

Social Capital and Health

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Introduction

An old axiom states that “it is not what you know, but who you know”. The idea of social capital has a long history in the social sciences. Scholars with disparate theoretical perspectives, however, debate its intellectual origins (for reviews, see Islam et al. 2006; Macinko and Starfield 2001). Some quote classic sociological predecessors, including Emile Durkheim, Talcott Parsons, Karl Marx, Frederick Engels, Max Weber, and Georg Simmel, for their insights into this concept (Portes and Sensenbrenner 1993). Some attribute this idea to the legacy of economists, such as David Hume, Edmund Burke and Adam Smith (Woolcock 1998). Some identify the philosophy of John Dewey as the central source of social capital (Farr 2004). As Putnam documents (2000), the term “social capital” first appeared in a 1916 article by Lyda Judson Hanifan on a rural school community center (Hanifan 1916).

Despite its divergent heuristic sources, social capital grew to a popular paradigm in multidisciplinary research during the last two decades. A search of Social Sciences Citation Index for articles with “social capital” in their topics depicted the explosively growing trajectory from 1990s. On average per year, there were less than four such articles from 1956 to 1989, while the number increased to 145 in the 1990s and dramatically jumped to 565 from 2000 to 2008. As is the case with new concepts in social sciences, social capital has triggered extensive debates. There is lack of consensus in its definitions, which inevitably result in controversial operationalizations, divergent measurements, disparate mechanisms, mixed empirical evidence, various implications, and arduous challenges. The key figures who popularized this concept and stimulated its theoretical development during the 1980s and the early 1990s include three sociologists

Pierre Bourdieu ([1983] 1986), Nan Lin (1982, 2001a), and James S. Coleman (1988, 1990), and one political scientist Robert D. Putnam (1993a, 2000).

As in other fields, social capital as a theoretical tool easily gains burgeoning acceptance in the health science. For instance, another search of Social Sciences Citation Index for articles with “social capital” and “health” in topics showed that accelerating popularity from the early 1990s (Figure 1). The number of such articles was only two in 1991, but rose to 93 in 2003, further jumps to 150 in 2006, and remains above 140 in 2007 and 2008. Edited books on social capital and health appeared in the last couple of years (e.g., Kawachi, Subramanian, and Kim 2008a; McKenzie and Harpham 2006). A few reviews have surveyed the associations of social capital with various health-related outcomes across cultures and societies (e.g., Almedom 2005; Cockerham 2007; De Silva et al. 2005; Hawe and Shiell 2000; Islam et al. 2006; Kawachi 1999; Macinko and Starfield 2001; Muntaner, Lynch, and Smith 2000; Shortt 2004; Whitley and McKenzie 2005). Despite the substantial development of this literature, Putnam’s notion of social capital absorbed by public health researchers has dominated the field. The original contributions of alternative sociological theories have thus been understated.

Figure 1 about Here

In this chapter, we do not aim to reconcile different approaches to social capital. Instead, our goal is to highlight social capital as a significant social antecedent of health from a sociological perspective. We begin with the introduction of social capital concepts of Bourdieu, Lin, Coleman, and Putnam. We then turn to the theoretical extension and

empirical application of these four perspectives to the social production of health. We conclude with a discussion of issues and future research directions. Social capital is one of the most acknowledged contributions from sociology to social science and public discourse during the last two decades (Portes 1998). Considering the fact that social capital is an intrinsic sociological factor, medical sociologists are expected to play a crucial role to further refine social capital and its extension in the health literature.

Social Capital: Embedded Resources in Social Relationships

Bourdieu: Exclusive Resources from Durable Networks

Bourdieu is the pioneer in the conceptualization of social capital. He introduced this concept in his French version of *Distinction* in 1979 (Adam and Rončević. 2003; Bourdieu 1984). His theory on social capital was originally published in French in 1983, and translated into English for the first time in 1986. He distinguished social capital from its sources and returns in the forms of other types of capital at the individual level. He also discussed its cross-context network embeddedness and its exclusive nature. He did not explicitly discuss its operationalizations and measurements, which paves the way for debates in the empirical applications of his work.

Bourdieu was concerned with fundamental causes of social stratification. As he contended, it is the unequal distribution and accumulation of capital that accounts for the production and reproduction of social structure. Capital ([1983] 1986: 241) is “accumulated labor” allowing its possessors to “appropriate social energy in the form of reified or living labor.” It has three essential forms: economic, culture, and social (([1983] 1986: 242-48). The first two forms are personally owned. The first two forms are

personally owned. Economic capital is material goods invested in mercantile relationships for monetary profits; and cultural capital consists of three subforms: the embodied state (i.e., the cultivation process), the objectified state (i.e., cultural goods), and the institutionalized state (i.e., educational credentials).

In contrast, social capital is embedded in networks of social relationships. It is “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group—which provides each of its members with the backing of the collectivity-owned capital, a ‘credential’ which entitles them to credit, in the various sense of the world” ([1983]1986: 248-49). The volume of social capital one has the access to depends on two elements: “the size of the network of connections he can effectively mobilize” and “the volume of the capital (economic, culture or symbolic) possessed in his own right by each of those to whom he is connected” ([1983]1986: 249). Since Bourdieu does not further discuss measurements of social capital, these two elements can serve as proxy indicators of social capital in his work.

Sources and returns of social capital are other forms of capital. The foundation of capital reproduction and thus stratification reproduction is the convertibility of capital ([1983]1986: 249-55). Economic capital, the root of other forms of capital, creates cultural and social capital, and cultural capital brings economic capital. In turn, social capital generates economic capital (i.e., material profits such as services) and cultural capital (i.e., symbolic profits from being associated with prestigious groups). Despite such convertibility, social capital exerts its unique effects independent from other forms

of capital. “These effects, in which spontaneous sociology readily perceives the work of "connections," are particularly visible in all cases in which different individuals obtain very unequal profits from virtually equivalent (economic or cultural) capital, depending on the extent to which they can mobilize by proxy the capital of a group (a family, the alumni of an elite school, a select club, the aristocracy, etc.) that is more or less constituted as such and more or less rich in capital” ([1983]1986: 256).

Networks of relationships spread across multiple contexts. They are “based on indissolubly material and symbolic exchanges” and “partially irreducible to objective relations of proximity in physical (geographical) space or even in economic and social space” ([1983]1986: 249). Networks of relationships is the consequence of purposive “investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships that are directly usable in the short or long term” ([1983]1986: 249). Social exclusion is one of these strategies. Social institutions legitimate and motivate within-group exchanges between homogeneous members, and exclude members whose mistakes threaten group interests ([1983]1986: 249-51).

Lin: Resources Embedded in Social Networks

Lin’s book on social capital appeared in 2001 providing a fully developed theoretical scheme (2001a). His theory builds upon social resources theory he and colleagues gradually developed in the late 1970s and the early 1980s (Lin 1982; Lin, Ensel and Vaughn 1981; Lin, Dayton and Greenwald 1978). His framework is rooted in classic sociological traditions. He differentiated two types of social capital from its structural and

networking sources at the micro- and meso-levels, its mechanisms, and its instrumental and expressive returns. He also offered empirically falsifiable operationalization and measurement instrument of social capital.

Social capital is, according to Lin, “resources embedded in a social structure that are accessed and/or mobilized in purposive actions” (2001a: 29). This definition is grounded in the classic tradition of personal capital theories (e.g., Marx’s capital, human capital, cultural capital). Personal capital is resources under control of individuals themselves. Social capital is assets possessed by individuals’ network members. In a presumed hierarchical social structure in the shape of a pyramid, resource allocation depends on structural positions. The amount of social capital hinges on in general structural positions of other members in social networks including networks in the cyberspace.

Lin distinguished two types of social capital: contact resources and network resources (Lin 2001b). The former refers to resources from network members individuals actually mobilize in their own purposive actions, and indicated by resources (e.g., socioeconomic attributes) of contacts that individuals used in purposive actions. The latter corresponds to resources available from network members individuals have access to. To capture network resources, Lin and colleagues develop the position generator to map positional networks (Lin and Dumin 1986; Lin, Fu, and Hsung 2001), which are not constrained by tie strength, geographic location, content, and homogeneity (Lin et al. 2001a; Lin forthcoming). This instrument asks respondents to identify their contacts associated with a representative sample of occupational positions salient in a society. If respondents know several people in that type of position, they are usually asked to name

the one that occurs to them first. Three social capital indices are usually created based on the quantity, quality, and diversity of accessed positions: extensity, upper reachability, and range. Extensity is the total number of positions the in which respondents identified one contact, and thus estimates the quantity of social capital. Upper reachability is the highest prestige score of occupations that respondents have access to, and predicts the quality of social capital. Range is the difference between the highest and lowest prestige scores of occupations that respondents have access to, and reflects the diversity of social capital. These social capital indices are consistent with Bourdieu's elements of social capital: network size and network members' personal capital. Besides, network resources can also be derived from another two network instruments: the name generator and the resource generator. The name generator maps personal networks (McCallister and Fischer 1978). It asks respondents to name a fixed number of contacts (usually five) with whom they discuss important matters (Burt 1984). Similar to the position generator, it may calculate social capital, for example, based on socioeconomic attributes of named contacts. The resource generator (Snijders 1999; Van der Gaag and Snijders 2005) directly maps resource networks. It asks respondents to identify contacts associated with a fixed list of useful and concrete social resources across multiple life domains. It measures social capital as the sum score of access to all different resources. The position generator proves to be generalized across societies due to its association with occupational structure common in modern societies, and be more flexible, useful, and efficient in describing access to social capital than the name generator and the resource generator (Lin 1999; Song and Lin forthcoming; Van der Gaag, Snijders, and Flap 2008).

Social capital stems from two sources: structural and networking (Lin 2001a). Structural sources include ego's earlier hierarchical roles or positions, both ascribed (e.g., gender, race, family origins) and achieved (e.g., prior socioeconomic status). The higher the previous social position, the greater the chance of access to social capital. Networking sources consist of tie strength and network location. Weak ties and closeness to social bridge in social networks creates more social capital (Burt 1992, Granovetter 1973). Lin criticizes Bourdieu's and Coleman's argument on exclusive or closed networks because it ignores these networking properties (2001a). Besides, collective assets such as trust and norms can either foster or restrict the access to social capital.

Social capital exerts both main and moderating effects (Lin 2001a). It generates instrumental (e.g., wealth, power and reputation), and expressive (e.g., health and life satisfaction) returns through four mechanisms: providing information, exerting influence, acting as social credentials, and reinforcing group identity and recognition (Lin 2001a). That effect interplays with tie strength. Social capital derived from weak ties creates more instrumental returns, while social capital embedded in strong ties produces better expressive returns. Also instrumental returns and expressive returns fortify each other.

Lin's initial efforts were more geared toward the individual level analysis. Recently, he (2008a) extends his original theory to the macro level. He defines two forms of social capital for a collectivity. Internal social capital is resources provided by members within a collectivity (i.e., associations, organizations, communities, regions, or nation-states), and external social capital refers to resources accessible from other collectivities with which the focal collectivity is networked.

Coleman: Functional Social-Structural Resources

It is Coleman's systematic examination of social capital and its role in the creation of human capital that called multidisciplinary attention to this term (1988). Then in his masterwork on *Foundations of Social Theory* published in 1990, he devoted one chapter to analyze social capital including its functionalist definition, multiple operationalizations, and structural sources at the meso- and macro-levels. He also emphasized its positive functions and returns at the collective level.

He conceptualized social capital as functional "social-structural resources" derived from structures of social relations: "social capital 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 a social structure, and they facilitate certain actions of individuals who are within that 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" (1990: 302). He justified such a broad conception by its utility in explaining multiple outcomes and bridging the micro- and macro levels.

A catch-all definition inevitably opens the floor for multiple operationalizations. Coleman proposed (1990: 306-13) six forms of social capital that facilitate actions: 1) obligations, expectations of reciprocity, and trustworthiness (i.e., individuals do things for each other and trust each other to reciprocate in the future), 2) information potential from social relations, 3) norms (in particular 'a prescriptive norm...that one should forgo self-interests to act in the interests of the collectivity' (1990: 311)) and effective sanctions, 4) authority relations (i.e., transferrable rights of control between individuals) that can solve common problems, 5) appropriable social organizations (i.e., organizations whose

resources benefit their participants), and 6) intentional organizations (i.e., organizations whose resources not only benefit their participants but also the public). His operationalization equalizes social capital with its sources (e.g., organizations) and returns (e.g., information) (Portes 1998). Coleman did not offer specific measurements for each form. He was actually hesitant about the value of social capital as a quantifiable concept (1990: 305-306). In his work on the association of social capital with dropout rates (1988), he measures social capital within the family as the presence of parents, the size of sibling, and mother's expectation for child's education and specifies social capital in the community as religiously-based high schools and the frequency of students' religious attendance.

Coleman also discussed five macro-level structural preconditions for the quantity of social capital (1990: 318-321): network closure, stability of social structure, collectivist ideology, affluence, and government support. The first three conditions have positive association with social capital, while extreme closure could damage social capital instead. The last two conditions decrease social capital, both of which increase interpersonal independence and decrease the maintenance of social relationships.

Coleman held that social capital functions in both positive and negative directions and at both individual and collective levels. But he obviously emphasized the positive functions of various forms of social capital for the collective, while admitting that some forms of social capital such as norms could also constrict some actions (1990: 311). Also in contrast with financial (i.e., money), physical (i.e., material objects), and human (i.e., skills and knowledge) capital that can only be privately owned, he (1990: 315-318) argued that social capital is not a private property of individual beneficiaries but a

property of social structure. It favors not only purposive investors in a structure but also all the members of that structure as public goods. Coleman's empirical research focuses on the positive role of social capital in educational attainment (1988). He only briefly illuminated the importance of social capital in the health care process, mentioning that the lack of social capital (i.e., trust) between patients and physicians increases costs of and decreases access to medical care (1990: 303).

Putnam: Facilitating Features of Social Organization

Putnam's work on social capital and its association with democracy appeared in 1993. It is his 1995 article, "Bowling Alone", and its expansion into the 2000 book of the same main title that popularized the term of social capital beyond academic community and into public discourse. Drawing on Coleman's work, Putnam proposed a functionalist definition, and mixed operationalizations, and a state-level social capital index. He distinguished two types of social capital. He emphasized positive returns of social capital as public good. He analyzed macro-level structural sources and returns of social capital.

In his earlier functionalist definition, social capital is "features of social organization, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions" (1993: 167). In his later definition of social capital as "connections among individuals -- social networks and the norms of reciprocity and trustworthiness that arise from them" (2000: 19), he tended to emphasize the causal directions between different components of social capital. Formal social connections include memberships and participation in formal organizations and activities such as political, educational, recreational, religious, and professional organizations and activities,

and connections in the workplace. Informal social connections refer to participation with family, friends, and neighbors in informal social and leisure activities. Networks of social connections increase productivity of individuals and reinforce norms of reciprocity. Similar to Coleman's explanation, the norms of generalized reciprocity mean that "I'll do this for you without expecting anything specific back for you in the confident expectation that someone else will do something for me down the road" (2000: 21). The norms of reciprocity as a community asset increase efficiency. Honesty and social trust (i.e., trust in other people) lubricate social life. Like Coleman, he equalized social capital with networks, reciprocity, honesty, and social trust, leaving their causal relations for future research (2000: 137). Besides, he included other consequences of networks such as altruism, volunteering, and philanthropy as alternative indicators of social capital. Putnam also develops a state social capital index (2000: 291). This index contains fourteen items, covering four areas such as community organizational life, engagement in public affairs, community volunteerism, informal sociability, and social trust.

Putnam distinguishes two subtypes of social capital: bonding and bridging (2000). Bonding social capital exists in relationships connecting homogeneous individuals, while bridging social capital lying in connections linking heterogeneous persons. Also bonding social capital works for enhancing within-group reciprocity and solidarity, while bridging social capital for obtaining goods from outside groups. Putnam emphasized the positive functions of both types of social capital, while he admitted that bonding social capital may lead to between-group enmity. This typology received critique from a strict social network perspective that bonding and bridging are properties of social networks instead of social capital (Lin 2008).

Putnam emphasized positive functions of social capital at two levels: individual and collective. Social capital is both “private good” and “public good” (2000: 20). One’s investment in social capital benefits not only oneself, but also spills over to other onlookers. Putnam recognized that functions of social capital are sometimes negative for those outside of a given network if social capital is used for antisocial purposes, while generally positive for those within that network.

Putnam reported an overall decline of social capital in the American society based on his preliminary bivariate correlational analyses. He attributed that decline into multiple macro-level factors, such as pressures of time and money, residential mobility and sprawl, electronic entertainment, and generational change (2000). He highlighted the potential of small groups, social movement, and telecommunications including the use of Internet for offsetting that decline. He discussed the positive associations of social capital with education and children’s welfare, neighborhood safety and productivity, economic development, health and happiness, democracy, and tolerance and equality. Drawing on previous research on network-based concepts such as social integration, social cohesion, and health, Putnam argued for health returns to social capital, without explicitly distinguishing social capital from those concepts. He reported only correlations of social capital at the state level with public health and mortality, and of social connections at the individual level with happiness (2000). It is other researchers who systematically theorized and testified the health effect of social capital using advanced analysis techniques, as we summarize in the next section.

To summarize, all four aforementioned scholars agreed that social capital contains resources derived from social networks and social structures, and it operates effectively

net of personal capital such as economic capital, human capital, and cultural capital (Lin 2001a). However, their definitions and operationalizations diverge from each other. We distinguish two schools.¹ Bourdieu and Lin exemplify a network-based approach. They defined social capital as relational asset available to individuals. Their approach is more refined by distinguishing social capital from its antecedents and yields for individuals from a conflict perspective (Adam and Rončević. 2003; Portes 1998). They discussed the interplay between personal and social capital. They asserted that networks are preconditions of social capital and exist across multiple contexts. Lin developed a strict methodological instrument to measure social capital embedded in social networks. Bourdieu did not discuss measurements, but his proposed elements of social capital (i.e., network size, personal capital of network members) are consistent with social capital indices derived from the position generator. One major difference between Bourdieu and Lin lies in the creation process of social capital. Bourdieu valued network closure while Lin emphasized network bridging. Besides, Lin specified collective assets such as trust and norms as sources instead of elements of social capital as in the work of Coleman and Putnam. Coleman and Putnam represented a normative approach in the sense that both of them underlined moral norms such as trust and reciprocity as forms of social capital. They emphasized the benefits of social capital as collective asset or public good from a functionalist perspective. Their concept and operationalization of social capital mingles social capital with its sources and outcomes. One major distinction between Coleman and Putnam exists in their causal arguments on social networks. Coleman used networks as sources of social capital, while Putnam subsumed networks under the umbrella of social capital. Unlike Lin, Putnam did not directly map social networks. His proposed indicators

reflect social integration, an antecedent of social networks. Next, we review theoretical and empirical application of each framework into the health literature.

Social Capital and Health: Theoretical Development and Empirical Evidence

Bourdieu: Incomplete Application

Unlike his well-known concept of cultural capital, Bourdieu's notion of social capital received limited attention in the literature. Its theoretical utility for health was recognized only recently. Its quantitative and qualitative applications raised debates, primarily because he did not explicitly measure social capital. Ziersch and colleagues extend Bourdieu's conceptualization to health in Adelaide, Australia. They argue that Bourdieu's work is valuable for individual-level inequality research in contrast with Putnam's focus on the collective-level social capital as public good (Ziersch et al. 2005), and helpful for distinguishing sources and consequences of social capital (Ziersch 2005). Ziersch and colleagues (2005) use four indicators of neighborhood-based social capital: neighborhood connections, neighborhood trust, reciprocity, neighborhood safety, and local civic action. They find that neighborhood safety explains physical health, and neighborhood safety and neighborhood connections predict mental health. Ziersch (2005) distinguishes social capital infrastructure from social capital resources. She uses three measurements for the former (i.e., informal networks, formal networks, and values such as trust, reciprocity, and safety), and four measurements for the latter (i.e., help, acceptance, civic actions, and control). Among these measurements, values, informal networks, help, and control are directly or indirectly positively associated with mental health, but none of them is associated with physical health.

Carpiano (2006) constructs a Bourdieu-based conceptual model of neighborhood social capital for health. Influenced by Portes (1998), he states that Bourdieu's work helps distinguish social capital from its sources and outcomes. He suggests that from a sociological perspective we should use social capital exclusively for network resources as Bourdieu conceived, and that Putnam's notion of social capital based on social cohesion should rather be a precondition of social capital. He makes efforts to distinguish social capital from its sources (e.g., neighborhood socioeconomic conditions, social cohesion) and outcomes as well. He uses connectedness and values such as trust and familiarity to indicate Putnam's social cohesion. He uses four measures to indicate Bourdieu's social capital, including neighborhood organization participation, informal social control, social support and social leverage (i.e., neighbors ask each other for advice). He also adds neighborhood attachment in his model, which is hypothesized to moderate the social capital effect. His two empirical studies analyze Los Angeles Family and Neighborhood Survey data. In one study on adults (2007), he finds unexpected positive associations of social support with daily smoking and binge drinking, negative association of social leverage with daily smoking, negative association of informal social control with binge drinking, and no associations of each social capital indicator with perceived health. He also shows evidence that neighborhood attachment interacts positively with informal social control and negatively with neighborhood organization participation for perceived health. In another study on female caregivers (2008), he reports unexpected positive association of social support with daily smoking, negative association of social leverage with daily smoking, and positive association of neighborhood organization participation with perceived health. Neighborhood attachment

interplays negatively with social leverage for perceived health and with informal social control for daily smoking.

Stephens (2008) points out that Bourdieu's work advances our understanding of health inequality in broader social connections beyond neighborhoods, in interrelationships of economic, cultural and social capital, and in the social exclusion process. She credits the above quantitative applications for their efforts to disentangle sources and outcomes of social capital. She further criticizes them for constraining attention to geographic locations, and measuring social capital as existing concepts using secondary data. She employs a qualitative method to document social connections in three neighborhoods in New Zealand. She reports evidence for the existence of social networks beyond geographic community. She shows that personal and community capital is convertible to social networks. Interviewees from different individual and community socioeconomic backgrounds had different social connections for different needs. She also finds evidence for health-relevant returns to social capital when some interviewees participated in voluntary groups in order to offset the loss of services including health services. However, Stephens went too far to state that social capital is not quantifiable for individuals as Coleman does.

Lin: Limited but Consistent Evidence

The concept of social capital by Lin helped produce substantial studies on status attainment. The impact of prior social positions on social capital as well as the effect of social capital on socioeconomic well-being has been well documented across societies (for a review, see Lin 1999). Health returns to social capital, though, received less

attention. Nonetheless, available studies report consistent findings of the effect of social capital. Social capital is proposed to be associated positively with health both directly and indirectly. Four mechanisms he conceptualized primarily for instrumental returns are applicable to health outcomes (Song and Lin forthcoming). First, social capital brings valuable health information. Also network members' resources, such as power and authority, exerts influence on health in the same way that individually possessed power and social ordering affect health policies, controls health information, and moderates exposure and vulnerability to health risks. Next, social capital acts as social credentials. A case study shows that the care and attitude from a hospital changed dramatically for a black woman near death after her ex-husband, a physician, advocated on her behalf (Abrams 2000). Finally, social capital reinforces group identity and generates emotional support.

Also social capital may interplay with personal capital with two possibilities (Song and Lin, forthcoming). One hypothesis is the compensation effect proposition. Individuals lacking personal capital are more motivated to resort to social capital and receive more health benefits from social capital. The alternative hypothesis is the cumulative advantage proposition. Individuals with more personal capital are more able to successfully mobilize social capital and thus receive more health resources from social capital.

Three quantitative studies testify health returns to social capital as Lin conceives, primarily because network instruments are not available in most secondary data. These studies report supportive evidence. Acock and Hurlbert (1993) analyze 1985 General Social Survey data. They use the name generator, and calculate the mean educational

level of named contacts to indicate social capital. They find that social capital enhances life satisfaction and reduces anomia. Webber and Huxley (2007) adapt the resource generator originally developed in the Netherlands, and construct a 27-item resource generator for the U.K. respondents. These items form one scale, and also reflect four subscales including domestic resources, expert advice, personal skills, and problem solving resources. That scale as well as two other subscales such as domestic resources and personal skills is negatively associated with mental disorder. Song and Lin (forthcoming) use the 1997 Taiwan Social Change Survey data, an island-wide stratified probability sample of adults in Taiwan. They derive social capital from two name generators and one position generator. One name generator asked respondents to name at most five contacts with whom they had communicated in the last year to discuss worries and personal problems, and the other respondents to name at most five contacts that they reached for actual help or information in the last year when encountering difficulties in life. The position generator listed a sample of fifteen ordered occupational positions salient in Taiwan, ranging from housemaids/cleaning workers up to physicians. Social capital (a factor score derived from extensity, upper reachability, and range) measured through the position generator instead of the name generators reduces depression and enhances self-reported health net of social support and personal capital. Also social capital interacts with education. It decreases depression to a greater degree for those with less education, which supports the compensation effect hypothesis.

Social capital embedded in electronic networks also receives attention nowadays. For example, Drentea and Moren-Cross (2005) employ a mixed method, and study a mothering board on a parent's website. As they report, social capital embedded in online

mothers' networks may influence mothers' and their children's health indirectly through providing emotional support and instrumental support such as informal health information sharing.

Coleman: Neighborhood Efficacy

Coleman's social capital has been broadly applied to educational attainment, but not to health outcomes. Sociologist Sampson and colleagues contribute to explicitly extending Coleman's work, and develop neighborhood-level collective efficacy theory (Sampson et al. 1997; Sampson, Morenoff, and Earls 1999). Collective efficacy is a social good and meets collective needs. It is the degree of neighbors' mutual trust and willingness to intervene in social control for the common good. It thus redefines social capital as shared expectations for action among neighbors. It has two elements: informal social control (i.e., neighbors are counted on to intervene), and social cohesion (i.e., neighborhood is close-knit; neighbors help each other, get along with each other, and share values) and trust (i.e., neighbors can be trusted). Individual responses to these elements are aggregated to the neighborhood level to indicate collective efficacy. Collective efficacy is characterized by spatial dynamics. In other words, collective efficacy from surrounding neighborhoods positively influences that within focal neighborhoods.

Collective efficacy is expected to influence individuals' health by depressing health risks at neighborhoods, creating stress buffers such as social support and safety nets, and maintaining and achieving health-relevant resources such as educational, clinical and housing resources (Drukker et al. 2005). Three studies have examined collective efficacy theory. All of them target the youth population, and report mixed

empirical evidence. Drukker and colleagues (2003) analyze data on children about 11 or 12 years old who attended one level of the Dutch primary school in Maastricht, the Netherlands. Their multilevel regression analysis show that net of neighborhood socioeconomic status, informal social control is positively associated with children's mental health but not their general health, while social cohesion and trust are not associated with both outcomes. In order to explore collective efficacy theory across societies, Drukker and colleagues (2005) continue to using the same data in Maastricht, and include another community survey data on children aged 12 in Chicago, the U.S. Their multilevel analysis implies that informal social control, and social cohesion and trust increase adolescents' perceived health for the Dutch sample and the Hispanic subsample in the U.S. but not for the non-Hispanic subsample. van der Linden and colleagues (2003) examine data on 56 children utilizing the mental health service and 206 children not using that service in Maastricht, the Netherlands. Their multilevel regression analysis reports that neither informal social control nor social cohesion and trust predict children's mental health service use, but social cohesion and trust offsets the effect of neighborhood socioeconomic deprivation on that type of service use.

Putnam: Expansive and Diverse Applications

Kawachi and colleagues first apply Putnam's social capital and explore its association with mortality in 1997 (Moore et al. 2005). A huge multidisciplinary literature has emerged since then. Social capital has been developed into different dimensions: structural and cognitive (Bain and Hicks 1998). Structural social capital includes formal and informal social connections, and cognitive social capital involves trust and norms of

reciprocity. Social capital has also been measured at multiple levels. Its individual-level measurement reflects individual social capital which exerts compositional effect, and their higher-level measurement usually as the aggregation of individual responses at the community, state, and even country level indicates ecological social capital which have contextual impact (De Silva et al. 2007; Macintyre and Ellaway 2000).

Different mechanisms have been proposed to link multiple levels of social capital to health (Kawachi et al. 2008b; Kawachi 1999; Kawachi, Kennedy, and Glass 1999; Kawachi, Kennedy, and Wilkinson 1999). Social capital functions at the individual level through the supply of social support, the impact of social influence (i.e., the maintenance of healthy norms, the promotion of health behaviors), social engagement, and physiological and biological mechanisms. Social capital operates at the neighborhood levels through the process of informal social control, the maintenance of healthy norms, the promotion of health behaviors, the enhancement of services and facilities, collective socialization, and the supply of social support. Social capital at the state level protects health through egalitarianism-oriented political participation and policy making.

Apart from its direct path to health, social capital in particular ecological social capital may also operate as one mechanism linking income inequality to health. Wilkinson (1996, 1999) proposes that social capital reflecting underlying psychosocial risk factors significantly mediates the negative association between income inequality and health. His opponents (Lynch et al. 2001a; Lynch et al. 2001b; Muntaner and Lynch 1999) criticize him for ignoring other sociological models of stratification such as class relations and class formation, and for overstating subjective consequences of inequality while downplaying structural sources of inequality. Their neo-material model argues that

health inequality is rooted in the material world where income inequality represents only one factor.

A huge literature has examined the linkages of multiple forms of social capital as Putnam conceives to various health and well-being outcomes such as life expectancy, mortality, physical health, mental health, health behavior, health care and services, health information, and life satisfaction among diverse populations of adolescents, adults, and the elderly across levels of social capital, cultures and societies. Their popularity is probably because of their political implications and quick measurements in secondary data (Foley and Edwards 1999). An extensive review of that literature is beyond the scope of this chapter. ² We are only able to illustrate the extensiveness of this empirical literature. In brief, the empirical results are mixed, varying with forms and levels of social capital, outcomes, units of analysis, data sources, research populations, and societies.

At the individual level, some studies find consistent evidence on various health-relevant outcomes across societies. An instrumental analysis of the 2006 Social Capital Community Survey data in the U.S. finds that all five social capital indicators (i.e., social trust, associational involvement, organized interaction, informal socializing, and volunteer activity) can enhance self-reported health (Schultz, O'Brien, and Tadesse 2008). A study of data from the National Survey on Drug Use and Health in the US reports a negative association of group participation with adolescent alcohol or drug use (Winstanley et al. 2008). Another study of data from six communities in the U.S. shows that civic participation in particular in organizations providing health information leads to more cardiovascular disease health messages (Viswanath, Steele, and Finnegan 2006).

Another study of the 2003 Health Survey for England finds that civic participation, social trust, perceived social support, and reciprocity lead to better self-reported health (Petrou and Kupek 2008). In Sweden, two studies of community survey data respectively show that civic participation increases leisure-time physical activity and that trust protects self-reported psychological health (Lindström, Hanson, and Östergren 2001; Lindström 2008).

Some studies find mixed evidence. A two-wave prospective panel study of a national representative sample in the U.S. reports that trust in neighbors rather than civic participation decreases major depression (Fujiwara and Kawachi 2008a). A fixed effect analysis of adult twins in the U.S. (Fujiwara and Kawachi 2008b) measures four social capital variables including social trust, sense of belonging, volunteering, and community participation, and examines four outcomes including perceived physical health, perceived mental health, number of depressive symptoms, and major depression. For both dizygotic and monozygotic twins, perceived physical health is positively associated with social trust. For dizygotic twins, number of depressive symptoms is negatively related to sense of belonging and community participation, and perceived mental health is positively associated with sense of belonging. In Canada, a study of community survey data (Veenstra et al. 2005) shows that voluntary participation is predictive of overweight status but not of self-rated health, emotional distress, and chronic illness. Also religious participation enhances self-rated health while secular participation enhancing self-rated health only for the elderly (Veenstra 2000). In Sweden, a study of community survey data on adolescents finds that social trust and social participation are associated with smoking and illicit drug use but not with binge drinking (Lundborg 2005). In Finland, a study of data from a national survey reports that social trust predicts good psychological health for

both gender groups and self-reported health only for women, while social participation and social contacts does not explain both outcomes (Nyqvist et al. 2008). Another study of community survey data in Cali, Colombia reports no associations of four social capital indicators (i.e., informal social control, social cohesion, civic participation, and trust in neighbors) with mental health among the youth population aged 15-25 (Harpham, Grant, and Rodriguez 2004).

Studies on ecological social capital also report mixed evidence. At the community level, for example, Lochner and colleagues (2003) use data from the 1995 Community Survey of the Project on Human Development in Chicago Neighborhood, and measure three neighborhood social capital: civic participation (i.e., the average per capita membership of voluntary participation by neighborhood), trust (i.e., the proportion of residents who think people in the neighborhood can be trusted), and reciprocity (i.e., the proportion of residents who think people are willing to help neighbors). As their hierarchical analysis show, civic participation predicts all-cause and other-cause death rates for all race-sex groups and heart disease death rates only for whites. Trust explains all-cause death rates for all race-sex groups except for black men, heart disease death rates only for white women and men, and other-cause death rates for all race-sex groups except for black women. Reciprocity is relevant to all-cause death rates and other-cause death rates for all race-sex groups except for black women, and heart disease death rates only for white men. Also none of them is associated with cancer death rates. Also at the neighborhood level, one study on live births in Chicago measures social capital as the combination of reciprocal exchange and local voluntary participation both of which are aggregated to the neighborhood level (Morenoff 2003). Neighborhood internal social

capital protects birth weight, and mediates the effect of neighborhood poverty and residential mobility. Also social capital from surrounding neighborhoods predicts birth weight, and such protection is stronger for focal neighborhoods with more internal social capital. Studies of national survey data in the U.S. show that college students' average volunteering time at the campus level decreases their alcohol or drug use (Weizman and Kawachi 2000; Weizman and Chen 2005). At the state level in the U.S., one study of 39 states (Kawachi, Kennedy and Glass 1999) finds that all three social capital indicators are associated with individuals' self-reported health, including civic engagement (i.e., per capita membership of voluntary associations in each state), trust (i.e., the percentage of residents who think most people can not be trusted), and reciprocity (i.e., the percentage of residents who think most people look out for themselves). Some studies of 48 states in the U.S. imply that the state Putnam index predicts individual self-reported health but not sexually transmitted diseases (Mellor and Milyo 2005; Semaan et al. 2007).

The debate on the mediating role of social capital in the association of income inequality to health also triggers studies on ecological social capital. Some studies support the mediating effect hypothesis. At the state level, in a study of 39 U.S. states (Kawachi et al. 1997), both per capita group membership and lack of social trust are associated with both income inequality and total mortality. In another study of 48 U.S. states (Weaver, and Rivello 2006-2007), mortality rates are associated with the State-level Putnam index but not with three income inequality indicators. Some studies disconfirm the mediating hypothesis. In one study of 16 wealthy countries (Muntaner et al. 2002), cause-specific mortality is associated more strongly with economic inequality and working-class power than with social capital. In another study of 19 countries

(Kennelly, O'Shea, and Garvey 2003), social trust, and membership of organizations and volunteering exert no significant effects on population health including life expectancy, infant mortality, and perinatal mortality, while per capita income and the proportion of health expenditure financed by the government are associated with better population health. In another analysis of 23 rich and poor countries (Lindström and Lindström 2006), social trust does explain population health such as adult mortality rate, life expectancy, and infant mortality rate for poor, rich, or all 23 countries, while Gini index predicts infant mortality rate for rich countries, gross national product per capita explains life expectancy for all countries, and Gini index and gross national product per capita is relevant to infant mortality rate for poor countries. One study of 45 countries (Mansyur et al. 2008) further shows that whether country level social capital (i.e., social network density, societal trust) and income inequality (i.e., GNP, Gini index) influence self-reported health depends on the countries included.

There are also studies on multilevel social capital. For example, one study of 40 U.S. communities data from the 2000 Social Capital Community Benchmark Survey (Kim, Subramanian, and Kawachi 2006) measures six individual-level social capital indicators, including formal bond (i.e., formal involvement in homogenous groups), trust in own racial/ethnic groups, formal bridge (i.e., formal involvement in heterogeneous groups), informal bridge (i.e., interaction outside one's own racial/ethnic groups), diversity (i.e., diversity of friendships), and social trust. It combines and aggregates the first two indicators to the community level as community bonding social capital, and the next three indicators to the community level as community bridging social capital. As it reports, three individual-level social capital indicators such as formal bonding, trust in

own racial/ethnic groups, and social trust are positively associated with self-reported health, and community bonding social capital instead of community bridging social capital exerts modest effect on self-reported health. One study of 45 countries (Mansyur et al. 2008) finds positive effect of individual voluntary participation and social trust on individual self-reported health, while the significance of national voluntary participation and trust depends on the countries included. Another study of 22 European countries (Poortinga 2006a) shows that individual instead of national civic participation and social trust predicts individual self-rated health. Also the effect of individual participation and social trust is stronger in countries with higher national civic participation and social trust. In addition, two studies of four developing countries (Peru, Ethiopia, Vietnam, and India) also reports that whether individual participation and its community aggregation contributes to the mental health of mothers of one-year-old child and child nutritional status varies with societies (De Silva et al. 2007; De Silva and Harpham 2007).

Issues and Future Directions

As this review suggests, social capital has opened up a burgeoning multidisciplinary health research literature across societies during the last two decades. Three sociologists Bourdieu, Lin, Coleman, and one political scientist Putnam, have contributed to the theoretical construction of social capital from different perspectives. Among them, Putnam's notion has captured most attention in the health literature with the effort of public health researchers, while theoretical values of other sociological theories have been understudied. To extend Woolcock's statement (1998), the popularity of social capital may contribute to driving sociologists into multidisciplinary discourse on public

and individual health issues. Sociologists may contribute greatly to increasing the understanding of the relationship between social capital and health by responding to the following four queries.

What is the added value of social capital? In other words, can we integrate social capital into the previous health literature? The integration requires us to examine the distinctions and associations between social capital and other established social antecedents of health. Putnam, Coleman, Sampson, and other scholars tend to equate social capital with other relationship-based concepts such as social networks, social integration, social cohesion, and social support (e.g., Carpiano 2006; Putnam 2000, 2004; Sampson et al. 1997; Szreter and Woolcock 2004; Ziersch et al. 2005). Such equalization pours old wine into new bottles (Kawachi et al. 2004), and endangers the added theoretical value of social capital (Lin 2001; Portes 1998). Also as mentioned earlier, the fourteen items in the Putnam index does not statistically reflect one single latent factor (Kim 2006 et al.; Kim and Kawachi 2007). In contrast, Lin's definitions and specifications of social capital allow us to distinguish these relevant concepts (Song and Lin forthcoming). A social network is "a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behavior of the persons involved" (Mitchell 1969: 2). Social networks are one of the most distinct social antecedents of health status (for reviews, see Berkman et al. 2000; House, Landis, and Umberson 1988; Lin and Peek 1999; Pescosolido and Levy 2002; Smith and Christakis 2008). The notion of social networks is not a theory but a perspective (Mitchell 1974). Specific theories are derived from the social network perspective to interpret mechanisms through which social

networks function to impact health (Berkman et al. 2000; Lin and Peek 1999; Pescosolido 2007), including social integration, social cohesion, and social support as well as social capital. Social integration is the extent of participation in social networks, indicated by active engagement in social roles and social activities, and cognitive identification with network members (Brissette, Cohen, and Seeman 2000). Social cohesion is the degree of social bonds and social equality within social networks, indicated by trust, reciprocity, and the lack of social conflict (Kawachi and Berkman 2000). We trace these two ideas back to the 1897 book on suicide by the founder of modern sociology, Emile Durkheim ([1897] 1951) (Turner 2003). Social support is the assistance from social networks, indicated by the quantity and quality of perceived or received help from network members (Lakey and Cohen 2000; Pearlin 1989). We credit Cassel and Cobb for their seminal works on social support in 1976 (Cassel 1976; Cobb 1976). Social support has received substantial research attention since then (for reviews, see House, Umberson, and Landis 1988; Thoits 1995). By comparison, social capital as Lin conceives in particular measured through the position generator uniquely captures structural positions possessed by individuals' network members. It is different from but causally relevant to the other network-based concepts. For example, social integration creates and maintains social ties and furthermore social capital, social cohesion may facilitate or constrain the accumulation of social capital, and social capital brings social support since we draw network members' resources for various supportive purposes (Lin 2001a; Pearlin and Schooler 1978; Song and Lin forthcoming). Adam and Roncevic (2003) are afraid that Lin's strict approach may exclude other approaches to social capital. But they ignore the fact that his rigorous approach allows us to achieve a systematic and coherent

understanding of relationship-based causes of disease and illness. In addition, there are critics on specifying trust and norms of reciprocity as subjective components of social capital (Cook 2005, Foley and Edwards 1999, and Lin 2001a). Social capital is neutral, objective, and rooted in social relationships, which contributes to its unique heuristic values. Trust and norms are inherently moral and psychological, and separated from network structures and social contexts. For example, studies on the associations of trust and norms with mental health are in particular questionable in terms of causal direction, considering the fact that researchers are trying to explain the relationship between psychological concepts. More theoretical efforts are in need for a coherent integration of social capital with the existing literature.

Does the network-based approach receive limited attention because of its limited implications for health? The answer is definitely no. Apart from its coherent integration with previous health literature as mentioned above, the network-based approach to social capital offers other important theoretical and methodological implications for future health research. First, this approach takes a conflict perspective, and contributes to linking health disparities with general stratification theories in sociology (Hawe and Shiell 2000; Song and Lin forthcoming). Second, this approach enhances the life course perspective to health stratification (O'Rand 2001; Pevalin 2003). Bourdieu's argument on the production and reproduction process of stratification and Lin's argument on the reciprocal relationships between instrumental and expressive returns fit more into the cumulative advantage/disadvantage theory in the health literature. Also this approach highlights social capital as an independent source of health disparities. Social capital as network members' resources exerts health effect net of individuals' personal capital in

particular their own socioeconomic resources, the fundamental causes of disease and illness (Link and Phelan 1995). Its potential mechanisms include information, influence, social credential or symbolic profits, material profits, and reinforced identification. Apart from its direct effect, social capital also interplays with other structural risk factors. Bourdieu argues for the convertibility between different forms of capital. Lin hypothesizes the reciprocal relationship between social capital and personal capital. Social capital could influence health by mediating the influence of prior personal capital, and indirectly by creating more personal capital. Medical sociologists are in better position to explore multiple mechanisms linking social capital to health and the causal relationships between social capital, personal capital, and other structural risk factors such as gender and race in the production process of health inequality. Next, the network-based approach strengthens the structural perspective in medical sociology, one unique sociological approach to health (Bird, Conrad, and Fremont 2000). Social capital can be another important approach to social structure and health because network members' structural positions reflect "structural arrangements in which individuals are embedded" (Pearlin 1989: 241). Furthermore, the network-based approach contributes to the social network tradition in medical sociology. It embeds social capital in networks beyond geographic location. One major research gap in the social network literature is whether the access to resources in particular material resources is one mechanism through which social networks shapes health (Berkman et al. 2000). Occupation is one central indicator of hierarchical social locations in the stratification literature, and the position generator measures social capital as the occupational distribution of network members. Social

capital measured through the position generator contributes to bridging that foregoing research gap in the social network and health literature (Webber and Huxley 2004).

What are the future research directions for the network-based approach? The theoretical adaption of Bourdieu's approach is still incomplete. Stephens concludes her research with the statement that "Bourdieu can help us only if we take account of his theory in its place". We would have to say that "Bourdieu can help us only if we take full instead of partial account of his theory." The lack of measurement in Bourdieu's work restricts its application into health, and produces controversial theoretical and empirical applications. Instead of measuring social capital as in the normative approach or other established social factors such as social support (e.g., Carpiano 2006; Ziersch 2005), we suggest that Bourdieu's proposed elements of social capital (i.e., network size, network members' personal capital) is more consistent with Lin's notion and measurement. We reserve this for future discussion. The empirical examination of Lin's theory and methodology relative to health is very few. For the purpose of generalizability and stronger causal inferences, longitudinal research designs containing appropriate network instruments, multiple health outcomes, and information for potential explanatory mechanisms are in need. Also future research should examine not only the direct effect of social capital but also its mediating and moderating effect between health and other established structural risk factors in particular personal capital over the life course. Furthermore, future research should measure network-based concepts including social capital independently, and examine their causal relationships for a more systematic understanding of the role of social networks in the production of disease and illness. In addition, future studies should examine the mobilization process of social capital in the

access to health resources. Available empirical studies only examine accessed social capital and its potential effects. Its limited explanatory power (Song and Lin forthcoming) may imply that social capital is expected to play a stronger role for individuals actually mobilizing social capital. For example, patients with more severe illness, or people with insufficient personal capital are more motivated to resort to social capital for health resources. Besides, the dynamic paths between social capital and personal capital would encourage future research on the dynamics of disease and illness from onset to recovery (Pevalin 2003; Webber and Huxley 2004). Finally, Lin proposes his macro-level conceptualization of social capital only recently. He specifies internal social capital at the collective level as the sum of members' resources. The established literature on the protective effect of community- and societal-level socioeconomic characteristics on various health outcomes implicitly demonstrate his conceptualization (for a review, see Robert and House 2000). Future theoretical clarification and methodological work is in need for a direct examination of his macro-level definition.

What are the major challenges and future directions for the normative approach? Collective efficacy theory proposed by Sampson and colleagues based on Coleman's work contributes to drawing our attention to the neighborhood mechanisms of health inequality. Its limited empirical applications report mixed results. Different elements of collective efficacy exert varying effects. There is also evidence for the interaction of certain elements of collective efficacy with race and neighborhood deprivation. There is no doubt that Putnam's work contributes significantly to the health literature. Despite the fact that there are mixed evidence, multiple indicators and levels of social capital are associated with various health-related outcomes across populations and societies. Social

capital not only exerts direct effects but also interplays with other factors such as gender, race, age, and neighborhood contexts. The mixed evidence for the normative approach to social capital brings the challenge of future theoretical and empirical research. Mixed results across societies suggest that future research should integrate institutional theory into the social capital literature. Mixed results across levels show that future research should elaborate the relationships between multiple levels of social capital. Mixed results across gender, race, and age groups imply that future studies should explore cultural and life course explanations. Mixed results across health outcomes indicate that future research should theorize specific mechanisms for different outcomes. Mixed results across measurements of social capital point out that future studies should analyze each indicator and its mechanisms separately instead of combining indicators without theoretical justification. Also most results are from cross-sectional data sets. For the purpose of stronger causal inferences, more strict research design such as the collection of prospective data and twin data are needed.

The normative approach not only attacks more applications but also more theoretical critiques, such as their understatement of social conflict and social capital's negative consequences, the confusing stretching of social capital into the macro level, mixed combination of established psychosocial factors, and tautological arguments of social capital as both a cause and an effect (Foley and Edwards 1999, Lin 2001a, Portes 1998). Future studies need to pay attention to the significance of social capital for health inequality. Also more theoretical and methodological efforts are in need on the construct validity of multilevel measurements of social capital (Hawe and Shiell 2000; Portes 1998; Lin 2001a; Muntaner and Lynch 2002). To solve the tautological problem, we have to

discriminate social capital from other relevant but distinct concepts as we discuss earlier. Such discrimination is not to deny the contribution of the normative approach to the revival of those concepts. To epitomize, we suggest that future research should recognize the previous relevant research in medical sociology, and theorize and examine relevant concepts (e.g., social integration, social cohesion, informal social control, social support, and social networks) independently instead of subsuming them under a trendy umbrella of social capital. Otherwise, it is confusing, for example, that social cohesion is not only part of collective efficacy but also part of social capital in Putnam's conception. Our suggestion may disappoint some leading scholars in the area of public health, who worry about that "at some future date, an international consensus conference of scholars might agree to reserve the use of the term 'social capital' only to network-based resources" (Kawachi, Subramanian, and Kim 2008b: 4).

Footnote

1. The division of schools is controversial. For example, Adam and Rončević (2003) distinguish three schools: Bourdieu's approach, Lin's utilitarian network-based approach, and the normative approach of Coleman and Putnam. Moore et al. (2005) discriminate two schools: the network approach of Coleman and Bourdieu, and the communitarian approach of Putnam. Kawachi et al. (2008b) seem to classify two approaches: the social cohesion school of Coleman and Putnam, and the network school of Bourdieu and Lin.
2. For most recent systematic reviews of the empirical literature, see Kawachi, Subramanian, and Kim 2008. This edited book devotes five chapters on summarizing empirical evidence.

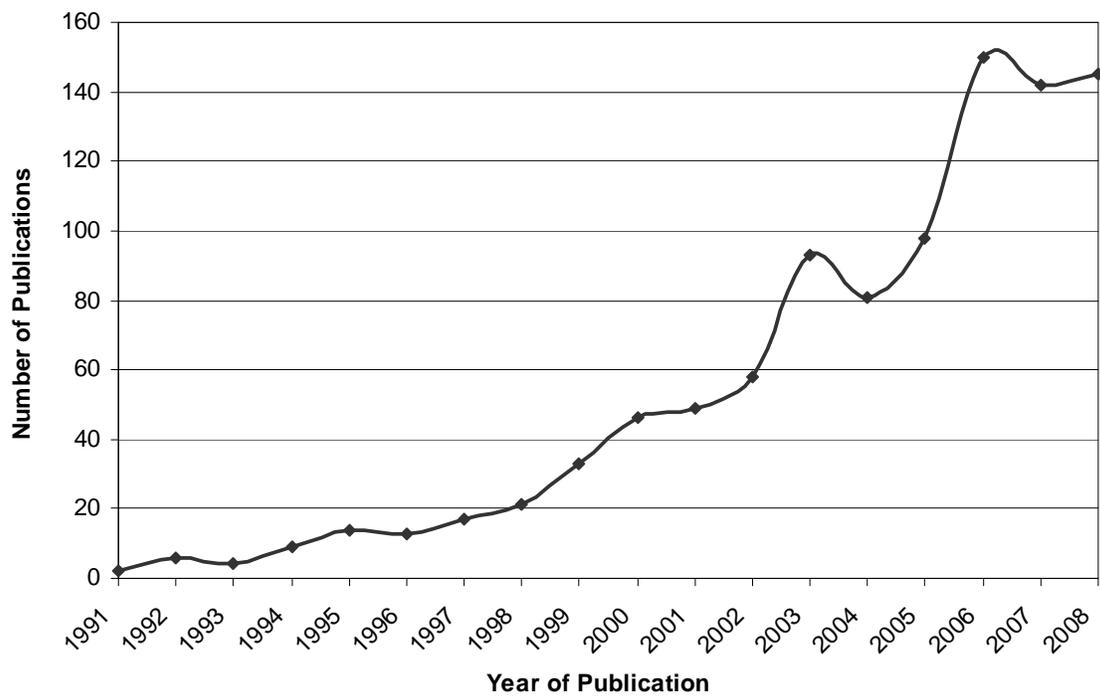


Figure 1 Articles with “Social Capital” and “Health” in topic: Social Sciences Citation Index (as of December 20, 2008)

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