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Social Capital and Health

A Decade of Progress and Beyond

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Pick any current issue of a journal such as *Social Science & Medicine* or the *Journal of Epidemiology and Community Health* and one is bound to see a featured article about social capital and health. Search on Pubmed for “social capital and health”, and one sees over 27,500 articles listed (as of December 2006). Enter the same search term in Google, and you get over 9 million hits. Yet wind the clock back to circa 1996 and one would be hard pressed to find an article in the public health literature that even mentioned this concept. In other words, within a short span of a decade, social capital has entered the mainstream of public health discourse, where it is now the theme of professional conferences, as well as the topic of white papers put out by government health agencies worldwide. For sure social capital was talked about in fields outside public health prior to 1996 – in sociology (Bourdieu, 1986; Coleman, 1990), economics (Loury, 1992), and political science (Putnam, 1993) – but the explosion of interest in applying the concept to public health is a comparatively recent phenomenon (Figure 1.1).

The purpose of this book is to take stock of what we have learned during the first decade of research on social capital and health. What *is* social capital? How do we measure it? What have we learned so far about the empirical relationships between social capital and specific health outcomes? What is the potential utility of the concept for designing interventions to improve population health? These are some of the questions that individual chapters will address.

As one would expect, whenever a new and important concept is introduced to a field, it is critically scrutinized and debated. Social capital is no exception. As Szreter and Woolcock (2004) declared, social capital has become one of the “essentially contested concepts” in the social sciences, like “class”, “race”, and “gender”. There are skeptics who maintain that in its most benign versions, social capital represents old ideas dressed up in fancy economic language while at its worst the concept represents a dangerous distraction from more pressing public health agendas such as the political struggle for justice and equality (more about this later). The chapters gathered in this book seek to present a picture of the state of the art in the field of social capital research, warts and all. Individual scholars provide different – and

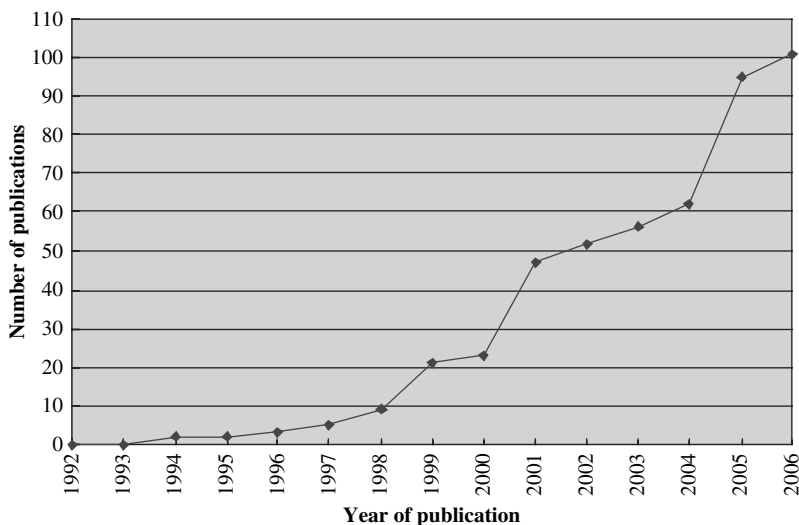


FIGURE 1.1. Papers on social capital and health indexed in MEDLINE 1992–2006

occasionally conflicting – points of view about the definitions and measurement of social capital, which we (the editors) take to be a healthy reflection of the debates in the field. There is no single definition of social capital that everyone would agree upon; nor is there a standardized approach to measuring it – at least not so far. Instead, we have endeavored to provide a survey of the field “from 30,000 feet”, making sure that a diversity of approaches and opinions has been represented by a group of leading scholars working at the intersection of social capital and population health.

1.1. Definitions of Social Capital – One or Many?

One of the most confusing and frustrating aspects of social capital, at least in the public health field, has been the lack of consensus concerning its definition. Vagueness in defining the concept reaches back to Coleman who devoted an entire chapter to social capital in his 1990 textbook *The Foundations of Social Theory*. In it, Coleman defined social capital as “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” (Coleman, 1990. p. 302). Alas, like the parable of the blind Indian sages who reached radically different conclusions concerning the nature of the elephant after each had touched a different part of the animal’s anatomy, public health researchers have often been guilty of lumping all sorts of disparate social phenomena under the label of “social capital”. As the term has

entered everyday political discourse, it seems to have become further debased, to the extent that some have bemoaned that social capital has become devoid of all meaning.

We are obviously not so pessimistic (else we would not have agreed to edit this book!). In fact, we believe that a survey of the uses of the term social capital in public health research reveals two distinct conceptions (Kawachi, 2006). On the one hand, social capital has been conceptualized as the resources – for example, trust, norms, and the exercise of sanctions – available to members of social groups. The social group can take different forms, such as a work place, a voluntary organization, or a tightly-knit residential community. We refer to this definition as the “social cohesion” school of social capital.¹ The salient feature of this approach is that social capital is conceptualized as a group attribute, i.e. as a property of the organization or the community, as opposed to a description of the individual members who belong to the group. Hence, a given member of a group may be an uncooperative, mistrusting individual, but he or she may reside in a community where others are trusting and helpful toward each other. The uncooperative individual may then end up benefiting from (or free-riding on) the generosity of his neighbors – for example, by refusing to participate in the annual community drive to pick up rubbish off the streets, but nonetheless benefiting from the voluntary labor of his neighbors. Alternatively, the individual may feel pressured to take part in the activities organized by his Pollyannaish neighbors, and begin to feel put upon and stressed. In both scenarios, what the social cohesion school of social capital emphasizes are the so-called “contextual” influences of the collective exerted on the individual (Kawachi & Berkman, 2000). Empirically demonstrating the existence of contextual influences on health requires special study designs and analytical techniques, a point we shall return to later.

Distinct from the social cohesion school, the “network” theory of social capital defines the concept in terms of the resources – for example, social support, information channels, social credentials – that are embedded within an individual’s social networks (Lin, 1999). In contrast to the social cohesion approach, network analysts conceptualize and measure social capital as both an individual attribute as well as a property of the collective (the social network). Most network analysts do not simultaneously assess social capital at both the individual and group levels, but rather they have tended to assess one or the other depending on their method of measurement. Methodological individualists, like van der Gaag and Webber (chapter 2) have developed instruments (e.g. the Resource Generator) to assess individual social capital, conceptualized as valued resources that individuals can access through their social networks. These valued resources can be accessed in several domains of life (at work, in private life), and spans across a range of goods from the material (e.g. borrowing money) to the symbolic (e.g. prestige and influence). An alternative network-based approach to measuring individual social

¹ Moore et al.(2005) have also labeled this the “communitarian” definition of social capital

capital is exemplified by Nan Lin's Position Generator (Lin, 2001), which relies upon asking individuals (the egos) to nominate others in their network (the alters) who hold valuable occupations (e.g. doctor, lawyer, lobbyist), and who could provide the egos with access to resources such as advice, prestige, and political connections.

In contrast to the mapping of ego-centered network resources just described, other network analysts have approached the measurement of social capital by mapping whole social networks (see chapter 4 by Lakon, Godette and Hipp). This method involves approaching every member within a defined social structure (e.g. members of an organization, or a network of organizations within a city) to establish the existence and characteristics of connections between them. The resulting sociogram is amenable to mathematical manipulation, from which it is possible to derive structural properties of the group. In turn, some of these group properties have direct relevance to health promotion. Thus, for example, the introduction of an innovation – say a campaign to encourage smoking cessation in the work place – would be predicted to diffuse more quickly within a more structurally dense network.² Although it would be a mistake to equate social capital with every structural network property derived from sociometric analysis, several of the concepts described by this approach – such as centrality, and network bridges – are directly relevant to social capital, if not actual measurements of it (see chapter 4 for a more rigorous defense of this thesis).

To summarize, empirical research on social capital has stimulated a vigorous debate regarding its conceptualization and definition. A fundamental point of contention is whether social capital ought to be considered as an individual or as a group attribute. Our tentative answer to this question is that it is both. Although the social cohesion approach to social capital conceptualizes it as a group attribute, the network-based definition embraces both the individual (ego-centered) and group (sociometric) levels of analysis. A second fundamental point of contention is whether social capital ought to be conceptualized as social cohesion or as resources embedded in networks. Again, our tentative answer is yes to both, although a citation network analysis of the public health literature on social capital found that researchers have given far more emphasis to the social cohesion definition of social capital (Moore, Shiell, Hawe, & Haines, 2005), a point that is also made by Richard Carpiano in chapter 5. Of course, we cannot reject the possibility that at some future date, an international consensus conference of scholars might agree to reserve the use of the term “social capital” only to refer to network-based resources, and to expel social cohesion from the umbrella of the label (just as Pluto was demoted from the status of a planet in the solar system at a recent conference of astronomers!). We, however, do not find cogent arguments to be dogmatic on this issue. Both the social cohesion and the network definitions of social capital have merit in pointing to the existence of valued resources (capital) that inhere within, and are by-products of, social relationships.

² See chapter 4 for a precise definition of network density.

1.2. Bonding Versus Bridging Social Capital

Regardless of whether one subscribes to the social cohesion school of social capital or the network school, consensus now exists about the importance of distinguishing between bonding and bridging social capital (Gittell & Vidal, 1998; Kawachi, 2006; Szreter & Woolcock, 2004). Bonding capital refers to resources that are accessed within social groups whose members are alike (“homophilous”) in terms of their social identity, such as class or race. By contrast, bridging capital refers to the resources accessed by individuals and groups through connections that cross class, race/ethnicity, and other boundaries of social identity.³ Although few empirical studies so far have actually measured both bonding and bridging capital, growing evidence suggests that distinguishing between these types will help us to understand how social capital promotes – or harms – the health of individuals.

One of the early criticisms of the public health literature on social capital has been that researchers have tended to emphasize social capital’s salutary impacts on health whilst neglecting or downplaying its damaging effects. This bias no doubt stemmed from earlier attempts at defining social capital (“version 1.0”) in which the concept was defined according to its *functions* (e.g. “facilitating desirable outcomes”) rather than by its forms (as in “resources available through social connections”). Most researchers now acknowledge the inherent circularity in defining a cause based on its consequences – i.e. “if a community has poor outcomes (for example, high rates of crime or infant mortality), it must be because it is lacking in social capital.” Portes (1998) in an influential article drew attention to the so-called dark sides of social capital, which include: (a) excessive demands placed upon members of cohesive groups to provide support to others; (b) expectations of conformity that may result in restrictions on individual freedom as well as intolerance of diversity; (c) the exercise of in-group solidarity to exclude members of out-groups, or in some cases, even to oppress them; and (d) the down-leveling of norms within a tightly-knit group that can hold back the prospects of upward social mobility (for example, in Jay MacLeod’s (1987) ethnographic study of a disadvantaged high school in Clarendon Heights, the peer group of “Hallway Hangers” devalues conventional success which serves to level its members’ aspirations for educational achievement).

As these examples make clear, social capital – like any form of capital (for example, money) – can translate into both good ends and bad ends. Church soup kitchens provide social capital, but so do the Ku Klux Klan and the mafia (at least to its members, though not for society at large). Accordingly current definitions of social capital (version 2.0 and beyond) are agnostic with regard to the consequences

³ Some scholars refer to an additional category, “linking” social capital, to refer to connections between individuals and groups who interact across explicit power or authority gradients in society (Szreter & Woolcock, 2004). We treat linking capital as a special case of bridging social capital.

of the uses to which network-based resources are put. However, distinguishing between bonding and bridging capital may help to explain the sometimes conflicting effects associated with social capital. To give an example, strong bonding capital often promotes strong within-group identity. In India, membership in the local branch of the Bharatiya Janata Party (BJP) no doubt encourages a person's sense of Hindu nationalism, while conversely belonging to the Muslim League does the same for Muslims. Both are forms of bonding capital. One might further predict that the stronger the bonding capital within religious groups in a given locality, the higher the levels of between-group tensions. Ashutosh Varshney (2002) at Michigan University conducted an empirical examination of outbreaks of sectarian violence in India. One of the puzzles uncovered by this study was the observation that there are marked variations in the history of ethnic conflict across cities in India that on the surface had roughly the same proportion of Hindu and Muslim residents. According to Varshney, the difference (i.e. why some cities were successful in maintaining the peace while others were racked by violence and conflict) was attributable to the presence of bridging social capital within the peaceful cities. Bridging capital in this case took the form of integrated civic organizations – business groups, trade unions, professional groups, and even reading circles – that included among its members both Muslims and Hindus. Such organizations, Varshney argues, have proved extremely effective at preventing the outbreak of violence, for example by maintaining channels of communication across the religious groups, and by being efficient at killing rumors that trouble-makers attempted to spread within the community in order to incite riots.

Bonding capital represents an important survival mechanism for residents of disadvantaged communities. As Carol Stack's (1974) ethnographic study of a poor African-American community revealed, high levels of mutual support through kinship networks are the primary mechanism for "getting by" in such communities. At the same time, bonding capital often extracts a cost to the providers of support in terms of the mental and financial strain of caring for others in need. Consistent with this notion, in a small study of a disadvantaged minority community in Birmingham, Alabama, Mitchell and LaGory (2002) reported that high bonding social capital (measured by the strength of trust and associational ties with others of a similar racial and educational background as the respondent) was paradoxically associated with higher levels of mental distress. In the same study, however, individuals who reported social ties to others who were unlike them with respect to race and class (i.e. who had access to bridging capital) were less likely to report mental distress.

Additional studies from Baltimore, Maryland (Caughy, O'Campo, & Muntaner C, 2003), and Adelaide, Australia (Ziersch & Baum, 2004), suggest that stronger bonding ties within disadvantaged communities may be a detriment to the health of residents. In a low-income neighborhood of Baltimore, children of mothers who reported lower levels of attachment to their community reported fewer behavioral and mental health problems (Caughy et al., 2003), while in a study of a working class suburb in Adelaide, Ziersch and Baum (2004) found that involvement in community groups was associated with worse physical health as measured by the

SF-12 health status survey. Qualitative interviews with residents in the same study found that respondents were more apt to link their participation in local community groups with negative mental and physical health outcomes.

The emerging picture from these studies seems to be that bonding capital within disadvantaged communities may be a health liability rather than a force for health promotion that it is often assumed to be. The key to improving health therefore appears to lie in residents' ability to access resources outside their immediate social milieu, i.e. access to bridging social capital. More refined tests of this hypothesis would be made possible by incorporating explicit measures of bridging capital into future studies, exemplified by network-based concepts such as heterogeneity and "upper reachability" (see chapter 4 for a more detailed exposition).

1.3. Social Capital Research within a Multi-Level Analytical Framework

As will become evident in Part II of this book summarizing the empirical evidence on social capital and health (chapters 8 through 11), a growing number of studies in public health have adopted a multi-level framework to analyze the relationship between social cohesion and specific outcomes.⁴ Multi-level approaches have proved useful in two fundamental ways: (a) by enabling researchers to demonstrate whether social cohesion has an independent "contextual" effect on individual health outcomes, over and above the characteristics of individuals belonging to the social group; and (b) by permitting researchers to explicitly test for cross-level interactions between community social cohesion and individual characteristics, such as socioeconomic status, race/ethnicity, and gender. A third way in which multilevel models are of substantial relevance (even though this aspect remains under-utilized in social capital research) is by enabling researchers to develop unconfounded measures of social cohesion from survey data aggregated up to the group level. Before we elaborate on the above functions of multilevel models, we discuss the intrinsic relevance of the multilevel study approach for social capital and health research.

Figure 1.2 identifies a typology of designs for data collection and analyses (Blakely & Subramanian, 2006; Blakely & Woodward, 2000; Subramanian, Glymour, & Kawachi, 2007) where the rows indicate the level or unit at which the outcome variable is being measured (i.e. at the individual level (y) or the aggregate, or ecological, level (Y)), and the columns indicate whether the exposure is being measured at the individual level (x) or the ecological level (X). Study-type $^{(y,x)}$ is most commonly encountered when the researcher aims to link exposures measured at the individual level (e.g. diet) to individual health

⁴ Social capital research from a network perspective has either analyzed individual level data (from ego-centered assessment) or group level data (via sociometric analyses).

		Exposure	
		x	X
Outcome	y	{y, x} Traditional risk factor study	{y, X} Contextual study
	Y	{Y, x} ^(A)	{Y, X} Ecological study

FIGURE 1.2. A typology of studies (adapted from Blakely TA & Woodward AJ (2000); and Blakely T & Subramanian SV (2006))

Note: ^(A) This type of study is impossible to specify as it stands. Practically speaking, it will either take the form of Y,X}, i.e. ecological study, where will now simply be central tendency of x. Or, if dis-aggregation of y is possible, so that we can observe y, then it will be equivalent to y,x}.

outcomes (e.g. obesity). By ignoring ecological effects (whether implicitly or explicitly), study-type^{y,x} assumes that health is primarily determined by individual choices and actions (Moon et al., 2005). By contrast, study-type^{Y,X} – referred to as the “ecological study” – may seem intuitively suited to research on ecological exposures, such as social capital, and population health. However, study-type^{Y,X} conflates the genuinely ecological with “aggregate” or compositional effects (Moon et al., 2005), and precludes the possibility of testing heterogeneous contextual effects on different types of individuals. An association between community social capital and health could simultaneously reflect both contextual and aggregate (or compositional) influences. In this situation the interpretative question becomes particularly relevant. If common membership of a community by a set of individuals influences their health over and above individual characteristics, then there may indeed be an ecological effect (i.e. the whole may be more than the sum of its parts). Alternatively, an association between a community level exposure and average community health status may simply reflect the underlying individual-level relationships between x and y. For example, if we find that average levels of obesity tend to be higher in neighborhoods with lower levels of social capital, such an observation need not, by itself, provide insight into the causal question of interest: i.e. does living in high social capital

neighborhoods increase individual residents' risk of obesity compared to living in a low-social capital neighborhood?

Answering the above question requires a study of the type $\{y, X\}$, i.e. in which an ecological exposure (e.g. the proportion of community members reporting trust) is linked to an individual outcome (obesity). A more complete representation would be type $\{y, x, X\}$ whereby we have an individual outcome (y), individual covariates (x) and ecologic exposure (X) reflecting a multilevel structure of individuals nested within ecologies. When the ecological exposure is an aggregate measure of individual characteristics, such as percent trust, it is obvious that information on both individual trust and average neighborhood trust is required to test for a contextual effect (Kawachi & Subramanian, 2006; Subramanian, Kim, & Kawachi, 2002).

A fundamental motivation for study-type $\{y, x, X\}$ is to distinguish "neighborhood differences in health" from "the difference a neighborhood makes to individual health outcomes" (Moon et al., 2005). Stated differently, contextual effects on the individual outcome can only be ascertained after individual factors that reflect the composition of the neighborhood have been controlled. Indeed, compositional explanations for ecological variations in health are common, to paraphrase the methodologist Gary King, "if we really understood [health variations], we would not need to know much of contextual effects" (King, 1997). This is an important challenge for researchers interested in understanding the effects of social capital on health.

The multilevel framework with its simultaneous examination of the characteristics of the individuals at one level and the context or ecologies in which they are located at another level offers a comprehensive framework for understanding the ways in which places can affect people (contextual effect) or, alternatively, people can affect places (composition). Adopting a multilevel framework implies that variations in health outcomes are determined by both individual risk and protective factors, *as well as* by community risk and resilience factors. As such, interventions to mitigate adverse health outcomes can be offered at both the individual and community levels.

1.4. Multilevel Models in Social Capital and Health Research

In the presence of a multilevel data, as described above, there are substantive as well as technical reasons to use multilevel statistical models to analyze such data (Goldstein, 2003; Raudenbush & Bryk, 2002). We will not review the basic principles of multilevel modeling here as they have been described elsewhere in the context of health research (Blakely & Subramanian, 2006; Moon et al., 2005; Subramanian, 2004; Subramanian, Jones, & Duncan, 2003b; Subramanian et al., 2007); but we provide a brief overview of the relevance of multilevel models for social capital and health research.

1.4.1. Evaluating the Independent Contribution of Community Social Capital

A fundamental application of multilevel methods for social capital and health research is evaluating the independent contribution of community social capital on individual health outcomes, net of individual covariates (including those social capital dimensions that may have been measured at the level of individuals) (Kawachi & Subramanian, 2006; Subramanian et al., 2002). We provide a hypothetical example of a study to investigate the influence of community social capital on individual body mass index (BMI).

For the purposes of the worked example, we shall assume that our indicator of social capital is a measure of perceived trust. At the individual level, social capital is measured by each individual's level of trust of others in the community. At the neighborhood level, we can construct a measure of social capital based upon aggregating individual responses to survey items about trust (e.g. the proportion reporting that they trust their neighbors). Following this, we can have a two-level structure where the outcome is the BMI, y for individual i (level-1) in neighborhood j (level-2). For simplicity, we will restrict this example to a single social capital indicator, trust. Trust can be measured as whether the subject reports a high or low level of trust (x_{1ij}) for every individual i in neighborhood j and coded 1 if the subject reports mistrust, 0 otherwise; and one neighborhood-level exposure, \bar{X}_{1j} , the proportion of subjects reporting mistrust in neighborhood j . With few exceptions (Subramanian et al., 2002), researchers have *not* considered individual analogues of social capital, and individual measures have been limited to demographic and socioeconomic characteristics of the individual. We consider the example of individual perception of trust to emphasize the substantive relevance of controlling for this individual (compositional) measure while evaluating the contextual influence of community social capital.

Multilevel models operate by developing regression equations at each level of analysis. Thus, models are specified at two levels. The level-1 model can be:

$$y_{ij} = \beta_{0j} + \beta_1 x_{1ij} + e_{0ij} \quad (1)$$

where, β_{0j} (the intercept) is the mean BMI for the j^{th} neighborhood for the group reporting high trust (the reference group); β_1 is the average differential in the BMI for individuals who report mistrust (x_{1ij}), across all neighborhoods. Meanwhile, e_{0ij} is the individual or the level-1 residual term. We can elaborate β_{0j} in the following manner:

$$\beta_{0j} = \beta_0 + u_{0j} \quad (2)$$

where, u_{0j} estimates the differential contribution (positive or negative) that a neighborhood makes to the prediction of the individual BMI, independent of the individual's report of mistrust.

The neighborhood effect, u_{0j} , can be treated in one of two ways. One option is to estimate each one separately (i.e. treat them as any categorical variable in the fixed part of a single level regression model). We can then adopt the usual OLS regression to obtain the parameter estimates (the fixed-effect approach). On the other hand, if neighborhoods are treated as a (random) sample from a population of neighborhoods (which might include neighborhoods in future studies if one has complete population data), and the interest is in making inferences about the variation between neighborhoods (as compared to making inferences only about the sampled neighborhoods) that would constitute a multilevel statistical approach (the random-effect approach). Just as a sample of individuals is used to make inferences about the population rather than about each individual, the neighborhoods are instruments for making inferences about the relevant population of neighborhoods.

The choice of whether to use a fixed or random approach is a substantive one: are neighborhood differences a nuisance (in which case one would perform a fixed-effects single-level regression) or do neighborhood differences represent important processes that predict individual outcomes (in which case, one would perform a random-effects multilevel regression)? Indeed, a fixed effects approach is *not* an option for the typical multilevel research with intrinsic interest in estimating the effect of neighborhood-level exposures on the individual outcome, because the fixed effects of each neighborhood and neighborhood exposure (e.g. mistrust) are entirely confounded and, therefore, the latter are not identifiable (Fielding, 2004). As such, the fixed effects approach to modeling neighborhood differences is unsuitable for the sort of complex questions to which multilevel modeling has been addressed.

An attractive feature of multilevel models is their utility in modeling neighborhood and individual characteristics simultaneously. The model specified in equation (2) can be extended to include a neighborhood exposure, \bar{X}_{1j} , the proportion of individuals reporting mistrust in neighborhood j :

$$y_{ij} = \beta_{0j} + \beta_1 x_{1ij} + e_{0ij} \quad (3)$$

Note that the separate specification of micro (equation 2) and macro (equation 4) models correctly recognizes that the contextual variables (\bar{X}_{1j}) are predictors of between-neighborhood differences, as specified in equation (3). Substituting equation (3) into the micro model (1) yields:

$$\beta_{0j} = \beta_0 + u_{0j} \quad (4)$$

Specifically, α_1 estimates the marginal change in BMI for a unit change in level of neighborhood social capital (\bar{X}_{1j}), and is the parameter that quantifies the contextual effect of neighborhood social capital on individual BMI, conditional on individual characteristics (e.g. individual trust, but also age, sex, race/ethnicity, socioeconomic status, etc.).

The classic formulation of a contextual model in equation (4), however, is susceptible to high collinearity between the individual and neighborhood exposures of social capital, leading to poor precision (Aitkin & Longford, 1986). One solution is to reformulate equation (4) with x_{1ij} (individual trust coded as 1 for subjects who report low trust, 0 for those who report high trust) centered around its neighborhood mean, \bar{X}_{1j} (neighborhood mistrust). For individuals who report mistrust, $(1 - \bar{X}_{1j})$ then equals the proportion not reporting mistrust in neighborhood j ; for individuals not reporting mistrust, $(0 - \bar{X}_{1j})$ equals minus the proportion individuals who report mistrust in neighborhood j . The reformulated model is then:

$$y_{ij} = \beta_0 + \beta_1(x_{1ij} - \bar{X}_{1j}) + \alpha_1\bar{X}_{1j} + (u_{0j} + e_{0ij}) \quad (5)$$

Equation (5) is simply a re-parameterization of equation (4) with the contextual effect of mistrust, α_1 of equation (4) being equivalent to $\alpha_1 - \beta_1$ of equation (5) (Raudenbush, 1989). However, in equation (5) the individual level mistrust, $x_{1ij} - \bar{X}_{1j}$, is orthogonal to its neighborhood analogue \bar{X}_{1j} , thus overcoming the problem of collinearity. Substantively, centering the individual mistrust at its neighborhood average allows us to disentangle the pure individual and contextual effects of social capital on BMI. Thus, β_1 now measures the pure individual effect of mistrust on BMI, *within* a neighborhood, while α_1 measures the contextual effect of mistrust on BMI *between* neighborhoods. Such a formulation is useful in evaluating the clustering of individual exposures by neighborhoods.

1.4.2. Considering Cross-Level Interactions Between Community Social Capital and Individual Characteristics

Equation (5) can be further extended to evaluate whether the effect of neighborhood social capital on individual BMI is different for individuals reporting high or low trust. This can be achieved by introducing a “cross-level interaction” in the fixed part of the multilevel regression model between the “group-centered” individual mistrust ($x_{1ij} - \bar{X}_{1j}$) and neighborhood mistrust (\bar{X}_{1j}), given as $((x_{1ij} - \bar{X}_{1j})(\bar{X}_{1j}))$, referred to as X_{2ij} in the following equation:

$$y_{ij} = \beta_0 + \beta_1(x_{1ij} - \bar{X}_{1j}) + \alpha_1\bar{X}_{1j} + \alpha_2\bar{X}_{2j} + (u_{0j} + u_{1j}(x_{1ij} - \bar{X}_{1j}) + e_{0ij}) \quad (6)$$

The above formulation tests for the presence of interaction between a level-2 (neighborhood mistrust) and level-1 exposure (individual trust), represented by the fixed parameter, α_2 . Specifically, α_1 estimates the marginal change in BMI for a unit change in the neighborhood mistrust for individuals reporting high trust; while α_2 estimates the extent to which the marginal change in BMI for a unit change in the neighborhood mistrust is different for individuals reporting mistrust. Note that the random part of the model has an additional random term, u_{1j} ,

associated with $x_{1ij} - \bar{X}_{1j}$. Underlying the test of a cross-level interaction is the anticipation that the neighborhood variation in BMI is different for individuals who report high or low trust that can then be explained in differential quantities (cross-level interactions effects) by levels of neighborhood social capital.

While the example considered here is a single normally distributed response variable (BMI) for illustration, multilevel models are capable of handling binary outcomes, proportions (as logit, log-log, and probit models); multiple categories (as ordered and unordered multinomial models); and counts (as poisson and negative binomial distribution models). These models essentially work by assuming a specific, non-Gaussian distribution for the random part at level-1, while maintaining the normality assumptions for random parts at higher levels. Consequently, the discussion presented in this paper focusing at the community level would continue to hold regardless of the nature of the response variable, with some important exceptions (Browne et al., 2005; Goldstein, Browne, & Rasbash, 2002).

1.4.3. Refining Survey-Based Assessments of Social Capital at the Community Level

A key, but under-utilized, relevance of multilevel models for social capital and health research is that it enables researchers to develop “un-confounded” measures of social capital from survey data aggregated up to the group level (Subramanian, Lochner, & Kawachi, 2003a). A common approach to assessing community or neighborhood level social capital involves surveying residents about their perceptions and behaviors, e.g. the extent to which they trust their neighbors; participate or engage in civic groups; or undertake acts of reciprocity. These individual responses are then aggregated to measure the level of social capital within the community (see chapter 3 by Trudy Harpham).

While this approach is commonly used, it is potentially problematic for an analysis that seeks to evaluate neighborhoods in terms of their social capital, since the observed differences between neighborhoods on social capital could be confounded by the characteristics of residents that constitute neighborhoods. At the same time, since information is originally collected as individual responses, such information, arguably, offers greater analytical scope for the understanding of social capital both at the level of individuals and at the level of neighborhoods.

In instances when community social capital is based upon aggregating individual information, one could utilize a standard multilevel model to refine the neighborhood measures of social capital. Consider the classic two-level hierarchical model:

$$y_{ij} = \beta_0 + \beta x_{ij} + (u_{0j} + e_{0ij}) \quad (7)$$

where, y_{ij} is the response on a social capital question or questions for individual i in neighborhood j ; \mathbf{x} is a vector of continuous and categorical individual

covariates (e.g. age, sex, socioeconomic status) for that individual; u_{0j} is the random displacement for neighborhood j , assumed to be normally distributed with a mean of zero and variance σ_{u0}^2 ; and e_{0ij} is the individual- or the level-1 residual, assumed to be identically, independently, and normally distributed with mean zero and a variance σ_{e0}^2 . In model (1) the regression and variance parameters take on the following interpretations: β_0 (associated with a constant, x_{0ij} , which is a set of 1s, and therefore, not written) is the average level of social capital across all neighborhoods; **β is a vector of regression coefficients associated with the vector of individual covariates**; σ_{u0}^2 represents the between-neighborhood variation in individual social capital response, conditional on individual (compositional) covariates; and σ_{e0}^2 represents the between-individual within-neighborhood variation.

The underlying random structure (variance-covariance matrix, represented as Ω) of the model specified in model (1) is typically specified as: $Var[u_{0j}] \sim N(0, \sigma_{u0}^2)$; $Var[e_{0ij}] \sim N(0, \sigma_{e0}^2)$; and $Cov[u_{0j}, e_{0ij}] = 0$. Model (1) is usually referred to as the “random-intercepts” or “variance components” model, since it allows us to partition variation according to the different levels, with the variance in y_{ij} being the sum of σ_{u0}^2 and σ_{e0}^2 ; this in turn also allows us to ascertain the degree of similarity between two randomly chosen individuals within a neighborhood, expressed as: $\rho = \frac{\sigma_{u0}^2}{\sigma_{u0}^2 + \sigma_{e0}^2}$ (Goldstein, 2003).

Note that model (1) estimates a variance based on the observed sample of neighborhoods. While this is important to establish the overall importance of neighborhoods as a unit or level, model (1) also allows us to estimate for each level-2 unit: $\hat{u}_{0j} = E(u_{0j} | Y, \hat{\beta}, \hat{\Omega})$. The quantity is \hat{u}_{0j} referred to as “estimated” or “predicted” residuals, or using Bayesian terminology, as “posterior” residual

estimates, and is calculated as $\hat{u}_{0j} = r_j \times \frac{\sigma_{u0}^2}{\sigma_{u0}^2 + \sigma_{e0}^2 / n_j}$, where σ_{u0}^2 and σ_{e0}^2

are as defined above, r_j is the mean of the individual-level raw residuals for neighborhood j , and n_j is the number of individuals within each neighborhood j . This formula for \hat{u}_{0j} uses the level-1 and level-2 variances and the number of people observed in neighborhood j to scale the observed level-2 residual (r_j). As the level-1 variance declines or the sample size increases, the scale factor approaches 1, and thus estimated \hat{u}_{0j} approaches r_j .

These neighborhood-level residuals are “random variables with a distribution whose parameter values tell us about the variation among the level-2 units”

(Goldstein, 2003). Another interpretation is that each \hat{u}_{0j} estimates neighborhood j 's departure from expected mean outcome. This interpretation is premised on the assumption that each neighborhood belongs to a population of neighborhoods, and the distribution of the population provides information about plausible values for neighborhood j (Goldstein, 2003).

Consequently, one can develop a model-based indicator of community social capital that is now adjusted for observed factors that are likely to influence individual perceptions of trust. This can be accomplished by adding $\hat{\beta} + \hat{u}_{0j}$ or equivalently $\hat{\beta}_{0j}$ which is the predicted average levels of trust in a community. The perspective developed above has implications for the ways in which we measure and specify contextual exposures such as “percent reporting mistrust” (Subramanian et al., 2003a). Typically, as mentioned earlier, these are usually based on raw proportions, i.e. aggregating individual responses to their neighborhood. In an analysis of the Community Survey data from the Project on Human Development in Chicago (PHDCN), Subramanian et al. (2003a) used the predicted residuals from survey items inquiring about trust in order to derive “cleaned” measures of neighborhood trust. This measure can then be used in the “second-stage” model that regress individual health outcomes on community social capital of the form specified in equation (4).

1.5. Social Capital as a Contextual Influence on Health: The Importance of Scale

As is evident from the foregoing discussion, social capital can influence health at several different levels of action: at the individual level, at the level of residential communities, schools, or work places, as well as at even broader levels of spatial aggregation (such as states, regions, and countries). In turn, the scale at which social capital is conceptualized and measured requires careful theorizing about the differences in mechanisms through which it is hypothesized to affect health outcomes.

When researchers conceptualize social capital as the resources that individual access through their networks, the relevant mechanisms involved in the production of health include: social influence, social engagement, and the exchange of social support. An extensive literature in health psychology and public health has elaborated on these pathways and mechanisms (Berkman & Glass, 2000; Cohen, Underwood, & Gottlieb, 2000). For example, being integrated within a social network brings individuals under the influence of others in the same network, which serves to regulate their health behaviors (an observation dating back to Durkheim, 1897). Needless to add, social influence can cut both ways. If others in a network disapprove of smoking and drunk driving, individuals who are part of that network will be more likely to refrain from those behaviors. If on the other hand, the individual belongs to a tightly-knit network of injection drug-users or a cult obsessed with mass suicide, we might expect social capital in such instances to be damaging to health. Social networks are also the conduit (“the wiring”)

through which various forms of social support (information, advice, cash loans, etc) are exchanged within relationships. In turn, social support is believed to promote wellbeing through its ability to buffer stress – either by positively affecting the individuals’ appraisals of their ability to cope with a stressful situation, or by directly supplying the resources required to deal with the stressful perturbation (Cohen, Underwood, & Gottlieb, 2000; Kawachi & Berkman, 2001).⁵

There is some debate as to whether trust measured at the individual level constitutes a genuine indicator of social capital (see chapter 3 by Trudy Harpham for further discussion on this issue). Those who argue against using trust as an indicator of social capital point out that an individual’s perception of trust can be either a precursor of social capital or a consequence of it, but not actually a part of social capital itself (Lin, 1999). We tend to agree with the view that *individual* trust (most commonly ascertained by questions such as “Do you agree that most people can be trusted?”) is problematic as an indicator of individual social capital – though for a different reason than the one commonly offered. The reason why we would view individual trust as potentially problematic is because it overlaps with the assessment of hostility in health psychology. Hostility refers to a personality trait that many studies have shown to be a risk factor for cardiovascular disease (Kubzansky & Kawachi, 2000; Matthews, 1988). Although the assessment of the hostility complex involves several components (including anger and aggression), one of the key constructs is mistrust of others. Thus, our view is that the evidence linking individual mistrust to health outcomes may be confounded by hostile personality traits. On the other hand, when perceptions about trust are *aggregated* to the group level, we would argue that it is no longer a measure of personality but a measure of the *trustworthiness* of people in the group. Moreover we would argue that the trustworthiness of a group is: (a) a collective property possessed by the group; (b) a resource that facilitates collective action; and hence (c) a valid measure of social cohesion.⁶

Turning now to community social capital, a different set of pathways and mechanisms needs to be invoked to explain the relationships to health outcomes than the ones just described for the case of individual social capital. At the community level, social capital (or more precisely, social cohesion) is hypothesized to influence health through processes such as collective socialization, informal social control, and collective efficacy (Coutts & Kawachi, 2006; see also chapter 11 by Kathleen Cagney and Ming Wen). Collective socialization refers to the role of community adults – not just a child’s own parents – in shaping child development, behaviors, and health outcomes. A related concept, informal social control, refers to the capacity of a group to regulate the behavior of its members according to

⁵ We hasten to add that some forms of social support can also be negative, for example a critical and judgmental partner might exacerbate a potentially stressful situation).

⁶ We use the term “valid” here to denote content validity, i.e. that trust properly belongs to the construct of social cohesion. Whether the perceptions expressed by individuals are reliable (dare we say “trustworthy”) or not is another matter (see chapters 3 and 7 for further discussion).

collectively desired (as opposed to forced) goals. In other words, in contrast to externally enforced actions (such as a police crackdown), informal social control focuses on “the effectiveness of informal mechanisms by which residents themselves achieve public order” (Sampson, Raudenbush & Earls, 1997). An example of informal social control that is relevant to health outcomes is the community’s ability to regulate “deviant” health behaviours among its youth, such as drug use and under-age smoking. Finally, collective efficacy, which is the neighborhood counterpart to the concept of individual efficacy, refers to the global willingness of residents to intervene on behalf of the common good (Sampson, Raudenbush, & Earls, 1997). In terms of measurement, collective efficacy is conceptualized as the combination of informal social control and neighborhood social cohesion. According to the theory of collective efficacy, the willingness of local residents to intervene for the common good depends crucially on the presence of mutual trust and solidarity among neighbors (Sampson, Raudenbush, & Earls, 1997). The pathways through which neighborhood collective efficacy may influence health outcomes include – *in addition* to informal control over deviant behaviors – the ability of residents to extract resources and to respond to threatened cuts in public services (such as the closure of health clinics), as well as their ability to engage in sustained collective action to manage neighborhood physical hazards (e.g. the location of toxic waste sites) (Browning & Cagney, 2002; Kawachi & Berkman, 2000).

At a still broader level of spatial aggregation, a number of empirical studies have examined the association between state-level (Kawachi, Kennedy, & Glass 1999; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997) or country-level (Helliwell & Putnam, 2004; Lynch et al., 2001) indicators of social cohesion and population health outcomes. Once again, the mechanisms underlying the demonstrated links between social capital and health are thought to be different at these broader levels than at the community or individual levels. Research has found that: (a) there are marked variations in the levels of social cohesion across broad geographic areas, and (b) the variations in social cohesion are strongly correlated with the degree of income inequality across the same areas (Kawachi et al., 1997; Putnam, 2000). Proceeding from these observations, we have theorized that the erosion of social cohesion is a critical mechanism through which inequality in the distribution of income is damaging to population health (Kawachi et al., 1997; Kawachi & Kennedy, 2002). Across the US states, for example, state-level measures of income inequality are tightly (and negatively) correlated with indicators of social cohesion, such as the degree to which residents agree that “most people can be trusted” and “most people are helpful”. In turn, states that are both unequal and low in social cohesion tend to be less generous with respect to the provision of public goods – which may help to explain their lower levels of health achievement (Kawachi & Kennedy, 2002). In societies with a more egalitarian distribution of economic resources than the United States – such as Sweden (Islam, Merlo, Kawachi, Lindstrom, Gerdtham, 2006a in press) or New Zealand (Blakely et al., 2006) – neither income inequality nor social cohesion has been found to be associated with population health outcomes. The income inequality

hypothesis has generated considerable debate.⁷ Nevertheless, recent evidence from experimental economics appears to be broadly consistent with the theory that economic inequality erodes social cohesion, and that lower levels of cohesion in turn results in reduced willingness to cooperate in the provision of public goods (see chapter 7 by Lisa Anderson & Jennifer Mellor for a description of these experiments).

1.6. Three Charges Against Social Capital

Social capital remains a contested concept in public health not just on account of the criticisms which have already been mentioned – such as the elusiveness in the way it is conceptualized and defined, or the tendency to hawk it as a panacea for public health whilst downplaying its negative aspects. Several additional charges have been leveled at “social capitalists” by critics who remain skeptical about the utility of “investing” in social capital as a public health improvement strategy (Pearce & Davey Smith, 2003). We highlight three of them in this section.

First, mapping the presence of social capital across diverse communities without an accompanying analysis of power differentials raises the risk of “blaming the community” for its problems (Muntaner, Lynch, & Davey Smith, 2001). It is tempting but wrong-headed to diagnose community pathology (high crime rates, poor health status) as the consequence of residents’ unwillingness to cooperate with each other or to trust their neighbors. As we have argued in the previous section, social capital does not arise in a vacuum or magically rain down from the sky on a few selected (and lucky) communities; but rather, social capital is itself shaped by broader structural forces operating at the level of communities, such as historical patterns of residential mobility (e.g. the influx of immigrants, shifts in local labor markets), municipal investment in housing and local infrastructure, as well as policies that perpetuate residential segregation or the planned shrinkage of services and amenities. In short, it is much more challenging to develop durable network ties, to organize collective activities, to trust strangers in your community, etc, when the community is unstable, deprived, socially isolated and abandoned without hope or prospects for a better future. Accordingly, the goal of mapping social capital should never yield to simplistic prescriptions like exhorting community members to act nicer to each other. Building social capital must be thought of as a complement to broader structural interventions (e.g. improving access to local labor markets), not as a replacement for them (Szreter & Woolcok, 2004).

This brings us to the second major criticism leveled at social capital, which is that building social cohesion has been peddled by some as a “cheap” way to solve the problems of poverty and health inequalities, notably by Third Way politicians who cite it as a tool to justify the abrogation of the state’s responsibilities to

⁷ For recent surveys of the state of the evidence from dissenting corners of the debate, see Subramanian and Kawachi (2004), Lynch et al. (2004) and Wilkinson and Pickett (2006)

provide for the welfare of its citizens. After all, it would be far cheaper to suggest that the poor help each other than for the state to pump millions of dollars into anti-poverty programs. Alarm bells were raised in several quarters when the World Bank started to talk the language of social capital in their strategic documents during the 1990s (Fine, 2001). As we have tried to emphasize, a strategy to improve community outcomes by exhorting the poor to pull themselves up by their bootstraps is unlikely to succeed or be sustainable. A critique related to the charge that social capital has been hijacked by Third Way politicians is the complaint that the language of social capital has stripped politics and power relations out of the analysis of health inequalities (Muntaner, 2004; Navarro, 2002; Navarro, 2004:). There is cogency and moral force to this argument, at least in macro analyses of how social cohesion at the societal level shapes patterns of population health. Careful historical analyses – such as Szreter and Woolcock’s (2004) discussion of the role played by linking social capital in shaping the sanitary reforms in 19th century Britain – show how politics and power relations can be brought back into the analysis of social capital and health.

The third and final criticism of social capital that we wish to highlight here pertains to the lack of clarity about the policies and interventions needed to build social capital. Assuming policy makers want to improve both the material infrastructure of deprived communities and to shore up their social capital, how do we advise them to go about achieving the latter? Social capitalists have been frequently (and perhaps unfairly) accused of advocating a return to traditional communitarian values; of wanting to turn the clock back to some idealized notion of “what a community ought to be like”, in which neighbors cooperate to bring in the harvest or raise barns (or some other more contemporary equivalent). In reality, as everybody knows, there is no practical way to recreate past forms of network connections – nor would it be necessarily desirable to do so. While demonstrations of interventions to boost social cohesion remain sparse, there is growing consensus about a few principles.

First, no magic recipe exists for building social capital that we are aware of. Social capital often arises as a by-product of social relationships, and few of us consciously “invest” in our social ties with the explicit aim of getting something out of them later. This raises the question about whether social connections can be manufactured *de novo*, or whether we should be focusing on mobilizing or strengthening existing social ties. According to the Social Capital Building Toolkit, developed by the Saguaro Seminar of the Kennedy School of Government at Harvard University (Sander & Lowney, 2005), our best chances of building social capital at the community level is by making a series of “smart bets”. An example of a smart bet would be using established principles of community organizing to encourage the formation of neighborhood-based associations. This raises another question. Before rushing off to organize one’s neighbors into a block group, it is critical to recognize that it is not only the overall level of social capital that matters, but also the *type* of social capital. Thus for example, widely scattered weak ties are more effective at disseminating information, whereas strong and dense connections are more effective for collective action

(Chwe, 1999). As Sobel (2002, p. 151) cautions: “People apply the notion of social capital to both types of situation, Knowing what types of networks are best for generating social capital requires that one be specific about what the social capital is going to be used to do”. Moreover, theory would suggest that it is not sufficient (or may be even harmful) to build bonding social capital among unemployed youth. It would be more helpful instead to build bridging capital between unemployed youth and employed adults to provide access to role models and mentoring (Sander & Lowney, 2005).

Any strategy to build social capital needs to pay close attention to the *distribution* of costs and benefits, including the possibility of unintended consequences. A gendered analysis of social capital would suggest that the mobilization and provision of support to others in the community tends to fall disproportionately on the shoulders of women. A health promotion strategy that supports one group in the community (e.g. men) at the expense of burdening another group (women) would only lead to a zero-sum outcome.

Lastly, in order to be sustainable, a social capital investment strategy requires more than the donated voluntary efforts of conscientious citizens. Investing in social capital requires real money and resources, and hence involvement of both the state and the private sector that are committed to such a strategy. Historically, the sustenance of social cohesion has depended on state support and stewardship, not just on voluntarism and the energy of communities (Szreter & Woolcock, 2004). Ultimately the most compelling economic rationale for governments to be involved in building social capital is that community cohesion – as a collective asset – produces externalities, i.e. collateral benefits to the rest of society that reach beyond the immediate members of networks. Because these externalities are intangible, the benefits may not become apparent except during a community crisis (such as in the aftermath of a hurricane or some other disaster). When left in the hands of private initiatives, economic theory suggests that communities will tend to under-invest in the production of such collective assets.

1.7. Structure of the Book

Our book is structured in two parts, with the first part (chapters 2 through 7) dealing with alternative approaches for measuring social capital, and the second part (chapters 8 through 13) dealing with the empirical evidence on social capital and health as well as broader applications of the concept for public health practice and interventions.

As we have alluded to already, researchers have adopted a variety of approaches for conceptualizing and measuring social capital. In chapter 2, Martin van der Gaag and Martin Webber describe the development of instruments to measure individual social capital, following the theoretical traditions of Bourdieu (1980), Burt (1992), Flap (1999), and Lin (2001). The authors describe three such instruments and their respective strengths and limitations: the name generator, the position generator, and the resource generator. In chapter 3, Trudy Harpham

summarizes the most prevalent approach for measuring community social capital in current public health research, viz. social surveys. A variety of instruments has been developed for use in diverse cultural settings. The chapter provides a succinct introduction to the key issues involved in designing such surveys, evidence for the validity and reliability of existing instruments, and an assessment of the methodological shortcomings of existing surveys as well as suggested solutions.

Survey-based instruments are clearly aligned with the social cohesion school of social capital (in which individual responses are aggregated up to the community or other group level). By contrast, Cynthia Lakon, Dionne Godette, and John Hipp present a lucid account of the conceptualization and assessment of social capital from a network perspective (chapter 4). Responding to the charge that public health researchers have privileged the social cohesion account of social capital (Moore et al., 2005), these authors suggest alternative approaches based on the assessment of ego-centered networks and whole network analysis. Their suggestions hold promise for both re-directing empirical research towards a network-based definition of social capital and for delivering new insights into mechanisms and designing interventions to enhance health.

Richard Carpiano (chapter 5) clearly sympathizes with the view that empirical research on social capital needs to move beyond current conceptions that emphasize communitarianism and social cohesion. His essay attempts to bring social capital back to Bourdieu's original notion of social capital as resources embedded in durable network ties, and to integrate Bourdieu's theory within a broader framework for investigating the influence of neighborhood contexts on health.

Qualitative and ethnographic approaches enable researchers to focus on questions that survey-based approaches cannot reach, and allow us to increase understanding by adding conceptual and theoretical depth to knowledge. In chapter 6, Rob Whitley provides a review of studies that have used this approach, and discusses some of the unique insights generated by the qualitative approach. Like others in this book, Whitley cautions against "narrowly focused studies utilizing social capital as a proxy for the social world [that] may be missing important elements of the lived, communal experiences" of individuals.

The Measurement section concludes with a contribution from two economists, Lisa Anderson and Jennifer Mellor on experimental approaches to studying social capital (chapter 7). As the authors note, economists by training tend to be wary of perceptions and opinions (e.g. concerning the trustworthiness of others) obtained through self reports. Many have been equally skeptical of the use of social capital indicators derived from secondary sources of data (such as measures of civic engagement, political participation, or volunteering), which are apt to be only tangentially related to the key constructs of interest. Enter the experimental paradigm. Some economists such as Edward Glaeser have attempted to directly assess social capital by dropping stamped envelopes (addressed to the researchers) on random street corners and counting the proportion that are picked up by strangers and mailed back (Glaeser et al., 2000). The authors of chapter 7 describe an approach based on an experimental paradigm in which cooperation is directly observed through so-called trust games.

Part II of the book includes systematic reviews of empirical studies linking social capital to physical health outcomes (chapter 8), mental health outcomes (chapter 9), and health-related behaviors (chapter 10). The burgeoning literature on social capital and health almost guarantees that any systematic review will likely be outdated by the time it is published. Nevertheless, the important contribution of these chapters consists of the way in which the individual authors have attempted to draw out the emerging patterns of associations of social capital with specific health outcomes across different study designs (ecological, individual, multi-level), different cultural contexts, as well as different ways of measuring social capital.

The chapter by Daniel Kim, S.V. Subramanian and Ichiro Kawachi finds fairly consistent evidence of an association between social capital and physical health (chapter 8), although the evidence is strongest for self-rated health, and much more sparse for objective health outcomes, such as the incidence of cardiovascular disease. Also, as noted earlier, a relationship between social capital and physical health has been more consistently found in societies with high levels of economic inequality, whereas the links are much weaker or nonexistent in more egalitarian societies (a point also noted in a recent review by Islam et al., 2006b). The chapter by Astier Almedom and Douglas Glandon (chapter 9) reveals that the evidence linking social capital to mental health outcomes is more sparse (sixteen studies) compared to those focusing on physical health outcomes (over fifty studies). More importantly, Almedom and Glandon highlight several issues where our understanding of mechanisms remains incomplete, and they conclude with a plea for more inter-disciplinary investigations of social capital incorporating ideas and methods from qualitative research. In chapter 10, Martin Lindström summarizes the studies linking social capital to health behaviors including alcohol and drug use, smoking, physical activity, diet, and sexual behavior. If the relationship between social capital and health is truly causal, the effect is likely to be mediated by the way it influences health-related behaviors. Therefore the better we can understand the links to health behavior, the more insight we are likely to gain into the causal mechanisms linking social capital to health outcomes (both positive and negative).

In chapter 11, Kathleen Cagney and Ming Wen focus on the empirical evidence linking community social capital to health outcomes in the elderly. As these authors argue, the elderly deserve special attention as a group because their health is often closely tied to circumstances in the communities in which they “age in place”. The chapter challenges researchers to refine their theories, measurements, and methods to better understand the ways in which social capital influences health outcomes in this demographic group.

The final two chapters of the book take us into the realm of policies and interventions. In chapter 12, Vish Viswanath explores the application of social capital to the field of health communications. His essay examines both how social capital can help to predict the success or failure of mass media campaigns (and potentially harnessed to improve the design and delivery of health messages), as well as how concepts in communication can shed light back on the different

forms of capital (bonding and bridging). Finally, chapter 13 connects social capital to the highly topical subject of disaster preparedness and recovery. In the wake of the September 11 attacks, Hurricane Katrina and outbreaks of avian ‘flu in Asia, public health preparedness in anticipation of disasters, pandemics and terrorist attacks has become a pressing concern for federal, state, and local agencies. The chapter by Howard Koh and Rebecca Cadigan provides a timely reminder of the salience of social capital for community disaster preparedness. As the authors argue, the long term value of activities carried out by agencies across the country to prepare for disaster consists in the way they build social capital. In turn, the social capital of communities turns out to be a critical ingredient of recovery following disasters (Kawachi & Subramanian, 2006).

The writer Jorge Luis Borges lamented the gradual debasement of philosophical ideas over time. According to Borges, once an idea is accepted by the public, a theory that originally took an entire book to develop later ends up being dispensed with in a short paragraph, then eventually consigned to a footnote (Borges, 1939/1998). Judging by the multiplicity and complexity of voices expressed in this book, we remain confident that social capital is in little danger of falling by the wayside, and that studying its relationship to health will remain an active field of scholarship for decades to come.

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