

The Utility of Social Capital in Research on Health Determinants

JAMES MACINKO and
BARBARA STARFIELD

The Johns Hopkins Medical Institutions

THIS ARTICLE IS THE RESULT OF A SYSTEMATIC SEARCH of the literature from several social science and public health databases, and includes articles, books, and commentary primarily from the 1980s to the present. The purposes of the article are (1) to explore differing definitions of social capital; (2) to review how it has been used and interpreted in the sociological, political science, and economic/community development literatures; (3) to discuss its appearance and use in the health inequalities literature; and (4) to suggest further directions for the refinement of the concept for use in explaining health outcomes.

What Is Social Capital?

The term *social capital* has been used to describe a number of phenomena pertaining to social relations at the individual and societal levels. The term itself hints at a nexus between sociology and economics. The *capital* in social capital can best be thought of in relation to other, more familiar forms of capital. In a simple economic production function, the goods and services produced in an economy are a function of two factors:

The Milbank Quarterly, Vol. 79, No. 3, 2001
© 2001 Milbank Memorial Fund. Published by Blackwell Publishers,
350 Main Street, Malden, MA 02148, USA, and 108 Cowley Road,
Oxford OX4 1JF, UK.

capital and labor. (Sometimes a third factor, land, is also included.) In this sense, *capital* refers to assets such as cash holdings, raw materials, installations, and equipment necessary for the production of goods or services (Browning and Zupan 1996). Capital is often subdivided into financial and physical capital to distinguish between monetary and nonmonetary assets (Woolcock 1998).

The second element of the production function, labor, represents the number of person-hours required to produce the desired good or service. Economists such as Becker (1993) observed that some employees are more productive than others because they may possess better health or more education, talent, or skills. The term *human capital* is used to describe the resources present within different workers (Becker 1993). Human capital can be increased or decreased within individuals as a result of individual investment, government policies, or chance. It can be bought (by investing in education, for example) and sold (usually in exchange for wages). All else being equal, people with high levels of human capital would be expected to have greater income or enjoy higher status than those with lower levels of human capital.

However, if we examine the behaviors of individuals within a society, we see that both workers and owners of capital engage in a number of activities that may affect how, when, and where they may acquire and use financial, physical, and human capital. In most societies, people form groups based on common ancestry, residence, beliefs, or other factors. People join associations, church groups, and political organizations. These groups both reflect and help shape individual identity, norms, beliefs, and priorities (Collins 1994). Through these networks, people share information, provide and receive support, and work together to achieve collective goals that could not be accomplished by an individual working in isolation. This is the “social” part of social capital. The term, therefore, refers to available resources (capital) that accrue to people by virtue of their mutual acquaintance and recognition (social) and that can be used for a variety of productive activities (Coleman 1990; Bourdieu 1991).

In a recent review of the origins and applications of social capital, Portes (1998) traced the idea of social capital to the 19th-century foundations of sociology, and claimed that the idea is implicit in Marx’s concept of the “atomized class-in-itself” versus a “mobilized class-for-itself” and in Durkheim’s “emphasis on group life as an antidote to anomie and self-destruction” (p. 2). Woolcock (1998) traced the concept’s intellectual origins to David Hume, Edmund Burke, and Adam

Smith, all of whom discussed the presence (or absence) of “economic norms of cooperation” and debated the necessity of moral and “natural protecting principles” resident in society for the proper functioning of the market mechanism.

Portes and Sensenbrenner (1993) claimed that it is often by means of social capital that small-business entrepreneurs mobilize financial capital—through loans and investment tips from members of their ethnic subgroup, for example. They may also gain entry into protected markets by virtue of that same membership. Other studies find that the benefits of social resources, like the benefits of financial ones, are distributed unequally among individuals and groups throughout society. Loury (1977) discussed how social networks influence employment possibilities for poor black youth in the United States. Even if such youth are able to improve their levels of human capital through education, Loury argued, their underdeveloped social networks mean that they have few connections to the labor market and thus have little information about new job opportunities. Moreover, they are unlikely to be able to ask for help from individuals in the labor market to help them gain employment even when they do learn of new opportunities (Loury 1992).

Another important contribution to the field has been Sampson’s work investigating neighborhood or group-level determinants of social deviance. Briefly, Sampson’s work looks at “informal social controls” (the ability of groups to regulate the actions of their members through various sanctioning activities and rituals) and “social cohesion” (how much trust the members of a community feel toward their neighbors). His studies have shown a strong inverse relationship between levels of social cohesion (a concept often subsumed under social capital) and prevalence of violent crimes such as homicides (Sampson, Raudenbush, and Earls 1997; Sampson and Groves 1989). The concept of social cohesion (as opposed to social capital) has subsequently been appropriated in several studies on the determinants of population health (Kawachi, Kennedy, and Wilkinson 1999a; Wilkinson 1998).

It is not clear who developed the first explicit definition of social capital. Coleman attributed the term to a 1977 work by Loury, who in turn claimed the idea originated in the work of a journalist (Jacobs 1961). Woolcock (1998) cited an “earlier, astonishingly prescient use of the term” by Hanifan (1920) who defined social capital as “those tangible assets . . . namely good will, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit” (p. 78).

Bourdieu (1980) seems to be the first to dedicate an entire work to the concept, while further refinements came from Coleman (1990), Putnam, Leonardi, and Nanetti (1993), Portes (1998), and others.

Table 1 provides a listing of the most common alternative definitions of social capital. Unlike human capital, in comparison, social capital

TABLE 1
Definitions of Social Capital

Source	Definition	Characterizes
Portes 1998, 12	"refers to the capacity of individuals to command scarce resources by virtue of their membership in networks or broader social structures."	Individuals
Loury 1992, 100 (as quoted in Woolcock 1998, 189)	"naturally occurring social relationships among persons which promote or assist the acquisition of skills and traits valued in the marketplace . . . an asset which may be as significant as financial bequests in accounting for the maintenance of inequality in our society."	Individuals and their social relations
Coleman 1990, 302	"is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of social structure and they facilitate certain actions of individuals who are within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence."	Individuals and their social relations
Bourdieu and Wacquant 1992, 119	"Sum of resources, actual or virtual, that accrue to a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition."	Groups
Putnam, Leonardi, and Nanetti 1993, 167	"refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions."	Groups, political units

cannot accrue to an individual unless he or she interacts with others. However, definitions vary according to the extent of emphasis on individuals or social groups, as reflected in the table. For example, once social capital is “produced” through social relations, where does it reside? Is social capital a societal resource or an individual one? Bourdieu was clear in his conception of the origin of social capital, but was ambiguous as to where exactly social capital resides. Putnam largely (but not solely) described social capital as the property of groups, which use it to “facilitate coordinated actions,” while Portes defined it as a property of individuals, who use it “to command scarce resources.” Coleman defined social capital as a property of social structures that have an influence on individuals.

Lack of consensus on the basic definition of social capital and where it resides has shaped much of the contemporary debate and has led to two separate but overlapping paths in the literature. The individual-level definitions, by and large, have predominated in setting the tone for further studies in the areas of ethnic entrepreneurship and sociological approaches to institutional development. Definitions of social capital as a collective resource became the basis for the macro-level approach to social capital in studies of civil society, democratization, and political development, such as those pioneered and promoted by Robert Putnam.

Social Capital and Civil Society

In 1993, Robert Putnam and colleagues concluded, after a 20-year study of decentralization and economic development in Italy, that social relations were the main explanation for differing levels of political and economic success among Italy’s various regions. Those regions whose local governments performed well also scored high on measures of civic engagement—that is, they had high levels of newspaper readership, voter turnout, and membership in choral societies, soccer clubs, and other groups among their citizenry. Putnam argued that high levels of civic engagement in regions such as Tuscany and Emilia-Romagna led to greater trust, enforceable norms, and dense networks of association among citizens. He claimed that it was this stock of social capital that led to improved governance and economic prosperity in those regions. The opposite also held true. Regions with little evidence of civic engagement, such as Sicily and Calabria, tended to have lower measures of social

capital, and this, said Putnam, explains why they also had higher rates of lawlessness, poorer governance, and weaker economic performance (Putnam 1993).

Putnam (1995) proposed two distinct forms of social capital. The first type, *localized social capital*, accumulates in the course of informal social interactions of families, churches, and social groups that people participate in every day. These networks help to engender trust, and to communicate and enforce norms of behavior among group members. He used the term *bridging capital* to describe the second type of social capital. This concept is based on the work of Granovetter (1973) and others who have shown that so-called weak ties (relationships with individuals outside of one's immediate or localized network) are important in the acquisition of new information and opportunities. This is because intragroup networking tends to convey redundant information (which is how, in fact, localized networks manage to reinforce group norms). For localized networks to function together to produce societywide effects, they must facilitate generalized trust and political accountability. For this reason, "bridging social capital" has been broadly applied in studies of democracy and civil society. Empirical evidence from studies of inner-city development, for example, shows that simply strengthening ties within inner-city neighborhoods (building localized capital) does not automatically lead to improved economic opportunities, unless attention is also paid to increasing ties with groups outside those neighborhoods (Granovetter 1973; Wallis 1998).

For Putnam, social capital forms a virtuous circle. As political negotiations take place within and among networks, the likelihood of opportunism and corruption decreases. At the same time, subsequent successes in negotiations reinforce the earlier ones and further encourage the production of localized and bridging social capital (Putnam 1995).

The recent upsurge of interest in social capital can be attributed primarily to Putnam's application of his findings in Italy to his analyses of civil society in the United States. In his article, "Bowling Alone: America's Declining Social Capital," Putnam (1995) used his theory of social capital to explain a phenomenon that was very much felt but as yet unarticulated in U.S. public opinion: that there had been a decline in civic culture in the United States over the past 40 years. The idea found wide acceptance.

Several features make Putnam's work attractive to academics, politicians, and civic society organizations. First, the concept has intuitive

appeal in diagnosing a widely perceived problem (Wallis 1998). It was an idea that resonated with the popular belief that civic life had, in fact, been declining in America—a proposition that Schudson (1996), Lemann (1996) and Paxton (1999) dispute—and that this decline was at least partly responsible for America's social ills. Second, the proposed solution to the problem of depleted stocks of social capital was attractive both to conservatives, who would prefer to rely on private action rather than government intervention, and to liberals, who sought to promote strengthened local participation in civil society (Wallis, Crocker, and Schechter 1998; Foley and Edwards 1998). Despite numerous critiques (discussed below), Putnam's conception of social capital has been widely embraced by a number of researchers and advocates working in disciplines as diverse as economics, political science, sociology, and public health.

To demonstrate the current popularity of the term in the literature, one only need conduct a search for books and articles containing the key phrase "social capital." We conducted such a search in May 2000 using the National Library of Medicine's PubMed, the Library of Congress online database, and other electronic databases including PAIS and Social Science Abstracts. We then reviewed the articles identified and used them to identify further references.

We identified 31 books through this technique. Only three of these books were published before 1996, and none were published before 1993. This lends some support to the idea that Putnam's work helped to accelerate interest in social capital. The books identified reflect a wide number of topics, disciplines, and country experiences. Since 1998 alone, publications on social capital have appeared (1) in the field of education, such as Lesser's (1999) study of knowledge and social capital, Orr's (1999) study of school reform in Baltimore, and World Bank studies of primary schools in Nigeria (Francis 1998); (2) in the field of business, such as Dinello's study (1997) of bankers in Russia and Leenders and Gabbay's book *Corporate Social Capital and Liability* (1999); (3) on the subject of microcredit, including World Bank studies in Tanzania (Narayan-Parker 1997) and Thailand (Unger 1998); and (4) on the subject of adolescent development (Youniss 1998). The Government of Macedonia (1995) even appears to have created an "Agency of the Republic of Macedonia for Transformation of Enterprises with Social Capital"!

Temkin and Rohe's (1998) study of neighborhood decline in Pittsburgh, Pennsylvania, provides an illuminating illustration. Putnam's

conceptualization of social capital was reflected in Temkin and Rohe's measures of sociocultural milieu (analogous to Putnam's "localized social capital") and institutional infrastructure (similar to Putnam's "bridging social capital"). Sociocultural milieu is measured in terms of whether residents view their community as a distinct space; whether they tend to borrow small items from one another; how often they visit neighbors to discuss problems; whether they live, work, and socialize in their own neighborhood; and whether they use neighborhood facilities for grocery shopping and religious services. Institutional infrastructure is measured by the number of neighborhood associations, aggregate voting rate, volunteer efforts focused on neighborhood issues, the visibility of the neighborhood in the larger city, and the presence of large organizations within the boundaries of the neighborhood. The authors found that the presence of both forms of social capital is a key determinant in predicting neighborhood stability, and that neighborhoods with higher levels of both types of social capital were less likely to decline over time.

Although many academics and policymakers have wholeheartedly accepted Putnam's notion of social capital, there has also been considerable criticism of Putnam's ideas and those of other social capital theorists, some of which has a direct bearing on how these theories have been applied in studies of health inequalities.

Criticism and Controversy

The first, and perhaps most frequent criticism of the recent literature on social capital is that 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 analysis that the term has lost all heuristic value (see Portes 1998; Foley and Edwards 1998; Woolcock 1998; Flora 1998). Fine (1999) called social capital a "catch-all, ambiguous if not incoherent, and yet analytically selective" concept. This sentiment is echoed by Wallis, Crocker, and Schechter (1998), who declared that social capital has "not necessarily become a public idea on the strength of empirical investigations supporting its validity; rather, its strength lies in its ability to mobilize diverse interests in a common dialogue and ultimately around a shared action agenda" (p. 253).

The second criticism focuses on Putnam's measures of participation in civic associations (also referred to as group membership). In a 1998

issue of the *American Behavioral Scientist* dedicated to the civil society and social capital debate, several authors reexamine one of the key results of Putnam's approach to assessing social capital: that participation in voluntary associations automatically leads to a more healthy democracy. In their cross-national comparison of five countries in Central America, Booth and Richard (1998) found that it may be the political context (open or repressive) that determines the types of voluntary organizations people participate in, rather than the other way around. Further, they suggest that even while people in different countries may actively participate in voluntary associations, they may still remain wary of political engagements and score low on aggregate social-capital measures due to negative associations with formerly oppressive regimes.

Stolle and Rochon's (1998) multicountry study of the United States, Germany, and Sweden, using measures that are more aligned with localized social capital, showed that, in general, membership in voluntary associations is positively associated with other measures of social capital. However, different types of associations seem to produce different components of social capital. Members of cultural organizations, for example, tend to have high levels of all components of social capital. Members of political associations, however, tend to have higher levels of political activity but not high levels of generalized trust, tolerance, optimism, or free ridership. Of course, this begs the question as to whether individuals joining different associations already possess certain forms of social capital, or whether the associations themselves help shape the forms of social capital available to their individual members (Newton 1997). This question was addressed by Carla Eastis.

Eastis's mini-ethnographic study of two choral societies in New Haven, Connecticut, underscored how two similar organizations in the same community each attracted different types of participants (1998). She also showed how the organization and functioning of each association helped to determine the types of social capital available to members of each association. Eastis described social capital as a group-behavior characteristic that may not be accurately measured by existing instruments when she concludes that:

[Among members] within the narrow category of choral groups, each organization represents a unique mix of networks, norms and values, and collective facilities, each entity present in different forms and levels if it is present at all. . . . [Membership in] some organizations

broadens social networks, participants in others develop strong values that may or may not be supportive of democratic institutions, still others train individuals in civic skills, and . . . some organizations do all or a combination of these. . . . General statements about the consequences for American democracy that are gleaned from examining membership rates in broad categories of voluntary associations are at best simplistic. (Eastis 1998, 76)

A further refinement of social capital is necessary when one considers that the same ties that bind groups together for their collective good may also have negative consequences for the same or other individuals. The strong social bonds that allow members of some ethnic groups to gain access to certain trades may prevent members of other groups from entering these fields. Examples include studies of the increasing level of control exerted by Korean-Americans in the produce business, and the control exercised by Italian, Irish, and Polish immigrants over the construction trades and fire and police unions in New York (Waldinger 1995; Woolcock 1998).

Moreover, there is often a price that individuals pay for their membership in certain groups. This price can be exacted in obligations that may undermine individual autonomy and prosperity. Portes (1998) discussed Clifford Geertz's 1963 study of enterprises in Bali, where successful entrepreneurs are likely to be approached by their less-successful kin for loans. Because norms of reciprocity in this society are so strong, businesses could be jeopardized by their own success, since a greater economic return means a greater obligation to supply kin with loans and other in-kind assets. Economic development could be thus aided or thwarted by different aspects of social capital.

Another potentially negative aspect of particular measures of social capital comes from observations that dense networks within communities can lead to demands for conformity that may limit individual expression and autonomy (Boussevain 1974). Moreover, the same sense of bounded solidarity that provides support to individuals of an oppressed minority may also lead to downward-leveling norms that may actually help to perpetuate that group's subordinate status (Bourgois 1995; Stepick 1992).

Nearly all approaches to the measurement of social capital blur the distinctions between social capital as a social resource, as a social product, or as an individual response. This problem is inherent in the work

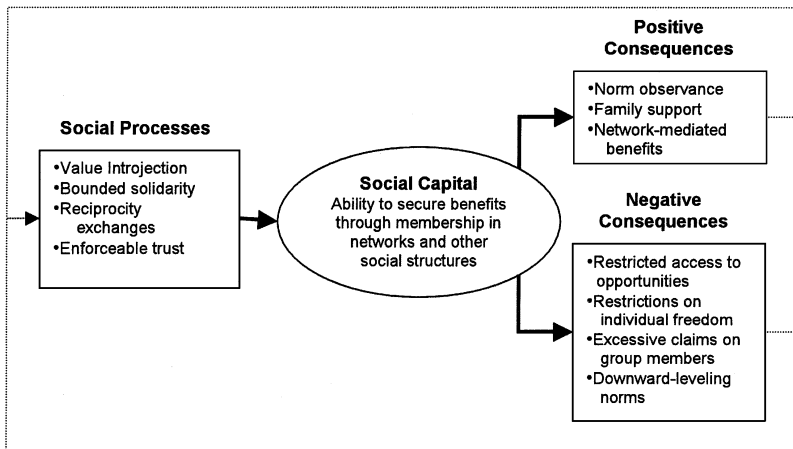


FIG. 1. Social Capital—Individual-Level Causes and Consequences (adapted from Portes 1998).

of Coleman, Bourdieu, and Putnam (Kunitz 2001; Foley and Edwards 1999). An exception is that of Portes, who clearly viewed social capital as an individual characteristic. His framework is unique in specifying the social processes that lead to social capital creation as well as its potential uses. His model is presented in figure 1.

In brief, Portes sees four main social processes that lead to social capital: (1) Durkheim's "value introjection"—the idea that internalized values, norms, and moral imperatives inform individual actions; (2) Marx's "bounded solidarity"—the idea that adverse circumstances help otherwise unrelated people to band together to improve their lot; (3) Simmel's "reciprocity exchanges"—the idea that nonmonetary debts (and credits) accumulate through nonmarket exchanges among community members, such as when neighbors exchange favors; and (4) Weber's "enforceable trust"—the idea that there is a sanctioning capacity of group rituals that ensures compliance by individuals with social expectations and norms (Portes 1998; Portes and Sensenbrenner 1993).

Portes's model includes the potential uses of social capital, both positive and negative. Positive uses include norm observance, leading to improved levels of trust and reciprocity, forms of family support (strong ties), and benefits derived through extrafamilial networks (weak ties). There is a positive-feedback mechanism implied by this conception of social capital: although social capital results from norm observance, trust,

and support, the presence of social capital reinforces the same norms, trust, and support that created it. This also suggests a potential mechanism for the micro-/macro-level link between the individual formation and the social reproduction of social capital.

Portes's model also includes potential negative uses of social capital, such as those leading to restricted access to opportunities (due to the lack of weak ties to individuals outside one's immediate social network), restricted individual freedoms (through excessive value introjection and enforceable trust), excessive claims on group members (as on the Balinese entrepreneurs), and downward-leveling norms.

The mechanism by which social capital develops has also been debated. Flora (1998) and Sharp (1998) found that moderate levels of inequality within a given community are not necessarily a detriment to the development of social capital, and may even strengthen it. Oliver, Marwell, and Teixeira (1985) suggested that a moderate level of elite mobilization can actually spur other community members into action, provided that the difference in cultural and financial capital between the elite and other groups is not too extreme.

Another criticism of the Putnam social-capital model addresses what some authors see as its implicit ideological underpinnings. For Edwards and Foley (1998), a high level of mistrust between members of a community (say, a lesbian couple living next door to a member of the religious right) does not imply that democracy is not strong or that civil society is weak. In fact, even if each household distrusted the other and opposed the other's politics in adversarial voluntary associations or political parties, this does not mean that there is not a very robust democratic system in place, or that economic productivity can be expected to decline. Moreover, in some circumstances, truly civic-minded individuals may justifiably distrust their (unjust) government. Following from this critique, the authors questioned the implicit value judgments present in the choice of indicators used by many contemporary studies of social capital. Furthermore, analyses by Smith (1997) showed that General Social Survey items on "interpersonal trust" may not be reliable, as responses have been sensitive to the changes in question wording and location that have taken place over the years. Nevertheless, as they are included in the General Social Survey and the National Election Survey, these measures of "social trust," "trust in government," and "trust in others" have consequently been used in the majority of studies on health and social capital.

Finally, Woolcock (1998) argued that there may actually be a number of forms of social capital—as reflected in a complex conceptual framework incorporating micro-level measures, including intracommunity ties (integration within communities) and intercommunity ties (Putnam's bridging social capital)—as well as even more macro-level measures, such as the level of embeddedness of state-society relations, and macro-level institutional coherence, competence, and capacity (organizational integrity). This type of framework may help to bridge the gaps among the multiple approaches to social capital and provide a link between the micro-level individual activities that create social capital and the macro-level effects of those attitudes and behaviors that then characterize communities, neighborhoods, and states.

Health Inequalities and Social Capital

The health literature is replete with studies of the impact of income, poverty, and social policies on health (see overviews by Rodriguez-Garcia and Goldman 1992; World Bank 1993; Bell and Reich 1988; Basch 1990). Since the 1980 publication of the Black Report on Britain's health inequalities (Black 1980), research on the variation in health status among people with different socioeconomic status has intensified (see Acheson 1998; Birch 1999). An unexpected and important finding of subsequent studies has been that better health outcomes appear to be positively correlated not only with absolute levels of income, but in some cases, even more strongly correlated with the distribution of income within society. Wilkinson posited that "mortality rates are no longer related to per capita economic growth, but are related instead to the scale of income inequality in each society" (Wilkinson 1994, 61). There is evidence that this relationship holds even when controlling for absolute levels of poverty and other factors, such as education (Wilkinson 1986; 1992; 1994; 1996; 1997; 1998; 1999; Rodgers 1979; LeGrand 1987). This relative-income hypothesis holds that "the *distribution* of income among members of society matters as much for their health and well-being as does their absolute standard of living" (Kawachi, Kennedy, and Wilkinson 1999a, xi). The theory is that as societies reach a certain threshold (characterized by Omran's epidemiological transition), health status becomes determined more by social (dis)advantage than by material scarcity (Wilkinson 1994).

Although there is still considerable debate about the magnitude and significance of the relative-income effect (see Wagstaff and van Doorslaer 2000; Judge, Mulligan, and Benzeval 1998), numerous studies have found that income inequality is related to population health at both the international and national levels. For example, Waldmann (1992) found that within a number of both developed and developing countries, a greater share of income going to the rich in each country was associated with a higher infant mortality rate in that country. This relationship held when controlling for poverty, health services, and social services. In a longitudinal analysis of 19 developed countries, Wilkinson (1992) found that societies with more equal income distributions also had higher life expectancies. Ben-Schlomo, White, and Marmot (1996) found this relationship to hold at the level of England's wards; Kennedy, Kawachi, and Prothrow-Stith (1996) found a similar relationship at the level of U.S. states; and Lynch and colleagues (1998) confirmed the relationship between income inequality and mortality in 282 metropolitan areas in the United States. Lynch and colleagues also found that the degree of income inequality in the United States was a more powerful contributor to mortality than "lung cancer, diabetes, motor vehicle crashes, human immunodeficiency virus (HIV) infection, suicide, and homicide in 1995" (1998, p. 1074). Other confirmatory studies include those by Waldmann (1992), Cairney and Wade (1998), Daly and colleagues (1998), Wolfson and colleagues (1999), and Soobader and Leclere (1999).

Given the hypothesized association between income inequalities and health, theorists then turned their attention to understanding the relationship of various determinants of health aggregated to the societal level. Major determinants currently being explored include education (Kunst and Mackenbach 1994), social hierarchies (Marmot 1999), primary care (Shi et al. 1999), social deprivation (Wilkinson 1996), material deprivation (Lynch et al. 2000), and social capital.

Table 2 lists the results of the literature search that relate to social capital and health. We identified a total of 34 articles that explicitly discuss social capital in the context of health or income inequalities. Based on this literature search, it appears that social capital has been applied in four ways in the health literature: (1) as an explanatory "pathway" in the relationship between income inequality and health status; (2) as a factor in the study of social networks and health; (3) as a mediator of the performance of health policies or reforms; and (4) as synonymous with social deprivation or social cohesion in relationship with violence and crime.

TABLE 2
Summary of Literature on Social Capital and Health

Author	Article type			Aspect of social capital examined
	Study	Comment	Theory/ other	
Aveyard, Manaseki, and Chambers 2000	X			Social data collected in British "Super Profiles" do not explain differences in health status between these units
Baum 1999; 2000		X X		Aspirations and difficulties in applying social capital to the study of health
Blakely, Kennedy, and Kawachi 2001	X			Association of socioeconomic inequality in voting participation with poor self-rated health
Burdine et al. 1999			X	Elements of a social-capital instrument
Hawe and Shiell 2000			X	Literature review on social capital and health promotion theories
Kawachi and Kennedy 1997			X	Hypothetical role of "social cohesion" in health inequalities
Kawachi and Kennedy 1999			X	Literature review of potential pathways leading to health inequalities
Kawachi, Kennedy, and Glass 1998	X			Contextual analysis of social capital and individual self-rated health
Kawachi, Kennedy, and Lochner 1997			X	Potential role of social capital and civic society on health
Kawachi, Kennedy, and Wilkinson 1999a	X			Relation of crime to social deprivation (a broader concept than social capital)
Kawachi, Kennedy, Lochner, et al. 1997	X			Correlation among income inequality, social capital, and mortality
Kennedy, Kawachi, and Brainerd 1998	X			Social capital/cohesion and mortality in Russia

TABLE 2 *continued*

Author	Article type			Aspect of social capital examined
	Study	Comment	Theory/ other	
Kennedy, Kawachi, Prothrow- Stith, et al. 1998	X			Income inequality, social capital, and violent firearm crime
Kunitz 2001			X	Critique of use of social capital in health studies
Labonte 1999		X		Cautions health practitioners about uncritical adoption of so- cial capital
Lochner, Kawachi, and Kennedy 1999			X	Review of macro-level measures and uses of social capital in health
Lomas 1998			X	Comparison of ability of different health interventions to generate social capital
Lynch, Due, Muntaner, et al. 2000		X		Poor material conditions are responsible for differences in health outcomes related to in- come inequality
Miller 1997		X		Asks what can health providers do about building social capital
Muntaner and Lynch 1999		X		Neo-Marxist critique of Wilkinson's theories of health in- equalities and social cohesion
Muntaner, Oates and Lynch 1999			X	Critique of current social capital indicators as suitable primarily for middle-class populations
Popay 2000		X		Critique of current uses of social capital in health research
Pope 2000		X		Argues that social capital mea- sures should not be included in surveys on population health
Rico, Fraile, and Gonzalez 1999	X			Social capital and governance of health decentralization in Spain

TABLE 2 *continued*

Author	Article type			Aspect of social capital examined
	Study	Comment	Theory/ other	
Rose 2000	X			Relationship between social capital and individual health among Russians
Veenstra and Lomas 1999		X		Proposes study of social capital and regional health governance in Canada
Veenstra 2000	X			Individual-level social capital and its impact on health
Vimpani 2000			X	Review of possible relationships between child development and social capital
Watt 1996		X		Social deprivation in England and Scotland and its health policy implications
Wilkinson 1996			X	Proposes thesis that social cohesion is related to health inequalities
Wilkinson 1997		X		Commentary on social cohesion, income inequality, and mortality studies
Wilkinson 1998			X	Discussion of social disorganization theory, crime, and health
Wilkinson 1999		X		Reply to Muntaner and Lynch (1999); clarifies social deprivation and social cohesion concepts
Total	10	12	12	

A brief review of the original research studies follows. The appendix presents the specific measures used in these and several other studies.

Kawachi, Kennedy, Lochner, and Prothrow-Stith (1997) were apparently the first to explicitly employ social capital as an explanation for the effects of income inequality on health. The authors used U.S. states as the unit of analysis and measured social capital by using General Social Survey (GSS) responses concerning social trust, perceived lack of fairness, perceived helpfulness of others, and membership in groups—taking each one separately. Through factor analysis, the authors found that the four social-capital indicators were correlated, but they did not create a social-capital index. Instead, they tested each social capital indicator separately.

They found each of the four measures to be associated with income inequality and mortality at the path coefficient (pc) 0.05 level. Path analysis suggests that income inequality acts through social capital (pc of 0.73) to influence mortality (pc of 0.64). However, the authors reported path analysis for only one social capital indicator: perceived lack of fairness.

Kawachi, Kennedy, and Glass (1998) expanded on these findings. They used the three GSS measures of civic trust (trust of others), reciprocity (helpfulness of others), and civic engagement (membership in groups). Using a multilevel model, they found that a person living in a state with low levels of trust had an increased adjusted odds ratio (OR = 1.4) of having lower self-reported health status than someone living in an area of higher trust. They found similar results for people living in states characterized as having low and medium group membership (adjusted OR = 1.22 and 1.11, respectively) and low and medium reciprocity (adjusted OR = 1.48 and 1.24, respectively) (Kawachi, Kennedy, and Glass 1998). As in the previous study, the authors did not create a social capital index. Instead, they characterized states as high (1 s.d. from mean), medium (mean), or low (1 s.d. from mean) for each of the three social-capital variables. Interestingly, even though all three social capital variables were correlated with each other, not all of the states characterized as having low levels of group membership (Alabama, Arkansas, Louisiana) were also characterized as "low reciprocity" (Arkansas, Georgia, Louisiana, Mississippi, Tennessee, West Virginia) or "low trust" (Alabama, Arkansas, Louisiana, Mississippi, Tennessee, West Virginia). This study did not explicitly address potential confounding effects due to the geographic or regional clustering of low-social-capital states. Kunitz (2001) presented an interesting explanation for these regional differences.

Veenstra (2000) performed an analysis of the relationships between individual-level measures of social capital and self-rated health in Saskatchewan. He measured social capital by constructing indices of civic participation, trust in government and neighbors, and sense of identity (see the appendix for more detailed variable descriptions). He calculated interitem correlations and Cronbach's alpha for each index, except civic participation, which he assumed, a priori, was not a unitary concept. The purpose of the study was to determine if there was a relationship between individual variation in self-rated health status and corresponding levels of trust, civic norms, participation, and social engagement.

Several measures of social engagement (frequency of socialization with coworkers, willingness to turn to a coworker in times of trouble, and

church attendance) were significantly related to self-rated health status. Veenstra also found evidence that participation in clubs had a positive impact among the elderly, but not among the general population. Neither levels of trust nor civic participation was correlated with self-reported health status. He concluded that social capital (as measured in this study) was not significantly related to self-rated health within Saskatchewan.

Kawachi, Kennedy, and Wilkinson (1999a) further expanded on the meaning of social capital by proposing that inequalities in environmental and social characteristics help to predict geographic variation in crime among U.S. states. According to this research, two characteristics influence the level of crime within a community: the degree of "relative deprivation" (measured by relative income inequality, unemployment, educational attainment, and poverty) and the level of "social cohesion." Social cohesion is measured by the GSS measures of interpersonal trust combined with the number of households headed by a single mother (the authors called the latter "family social capital") and a collective efficacy scale composed of answers to questions about perceptions of trust, cooperation, values, and helpfulness of one's neighbors. The authors did not present validity and reliability tests of this new index.

The results suggest that state-level income inequality is highly associated with violent crime such as homicide ($r = 0.74$). Low levels of interpersonal trust were correlated with higher homicide rates ($r = 0.82$), and the number of female-headed households yielded results similar to those obtained by low levels of trust. The collective efficacy index was significantly related to organizational participation ($r = 0.45$) and neighborhood services ($r = 0.21$), and inversely related to homicide rates. The study did not include health status measures.

This study borrows the concept of "social cohesion" from Sampson, Raudenbush, and Earls (1997) and Wilkinson (1998). As operationalized here, social cohesion seems to result from social capital combined with other factors such as income inequality, unemployment, and educational attainment. The authors hypothesized that a depletion of the social-capital stock within a society may lead to decreased social cohesion, which is a distinguishing characteristic of a "socially disorganized" neighborhood. However, the authors somewhat confusingly stated that although "social capital and social cohesion are not the same thing" (Kawachi, Kennedy, and Wilkinson 1999a, 722), they will nevertheless "use measures of social capital to indicate the level of social cohesion within communities" (p. 724).

Kennedy, Kawachi, and Brainerd (1998) applied measures of social capital to explain increased mortality in Russia after the fall of the Soviet Union. They used aggregate voting rates and trust in government and also included a number of variables related to "social cohesion." These include crime (even though crime was considered an outcome in the prior study), divorce rates, and conflicts in the workplace. These social capital and cohesion indicators were strongly associated with age-adjusted mortality and life expectancy for both men and women.

Rose (2000) analyzed the contribution of human and social capital to the health of the Russian population. He found that both human capital (measured by education, age, income, and socioeconomic status) and social capital (measured by sense of self-efficacy, trust of others, inclusion or exclusion from formal and informal networks, social support, and social integration) are associated with improved self-reported physical and emotional health. He entered each social-capital variable separately into the model, and reported no data on the validity of the social capital measures used. The study attempted to adapt social-capital measures to the unique culture of postcommunist Russia, but it included a number of indicators similar to other well-established determinants of health, including social networks, social support, and sense of self-efficacy. The author also included unusual social-capital variables, such as smoking status and paying a doctor to expedite one's treatment, in his analysis.

Other studies looked at the role of social capital in the governance of health systems in Canada and in Spain, and at the impact of political participation on health outcomes in the United States. Veenstra and Lomis (1999) proposed a framework for studying the impact of social capital on regional health governance in Canada, but did not present results from this study. Their proposed indicators are presented in the appendix.

Rico, Fraile, and Gonzalez (1999) borrowed from Putnam to study the decentralization of the health system in Spain. Using an index composed of voting rates, group membership, newspaper readership, strikes, and protests/demonstrations per 1,000 inhabitants, they found that social capital was correlated with improved regional government performance, such that regions with higher levels of social capital were (1) better able to obtain resources for health from the central government, (2) better able to implement health reforms, and (3) better able to leverage health resources and agree on health policy goals. Poorly performing regions, such as Galicia, were characterized by low levels of social capital, polarized internal politics, and poor policy implementation. However, the authors

found that the explanatory power of their social-capital index was partially mediated by favorable initial income allocations to each region. This was, in turn, related to levels of regional autonomy granted by the Spanish constitution (Rico, Fraile, and Gonzalez 1999). Neither of these external factors was correlated with social capital. The authors concluded that although social capital is important to regional governance, it does not tell the whole story in explaining regional government performance.

Blakely, Kennedy, and Kawachi (2001) explored the relationship between a political component of social capital (voting rates) and self-rated health in the United States. Although the study revealed no direct association between income inequality and voting inequality, it suggested that individuals living in states with low voter turnout had increased odds of fair or poor self-rated health. The study did not incorporate other types of social capital measures.

Indicators of Social Capital

An analysis of the indicators presented in the appendix reveals several problems. First, there is little consistency in the names assigned to similar measures. For example, measures derived from questions on GSS such as “% of respondents who agree that most people can be trusted” are called (even by the same authors) measures of civic trust, interpersonal trust, and trust in others. This leads to a lack of clarity about what, exactly, each researcher is trying to measure. Table 3 presents the most commonly used GSS measures of social capital and the terms commonly used to describe these measures.

Second, there does not seem to be consensus on the level of aggregation at which social capital measures should be assessed. Several studies look at characteristics on the individual level, others at neighborhood or community levels, and still others look at states and even nations as the unit of analysis (see table 4). Table 4 also shows that there is variation in whether certain indicators are measures of attitudes or of behaviors. This ambiguity is present in both individual- and group-level indicators.

Perhaps the most pressing difficulty in interpreting the results of the preceding studies is the fact that few of the indicators, indices, or scales used to measure social capital have been subjected to widespread and standard psychometric testing, including internal consistency reliability, item-total correlations, or factor analysis. For example, although

TABLE 3
General Social Survey Questions Frequently Used as Measures of Social Capital

GSS question	Common designations
Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?	Social trust, social mistrust, civic trust, interpersonal trust
Do you think most people would try to take advantage of you if they got the chance, or would they try to be fair?	Perceived lack of fairness
Would you say that most of the time people try to be helpful, or are they mostly looking out for themselves?	Perceived helpfulness of others, willingness to cooperate, perceived norms of reciprocity
Here is a list of various organizations. Could you tell me whether or not you are a member of each type?	Group membership, civic engagement

TABLE 4
Individual and Group-level Measures of Social Capital

Individual-level attributes	Individual attitudes (IA) or individual behaviors (IB)	Group-level attributes	Group attitudes (GA) or group behavior (GB)
Attitudes/commitment toward cooperation	IA/IB	Collaborative problem-solving	GB
Expectations of reciprocity	IA	Community credit slips	GB
Interpersonal trust	IA	Norms of cooperation (aggregated)	GA
Participation in social networks	IB	Number of/attendance in voluntary organizations	GB
Sense of collective efficacy/optimism	IA	Level of civic engagement	GA
Sense of personal identification w/community	IA	Visibility of neighborhood within the larger city	GA
Trust in institutions	IA	Aggregated voting rates	GB
Use of neighborhood facilities	IB	Shared ownership of commons	GB
Willingness to discuss problems with neighbors	IB	Households subscribing to newspaper	GB

previously discussed questions included in the GSS are intended to measure components of social capital (at least as defined by Putnam), current studies often fail to provide evidence that such questions are valid or reliable measures of a single concept. In fact, the GSS investigators do not systematically subject the measures used in the GSS survey to psychometric testing. Instead, these investigators stress that any researcher using the GSS data should conduct such tests (Smith 2001). The studies reviewed here either do not provide evidence of having conducted such tests or cite tests performed on a similar, but not identical, list of items. Current studies often fail to justify why only one or more measures are used in analyses while others are dropped. The picture becomes even more confused when some authors, such as Veenstra, develop internally validated indices intended to measure social capital, but include in their social capital construct several domains that are quite different from those used in other social capital studies.

Some of the more recent work on social capital, such as that by Kawachi, Kennedy, and Wilkinson (1999a), Kawachi and Berkman (2000), and Kennedy and colleagues (1998), explicitly recognized difficulties in defining, measuring, and interpreting social capital as a single explanatory variable. Kawachi, Kennedy, and Wilkinson (1999b) and Kawachi and Berkman (2000) suggested that, because measures of social capital are still evolving, conclusions about the role of social capital on health should be interpreted with caution.

Lochner, Kawachi, and Kennedy (1999) presented an overview of different measures of social capital and included reliability and validity data for each of the individual instruments. Although helpful, they discussed many instruments that measure constructs that may not be the same as social capital; they did not include the most commonly used measures (such as those included in the GSS); and they made no effort to consider which of the various measures presented should be part of a reliable and valid social-capital scale. The appendix contains a summary of the instruments included in their paper.

Several recent articles have brought the debate over social capital to the forefront of the public health agenda. Popay (2000) and Baum (2000) claimed that current approaches to studying social capital and health are limited, in that they neglect questions of power, are too tied to arguments between neo-Marxist and Durkheimian orientations, are imprecise in the level of measurement and unit of analysis they employ, and are unclear about the theoretical basis for their social-capital measures.

Another challenge to the current social-capital literature comes from Muntaner, Oates, and Lynch (1999) who presented evidence that current measures of social capital “downplay or do not include forms of participation in social groups characteristic of working class communities, such as union membership” (p. 409). The authors claimed that this omission stems from implicit acceptance of the Durkheimian theoretical orientation that ultimately compromises the validity of current social capital instruments.

Lynch and colleagues (2000) were also critical of current studies on social capital. They echoed criticisms of the rather thin theoretical and empirical basis of many social-capital studies and offered an alternative explanation for the role of social capital and income inequality on population health. They claimed that “absolute and relative income differences may represent the unequal distribution of the material conditions that structure the likelihood of possessing and accessing health protective resources; of reducing negative health exposures; and of facilitating full participation in the society” (p. 406).

Conclusions and Future Directions

Contrary to the claims of at least some of the work reviewed above, 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. There seems to be even less clarity on precisely how it might be related to inequalities in health outcomes.

There appear to be at least four levels that have at one time or another been included in conceptualizations and measures of social capital. At the macro level, historical, social, political, and economic context are viewed as antecedents to the types of social relations or societal structures that may produce social capital and help to determine its distribution within societies. For example, the World Bank (Krishna and Shrader 1999) included rule of law, political regime type, and level of decentralization as examples of the macro-level context that influences social-capital production (at least in terms of economic development), but this area has received relatively little attention in the health literature. One exception is Navarro and Shi (2001), who suggested that the northern Italian regions studied by Putnam have been ruled primarily by the Italian Communist Party and that this important political context may have more to do with the presence of social bonds and economic

performance within those regions than the “social capital” variables studied by Putnam.

At the neighborhood or “meso” level, measures include characteristics of neighborhoods or communities that may affect the production and use of social capital within those areas. Sampson and Raudenbush (1999) discussed indicators of “neighborhood physical and social disorder” that may characterize neighborhoods and consequently influence the patterns of social-network development, cooperation and “collective efficacy,” and level of social deviance, such as violent crime. These neighborhood-level variables are still in the early stages of development, and have not yet been incorporated into studies on health outcomes.

The third level is composed of individual-level behaviors, such as voting, membership in groups, and cooperating with others, that have been aggregated to the neighborhood, state, or national levels. Many of these indicators are present within the GSS and National Election Surveys and comprise a relatively large segment of the social-capital measures used by health researchers. However, as previously mentioned, these measures are usually presented as if they took place in a neutral historical, political, and socioeconomic context.

The fourth level is composed of individual-level attitudes that are primarily psychological constructs, such as trust in neighbors, trust in government, and expectations of reciprocity. Many of these measures are also present within the GSS and the National Election Surveys, and they are generally aggregated to the neighborhood, state, or national level in studies on health outcomes.

This review has shown that social-capital measures used in the health literature are not consistently based on any one major theoretical tradition. This is not a shortcoming in itself—except that, by and large, the articles failed to justify why one conceptualization of social capital should be preferred over another. They also failed to explain why certain social-capital measures were chosen over others, and few studies addressed the weaknesses of common social-capital indicators such as membership in groups and interpersonal trust. This lack of consistency and clarity leads to limited comparability between studies and raises questions as to the ultimate interpretation of studies that use only one approach without testing alternatives. Moreover, the apparent lack of sufficient empirical justification for the validity and reliability of the different social-capital measures casts further doubt on the generalizability of proposed explanatory pathways linking income inequality with health and other social outcomes.

Based on the review presented above, we propose several elements of a research agenda on social capital and health.

1. Clarify the basis for the concept of social capital. Is it one concept or several? Is it a way of characterizing a system (political structures), a basis for characterizing a set of social interrelationships, or a means of grouping together several psychological processes? Future studies should also do a better job at justifying the level of geographical analysis of social capital. For example, Putnam's concept of social capital and its political components are more relevant in ecological analyses at the state and national levels that depend upon macro-level governance structures. Indicators of social relationships that are based on the notion of social nurturance (or sanction) at the individual level might build on conceptual frameworks, such as those proposed by Portes or Veenstra, and aggregated to the neighborhood or community levels. The definition of social capital is critical for deciding the appropriate level of analysis.
2. Explore potential explanations for mechanisms through which social capital might influence health. If social capital is to add to what we already know about the importance of individual social networks and social support, it is important to understand better the pathways through which social capital may work. Alternative pathways have been proposed—Wilkinson's (1996) notion that perceptions of social inequality lead to stress and poorer health outcomes and Lynch and colleagues' (2000) hypothesis that differences in material conditions themselves operate to cause health inequalities, for example—but due to the differences in both theoretical orientation and social-capital measures employed, researchers are ill-prepared to compare these pathways or propose testable alternatives.
3. Develop a set of core social-capital variables that is based on their psychometric properties of internal consistency reliability, other aspects of reliability, and validity. Indicators must be better justified in terms of criticisms of their validity. For example, how should commonly used measures, such as membership in groups, be interpreted in the light of new knowledge of organizational diversity, potential class bias, and their potentially ambiguous relationship to social capital? Until the concept and measures

of social capital are sorted out, it may be more useful to refer to more readily understandable and conceptually clear measures, such as interpersonal trust and membership in groups, without grouping them together as representing a concept that has little or no demonstrated internal consistency or reliability.

4. Test the relationships between social capital and different aspects of health in different population groups. If social capital is a property of individuals, their relationships, and the context in which they live, it stands to reason that the measures and the meanings of social capital may vary among cultures or countries. It is also possible that social capital may have different effects on different health outcomes.
5. Analyze the effects of mediating, confounding, and modifying characteristics on the relationship between social capital and health. Potential confounders, such as gender, social class, and regional characteristics, are rarely investigated in a systematic manner. As Woolcock (1998) and Krishna and Shrader (1999) suggested, the wider context in which social capital develops and operates (including rule of law, political regime, and state-society connections) also needs to be addressed as a potential antecedent of the relationship between social capital and health outcomes at both the individual and group levels.
6. Explore the underlying social, cultural, political, and historical antecedents of social capital in different areas and in different times. There is a need to understand where social capital comes from, to what extent it is related to history, economy, culture, and material resources, how it modifies and is modified by these determinants, and over what kind of timeline. Popay (2000) and Kunitz (2001) suggested that narrative and historical research may play an important role in understanding the deep connections between people and the places in which they live, including the long time over which changes manifest themselves.
7. Undertake further study on the mechanisms and consequences of interventions designed to enhance the components of social capital within communities and societies before proposing social-capital enhancement as an essential tool of public health. Further analysis of existing interventions aimed at improving social capital (such as those in Chicago currently being studied by Earles, Sampson, and others) may provide a rich source of data for analyzing

potential changes in health status associated with changing levels of different components of social capital. Hawe and Shiell (2000) have suggested that the literature on the theory and practice of community development and health promotion offers a rich source of information on the range of community-level interventions and their likely impact on social processes and outcomes.

Social capital offers an intriguing explanation for one of the pathways linking income inequalities and health status. The idea that income inequalities may disrupt social relations, norms, and trust has wide intuitive appeal. The alternative explanation, that poor social relations are the result (rather than the cause) of health and social inequalities, is also intriguing and deserves further investigation. Given what we already know about the importance of social networks, social support, social class, and the impact of social hierarchies on a variety of health outcomes (see Berkman and Syme 1979; Schoenbach et al. 1986; Tarlov 1996; Brunner 1997), finding a means to explain and unite these factors is a laudable goal for partnerships between health and social science researchers. By clarifying the conceptualization and measures of social capital, we can better elucidate its role and harness its potential more appropriately as one of several possible means to enhance equity in health and other social outcomes.

References

- Acheson, D. 1998. *Independent Inquiry into Inequalities in Health: Report*. London: Stationery Office.
- Aveyard, P., S. Manaseki, and J. Chambers. 2000. Does the Multidimensional Nature of Super Profiles Help District Health Authorities Understand the Way Social Capital Affects Health? *Journal of Public Health Medicine* 22:317–23.
- Basch, P. 1990. *Textbook of International Health*. Oxford: Oxford University Press.
- Baum, F. 1999. Social Capital: Is It Good for Your Health? Issues for a Public Health Agenda. *Journal of Epidemiology and Community Health* 53:195–6.
- Baum, F. 2000. Social Capital, Economic Capital and Power: Further Issues for a Public Health Agenda. *Journal of Epidemiology and Community Health* 54:409–10.
- Becker, G. 1993. *Human Capital*. Chicago: University of Chicago Press.

- Bell, D., and M. Reich. 1988. *Health, Nutrition and Economic Crises*. Dover, Mass.: Auburn House.
- Ben-Schlomo, Y., I. White, and M. Marmot. 1996. Does the Variation in the Socioeconomic Characteristics of an Area Affect Mortality? *British Medical Journal* 312:1013–4.
- Berkman, L., and S. Syme. 1979. Social Networks, Host Resistance and Mortality: A Nine-Year Follow-Up Study of Alameda County Residents. *American Journal of Epidemiology* 109:186–204.
- Birch, S. 1999. The 39 Steps: The Mystery of Health Inequalities in the UK. *Health Economics* 8:301–8.
- Black, D. 1980. *Inequalities in Health: Report of a Research Working Group*. London: Department of Health and Social Security.
- Blakely, T., B. Kennedy, and I. Kawachi. 2001. Socioeconomic Inequality in Voting Participation and Self-Rated Health. *American Journal of Public Health* 91:99–104.
- Booth, J., and P. Richard. 1998. Civil Society and Political Context in Central America. *American Behavioral Scientist* 42(1):33–96.
- Bourdieu, P. 1980. Le capital social: Notes provisoires. *Actes recherche science social* 31:2–3.
- Bourdieu, P. 1991. The Forms of Capital. In *Handbook of Theory and Research for the Sociology of Education*, ed. J.G. Richardson, 241–58. New York: Greenwood.
- Bourdieu, P., and L. Wacquant. 1992. *Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.
- Bourgois, P. 1995. *In Search of Respect: Selling Crack in El Barrio*. New York: Cambridge University Press.
- Boussevain, J. 1974. *Friends of Friends: Networks, Manipulators and Coalitions*. New York: St. Martin's.
- Browning, E. and M. Zupan. 1996. *Microeconomic Theory and Applications*. New York: HarperCollins.
- Brunner, E. 1997. Stress and the Biology of Inequality. *British Medical Journal* 314:1472–6.
- Burdine, J., M. Felix, N. Wallerstein, et al. 1999. Measurement of Social Capital. *Annals of the New York Academy of Sciences* 896:393–5.
- Cairney, J., and T. J. Wade. 1998. Reducing Income Disparity to Achieve Better Health: Modeling the Effect of Adjustments to Income Adequacy on Self-Reported Morbidity among the Elderly in Canada. *Canadian Journal of Public Health* 89:424–8.
- Coleman, J.S. 1990. *Foundations of Social Theory*. Cambridge, Mass.: Harvard University Press.
- Collins, R. 1994. *Four Sociological Traditions*. Oxford: Oxford University Press.

- Daly, M., G. Duncan, G. Kaplan, and J. Lynch. 1998. Macro to Micro Links in the Relation between Income Inequality and Mortality. *Milbank Quarterly* 76:303–4.
- Dinello, N. 1997. *Banks and Bankers in Russia: Economic and Social Capital*. Pittsburgh: University of Pittsburgh.
- Eastis, C. 1998. Organizational Diversity and the Production of Social Capital: One of These Groups Is Not Like the Other. *American Behavioral Scientist* 42:66–77.
- Edwards, B., and M. Foley. 1998. Civil Society and Social Capital: Beyond Putnam. *American Behavioral Scientist* 42:124–39.
- Fine, B. 1999. The Development State Is Dead—Long Live Social Capital. *Development and Change* 30:1–19.
- Flora, J. 1998. Social Capital and Communities of Place. *Rural Sociology* 63:481–506.
- Foley, M., and B. Edwards. 1998. Beyond Tocqueville: Civil Society and Social Capital in Comparative Perspective. *American Behavioral Scientist* 42:5–20.
- Foley, M., and B. Edwards. 1999. Is It Time to Disinvest in Social Capital? *Journal of Public Policy* 19:141–73.
- Francis, P. 1998. *Hard Lessons: Primary Schools, Community and Social Capital in Nigeria*. Washington, D.C.: World Bank.
- Geertz, C. 1963. *Peddlers and Princes*. Chicago: University of Chicago Press.
- Granovetter, M.S. 1973. *Getting a Job: A Study of Contacts and Careers*. Cambridge, Mass.: Harvard University Press.
- Hanifan, L.J. 1920. *The Community Center*. Boston: Silver, Burdett.
- Hawe, P., and A. Shiell. 2000. Social Capital and Health Promotion: A Review. *Social Science and Medicine* 51:871–85.
- Jacobs, J. 1961. *The Death and Life of Great American Cities*. New York: Random House.
- Judge, K., J. Mulligan, and M. Benzeval. 1998. Income Inequality and Population Health. *Social Science and Medicine* 46:567–79.
- Kawachi, I., and L. Berkman. 2000. Social Cohesion, Social Capital, and Health. In *Social Epidemiology*, eds. L. Berkman and I. Kawachi, 174–90. New York: Oxford University Press.
- Kawachi, I., and B. Kennedy. 1997. Socioeconomic Determinants of Health: Health and Social Cohesion: Why Care about Income Inequality? *British Medical Journal* 314:1037.
- Kawachi, I., and B. Kennedy. 1999. Income Inequality and Health: Pathways and Mechanisms. *Health Services Research* 34:215–27.
- Kawachi, I., B. Kennedy, and R. Glass. 1998. Social Capital and Self-Rated Health: A Contextual Analysis. *American Journal of Public Health* 89:1187–93.

- Kawachi, I., B. Kennedy, and K. Lochner. 1997. Long Live Community: Social Capital as Public Health. *American Prospect* (November–December):56–9.
- Kawachi, I., B. Kennedy, K. Lochner, and D. Prothrow-Stith. 1997. Social Capital, Income Inequality, and Mortality. *American Journal of Public Health* 87:1491–8.
- Kawachi, I., B. Kennedy, and R. Wilkinson. 1999a. Crime: Social Disorganization and Relative Deprivation. *Social Science and Medicine* 48:719–31.
- Kawachi, I., B. Kennedy, and R. Wilkinson, eds. 1999b. *The Society and Population Health Reader*. Vol. 1, *Income Inequality and Health*. New York: New Press.
- Kennedy, B., I. Kawachi, and E. Brainerd. 1998. The Role of Social Capital in the Russian Mortality Crisis. *World Development* 26:2029–43.
- Kennedy, B., I. Kawachi, and D. Prothrow-Stith. 1996. Income Distribution and Mortality: Cross-Sectional Ecological Study of the Robin Hood Index in the United States. *British Medical Journal* 312:1004–7.
- Kennedy, B., I. Kawachi, D. Prothrow-Stith, B. Gibbs, and K. Lochner. 1998. Social Capital, Income Inequality, and Firearm Violent Crime. *Social Science and Medicine* 47:7–17.
- Krishna, A., and E. Shrader. 1999. *Social Capital Assessment Tool*. Document prepared for the World Bank Conference on Social Capital and Poverty Reduction, June 22–24, Washington, D.C.
- Kunitz, S. 2001. Accounts of Social Capital: The Mixed Health Effects of Personal Communities and Voluntary Groups. In *Poverty, Inequality, and Health: An International Perspective*, eds. D. Leon and G. Walt, 159–74. Oxford: Oxford University Press.
- Kunst, A., and J. Mackenbach. 1994. The Size of Mortality Differences Associated with Educational Level in Nine Industrialized Countries. *American Journal of Public Health* 84:932–7.
- Labonte, R. 1999. Social Capital and Community Development: Practitioner Empitor. *Australia New Zealand Journal of Public Health* 23:430–3.
- Leenders, R., and S. Gabbay. 1999. *Corporate Social Capital and Liability*. Boston: Kluwer Academic.
- LeGrand, J. 1987. Inequalities in Health: Some International Comparisons. *European Economic Review* 31:182–91.
- Lemann, N. 1996. Kicking in Groups. *Atlantic Monthly* (April):25.
- Lesser, E. 1999. *Knowledge and Social Capital: Foundations and Applications*. Boston: Butterworth-Heinemann.
- Lochner, K., I. Kawachi, and B. Kennedy. 1999. Social Capital: A Guide to Its Measurement. *Health and Place* 5:259–70.

- Lomas, J. 1998. Social Capital and Health: Implications for Public Health and Epidemiology. *Social Science and Medicine* 47:1181–8.
- Loury, G.C. 1977. A Dynamic Theory of Racial Income Differences. In *Women, Minorities and Employment Discrimination*, eds. P.A. Wallace and A. Le Mund, 153–86. Lexington, Mass.: Heath.
- Loury, G.C. 1992. The Economics of Discrimination: Getting to the Core of the Problem. *Harvard Journal of African American Public Policy* 1:1.
- Lynch, J., P. Due, C. Muntaner, and G. Davey Smith. 2000. Social Capital: Is It a Good Investment Strategy for Public Health? *Journal of Epidemiology and Community Health* 54:404–8.
- Lynch, J., G. Kaplan, E. Pamuk, et al. 1998. Income Inequality and Mortality in Metropolitan Areas of the United States. *American Journal of Public Health* 88:1074–80.
- Lynch, J.W., G.D. Smith, G.A. Kaplan, and J.H. House. 2000. Income Inequality and Mortality: Importance to Health of Individual Income, Psychosocial Environment, or Material Conditions. *British Medical Journal* 320:1200–4.
- Macedonia, Government of. 1995. *Doing Business in Macedonia*. Skopje: Agency of the Republic of Macedonia for Transformation of Enterprises with Social Capital.
- Marmot, M. 1999. Acting on the Evidence to Reduce Inequalities in Health. *Health Affairs* 18:42–4.
- Miller, R. 1997. Healthy Boston and Social Capital: Application, Dynamics and Limitations. *National Civic Review* 86:157–66.
- Muntaner, C., and J. Lynch. 1999. Income Inequality, Social Cohesion, and Class Relations: A Critique of Wilkinson's Neo-Durkheimian Research Program. *International Journal of Health Services* 29:59–81.
- Muntaner, C., G. Oates, and J. Lynch. 1999. Social Class and Social Cohesion: A Content Validity Analysis Using a Nonrecursive Structural Equation Model. *Annals of the New York Academy of Sciences* 896:409–12.
- Narayan-Parker, D. 1997. *Cents and Sociability: Household Income and Social Capital in Rural Tanzania*. Washington, D.C.: World Bank.
- Navarro, V., and L. Shi. 2001. The Political Context of Social Inequalities in Health. *Social Science and Medicine* 52:481–91.
- Newton, K. 1997. Social Capital and Democracy. *American Behavioral Scientist* 40:575–86.
- Oliver, P., G. Marwell, and R. Teixeira. 1985. A Theory of the Critical Mass. *American Journal of Sociology* 91:522–56.
- Orr, M. 1999. *Black Social Capital: The Politics of School Reform in Baltimore, 1986–1998*. Lawrence: University Press of Kansas.
- Paxton, P. 1999. Is Social Capital Really Declining in the United States? A Multiple Indicator Assessment. *American Journal of Sociology* 105:88–127.

- Popay, J. 2000. Social Capital: The Role of Narrative and Historical Research. *Journal of Epidemiology and Community Health* 54:401.
- Pope, J. 2000. Social Capital Should Not Be Incorporated into Surveys Designed to Monitor Population Health. *Australia and New Zealand Journal of Public Health* 24(3):341.
- Portes, A. 1995. The Economic Sociology of Immigration: A Conceptual Overview. In *The Economic Sociology of Immigration: Essays on Networks, Ethnicity, and Entrepreneurship*. New York: Russell Sage.
- Portes, A. 1998. Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology* 24:1–24.
- Portes, A., and J. Sensenbrenner. 1993. Embeddedness and Immigration. *American Journal of Sociology* 98:1320–50.
- Putnam, R. 1993. The Prosperous Community: Social Capital and Economic Growth. *American Prospect* (Spring):35–42.
- Putnam, R. 1995. Bowling Alone: America's Declining Social Capital. *Journal of Democracy* 6:65–78.
- Putnam, R., R. Leonardi, and R. Nanetti. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, N.J.: Princeton University Press.
- Rico, A., M. Fraile, and P. Gonzalez. 1999. Regional Decentralization of Health Policy in Spain: Social Capital Does Not Tell the Whole Story. *West European Politics* 21:180–99.
- Rodgers, G.B. 1979. Income and Inequality as Determinants of Mortality: An International Cross-Sectional Analysis. *Population Studies* 33:343–51.
- Rodriguez-Garcia, R., and A. Goldman, eds. 1992. *The Health-Development Link*. Washington, D.C.: PAHO/WHO.
- Rose, R. 2000. How Much Does Social Capital Add to Individual Health? A Survey Study of Russians. *Social Science and Medicine* 51:1421–35.
- Sampson, R., and W. Groves. 1989. Community Structure and Crime-Testing Social-Disorganization Theory. *American Journal of Sociology* 94:774–802.
- Sampson, R., and S. Raudenbush. 1999. Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods. *American Journal of Sociology* 105:603–51.
- Sampson, R., S. Raudenbush, and F. Earls. 1997. Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy. *Science* 277: 918–24.
- Schoenbach, V., B. Kaplan, L. Friedman, and D. Kleinbaum. 1986. Social Ties and Mortality in Evans County, Georgia. *American Journal of Epidemiology* 125:777–91.
- Schudson, M. 1996. What if Civic Life Didn't Die? *American Prospect* 25:17–20.

- Sharp, J. 1998. The International Community: A Structural Network Analysis of Community Action in Three Midwestern Towns. Ph.D. diss., Iowa State University.
- Shi, L., B. Starfield, B. Kennedy, and I. Kawachi. 1999. Income Inequality, Primary Care, and Health Indicators. *Journal of Family Practice* 48:275–84.
- Smith, T. 1997. Factors Relating to Misanthropy in Contemporary American Society. *Social Science Research* 26:170–96.
- Smith, T. 2001. Psychometrics on the Ass (personal communication, January 30).
- Soobader, M.J., and F.B. Leclere. 1999. Aggregation and the Measurement of Income Inequality: Effects on Morbidity. *Social Science and Medicine* 48:733–44.
- Stepick, A. 1992. The Refugees Nobody Wants: Haitians in Miami. In *Miami Now*, ed. S. Grenier, 57–82. Gainesville: University of Florida Press.
- Stolle, D., and T. Rochon. 1998. Are All Associations Alike? Member Diversity, Associational Type, and the Creation of Social Capital. *American Behavioral Scientist* 42:47–65.
- Tarlov, A.R. 1996. Social Determinants of Health: The Sociobiological Translation. In *Health and Social Organization*, eds. B. Blane and R. Wilkinson. London: Routledge.
- Temkin, K., and W.M. Rohe. 1998. Social Capital and Neighborhood Stability: An Empirical Investigation. *Housing Policy Debate* 9:61–88.
- Unger, D. 1998. *Building Social Capital in Thailand: Fibers, Finance, and Infrastructure*. Cambridge: Cambridge University Press.
- Veenstra, G. 2000. Social Capital, SES and Health: An Individual-Level Analysis. *Social Science and Medicine* 50:619–29.
- Veenstra, G., and J. Lomas. 1999. Home Is Where the Governing Is: Social Capital and Regional Health Governance. *Health and Place* 5:1–12.
- Vimpani, G. 2000. Child Development and the Civil Society—Does Social Capital Matter? *Developmental and Behavioral Pediatrics* 21:44–7.
- Wagstaff, A., and E. van Doorslaer. 2000. Income Inequality and Health: What Does the Literature Tell Us? *Annual Review of Public Health* 21:543–67.
- Waldinger, R. 1995. The Other Side of Embeddedness: A Case Study on the Interplay between Economy and Ethnicity. *Ethnic and Racial Studies* 18:555–80.
- Waldmann, R.J. 1992. Income Distribution and Income Mortality. *Quarterly Journal of Economics* (November):1283–302.
- Wallis, A. 1998. Social Capital and Community Building, Part 2. *National Civic Review* 87:317–36.

- Wallis, A., J. Crocker, and B. Schechter. 1998. Social Capital and Community Building: Part One. *National Civic Review* 87:253–71.
- Watt, G. 1996. All Together Now: Why Social Deprivation Matters to Everyone. *British Medical Journal* 312:1026–9.
- Wilkinson, R. 1986. *Class and Health: Research and Longitudinal Data*. London: Tavistock.
- Wilkinson, R. 1992. Income Distribution and Life Expectancy. *British Medical Journal* 304:165–8.
- Wilkinson, R. 1994. The Epidemiological Transition: From Material Society to Social Disadvantage? *Daedalus* 123:61–77.
- Wilkinson, R. 1996. *Unhealthy Societies: The Afflictions of Inequality*. London: Routledge.
- Wilkinson, R. 1997. Comment: Income, Inequality, and Social Cohesion. *American Journal of Public Health* 87:1504–6.
- Wilkinson, R. 1998. Income Inequality and Population Health. *Social Science and Medicine* 47:411–2.
- Wilkinson, R. 1999. Income Inequality, Social Cohesion, and Health: Clarifying the Theory—A Reply to Muntaner and Lynch. *International Journal of Health Services* 29:525–43.
- Wolfson, M., G. Kaplan, J. Lynch, N. Ross, and E. Baclund. 1999. Relation between Income Inequality and Mortality: Empirical Demonstration. *British Medical Journal* 319:953–7.
- World Bank. 1993. *World Development Report: Investing in Health*. Oxford: Oxford University Press.
- Woolcock, M. 1998. Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. *Theory and Society* 27:151–208.
- Youniss, J. 1998. *Mutuality in Parent-Adolescent Relationships: Social Capital for Impending Adulthood*. Washington, D.C.: William T. Grant Foundation.

Acknowledgments: An earlier version of this paper was presented in June 2000 to the First Meeting of the International Society for Equity in Health in Havana, Cuba. The authors thank anonymous reviewers for comments on an earlier version of this document. This work was partially funded by a grant (T32 HS 00029) from the Agency for Healthcare Research and Quality.

Address correspondence to: James Macinko, M.A., Department of Health Policy and Management, Johns Hopkins University School of Hygiene and Public Health, 624 N Broadway-Room 447, Baltimore MD 21205 (e-mail: jmacinko@jhsph.edu).

Appendix

Indicators and Measures of Social Capital

Study	Unit of Analysis (source)	Social-Capital Measures
Kawachi, Kennedy, and Brainerd, 1998	Nation (Russia) (survey conducted by All-Russian Center for Public Opinion Research)	Social cohesion: divorce rate, per capita crime rate, workrelation strain Civic engagement: uninterested in politics, percentage not voting. Trust in government: distrust of local/regional/national government
Kawachi, Kennedy, and Glass 1998	U.S. States (BRFSS and GSS)	Civic trust: percentage who agree that “Most people can be trusted” Reciprocity: percentage who agree that “Most people try to be helpful” Civic engagement: per capita number of groups and associations to which residents belong
Kawachi, Kennedy, Lochner, and Prothrow-Stith, 1997	U.S. states (GSS)	Fairness/civic trust: percentage who agree that “Most people be trusted,” vs. “Most people would try to take advantage of you” Helpfulness of others: percentage who agree that “Most people try to be helpful” Civic engagement: per capita number of groups and associations to which residents belong

<p>Kawachi, Kennedy, and Wilkinson 1999a</p>	<p>U.S. states (GSS and U.S. Census)</p>	<p>Interpersonal trust: percentage who agree that “Most people can be trusted”</p> <p>Family social capital: households headed by single mother</p> <p>Collective efficacy: scale composed of coded answers to the following questions: This is a close-knit neighborhood; People in this neighborhood (a) can be trusted; (b) do not get along; (c) do not share the same values; (d) are willing to help their neighbors</p>
<p>Kennedy, Kawachi, Prothrow-Stith, et al. 1998</p>	<p>U.S. states (GSS)</p>	<p>Civic engagement: per capita number of groups and associations to which residents belong</p> <p>Trust in others: percentage who (dis)agree that “Most people would try to take advantage of you if they got the chance” vs. “Most people can be trusted”</p> <p>Cooperation: percentage who agree that “Most people try to be helpful”</p>
<p>Lochner, Kawachi, Kennedy 1999</p>	<p>Mixed (literature review)</p>	<p>Collective efficacy (composite of social cohesion and informal social control): social cohesion (people in neighborhood can be trusted/help others/have same values/get along with each other), collective efficacy (likelihood that neighbors could be counted on to intervene in a number of problems such as a fight, children skipping school, vandalism)</p> <p>Sense of community: membership (participation in groups and feelings about membership in groups), influence (political efficacy, trusting leaders, interest in neighborhood problems), sharing of values (positive</p>

Study	Unit of Analysis (source)	Social-Capital Measures
Muntaner, Oates, and Lynch 1999	Nation (U.S. and U.K.); political action surveys	<p>perception of neighborhood, share values/needs), shared emotional connection</p> <p>Neighborhood cohesion: social interaction, affective bonds (sense of mutual aid, community, attachment to place)</p> <p>Community competence:</p> <ul style="list-style-type: none"> —commitment (length of residence, use of services, volunteerism) —participation (membership in civic groups, registered voters), self-awareness, and clarity of situational definition —articulateness/effective communication (people express unpopular opinions, stand before outside groups and state community needs), conflict management and containment (people speak out about differences and means to resolve them) —management of relations with larger society (local officials are representative, number of people who own home) —machinery for facilitating participant interaction and decision making (town council’s effectiveness, willingness to write letters, political campaign voluntarism) <p>Conventional participation: attending meetings or political rallies, contact with public officials, working on political campaigns, discussing</p>

		<p>politics, trying to convince friends to vote the same as you, voting in elections</p> <p>Legal protest: frequency of joining in boycotts, attending demonstrations, signing petitions</p> <p>Political efficacy: belief that politicians and political parties don't care about the public, that representatives lose touch with the public, that individuals have no say on what government does</p> <p>Organizational membership</p>
Rico, Fraile and Gonzalez 1999	Regions (Spain)	<p>Percentage not voting in local, regional, and national elections</p> <p>Number of associations per 1,000 inhabitants</p> <p>Average number of working days lost to strikes per 1,000 employees</p> <p>Index of newspaper readership</p> <p>Demonstrations per 1,000 inhabitants</p>
Rose 2000	Nation (Russia)	<p>Generic social capital: social exclusion, informal networks, antimodern networks, market networks</p> <p>Health-specific: have someone to rely on when ill, smokes, pays doctor to expedite treatment, exercises with others or by oneself</p> <p>Social integration: have sense of control over one's life, feel that most people can be trusted, use friends for information, have communist in family, attend church, is opinion leader, rely on government help, belong to organizations, live in village</p>

Study	Unit of Analysis (source)	Social-Capital Measures
Temkin and Rohe 1998	City/neighborhood (health was not studied as an outcome)	Sociocultural milieu (individual level): view of community as a distinct place, use of community credit slips (borrow things from neighbors), discussion of problems with neighbors, % of people who live/work in neighborhood, use of neighborhood facilities for shopping/religion Institutional infrastructure (contextual): number of neighborhood institutions, aggregated voting rates, volunteer efforts, visibility of neighborhood in the city, presence of large organizations within the city
Veenstra and Lomas 1999	Community level and individual level (surveys in Canada)	Civic participation: proportion of eligible citizens who voted in last election, of households who subscribe to local newspaper, of individuals who belong to neighborhood improvement associations, donated blood, or wrote letter to the editor Collaborative problem-solving: Are there opportunities available to solve community problems? Did you ever organize a group to solve a problem? Social engagement: participation in/number and types of clubs and associations in the community; amount of time spent with friends, neighbors, workmates, family Trust: in individuals; in institutions (government, others) Personal identity: commitment to helping others in same/other groups, self-identification with different groups

Veenstra 2000	Individual level (Saskatchewan, Canada)	Civic participation: index composed of responses to questions about participation in voluntary organizations, blood donation, newspaper readership, voting Trust in government (political trust): index composed of responses to questions about performance of local, regional, and national governments, trust in government decisions and capacity to solve problems Trust in neighbors: index composed of responses to questions about close friends living in neighborhood, knowing the names of neighbors, trusting neighbors to help during illness, comfort in lending money or a car to neighbors Trust in people from respondent's communities and region: index based on responses to whether "most people in my community/region can be trusted/are willing to help/others/are honorable" Trust of people in general: index based on responses to whether "most people can be trusted, most people in my region/ethnic group/religious group, can be trusted"
Vimpani 2000	Unclear	Participation in social networks Reciprocity Trust Social norms Shared ownership of commons Active and willing engagement of citizens within the community