, H.; Arber, S.; Fee, L.; and Ginn, J. (1999) *The Influence of Social Support and Social Capital on Health. A Review and Analysis of British Data* Health Education Authority: London.

Cornwell, J. (1984) *Hard Earned Lives. Accounts of Health and Illness from East London* Tavistock Publications: London.

Coulthard, M.; Walker, A.; and Morgan, A. (2002) *People's Perception of Their Neighbourhood and Community Involvement. Results From the Social Capital Module of the General Household Survey 2000* Stationery Office: London.

East, L. (2002) 'Regenerating health in communities: Voices from the inner city' *Critical Social Policy* 22:147–173.

Ell, K. (1996) 'Social networks, social support and coping with serious illness: The family connection' *Social Science and Medicine* 42:173–183.

Ginn, J. and Arber, S. (2004) 'Gender and the relationship between social capital and health' in Morgan, A. and Swann, C. (eds) *Social Capital For Health: Issues Of Definition, Measurement And Links To Health* Health Development Agency: London.

Hawe, P.; Webster, C.; and Shiell, A. (2004) 'A glossary of terms for navigating the field of social network analysis' *Journal of Epidemiology and Community Health* 58:971–975.

Islam, M.K.; Merlo, J.; Kawachi, I.; Lindstrom, M.; and Gerdtham, U.-G. (2006) 'Social capital and health: Does egalitarianism matter? A literature review' *International Journal for Equity in Health* 5(3). doi: 10.1186/1475-9276-5-3.

James, C. and Gimson, S. (2007) *Families and Neighbourhoods* Family and Parenting Institute: London.

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

Kennedy, B.P.; Kawachi, I.; Prothrow-Stith, D.; Lochner, K.; and Gupta, V. (1998) 'Social capital, income inequality, and firearm violent crime' *Social Science and Medicine* 47:7–17.

Khawaja, M.; Tewtel-Salem, M.; Obeid, M.; and Saliba, M. (2006) 'Civic engagement, gender and self-rated health in poor communities' *Health Sociology Review* 15(2):192–208.

Kunitz, S.J. (2001) 'Accounts of social capital: The mixed health effects of personal communities and voluntary groups' in Leon, D.A. and Walt, G. (eds) *Poverty, Inequality, and Health. An International Perspective* Oxford University Press: Oxford.

Lochner, K.A.; Kawachi, I.; Brennan, R.T.; and Buka, S. (2003) 'Social capital and neighbourhood mortality rates in Chicago' *Social Science and Medicine* 56:1797–1805.

Looman, W.S. (2006) 'Development and testing of the social capital scale for families of children with special health care needs' *Research in Nursing and Health* 29:325–336.

Macinko, J. and Starfield, B. (2001) 'The utility of social capital in research on health determinants' *Milbank Quarterly* 79:387–427.

Mackay, C.J.; Cousins, R.; Kelly, P.J.; Lee, S.; and McCaig, R.H. (2004) 'Management standards and work-related stress in the UK. Policy background and science' *Work and Stress* 18:91–112.

MACSES (MacArthur Foundation Network on Socioeconomic Status and Health) (1999) *Social Support and Social Conflict* Available at http://www.macses.ucsf.edu/Research/Psychosocial/notebook/socsupp.html [Date of access 16 June 2009].

Morrow, V. (2001) *Networks and Neighbourhoods: Children's and Young People's Perspectives* Health Development Agency: London.

Onyx, J. and Bullen, P. (2000) 'Measuring social capital in five communities' *Journal of Applied Behavioral Science* 36:23–42.

Pevalin, D.J. and Rose, D. (2003) *Social Capital for Health. Investigating the Links Between Social Capital and Health Using the British Household Panel Survey* Health Development Agency: London.

Pollack, C.E. and von dem Knesebeck, O. (2004) 'Social capital and health among the aged: Comparisons between the United States and Germany' *Health and Place* 10:383–391.

Poortinga, W. (2006) 'Social relations or social capital? Individual and community health effects of bonding social capital' *Social Science and Medicine* 63:255–270.

Putnam, R.D.; Leonardi, R.; and Nanetti, R.Y. (1993) *Making Democracy Work. Civic Traditions in Modern Italy* Princeton University Press: Princeton.

Putnam, R.D. (2000) *Bowling Alone. The Collapse and Revival of American Community* Simon and Schuster: New York.

Putnam, R.D. and Goss, K.A. (2002) 'Introduction' in Putnam, R.D. (ed) *Democracies in Flux. The Evolution of Social Capital in Contemporary Society* Oxford University Press: New York.

Raudenbush, S.W. (2003) 'The quantitative assessment of neighbourhood social environments' in Kawachi, I. and Berkman, L.F. (eds) *Neighbourhoods and Health* Oxford University Press: New York.

Reis, H.T. and Shaver, P. (1988) 'Intimacy as an interpersonal process' in Duck, S. (ed) *Handbook of Personal Relationships. Theory, Research and Interventions* John Wiley: Chichester UK.

Rogers, R.G. (1996) 'The effects of family composition health and social support linkages on mortality' *Journal of Health and Social Behaviour* 37:326–338.

Rose, R. (2000) 'How much does social capital add to individual health?' *Social Science and Medicine* 51:1421–1435.

Snijders, T.A.B. (1999) 'Prologue to the measurement of social capital' *La Revue Tocqueville* 20:27–44.

Stacey, M.; Batstone, E.; Bell, C.; and Murcott, A. (1975) *Power, Persistence and Change. A Second Study of Banbury* Routledge and Kegan Paul: London.

Stansfeld, S.A.; Fuhrer, R.; and Shipley, M.J. (1998) 'Types of social support as predictors of psychiatric morbidity in a cohort of British Civil Servants (Whitehall II Study)' *Psychological Medicine* 28:881–892.

Stewart-Brown, S. and Shaw, R. (2004) 'The roots of social capital: Relationships in the home during childhood and health in later life' in Morgan, A. and Swann, C. (eds) *Social Capital for Health: Issues of Definition, Measurement and Links to Health* Health Development Agency: London.

Stone, W. (2001) *Measuring Social Capital, Towards a Theoretically Informed Measurement Framework for Researching Social Capital in Family and Community Life* Australian Institute of Family Studies: Melbourne.

Terry, D.J. and Jimmieson, N.L. (1999) 'Work control and employee well-being: A decade review' *International Review of Industrial and Organizational Psychology* 14:95–148.

Thoits, P. (1983) 'Multiple identities and psychological well-being: A reformulation and test of the social isolation hypothesis' *American Sociological Review* 48:174–187.

Thoits, P.A. (1995) 'Stress, coping and social support processes: Where are we? What next?' *Journal of Health and Social Behaviour* Extra issue:53–79.

Veenstra, G. (2000) 'Social capital, SES and health: An individual-level analysis' *Social Science and Medicine* 50:619–630.

Wellman, B.; Carrington, P.J.; and Hall, A. (1988) 'Networks as personal communities' in Wellman, B. and Berkowitz, S.D. (eds) *Social Structures: A Network Approach* Cambridge University Press: Cambridge.

Whitley, R. and McKenzie, K. (2005) 'Social capital and psychiatry: Review of the literature' *Harvard Review of Psychiatry* 13:71–84.

Ziersch, A.M. (2005) 'The health implications of access to social capital: Findings from an Australian study' *Social Science and Medicine* 61:2119–2131.

Ziersch, A.M.; Baum, F.E.; MacDougall, C.; and Putland, C. (2005) 'Neighbourhood life and social capital: The implications for health' *Social Science and Medicine* 60:71–86.