

Ichiro Kawachi · Soshi Takao
S.V. Subramanian *Editors*

Global Perspectives on Social Capital and Health

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Ichiro Kawachi
Department of Social and Behavioral
Sciences
Harvard University
Boston, MA, USA

Soshi Takao
Department of Epidemiology
Okayama University Graduate School
of Medicine
Okayama City, Japan

S.V. Subramanian
Department of Social and Behavioral
Sciences
Harvard University
Boston, MA, USA

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¹Mischievously referred to by its alternative name, International Society for Saké Connoisseurs.

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Contributors

Jun Aida, D.D.S., M.P.H., Ph.D., Department of International and Community Oral Health, Graduate School of Dentistry, Tohoku University, Sendai, Japan

Lorraine Dean, Sc.D., University of Pennsylvania, Philadelphia, PA, USA

Jenni Ervasti, Ph.D., Finnish Institute of Occupational Health, Helsinki, Finland

Takeo Fujiwara, M.D., Ph.D., M.P.H., Department of Social Medicine, National Research Institute for Child Health and Development, Tokyo, Japan

Yoshinori Fujiwara, M.D., Ph.D., Research Team for Social Participation and Community Health, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan

Keon Gilbert, P.H., M.A., M.P.A., Behavioral Science and Health Education, St. Louis University, St Louis, MO, USA

Tomoya Hanibuchi, Ph.D., School of International Liberal Studies, Chukyo University, Showa-ku, Nagoya, Japan

Yukinobu Ichida, Ph.D., Nihon Fukushi University, Aichi, Japan

Yoji Inaba Nihon University, Tokyo, Japan

Ichiro Kawachi, M.D., Ph.D., Department of Social and Behavioral Sciences, Harvard School of Public Health, Harvard University, Boston, MA, USA

Mika Kivimäki, Ph.D., Department of Epidemiology and Public Health, University College London, London, UK

Finnish Institute of Occupational Health, Helsinki, Finland

Katsunori Kondo, M.D., Ph.D., Center for Well-being and Society, Nihon Fukushi University, Naka-ku, Nagoya, Japan

Naoki Kondo, M.D., Ph.D., Department of Health and Social Behavior, School of Public Health, The University of Tokyo, Tokyo, Japan

Janette Leroux, M.Sc., Queen's University, Kingston, Canada

Spencer Moore, Ph.D., M.P.H., Queen's University, Kingston, Canada

Hiroshi Murayama, Ph.D., R.N., P.H.N., Research Team for Social Participation and Community Health, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan

Tomoki Nakaya, Ph.D., Department of Geography, College of Letters, Ritsumeikan University, Kyoto, Japan

Tuula Oksanen, M.D., Ph.D., Finnish Institute of Occupational Health, Turku, Finland

Mikael Rostila, Ph.D., Centre for Health Equity Studies (CHESS), Stockholm University/Karolinska Institutet, Stockholm, Sweden

Jon Salsberg, M.A., Department of Family Medicine, McGill University, Montreal, QC, Canada

Kokoro Shirai, Ph.D., Department of Human Sciences, School of Law and Letters, University of the Ryukyus, Okinawa, Japan

S.V. Subramanian, Ph.D., Department of Social and Behavioral Sciences, Harvard School of Public Health, Harvard University, Boston, MA, USA

Etsuji Suzuki, M.D., Ph.D., Department of Epidemiology, Graduate school of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, Okayama City, Japan

Daisuke Takagi, M.A., Department of Social Psychology, Graduate School of Humanities and Sociology, The University of Tokyo, Tokyo, Japan

Soshi Takao, M.D., Ph.D., Department of Epidemiology, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, Okayama City, Japan

Gindo Tampubolon, Ph.D., Institute for Social Change, University of Manchester, Manchester, UK

Jussi Vahtera, M.D., Ph.D., Finnish Institute of Occupational Health, Turku, Finland

Marianna Virtanen, Ph.D., Finnish Institute of Occupational Health, Helsinki, Finland

Chapter 1

Introduction

Ichiro Kawachi, Soshi Takao, and S.V. Subramanian

Since the publication of the forerunner of the present book, “*Social Capital and Health*” edited by Kawachi, Subramanian and Kim (2008), studies of social capital have continued to expand in new directions, extending into new applications and the analysis of new problems and puzzles in population health. A cursory search of the PubMed database using the search term “*Social Capital and Health*” reveals that over 2,000 papers were published on the topic in 2011 alone. As we argued in the earlier book, the concept of social capital holds broad appeal in terms of its potential for explaining diverse phenomena in public health. At the same time, the popularity of the idea has resulted in “conceptual stretch” and theoretical slippage to the point (sometimes) of losing utility as a meaningful construct.

What is “social capital” and how is it relevant to population health? As a prelude to answering that question, we think it is useful to highlight three puzzles which help to illustrate how the concept is being applied in current research:

1. *Disaster preparedness and recovery.* The incidence of major disasters seems to be increasing worldwide, partly because of the rising settlement of populations in disaster-prone areas and partly because of factors such as climate change. During the past decade, major disasters—including the 2004 Indian Ocean earthquake and tsunami, the 2005 Pakistan earthquake, Hurricane Katrina (in 2005), and the 2010 Haiti earthquake—have extracted a devastating toll in terms of human casualties and the destruction of communities. From a disaster preparedness/recovery

I. Kawachi, M.D., Ph.D. (✉) • S.V. Subramanian, Ph.D.
Department of Social and Behavioral Sciences, Harvard University, Boston, MA, USA
e-mail: ikawachi@hsph.harvard.edu; svsubram@hsph.harvard.edu

S. Takao, M.D., Ph.D.
Department of Epidemiology, Okayama University Graduate School of Medicine,
2-5-1 Shikata-cho, Okayama City 700-8558, Japan
e-mail: s-takao@md.okayama-u.ac.jp

perspective, a major puzzle is to understand why some communities turn out to be much more resilient than others in the aftermath of major disasters such as hurricanes, earthquakes, and tsunamis. Residents of resilient communities are quicker to get back on their feet, more effective in organizing relief efforts, and more successful in overcoming collective action problems that hinder recovery efforts than in other communities (Aldrich, 2012). The rate of recovery following disasters depends on several factors—including, most obviously, the magnitude of the disaster (e.g., the size of the earthquake on the Richter scale and proximity to residential settlements). Nonetheless, even after taking account of these well-established factors, there remains substantial variability in the rate at which different communities recover.

2. *Combating crime.* In the field of criminology, researchers have long noted that some communities are much more effective than others in their ability to exercise informal control over youth behavior (e.g., loitering on the streets, public drunkenness) that lead to social disorder and crime (e.g., vandalism) (Sampson, 2003). These variations persist even when we compare communities that are equally disadvantaged in socioeconomic terms—such as high unemployment rates and poverty. In turn, the same urban neighborhoods that suffer high rates of crime also turn out to exhibit higher rates of public health problems, including higher infant mortality rates, low birth weight, accidental injuries, obesity, and diabetes (Sampson, 2003). The safer communities seem to share a secret ingredient that acts as a kind of “glue” that binds together residents and facilitates their collective efficacy to act toward realizing their shared goals (living in a crime-free community). The safety of these communities is not accomplished through more investment in the police force, but rather through *informal* mechanisms involving the willingness of adults in the community to step in to intervene when delinquent behavior is observed on the street. The collective efficacy that such communities exhibit also translates into health promotion activities, such as organizing protests against the threatened closure of local emergency medical services or gathering petitions to pass local ordinances to keep junk food outlets from opening near schools.
3. *Workplace health.* Researchers in the field of occupational health have long grappled with the puzzle of why some workplaces produce healthy and contented employees while others do not. The research has focused on the role of the workplace psychosocial environment as an influence on workers’ health, and considerable evidence has accumulated on factors at both the job-task level (level of psychological demands and perceived control) and at the organization level (effort–reward imbalance and organizational justice). In recent years, a series of studies have begun to investigate the role of workplace social cohesion—i.e., a climate of trusting, cooperative relationships between coworkers, as well as between employees and management—as a critical ingredient in promoting the health of workers (see Chap. 2). Johnson and Hall (1988) first put forth the concept of “iso-strain”—i.e., the combination of social isolation and high job strain—as a particularly toxic threat to workers’ health. The emerging research on workplace social cohesion extends the notion of social disconnectedness

(originally conceptualized by Johnson and Hall as an attribute of the individual) to the level of the work unit itself. Cohesive workplaces are more effective in buffering employee stress levels during periods of high load; they may be also more efficient in promoting workplace health promotion campaigns via social influence and the transmission of social norms.

In each of the foregoing examples, there seems to be a nebulous force embedded in the social structure—whether it is a residential community or a workplace—that facilitates collective action for the benefit of its members. Much of the research on “social capital” is concerned with theorizing, identifying, and measuring the nature of that collective force and demonstrating how it is related to population health outcomes.

1.1 A Definition of Social Capital

As a consequence of its broad dissemination throughout the social sciences—in sociology, political science, anthropology, and economics, to name a few—there is no single, universally accepted definition of social capital. As the concept is appropriated by each field, it becomes refracted through the lenses of different disciplines, resulting in a proliferation of definitions that sows conceptual confusion and slippage. According to Coleman (1990) who devoted a chapter to the topic in *Foundations of Social Theory*, social capital is defined as a set of socio-structural resources “that have two characteristics in common: they all consist of some aspect of a social structure. And they facilitate certain actions of individuals who are within the structure” (p. 302). Coleman was furthermore quite explicit about his level of conceptual analysis: “Unlike other forms of capital, social capital inheres in the structure of relations between persons and among persons. It is lodged neither in individuals nor in physical implements of production” (p. 302).

Contrasting with the socio-structural approach to social capital, other scholars define social capital as an attribute belonging to the individual. Thus, Portes (1998) has called for an explicitly individual level of analysis, identifying social capital as the resources that are derived from an individual’s social network. The difficulty with this approach—at least for researchers in psychology and public health—is that “resources derived from an individual’s social network” sounds exactly like “social support.” That is, individuals access various types of resources—e.g., information, emotional support, or a cash loan during an emergency—via their social networks. And since we already have a perfectly adequate term to describe these resources (“social support”), why substitute it for another fancy term?

From a population health perspective, we argue that the utility of using the concept of social capital lies in redirecting the focus of attention away from the individual to the social structure in which he/she is embedded. Turning back to the puzzles we presented at the start of the chapter, we are primarily interested in the question about why some communities fare better than others with respect to disaster recovery, combating crime, and promoting worker health. This is a different

question than asking why some individuals fare better than others. Throughout this book, then, the term “social capital” is used to refer to features of the social structure (à la Coleman) which facilitate the actions of individuals within the structure.

What are examples of “features of social structure that facilitate collective action”? As Coleman pointed out, social capital is not a single entity, but can take a variety of forms, including:

- *Enforceable trust.* Employee A does a favor for employee B (e.g., helping with the extra workload during a busy period at work), expecting that the favor will be returned in the future when A is in a similar pinch. Why does this exchange work? The answer is because A trusts B to honor his/her “credit slip.” Under what circumstance is this more likely to be true? The answer is: When the social structure provides a sanction against free riders. For example, if A and B are both coworkers with employee C, then employee B risks damage to his/her reputation by not reciprocating the favor provided by employee A. If employee B were then to turn to employee C for help in the future, he/she may be spurned as a free rider. To wit, the more saturated the social connections within a workplace (i.e., the more cohesive the workplace), the higher the trustworthiness of the social structure—which in turn lubricates the exchange of mutual help between employees in the performance of job tasks, thereby buffering the consequences of job-related stress.
- *Information channels.* A different type of resource that is transmitted through social connections is the diffusion of information. For example, in the immediate aftermath of a disaster, individuals rely on their better-informed neighbors to find out about where to go to in order to obtain emergency food and water supplies or how to go about applying for financial assistance from authorities. In this instance, the social connections are valuable for the information they provide, not for the “credit slips” they supply in terms of favors from others that will be reciprocated at a later date. Importantly, the structure of a social network that facilitates the exchange of mutual assistance may be different from the structure of a network that facilitates the spread of information. Whereas enforceable trust is likely to be strengthened by network transitivity (i.e., the cost to your reputation is heightened if you do not reciprocate a favor to your friend if all of your friends also know each other), the same may not apply to the diffusion of information. In the case of information flow, it may be more important that your friends do *not* know each other (since they are likely to share the same information) and for there to be more independent paths via which information can reach any given individual.
- *Appropriate social organizations.* A cohesive community is one in which residents are constantly getting together to establish voluntary organizations. The origins of such organizations depend on several factors such as the leadership and altruism of the founding members, but their sustainability over the long-term hinges critically on the trustworthiness of the environment. In other words, no voluntary association can last in the absence of the willingness of members to share the burden of responsibilities and duties—or the threat of sanctions (social disapproval) directed at free riders. Social organizations are usually

established for a particular purpose (e.g., policing crime in the neighborhood), but they can also be *appropriated* for other purposes. For example, in the aftermath of the 1995 Kobe earthquake, researchers found that neighborhoods that were blessed with neighborhood associations that pre-dated the disaster were much quicker to organize emergency assistance, communicate news about official relief efforts, and channel financial assistance from authorities (Nakagawa & Shaw, 2004). These neighborhood associations (*machizukuri* associations) were originally established in order to improve conditions in the community (e.g., combating pollution), but they were swiftly appropriated for the purpose of disaster relief once the earthquake struck. Importantly, the presence of such organizations can benefit members of the community who do not belong to them—i.e., they have positive spillover effects on those who may not be actively participating in such associations. Furthermore, communities that are blessed with a high density of voluntary organizations with interlocking membership are likely to have higher *collective efficacy* in solving problems; they constitute an important asset through which communities solve dilemmas of collective action, i.e., they are a form of capital that resides in the social structure.

The foregoing examples illustrate that a social structure endowed with high stocks of social capital is one that is also likely to exhibit higher levels of *social cohesion*. Indeed, in the public health literature, the terms social capital and social cohesion have been used almost interchangeably. However, there are two sources of objection to this practice. First, the conflation of social capital with social cohesion is unacceptable to the methodological individualists who treat social capital as an attribute of the individual. For example, in Nan Lin's approach, social capital is conceptualized as the ability of the individual to access others in their network with valued social positions (Lin, 2001). According to his approach (the Position Generator), an individual with high social capital is conceptualized as someone who is connected to friends who have high status or prestige occupations or acquaintances who embody instrumental resources—for example, providing legal advice (a lawyer) or offering tips about how to get a child admitted to college (a college admissions official). As discussed earlier, there is an established theoretical tradition (following Portes among others) of viewing social capital as “resources that individuals can access via their network connections.” It would be a mistake to insist that the term social capital should be equated with social cohesion. At the same time, it seems to us equally restrictive to equate social capital with individual-level social support. Throughout the book, therefore, we remain agnostic with regard to the use of the term “social capital” in the social sciences, i.e., referring to both the assets that the individual can access through his/her networks as well as the socio-structural assets that reside in the group.

A second objection to conflating social capital with social cohesion is related to issues of measurement. In the health literature, social capital has been most often assessed via survey approaches that inquire about people's perceptions of trust, norms of reciprocity, and participation in social organizations—in other words, constructs that heavily emphasize aspects of social cohesion. What is missing from

this approach is an assessment of network constructs and all of the richness that sociometric analysis can bring to the table (Moore, Shiell, Haines, & Hawe, 2005). By aggregating individual responses up to the level of the collective (e.g., the residential neighborhood), survey-based approaches to measurement further perpetuate the notion that social capital is the same as social cohesion, i.e., a group-level, communitarian construct. This argument has theoretical force. At least in the health literature, there is much room for improvement in addressing the gap caused by the dearth of studies utilizing a network-based approach to measuring social capital. In the forerunner to this book, *Social Capital and Health*, Cynthia Lakon and colleagues provide valuable suggestions on how network concepts and metrics can be used to strengthen the assessment of social capital (Lakon, Godette, & Hipp, 2008).

1.2 Emerging Directions

The focus of the earlier volume, “*Social Capital and Health*” (2008), was primarily on the measurement of social capital in health research, as well as on summarizing the empirical evidence linking social capital to different health outcomes. In the present book, we have selected to focus on emerging directions of research. We highlight four noteworthy trends in research: (a) application of social capital to diverse social contexts (e.g., schools, workplaces), (b) understanding the determinants of social capital, (c) strengthening causal inference and developing interventions, and (d) extension of the concept to analyze fresh problems and population subgroups.

1.2.1 Application to Diverse Social Contexts

The first generation of social capital research in the health arena focused almost exclusively on the neighborhood context. Beginning in the late 1990s, there was a surge (some would say “resurgence”) of interest in theorizing the role of residential contexts on health (Macintyre & Ellaway, 2000). At least two independent developments spurred this trend: first, the emerging obesity epidemic and the search for its causes and, second, the diffusion of multilevel analytical techniques from the education field to the public health field (Subramanian, Jones, & Duncan, 2003). With regard to the obesity epidemic, attention naturally turned to the residential context because of the stark disparities in obesity prevalence between urban neighborhoods, at least in North America. Researchers sought to explain these disparities in terms of differences in neighborhood features such as the local food environment (access to fresh produce versus exposure to junk food) or the built environment (“walkability”) (Cawley, 2011). A comprehensive framework for characterizing the neighborhood environment encompasses not only the physical and service environment, but in addition the *social* environment, of which social capital constitutes a part.

Empirical investigations of neighborhood social capital and health have yielded mixed results (Murayama, Fujiwara, & Kawachi, 2012). We offer four general observations about the state of evidence:

- There seems to be a fairly consistent association across studies between *individual perceptions* about social cohesion in the neighborhood and health, but a much less robust relationship between *aggregate* indices of social cohesion and individual health, after statistically controlling for individual perceptions. In other words, demonstrating the existence of a contextual effect of social cohesion on health (above and beyond the influence of subjective perceptions) has remained quite elusive.
- The most consistent evidence has been reported for self-rated health, i.e., the one item measure asking individuals to rate whether their overall health is “Excellent, Very Good, Fair, or Poor.”
- Much of the evidence is based on cross-sectional data and there is a dearth of prospective studies.
- Community social cohesion is a double-edged sword. It does not promote health in every situation, and some may be even harmed by it. The downside of social capital is something that even Coleman (1990) noted: “A given form of social capital that is valuable for facilitating certain actions may be useless or even harmful for others” (p. 302). For example, Subramanian, Kim, and Kawachi (2002) reported an interaction between community social cohesion and individual mental well-being. To wit, living in a highly cohesive community is good for the mental health of those who express a high level of trust for their neighbors, but the opposite is true for individuals who mistrust others, i.e., their mental well-being is worse for being surrounded by a cohesive community.

Apart from the need to strengthen causal inference (see Chap. 4), there is an additional reason why neighborhood research on social capital may have yielded mixed findings, viz., the problem of defining boundaries. Although standard practice by researchers is to adopt administrative boundaries—such as the Census tract or block group—there is no reason to suppose that these are the relevant definitions of a neighborhood, especially when it comes to assessing social interactions. The well-known modifiable areal unit problem (MAUP) suggests that different associations can be thrown up simply by the way in which boundaries are sliced and diced. In this book, Chap. 6 by Daisuke Takagi examines the problem posed by MAUP using crime as an exemplar (we discuss this in more depth in Sect. 1.2.3).

One approach to tackling the boundary problem is to turn to contexts that have meaningful boundaries based on prior theory, viz., schools and workplaces. The problem of specifying boundaries will be familiar to researchers conducting whole social network analysis—i.e., where should the interviewer draw the line when inquiring about alters nominated by the ego? One reason why whole network analysis is more commonly encountered in the school and workplace setting (but seldom in the neighborhood setting) is because of this boundary issue. Chapters 2 (by Tuula Oksanen and colleagues) and 3 (by Marianna Virtanen and colleagues) summarize

the new generation of research where investigators have sought to extend the assessment of social capital to the workplace and school environment, respectively.

The application of social capital to the school context predates contemporary research by almost a century. As Virtanen and colleagues point out in Chap. 3, Lyda Hanifan introduced the term as far back as in 1916 in his study “*The Rural School Community Center*” (Hanifan, 1916). However, until relatively recently, research on school social capital was predominantly focused on its impact on students’ academic achievement and social adjustment. According to one definition (cited in Chap. 3), social capital in the school setting refers to “the bonds between parents, children, and schools that support educational attainment” (Parcel, Dufur, & Cornell Zito, 2010, p. 831). As applied to the maintenance of healthy behavioral norms among pupils, the concept of *school climate*—as measured by the degree of respect between students as well as between students and teachers, the quality of peer relationships, and the maintenance of social order—has been demonstrated to prevent the occurrence of deviant behaviors such as smoking and drug use among youth (see Chap. 3 for a summary of empirical studies). Of course, strong social bonds among pupils can act in the opposite direction as well. If the prevailing norm in the school is to “act tough” and smoke behind the bicycle shed, then students may seek acceptance (i.e., conform to the norm) by following the example set by others. In disadvantaged schools, peers may view succeeding academically as being “uncool,” thereby exerting down-leveling norms on achievement—an example of the “dark side” of social capital exemplified by Jay MacLeod’s classic ethnographic study of the Hallway Hangers (referring to the students who loitered in the hallways of their school instead of attending class) in *Ain’t No Makin’ It* (MacLeod, 2004). In this instance, the culture of underachievement could be viewed as a protective mechanism exerted by the group to ensure that the student who strives too hard will not be disappointed by subsequent failure. Such caveats notwithstanding, the concept of school social capital holds significant promise in explaining the between-school variations in youth health outcomes, ranging from tobacco use, alcohol drinking, obesity, sexual risk behaviors, to suicidality. A challenge for future research on the influence of the school environment is to disentangle the simultaneous and cumulative (or perhaps compensatory) influence of the neighborhood contexts in which adolescents grow up. Such studies will necessitate the use of cross-classified multi-level analytical approaches.

Chapter 2 summarizes the application of social capital in the workplace context. As noted by Oksanen and colleagues, studies of the workplace turn out to provide some of the most convincing empirical evidence to date, demonstrating the relationship between social capital and health. These studies are often of high quality, featuring large sample sizes, longitudinal follow-up, and validated health outcomes. Importantly, they also circumvent the boundary issue, since the workplace constitutes a meaningful social setting in which workers (a) frequently need to collaborate in the performance of certain tasks, (b) spend a significant portion of their waking moments, and (c) derive their identity, self-esteem, and friendships. The workplace is also a potential locus for intervening on social capital to promote health. The increasing global demand for “flexibility of labor” has led to the rise of

precarious employment worldwide, i.e., involuntary part-time, fixed-term, temporary, and contract workers. The increasing bifurcation of workplaces into standard workers versus nonstandard workers—even in a bastion of the lifetime employment guarantee system such as Japan—poses a grave threat to the future of social cohesion in the workplace. Up to a third of the workforce in developed countries is now composed of such nonstandard workers, who, as a result of their rapid turnover and lack of many benefits and labor protections, cannot participate as “full citizens” in the social milieu of the workplace. A corollary of this trend is that any work-based intervention to boost social capital must address the structural antecedents of social cohesion in the workplace.

1.2.2 Antecedents of Social Capital

A prerequisite for developing interventions to boost social capital for health promotion is to gain a better understanding of the upstream drivers of social capital. As discussed by Tomoya Hanibuchi and Tomoki Nakaya in Chap. 5, the determinants of community social capital are still imperfectly understood. Factors that have been examined to date include (a) the degree of urbanization/suburbanization, (b) neighborhood built environment (e.g., walkability), and (c) the historical development of the community.

The connection between the built environment and the social life of urban residents was originally noted by Jane Jacobs in *Death and Life of Great American Cities* (1961). In her manifesto for the “new urbanism,” Jacobs lyrically expounded on the importance of spacious sidewalks, public spaces, and neighborhood stores for fostering the kind of casual social interactions between urban residents that would ultimately lead to the creation and maintenance of social capital. Unfortunately, the empirical evidence has turned out to be rather mixed with regard to the role of urban design on social capital. At the very least, the link between urban form and social capital appears to be culturally contingent. For example, using Japanese data, Hanibuchi et al. (2012) measured the objective walkability score of different neighborhoods using a geographical information system (GIS)-based approach and attempted to correlate these features with a slew of social capital indicators (perceived trust, reciprocity, informal socializing, civic participation). No significant positive association was found between the walkability score and any of the social capital indicators, suggesting that “walkable does not mean sociable,” at least for the population of older Japanese adults.

Meanwhile, one of the strongest predictors of social capital turns out to be the historical age of the community. In the same Japanese data, Hanibuchi et al. (2012) used historical topographical maps to trace the boundaries of towns dating back over centuries. They found that residents of more recent settlements were less likely to perceive social capital in their neighborhoods compared to residents of settlements that had been in existence for longer periods. The older the age of the community, the higher the stocks of social capital; in fact, the ideal length of time for

social capital to flourish in the community appeared to be roughly a century! The Japanese findings echo Robert Putnam's famous finding that regional patterns of social capital in Italy could be traced back to centuries of civic engagement (medieval choral societies and such) (Putnam, 1993). Undoubtedly, these findings reflect the long influence of civic culture and traditions in which communities were allowed to marinate; but they also suggest that residential instability is not conducive to social capital—it is difficult to get to know your neighbors if they are constantly coming and going.

All this does not mean that we should throw up our hands and give up. As Hanibuchi and Nakaya suggest in Chap. 5, the connection between social capital and the “age” of the community has a very practical implication for public health interventions, viz., during disaster recovery efforts. Following the 1995 Kobe earthquake (officially referred to as the Great Hanshin-Awaji Earthquake), victims who had lost their homes were relocated to temporary shelters without regard for preserving their community-based ties. The resulting “solitary deaths” of victims (particularly senior citizens) who had been torn from their established networks raised a public outcry. There is a parallel to this story with efforts in American society to pull down dilapidated public housing and to relocate residents to “improved” communities. As illustrated by the mixed results of HUD's Moving to Opportunity (MTO) Demonstration Program (Osypuk et al., 2012), relocating residents from their established social milieu does not lead to uniformly improved health outcomes, even if the physical and service infrastructure can be improved.

1.2.3 Causal Inference

In the predecessor to the present book, “*Social Capital and Health*” (Kawachi et al., 2008), we wrote that the novelty of ecological studies demonstrating the relationship between social capital and health outcomes had worn off. A call was made for more sophisticated studies demonstrating a true contextual effect of social capital on individual health outcomes. Five years on, we would say that the novelty of multilevel studies of social capital and health is beginning to fade. The field needs to move beyond description and in the direction of more robust demonstrations of causality.

Chapter 4 takes on the challenge of strengthening causal inference in social capital studies. The authors of that chapter dwell on the technique of instrumental variable (IV) estimation as an approach to overcome the problem of endogeneity of social capital (simultaneity and omitted variables bias). The idea of an instrument is to find a variable that induces exogenous variation in the exposure (in this case, social capital) without directly affecting the outcome variable. The situation is analogous to a coin toss in a randomized clinical trial, which directly assigns the patient to treatment or placebo, but does not itself affect the outcome of the treatment (other than through allocation to the treatment). The idea of instrumental

variables is to look for variables that are uncorrelated with the set of unobserved confounding variables (common prior causes of the exposure and outcome), so that the predicted value of the exposure is purged of any correlation with the unobserved confounders.

An extended case study in Chap. 4 illustrates an example of IV estimation, using an intervention introduced by one town in Japan to open a number of community centers (“salons”) aimed at fostering social interactions among the town’s older residents (see also Chap. 9 for a detailed description of the intervention—called the Taketoyo Project). A naïve analysis of this intervention would have found that people who participated in the activities offered by the salons (hobbies, games, or simply chatting) experienced improved levels of trust as well as self-perceived health. However, a skeptic would (rightly) argue that these associations prove little beyond the fact that people who are more trusting of others are also more likely to participate in salons and that trusting people also tend to be healthier than cynical recluses. A cluster randomized trial (“build salons in randomly selected neighborhoods but not others”) would have circumvented this problem of self-selection, but the town authorities were either too impatient or didn’t have the budget to perform a proper experiment. What can the researcher do in this instance? The answer is to utilize the distance of each resident’s home to the closest salon as an instrument—on the assumption that residents who happened to be living close to a newly opened salon is more likely to look in. The IV strategy is to exploit this random assignment to “treatment” (in this case, salon participation). The analysis proceeds in two stages. In the first step, the exposure (salon participation) is instrumented:

$$\hat{X} = \alpha_0 + \alpha_1 Z + \alpha_k \text{ Other predictors},$$

where \hat{X} represents the predicted value of social participation, and Z is the instrument (distance from each resident’s home and the closest salon). In the second step, the instrumented values of social participation are then plugged into an equation that regresses the outcome of interest (e.g., trust of others or self-rated health) on the predictors:

$$Y = \beta_0 + \beta_1 \hat{X} + \beta_k \text{ Other predictors} + \varepsilon.$$

Assuming that the IV assumptions are valid (these are discussed in Chap. 4), the results are more compelling than the answers obtained from ordinary least squares regression. In the case study, we find that residents who participated in the salons were more likely to express trust of other community members over time and more likely to experience improvements in self-perceived health.

Referring back to the discussion in the previous section (Sect. 1.2.2; see also Chap. 5), we note in passing that a better understanding of the antecedents of social capital also helps us to find good instruments—e.g., the residential stability of a community, the degree of neighborhood ethnic heterogeneity, or features of urban design such as access to local transportation.

An altogether separate problem in causal inference is tackled by Daisuke Takagi in Chap. 6, viz., the problem of the modifiable areal unit problem (MAUP). As referred to earlier, MAUP refers to the statistical bias that can arise via the arbitrary choice of district boundaries when examining the association between an ecological exposure (such as neighborhood social capital) and an outcome (such as health). In multilevel analyses of neighborhood social capital and health, the boundaries of each area are often simply accepted as those passed down by the Census Bureau (e.g., official census tracts). This practice is convenient because other area-level characteristics (such as the percentage of households living below the poverty threshold) are then readily available and can be controlled for in multiple regression analysis. In defense of this convention, the fixed boundaries of officially designated areas help to preserve the comparability of areas across time and successive Censuses. However, there is no reason to suppose that local social interactions (which give rise to social capital) follow such official boundaries, and they also ignore spatial spillover effects—i.e., the possibility that social capital in one neighborhood might influence the outcomes of residents in adjoining areas. In theory at least, MAUP can give rise to non-differential misclassification in which the investigator runs the risk of losing the signal for the noise. To circumvent this problem—and using crime victimization as the outcome—Takagi demonstrates two alternative approaches to analyzing data which take into account the spatial dimension of community social capital. In the first approach, alternate buffer zones are created for each individual in the dataset, disregarding administrative boundaries. To simplify the demonstration, Takagi used the perceived level of trust as the indicator of social capital (obtained from a mailed survey). The social influence of neighbors on each individual is then calculated as the average of trust expressed by all residents within different circular buffer zones, which were calculated in 10 m increments ranging from 50 to 500 m. The piecewise regression suggests that the association between trust and burglary victimization is nonlinear and U-shaped; the protective effect of neighbors' trust on crime victimization is strongest at the most proximate (60 m) as well as the most distant scale (500 m), but is weaker at intermediate distances.

Sociological theories about crime provide an interpretation for this apparent “bipolar” association between spatial scale and victimization. At the very intimate scale, neighbors who live in close proximity to each other may depend on daily “management activities”—such as watching out for your neighbor's home when he/she is on vacation and making sure that the mail and newspapers do not pile up in the driveway. Such reciprocity is less likely for neighbors that are further away. By contrast, at wider scales of spatial organization, residents of a community may benefit from the collective efficacy of the neighborhood in establishing crime watch groups or lobbying for more police protection. Such organized activities are more likely to be brought about as a consequence of the collective action of many residents, not just the quotidian acts of reciprocity exercised by next-door neighbors. Takagi is quick to caution that the spatial distance between residents is not necessarily the best way to operationalize social influence. But at the very least, the analysis demonstrates how different results could be obtained by the arbitrary choice of spatial scale.

The second approach adopted by Takagi is to explicitly tackle the problem of spatial spillovers by modeling each resident's unique "exposure" to community social capital via calculating the weighted distance from every other resident within a given geographic area. The spatial Durbin approach weights the unique "force" of social capital felt by each individual according to the inverse of the distance between that individual and all other individuals living in the same locality, giving rise to an inverse-distance spatial-weighting matrix. Using a survey conducted in one ward of Tokyo City, Takagi demonstrates that *net* of the individual's social network characteristics, residents in geographic locations with stronger social capital (as measured by the distance-weighted "force" of trust and norms of reciprocity), are protected from crime victimization (Takagi, Ikeda, & Kawachi, 2012). Strikingly, when the analysis is repeated using multilevel analysis (using officially defined neighborhood boundaries), no association was found between community social capital and crime victimization.

Although Takagi's demonstration utilizes the case of crime, there is every reason to believe that the same approach could yield dividends if applied to other health outcomes (Arcaya, Brewster, Corwin, Zigler, & Subramanian, 2012). To wit, his approach suggests that an explicit consideration of the spatial dimension of social capital may improve causal inference.

1.2.4 Social Capital Interventions

Despite the introduction of innovations such as spatial analysis, IV estimation, and fixed effects analysis (which we also discuss in Chap. 4), the ultimate proof of causation rests on demonstrating via some type of intervention that changing social capital can produce changes in individual health outcomes. A cluster of chapters in this book describe promising avenues of approach to intervention, viz., network social capital interventions (Chap. 8), efforts to promote social participation and civic engagement in the elderly (Chap. 9), and microfinance interventions (Chap. 10).

The importance of grounding the design of social capital interventions on strong theory is emphasized in Chap. 8, by Spencer Moore and colleagues. "*What is a social capital intervention?*" they ask. And "*How would a social capital intervention differ from more familiar interventions seeking to improve such factors as social support or community capacity?*" Adopting an explicit network-based theory of social capital, the authors proceed to lay down a set of guiding principles for designing a population approach to intervening on social capital to improve health. With regard to the debate (discussed earlier in Sect. 1.1) concerning the tension between the individual and interpersonal level of analysis versus the group level of analysis, Moore and colleagues are helpful in pointing out that these are not mutually exclusive approaches to conceptualizing social capital. It is worth quoting the authors at length here:

“Debates on the appropriate level of analysis have often pitted communitarian against network approaches to social capital. Communitarian approaches have focused on social capital as the property of spatially-defined groups, (e.g., neighborhoods, countries), whereas network approaches have tended to examine social capital at the personal or interpersonal levels. Nevertheless, as Bourdieu (1986) emphasized, network social capital operates across both levels since such capital is collectively owned but mobilized through individual and group actions. Hence, a network approach to social capital implies the consideration of how social capital operates across multiple levels of influence” (p. 108–116).

According to the typology of interventions laid out in Chap. 8, programs can target social capital in at least four distinct ways: (a) as the channel (i.e., mediating variable) through which alterations in more macro-level intervention targets come to influence health, (b) as the target of intervention itself, (c) as the downstream outcome of the intervention, or (d) as a segmenting device (i.e., a moderating variable). For example, the microfinance interventions described in Chap. 10 treat social capital as the mediating variable through which microcredit leads to improved health, i.e., the establishment of a microcredit system constitutes the intervention *per se*, but the channel through which it is delivered (rotating credit associations) acts as a form of social capital which may influence the health outcomes of subscribing members (in both good and bad ways, as it turns out). By contrast, the efforts described in Chap. 9 to establish new forms of civic organizations (e.g., community-based centers to benefit senior citizens) represent examples where building social capital is the target. Sometimes, social capital is not the direct target of the intervention, but an anticipated consequence—for example, when urban planners build recreational facilities in order to promote physical activity among residents, but an anticipated benefit is an increase in social interactions. Lastly, interventions can incorporate social capital as a moderating variable that can determine the comparative success of unrelated health promotion interventions. For example, a widely recognized finding in disaster research is the sheer degree of variability in the recovery of affected communities (see Chap. 7). Researchers posit that an important portion of this variability can be explained by variations in the stocks of community social capital predating exposure to disaster (Aldrich, 2012). Figure 8.1 in Chap. 8 provides a graphical illustration of these possibilities. Importantly, each of these types of intervention can be conceptualized at multiple levels—both at the individual/interpersonal level as well as the group level.

An important corollary of adopting a network approach to social capital intervention is that it requires formal network data to be collected in order to assess the effectiveness of interventions. And as Moore and colleagues convincingly argue, doing so would help interventionists to (a) illuminate the specific behavioral and psychosocial mechanisms through which social capital promotes health, (b) to anticipate unintended adverse consequences, and (c) to address existing and emergent inequalities in the resources available and accessible within and between networks.

Chapters 9 and 10 turn to real-world examples of interventions involving the concept of social capital. In Chap. 9, Murayama, Kondo, and Fujiwara summarize the evidence on social capital interventions to promote healthy aging. A well-known

example is the Experience Corps® in the USA, initially introduced in the city of Baltimore and subsequently rolled out to the rest of the country. The intervention is premised on training community-dwelling retirees to volunteer as teachers' assistants in local public elementary schools (Fried et al., 2004). An evaluation of the program suggested that the intervention promoted “bridging” social capital across generations and led to both the health and well-being of the elderly volunteers (mobility, functional independence) as well as improvements in the academic performance of the children. A program modeled on the Experience Corps was subsequently introduced in Japan—called the REPRINTS program—designed to foster intergenerational interaction between seniors and schoolchildren. Extensive evaluation of the REPRINTS program—described in Chap. 9—suggests that the benefits of the intervention extended beyond the elderly volunteers and the schoolchildren and led to positive spillover effects on the teachers as well as the parents of the children. Continuing improvements in longevity combined with the “graying” of the population poses a challenge for the long-term solvency of social security. At the same time, there are significant benefits to society represented by the growing segment of the older population of adults who embody substantial experience, skills, and knowledge. Their untapped human capital represents a resource for enhancing the productivity of societies. Importantly, by talking about “productive aging,” we are not simply referring to economic productivity (as in policy debates about raising the age of retirement), but rather productivity in the fuller sense of promoting health and well-being for the whole of society. Programs such as Experience Corps and REPRINTS suggest a way forward in which this potential could be unleashed, promoting intergenerational social cohesion at the same time as yielding a social capital “dividend” for society.

Turning to microfinance programs, these are typically discussed in the context of jump-starting the economic development of poor countries. However, as discussed by Naoki Kondo and Kokoro Shirai in Chap. 10, indigenously generated microfinance arrangements can be found even in developed countries. Microcredit provides financial loans to individuals who may not otherwise have access to banking institutions. They often rely on some form of social capital—e.g., a relationship between the lender and the recipient, or membership in a credit association—in order to ensure the security of the loans that are made. Kondo and Shirai focus specifically on rotating savings and credit associations (ROSCA) as a type of microfinance. The viability of these institutions depends on the maintenance of social capital within a group, but importantly, they also generate social capital over time. In other words, though the ostensible purpose of the credit association is to raise cash, the activities of the groups frequently spill over into social functions such as the exchange of gifts or simply gathering together to eat and drink at monthly gatherings. From a sociological perspective, such seemingly incidental activities have an ulterior motive, which is to strengthen the solidarity of the group in order to raise the reputational cost of default or to keep a watchful eye on defectors. Nevertheless, when ROSCA members are interviewed, they frequently cite the opportunities to socialize with others as their primary reason for belonging (Kondo & Shirai, Chap. 10). Credit associations also provide a textbook illustration of both the healthy and unhealthy

aspects of social capital—or what Aldrich (2012) calls the “Janus-faced character of social capital.” On the positive side, credit associations provide financial and social support. On the negative side, they can exert excessive pressure on members to contribute to the pot of money, or sometimes admittance to a credit union can be used by “insiders” as the basis on which to socially exclude “outsiders,” thereby aggravating divisions within the community and actively promoting between-group disparities.

1.2.5 Fresh Problems and Population Subgroups

As research on social capital matures, investigators have sought to apply the lens of social capital to explain health variations across different population groups. When we edited the predecessor to this book in 2008, the bulk of empirical research on social capital stemmed from North America and parts of Western Europe/UK. In the intervening years, research on social capital has diffused to other cultural settings (the studies from Japan featured in this book exemplify this trend). In the present book, we highlight three active new areas of investigation that transport the concept of social capital to new populations and social contexts: (a) research on social capital in minority ethnic communities (Chap. 12), (b) research on the role of social capital in disaster-stricken communities, and (c) cross-national comparative research on the macro-level associations between social capital and the welfare state (Chap. 11).

In Chap. 12, Keon Gilbert and Lori Dean focus their attention on the curiously missing discussion of race/ethnicity in discourse about social capital. One of the criticisms leveled at social capital is that it assumes a predominantly middle-class (and by implication, white middle class) view of social cohesion generated by membership in Rotary Clubs, Boys Scouts, the Knights of Columbus, and such. To the extent that race/ethnicity has been considered, researchers have tended to focus on the influence of immigration as a (negative) influence on social cohesion. Yet, as Gilbert and Dean persuasively argue, ignoring the dimension of race impoverishes scholarship on social capital and health. A clue to the salience of considering race is that “mainstream” measures of social capital often turn out to have a different association with health outcomes among African-Americans compared to whites. For example, relationships between social participation and health are either attenuated in black communities or sometimes even point in the opposite direction, i.e., harmful to health (Mitchell & LaGory, 2002). One explanation for this “anomaly” is that residents of deprived communities are often forced to turn to each other for instrumental support, and that this type of strong bonding capital imposes a burden on people’s already stressful lives. The deleterious association between bonding capital and poor health is not restricted to black communities in North America, but has also been reported in socioeconomically deprived communities in other parts of the world, for example, in the urban slums of Santiago, Chile (Sapag et al., 2008).

What Gilbert and Dean advocate is not simply a more “ethnically inclusive” scholarship on social capital but a more nuanced scholarship grounded in a detailed historical understanding of the origins of social capital in diverse communities (a plea that is also echoed in the chapters by Hanibuchi and Nakaya, as well as Moore and colleagues). For example, Gilbert and Dean argue that the legacy of the racial residential segregation in the USA has left black communities to fend for themselves. The bonding capital that arises from this context is indispensable for the survival of residents, but it is also burdensome and stressful. At the same time, the strength of social capital in black communities is illustrated by their historical solidarity and resistance to the institution of racism. Notable examples of the collective efficacy of black communities are illustrated by the activism surrounding the Voting Rights Act of 1965 and the rise of a parallel healthcare institutions—itsself a response to the history of racial segregation in the healthcare system in the USA. An ahistorical approach to social capital risks blaming the community for its problems. Conversely, a historically informed approach to social capital suggests that researchers need to develop indicators of social capital that are historically and culturally tailored to the communities that they are studying.

Communities stricken by disaster constitute a special type of population subgroup, and Chap. 7 by Jun Aida and colleagues summarizes the burgeoning research in this area. The puzzle in disaster research is how to explain the substantial variability in the resilience of affected communities, viz., why do some communities get back on their feet much more quickly than others with respect to the resumption of economic activity, the return of residents to their homes, and recovery of health status? In a recent book on the subject, Daniel Aldrich (2012) summarized the hypothesized mechanisms through which communities with greater social capital stock manage to recover more quickly after disaster: (a) social connections can serve as “informal insurance,” allowing victims to draw upon preexisting support networks for financial, informational, and emotional assistance; (b) better-connected communities are more effective at mobilizing residents to “voice” their demands and extract resources from authorities; and (c) cohesive communities raise the cost of “exit” from embedded networks, thereby increasing the probability that residents will be invested in returning to their communities to work together toward reconstruction. Chapter 7 provides a systematic review of the studies to date that examined the association between social capital and post-disaster health outcomes.

Cross-national comparative research on social capital and health remain sparse. Indeed, we hope that one outcome of this book is to stimulate investigators to undertake more careful and systematic comparisons across different societal and cultural contexts—a good example is the exercise in comparing social capital in Japanese and Finnish workplaces (in Chap. 2). In Chap. 11, Mikael Rostila takes a broad look across social capital across 26 European countries included in the 2008 European Social Survey. Like Hanibuchi and Nakaya in Chap. 5, he is interested in the antecedents of country-level variations in social capital. His particular concern is in testing the debate about whether the welfare state “crowds out” social capital, i.e., whether the services and social protections provided by the state leads to a withering of voluntarism and norms of mutual assistance. The second objective of his

chapter is to explore the evidence on whether levels of social capital in countries with different institutional characteristics and welfare policy also promote the overall health of societies.

As originally set forth by John McKnight in his book *“The Careless Society: Community and its Counterparts”* (1995), the argument about social capital and the welfare state runs something as follows: that government provision of welfare services saps our duty to care for each other and erodes societal norms of mutual assistance, voluntarism, and community competence. According to this view, the welfare state fosters a nation of “clients,” commodifying the kinds of support that members of communities used to provide for each other.

Rostila demonstrates that there is no systematic link between a strong welfare regime and the weakening of social bonds. In fact, just the opposite is found in his empirical results; the more that a country spends in the aggregate on social protection, the higher are the levels of informal social participation and membership in civic associations. Similar results are obtained for levels of social trust as well as access to instrumental support via social connections. And although these associations are attenuated after controlling for per capita GDP, Rostila’s findings amount to a decisive falsification of the thesis that stronger welfare regimes represent the prime culprit behind the decline of social capital observed by scholars such as Robert Putnam (2000). Within countries such as the USA, it has been similarly shown that states that invest in more social spending tend to have higher stocks of social capital (Putnam, 2000). This leads us to suspect that the direction of causality runs in the opposite direction to that hypothesized by McKnight, i.e., societies characterized by high levels of solidarity among its citizens are more effective in spurring efforts by their governments to protect its most vulnerable citizens. Social historians go even further, asserting that strong government support (for such institutions as labor unions and charitable organizations) *depend* upon state support for their viability and sustenance (Skocpol, 1996). In short, social capital cannot be left alone to the grassroots efforts of public-minded citizens; in order to thrive, support from the welfare state is a critical ingredient.

1.3 Social Capital and Social Theory

The final chapter of this book by Yoji Inaba reviews the criticisms of social capital in the social sciences, of which there are many. Inaba lists the five types of ambiguity embodied in the use of social capital: (a) ambiguity of the definition, (b) ambiguity about the added value by social capital, (c) ambiguity concerning measurement, (d) ambiguity surrounding causality, and (e) ambiguity as a policy tool. Taken together, the laundry list of complaints about social capital might seem sufficient to sink the ship (and some would say that the boat ought to be scuttled). However, all the problems do not have equal weight. Some of the problems—such as the ambiguities of definition, measurement, and causation—are dealt with in some detail in this book, and there seems to be either emerging consensus or at least the problems seem tractable.

As Inaba notes, the most serious doubt about social capital concerns the value added by use of the term. Some eminent economists have been particularly critical of the abuse/use of the term “capital,” which they insist should be reserved to describe a factor of production for which actors purposively sacrifice current consumption for future benefit (Solow, 1999). People do not deliberately “invest” in social relations for future gain. Although Coleman’s notion of the stockpiling of “credit slips” (as a result of A doing a favor for B) comes somewhat close to this idea, we concur for the most part that social capital is accumulated as a by-product of social interactions. That is, social capital fails the test of “capital” based strictly on economic theory.

So perhaps those researchers who insist on theoretical purity should start using social “capital”—i.e., bracketing the word with quotation marks—to signify that the terminology is being used in a loose, heuristic sense. For the rest of us, the blurred boundaries of definition provide an attractive space where interdisciplinary discourse becomes possible. As the British logician and philosopher Carveth Read (1848–1931) once famously said (later misattributed to John Maynard Keynes): it is more important that the theory should get the big picture “roughly right” than “exactly wrong.” As a metaphor or descriptive term, social capital seems useful to us for reminding the world that labor, physical capital, and money are not the only factors of production; social relations matter too.

Another persistent charge against social capital is that the concept is just warmed-up leftovers from existing theories about reciprocity exchanges, social networks, communitarianism, and so on. It undoubtedly grates on scholars deeply trained in these theories to be forced to listen to upstart social capitalists recycling old insights as if they were freshly discovered insights. But we believe this kind of tension is inevitable whenever old ideas are transported into a new field (in this instance, population health). A more charitable way to view the situation is to recall that scientific advances are often made precisely because fresh converts are not weighed down by decades of theoretical baggage. Ignorance in this instance is both a weakness and a strength. What we are witnessing is the process of *scientific arbitrage*.

The term arbitrage in the commodities market refers to the simultaneous buying/selling of the same commodities in different markets to profit from unequal prices and unequal information. For example, a successful arbitrageur is someone who knows that pork bellies are selling for \$1.00 per pound in Chicago and \$1.50 in New York. Accordingly, he/she buys pork bellies in Chicago and sells them in New York for a handsome profit. The idea of arbitrage could be equally applied in the marketplace of ideas. Thus, according to Thomas Friedman (1999), it was said of the great Spanish writer José Ortega y Gasset that he made his living by “buying information cheap in London and selling it dearly in Spain.” That is, he frequented all the great salons of London and then translated the insights he gained there into Spanish for Spanish readers back home. The exact same analogy could be extended to describe the diffusion of successful ideas in science. That is, fruitful advances in the sciences are seldom the result of original thinkers who fashioned new ideas wholly out of new cloth. For example, tremendous strides were made in molecular biology in the 1930s as the result of the migration of physicists (and the incorporation of their

ideas and methods) into the field of the life sciences. The early pioneers included figures such as Max Delbrück, Leo Szilard, Sir Lawrence Bragg, and Francis Crick. In the 1970s, the incorporation of insights from psychology into economics resulted in the creation of the field of behavioral economics (it is well to remember that Daniel Kahneman never formally trained in economics, even though he was awarded the Nobel Prize in the field in 2002). Within the health arena, we note that advances were made when economists began to colonize the field of epidemiology beginning in the 1990s. They brought with them a fresh set of econometric tools to analyze associations that had long been accepted as causal by the epidemiologists (such as the relationship between schooling and health or income and health).

In each of these instances, it was not a prerequisite that the scholars who strayed from their home disciplines into new areas should be fully conversant with all of the intricacies and nuances of their adopted field of inquiry. Indeed, it could be said that their intellectual freedom from received wisdom allowed them the freedom to question old dogmas and tackle problems with a fresh set of eyes.

In a similar manner, we assert that the application of social capital to population health represents an attempt to arbitrage concepts from the social sciences into epidemiology. Prior to its importation to the health field, social capital had already been used to explain diverse phenomena ranging from political governance and democracy, crime, educational outcomes, and economic development. Population health just happens to be the latest frontier in which the concept has engaged scholars across diverse disciplines—from epidemiology, sociology, criminology, to geography, anthropology, and psychology. The collection of chapters in this book exemplifies the active intellectual engagement that is taking place.

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Chapter 2

Workplace Social Capital and Health

**Tuula Oksanen, Etsuji Suzuki, Soshi Takao, Jussi Vahtera,
and Mika Kivimäki**

Social capital involves social relations and networks, norms of reciprocity, and trust, which facilitate coordination and cooperation for mutual benefit (Coleman, 1990; Putnam, 1993). Traditionally, social capital has been studied in neighborhoods, communities, societies, and even nations. More recently, however, researchers have also examined social capital at workplaces. This is justifiable because, by definition, social capital is not restricted to any particular social entity or social networks of any specific size (Stone & Hughes, 2002). Furthermore, at work, people are typically exposed to a reasonable amount of social relations and day-to-day interactions. Thus, the workplace may constitute an important social context for social capital (Lindström, 2008).

Original studies on social capital have focused on schools, and a large body of research exists on residential areas. So why have workplaces suddenly become such a popular target for researchers in this field? The intensification of working life is probably one reason as it has made it harder for people to maintain contact with friends and neighbors. Long working hours have become the culture in many

T. Oksanen, M.D., Ph.D. (✉) • J. Vahtera, M.D., Ph.D.
Finnish Institute of Occupational Health, Lemminkäisenkatu 14-18B, Turku 20520, Finland
e-mail: Tuula.Oksanen@ttl.fi; Jussi.Vahtera@ttl.fi

S. Takao, M.D., Ph.D.
Department of Epidemiology, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, 2-5-1 Shikata-cho, Kita-ku, Okayama City 700-8558, Japan
e-mail: s-takao@md.okayama-u.ac.jp

E. Suzuki, M.D., Ph.D.
Department of Epidemiology, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, 2-5-1 Shikata-cho, Kita-ku, Okayama City 700-8558, Japan
e-mail: etsuji-s@cc.okayama-u.ac.jp

M. Kivimäki, Ph.D.
Department of Epidemiology and Public Health, University College London,
1-19 Torrington Place, London WC1E 7HB, London, UK

Finnish Institute of Occupational Health, Topeliuksenkatu 41, Helsinki 00250, Finland
e-mail: mika.kivimaki@helsinki.fi

workplaces, and more time is used commuting due to suburban sprawl. This development appears to have displaced time otherwise spent in community and social involvement (Halpern, 2005). Putnam (2000) suggests that there has been a transfer from residence-based to work-based communities in terms of time spent and social relations experienced. Accordingly, a potential decline in volunteer-based social participation and social capital in communities might be counterbalanced with the emergence of employment-based social cohesion and social capital at the workplaces.

This chapter introduces the recent extension of social capital research into workplaces. We first discuss the conceptual and empirical backgrounds of workplace social capital research, highlighting the relations with this research in community settings. Then we review the ways in which social capital has been assessed at workplaces and look at the research on social capital at the workplace as a determinant of employee health. In addition, we provide results from a comparative study between Finland and Japan, to highlight the extent to which this association may be dependent on cultural context. We close this chapter by suggesting directions for further social capital research in workplaces.

2.1 Social Capital and Other Psychosocial Factors Related to Employee Health

The psychosocial environment of the workplace has received much attention over the last few decades. The job strain concept, a seminal theoretical model introduced by Karasek in the late 1970s (Karasek, 1979), proposes that high demands and low control, in conjunction with low coworker support, are conducive to work stress. Subsequently, Siegrist (1996) described the psychosocial features of work from the perspective of gaining rewards from one's efforts. Here, the theoretical focus is on the norm of social reciprocity. The model posits that efforts at work should be balanced by rewards such as adequate salary, respect and esteem, job security, and status consistency; otherwise, stress is likely to emerge. While the effort–reward imbalance concerns distributive injustice, the view was later broadened to organizational injustice in the procedural and relational procedures of management (Elovainio, Kivimäki, & Vahtera, 2002; Kivimäki et al., 2005). Justice in an organization is manifested as the quality of interpersonal treatment and accurate, correctable, ethical decision-making procedures (Moorman, 1991).

More recent evidence suggests that trust, social networks, and social cohesion at the workplace, that is factors related to social capital, might also be relevant in research on employee health (Kawachi, 1999). This evidence indicated that focus should also be placed on specific aspects of the trusting climate, participative approach, and interactional relationships at the workplace, and that group-level social cohesion should be taken into account.

The “old” and “new” concepts describing the psychosocial environment are likely to be interrelated. Indeed, evidence suggests that workplace social capital

may buffer the effect of job stress (Sapp, Kawachi, Sorensen, LaMontagne, & Subramanian, 2010). Conversely, a low level of integration within a social network and low social capital may increase vulnerability to adverse health effects of job stress. Supportive relationships may also encourage healthier behavior patterns in terms of coping with stress (Wilkinson & Marmot, 2003). It is also possible that job stress mediates the effects of low social capital on health through biological mechanisms such as an activation of the hypothalamus–pituitary–adrenal (HPA) axis (Oksanen et al., 2012). Furthermore, improved work organization may help to decrease less desirable consequences of social capital at the workplace, such as bullying. A Swedish study reported that procedural justice concerning decision making within the organization is important in encountering the emergence of workplace bullying (Oxenstierna, Elofsson, Gjerde, Hanson, & Theorell, 2012).

Work life has changed dramatically since the first models of psychosocial work environment were launched. Current workplaces are characterized by organizational restructuring, mergers, and the outsourcing of many functions. This requires flexibility and the ability to adapt to continual change. Another driver for change is the proliferation of temporary employment (Gospel, 2003). It is estimated that sooner or later most organizations will have only a small core of full-time, permanent employees. Short-term contracts have now replaced jobs for life, and consequently, mobility between employers has become inevitable. In these circumstances, individual networks are valuable, because careers are increasingly in own hands (Cooper, 2002). At the same time, increasing emphasis is placed on cooperation and collaboration both inside and outside the workplace. According to the proverb “No man is an island,” employees and companies do not thrive when isolated: networking is important. These changes have called for a new understanding of the psychosocial work environment from the perspective of the whole work community; here the concept of workplace social capital is highly relevant. Workplace social capital provides a way of talking and identifying the nature and impact of relationships between people from diverse backgrounds who need to cooperate and exchange information in today’s complex working life (Hofmeyer & Marck, 2008).

2.2 Why Is the Workplace an Important Context for Social Capital and Health Research?

As noted at the outset of this chapter, the vast majority of previous studies have focused on social capital in residential/geographical neighborhood (Kawachi, 1999; Lindström, 2008). However, compared to large geographic units (countries, cities, or even neighborhoods), workplace may capture important social interactions and networks appropriately (Sundquist & Yang, 2007) within a clearly defined proximal setting, such as the work unit. In the first chapter of *Social Capital and Health*, Kawachi, Subramanian, and Kim (2008) raised three charges against social capital research: (a) mapping the presence of social capital across communities raises the risk of “blaming the community” for its problem, (b) the concept of social capital could be utilized as a “cheap” alternative to Third Way politicians solving the

problems of poverty and health inequalities, and (c) no clear policies and interventions have been needed to build up social capital. We argue that studies on workplace setting could potentially provide a way with which to tackle these charges.

With regard to point (a), mapping of the level of social capital across groups may highlight constructive messages for the settings. For a work unit with lower social capital within a company, the criticism may initially be upsetting, but comparisons at the company rather than work unit level may be better tolerated. From the employees' viewpoint, it is important to know whether social capital in the organization is likely to promote or damage well-being, since unfavorable results may motivate corrective actions at the workplace, or the employee may find another company in which to pursue a better work–life balance. During a severely stagnated economic situation, companies may benefit from high workplace social capital as a coping strategy because ideally social capital may facilitate cooperation and coordination without increasing costs. This also relates to point (b).

Regarding point (c), there are several forms of “capitals”: financial, material, natural, human, and social. They may, in fact, be more familiar at workplaces than in the community. Corporate executives have already recognized that capitals are the targets of investment. At workplaces, human capital has been continuously invested in through on-the-job training that is planned, organized, and conducted at the employees' worksite. Such investments in social capital are currently rarer. Interestingly, financial and material capitals decrease as we use them. In contrast, social capital, as well as human capital, increases the more we use them.

In addition to the three points above, several other problems have been acknowledged in social capital research: (d) the modifiable areal unit problem (MAUP), (e) the “dark side” social capital, and (f) the need to find determinants (source) of social capital. There might be several advantages to resolving these problems in workplace settings as well as in community settings.

In relation to point (d), in community studies, researchers need to define “reference area” in order to aggregate individual responses when creating group-level social capital indicators. The reference area can vary from large state to small neighborhood depending on the study hypothesis and availability of the data, but there is relatively little systematic research to identify the most adequate spatial unit. The definition of nonspatial groups, such as workplaces or schools, may pose fewer problems in this regard because questions can be raised about the definite boundary (Harpham, 2008).

As noted in point (e), strong bonding social capital can sometimes be seen as a detrimental factor to health (Portes, 1998). In the Hippocratic Oath, the well-known phrase “First, do not harm” is one of the principle precepts of medical ethics. We need to pay a great deal of attention to this principle when we apply the concept of social capital to the context of community. At the workplace, employees' health is legally protected (e.g., by the Occupational Safety and Health Law) and employers are responsible for promoting (or, at least, not damaging) their employees' health. Within this framework, trials of social capital at the workplace may be more straightforward than in a community, because in the case of any adverse event, a specific person is responsible for taking corrective actions.

At the workplace, as well as in communities, the “dark side” social capital may exist. In other words, social capital may be used to exclude outsiders, place excess

claims on group members, restrict individual freedom, or reinforce adverse health behaviors when they are defining characteristics of group (Portes, 1998). It is noteworthy, however, that in previous community studies, the “dark side” of social capital has been observed in deprived settings (Mitchell & LaGory, 2002) rather than in more privileged settings (Iwase et al., 2012). In terms of social hierarchy, employed people do not generally belong to the lowest category in respect to their income, education, and occupation. From this point of view, a negative effect is less likely at the workplace than in a community. However, there are other types of social interaction at work, such as workplace bullying, which can damage workers’ health. Therefore, it is important to try to disentangle the link between social capital and other related concepts in the workplace setting.

The last point, related to the determinants of social capital, is closely associated with the abovementioned intervention issue. At the time when companies are established, there is little built social capital: only the determinants of social capital may be available to foster future social capital. For research, this means that, in principle, it is possible to observe the whole natural history of social capital at workplaces, from its birth to possible erosion; this opportunity is rarely available in studies of communities. In a community, health determinants often exist outside the control of the health domain, as suggested by the Commission on Social Determinants of Health (WHO) in their final report (2008). Compared to community settings, at workplaces, at least at the corporate executive level, there is authority to intervene in some of these non-health-domain determinants of health, through income policies and the development of work conditions.

2.3 How to Measure Social Capital at Work

The operationalization of workplace social capital has varied between studies. Some researchers have emphasized trust as a key element, as it facilitates cooperation and contributes to social cohesion (Coleman, 1990; Putnam, 1993). They suggest that trust provides an appropriate proxy of social capital, although the opponents counteract this by stating that trust is a source or a consequence of social capital (Ziersch, 2005).

2.3.1 *Measuring Trust*

The measures of trust at the workplace have included items such as “Generally speaking, would you say that most people in your company can be trusted, or do you think that you cannot be too careful when dealing with people?” (Suzuki, Fujiwara, et al., 2010; Suzuki, Takao, et al., 2010); “I trust the people I work with” (Sapp et al., 2010); “How would you rate the level of workers’ trust in management at your workplace?”; “How much do you trust the people you work with?” (Helliwell & Huang, 2010, 2011); and “In our organization we trust each other” (Ernstmann et al., 2009; Jung et al., 2011; Kowalski, Driller, et al., 2010; Kowalski, Ommen, et al., 2010).

A problem arises when we do not know the precise attitude that trust actually refers to. For example, does the question “How much do you trust people you work with?” refer to a specific audience? In the school context, for instance, teachers may include school children’s parents as people that they work with. Or in the context of social welfare services, clients are sometimes included in the ratings of people one works with. Especially when comparing results across studies, ambiguity can be problematic.

Contextual and cultural differences may also play a role, as suggested by Baron-Epel, Weinstein, Haviv-Mesika, Garty-Sandalon, and Green (2008). They interviewed Arabs and Jews in Israel about social capital including social trust. The two ethnic groups did not generally live in mixed communities, and the Arab community was characterized as being more collective. Surprisingly, their perceptions of whether most people can be trusted were significantly lower than those in the Jewish community (38 % vs. 63 % reported high trust). The authors concluded that Arabs may have perceived the question of trust as designed to probe their suspicion and distrust of people who are not part of their collective entity but, instead, part of the community outside the extended family. In the culturally diverse workplace, cross-cultural measurement equivalence may therefore be important.

Using trust as a single item to measure social capital may be theoretically problematic given that social capital is a multi- rather than unidimensional concept. Szreter and Woolcock (2004), for example, suggested that social capital entails a bonding, bridging, and linking dimension. In daily connections at the workplace, the bonding and bridging dimensions of social capital include relationships with coworkers and networking with collaborators and business partners, whereas the linking dimension refers to the relations across power gradients including the relations between employees and their managers or representatives of the governance. Alternatively, at the workplace, the horizontal component of social capital at the workplace includes relationships between employees at the same level of hierarchy (Szreter & Woolcock, 2004), and the vertical component refers to connections that span the different levels of power at the workplace. If all these components of social capital are always at play at workplaces, this should be reflected in the measurements of workplace social capital.

2.3.2 Multicomponent Measures of Social Capital

A composite index can comprise several core aspects of social capital at the workplace. In the German context, Jung et al. (2012, 2011) used the Social Capital in Organizations Scale (six items) to assess individual-level horizontal social capital as perceived common values, support, cohesion, and trust in the organization. Ernstmann et al. (2009) compiled six items to assess two key features of workplace social capital, namely, common values and perceived trust in the organization (hospitals). This follows that although researchers in the field now face a bewildering choice of measures of workplace social capital, few have been specifically validated to measure social capital at the workplace.

Box 2.1. A Short Measure of Social Capital at Workplace

1. People keep each other informed about work-related issues in the work unit
2. We have a ‘we are together’ attitude
3. People feel understood and accepted by each other
4. People in the work unit cooperate in order to help develop and apply new ideas
5. Do members of the work unit build on each other’s ideas in order to achieve the best possible outcome?
6. Our supervisor treats us with kindness and consideration
7. Our supervisor shows concern for our rights as an employee
8. We can trust our supervisor

The Finnish Public Sector Study (FPSS) developed and psychometrically tested a short multi-item instrument to specifically assess social capital at the workplace (Kouvonen et al., 2006). As shown in Box 2.1, the short measure of workplace social capital comprises eight items that indicate whether people feel that they are respected, valued, analyzed, and treated as equals at work rather than feeling that it is all a matter of seniority in their hierarchy. Furthermore, the definition of workplace social capital is in agreement with the current notions of the concept, such as the widely used definition offered by Kawachi, Kennedy, Lochner, and Prothrow-Stith (1997): “Those features of social structures, such as levels of interpersonal trust and norms of reciprocity and mutual aid, which act as resources for individuals and facilitate collective action.”

This measure of workplace social capital appreciates its multidimensional nature. It covers some aspects of bonding social capital with issues of horizontal tight-knit ties and relationships with coworkers who are trusted and share similar values of reciprocity and mutual aid in daily interactions needed to “get by” at work (items #1–3), bridging social capital with issues involving cooperative relationships with coworkers in all occupations that needed to “get ahead” (items #4–5), and linking social capital with issues about relationships between people who interact across authority gradients at work (items #6–8).

2.4 Workplace Social Capital and Health

In this section, we summarize the methods and findings of previous studies on workplace social capital and health. First, we will summarize the findings of studies in nonmedical settings (either in the public or private sector). Although some Finnish studies include public sector employees working at hospitals, the findings of these studies are more applicable to general workers. After this, we will summarize previous findings in medical settings.

2.4.1 Findings Regarding Workplace Social Capital and Health in Nonmedical Settings

Table 2.1 provides details of 17 studies of workplace social capital and health in nonmedical settings. The studies used various indicators of social capital—ranging from proxy measures of social capital, such as employment security and social support (Liukkonen, Virtanen, Kivimäki, Pentti, & Vahtera, 2004) and social network (Suzuki, Takao, Subramanian, Doi, & Kawachi, 2009), to psychometrically validated multi-item instruments that captured both the cognitive and structural dimensions of social capital at the workplace (Kouvonen et al., 2006; Kouvonen, Oksanen, Vahtera, Stafford, et al., 2008; Kouvonen, Oksanen, Vahtera, Väänänen, et al., 2008; Oksanen et al. 2008, 2012; Oksanen, Kawachi, et al., 2011; Oksanen, Kivimäki, et al., 2011; Oksanen, Kouvonen, Vahtera, Virtanen, & Kivimäki, 2010; Väänänen et al., 2009). The health outcomes examined in these studies include self-rated health (Kouvonen et al., 2006; Liukkonen et al., 2004; Oksanen et al., 2008; Suzuki et al., 2009; Suzuki, Takao, et al., 2010), onset of depression (Kouvonen, Oksanen, Vahtera, Stafford, et al., 2008; Oksanen et al., 2010), smoking cessation (Kouvonen, Oksanen, Vahtera, Väänänen, et al., 2008), adverse lifestyle factors (including smoking status) (Sapp et al., 2010; Suzuki, Fujiwara, et al., 2010; Väänänen et al., 2009), all-cause mortality (Oksanen, Kivimäki, et al., 2011), incidence of hypertension (Oksanen et al., 2012), non-adherence to antihypertensive medication (Oksanen, Kawachi, et al., 2011), depressive symptoms (Jung et al., 2012) or psychological distress (Liukkonen et al., 2004), and life satisfaction (Helliwell & Huang, 2010, 2011). These studies were mainly conducted in Finland (ten studies) and Japan (three studies) but also in the USA, Canada, and Germany.

As discussed in Chap. 4, when researchers examine the relations between individual perception of social capital and health, they are presumably interested in the question of whether being surrounded by, say, trusting neighbors or coworkers can facilitate their health. Thus, if researchers conceptualize social capital as a characteristic of the group, or the target of the inference is the group itself, they need to capture the trustworthiness of the social environment to model the group's stock of trust (or reciprocity, etc.) while controlling for individual-level trust (or reciprocity, etc.). As a useful statistical approach, multilevel analyses have been conducted to define and identify the social context level correctly and thus to simultaneously examine the effects of individual- and contextual-level social capital on health. Of the 17 studies, nine conducted multilevel analyses with individual workers at level 1 and work units or companies at level 2 (Kouvonen et al., 2006; Kouvonen, Oksanen, Vahtera, Stafford, et al., 2008; Kouvonen, Oksanen, Vahtera, Väänänen, et al., 2008; Oksanen et al. 2008, 2010; Sapp et al., 2010; Suzuki, Fujiwara, et al., 2010; Suzuki, Takao, et al., 2010; Väänänen et al., 2009), whereas the remaining studies were conducted at an individual level.

Some of the strongest evidence to date of workplace social capital comes from the FPSS cohort. This cohort consists of approximately 150,000 public sector employees who were working in 10 towns and 21 hospitals between 1991 and 2005

Table 2.1 Summary of 17 studies of workplace social capital and health in non-medical settings

Author(s), (year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Liukkonen et al. (2004) Finland	Cohort study	6,028 public sector employees, in eight towns (3,998 established permanent employees, 1,563 employees with initially a fixed-term contract, and 467 initially subsidized employees)	Men: 43 (9.3) Women: 42 (9.4)	1,228/4,800	1. Employment security (permanent, fix-term contract, and subsidized contract) 2. Social support (short version of the distress Social Support Questionnaire)	Poor self-rated health Psychological distress	Age, marital status, occupational status, income, baseline levels of the health outcome in questions	Logistic regression analysis	1. Employment security Men ORs for poor self-rated health Fixed-term vs. permanent: 0.74 (0.61–0.90) Subsidized vs. permanent: 0.82 (0.61–1.11) ORs for psychological distress Fixed-term vs. permanent: 0.78 (0.65–0.92) Subsidized vs. permanent: 0.78 (0.59–1.03)	Not applicable

(continued)

Table 2.1 (continued)

Author(s), (year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
									Women	
									ORs for poor self-rated health	
									Fixed-term vs. permanent: 0.69 (0.44–1.08)	
									Subsidized vs. permanent: 0.79 (0.43–1.46)	
									ORs for psychological distress	
									Fixed-term vs. permanent: 0.66 (0.43–1.02)	
									Subsidized vs. permanent: 1.26 (0.71–2.24)	
									Note: The results of social support are not shown due to space limitation	

Kouvonen et al. (2006) Finland	Cross-sectional study (2000–2002)	45,480 public sector employees in 10 towns and 21 hospitals	10 town sub sample: 44.9 (NA)	8,709/36,771	Finland eight items <i>Individual level</i> : Q1 (low), Q2, Q3, Q4 (high)	Poor self-rated health	Age	Multilevel logistic regression analysis	Men	Men
									Q1 vs. Q4: OR: 2.99 Q2 vs. Q4: OR: 1.69 (1.45–1.98)	Q1 vs. Q4: OR: 1.79 (1.51–2.11) Q2 vs. Q4: OR: 1.09 (1.09–1.57)
Oksanen et al. (2008) Finland	Cohort study (2000–2004)	9,524 local government employees in 1,522 work units	21 hospital sub sample: 43.1 (NA)	2,036/7,488	Finland eight items Changes in repeated assessment of social capital <i>Individual level</i> : low–low, high–low, low–high, high–high	Poor self-rated health	Covariates: individual-level social capital; age, sex, occupational status, marital status, smoking status, alcohol use, physical activity, body weight	Multilevel logistic regression analysis	Women	Women
									Q1 vs. Q4: OR: 2.42 (2.24–2.61) Q2 vs. Q4: OR: 1.67 (1.55–1.79) Q3 vs. Q4: OR: 1.36 (1.27–1.47)	Q1 vs. Q4: OR: 1.19 (1.10–1.30) Q2 vs. Q4: OR: 1.25 (1.15–1.36) Q3 vs. Q4: OR: 1.13 (1.04–1.23)
									Ref. High–high Low–low: OR: 1.14 (0.99–1.32) High–low: OR: 0.99 (0.82–1.19) Low–high: OR: 1.08 (0.91–1.29)	

(continued)

Table 2.1 (continued)

Author(s), (year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
					<i>Work-unit level:</i> low–low, high– low, low–high, high–high [self-excluded measure]		<i>Covariates for social capital:</i> proportion of temporary workers, proportion of men, proportion of manual worker, mean age, work unit size			
Kouvonen, Oksanen, Vahtrera, Stafford, et al. (2008) Finland	Cohort study (2000– 2005)	33,577 workers in 3,236 work units of 10 towns and 21 hospitals	43.8 (9.5)	6,623/26,954	Finland eight items <i>Individual level:</i> Q1 (low), Q2, Q3, Q4 (high)	Self-reported, physician diagnosed depression	Sex, age, marital status, socioeco- nomic position, of employer, smoking, alcohol use, physical activity, BMI	Multilevel logistic regression analysis	Q1 vs. Q4: OR: 1.34 (1.16–1.55) Q2 vs. Q4: OR: 1.16 (1.00–1.35) Q3 vs. Q4: OR: 1.06 (0.92–1.23)	Q1 vs. Q4: OR: 1.00 (0.85–1.16) Q2 vs. Q4: OR: 0.98 (0.84–1.14) Q3 vs. Q4: OR: 0.93 (0.80–1.09)
					<i>Work-unit level:</i> Q1 (low), Q2, Q3, Q4 (high) [self-excluded measure]					
Kouvonen, Oksanen, Vahtrera, Väänänen, et al. (2008) Finland	Cohort study (2000– 2005)	4,853 smoking workers in 1,946 work units of 10 towns and 21 hospitals	43.6 (8.8)	1,147/3,706	Finland eight items <i>Individual level:</i> Q1 (low), Q2, Q3, Q4 (high)	Smoking cessation	Sex, age, marital status, socioeco- nomic position, type of employer, alcohol use, physical activity, BMI, depression	Multilevel logistic regression analysis	Q4 vs. Q1: OR: 1.26 (1.03–1.55) Q3 vs. Q1: OR: 1.13 (0.92–1.38) Q2 vs. Q1: OR: 1.03 (0.84–1.26)	Q4 vs. Q1: OR: 1.05 (0.86–1.29) Q3 vs. Q1: OR: 1.06 (0.87–1.30) Q2 vs. Q1: OR: 1.02 (0.84–1.25)

Work-unit level:
Q1 (low), Q2, Q3,
Q4 (high)
[self-excluded
measure]

Väänänen et al. (2009) Finland	Cohort study (2000– 2005)	31,373 workers in 2,967 work units of 10 towns and (9.2) 21 hospitals	45.0 (9.2)	5,476/25,897	Finland eight items <i>Individual level:</i> Q1 (low), Q2, Q3, Q4 (high)	Number of adverse lifestyle risk factors (smoking, heavy drinking, physical inactivity, and overweight)	Sex, age, marital status, type of employer, co-occurrence at baseline, socioeco- nomic position	Multilevel multino- mial logistic regression analysis	1–2 vs. 0 risk factors: Q1 vs. Q4: OR: 1.02 (0.94–1.11) Q2 vs. Q4: OR: 0.99 (0.94–1.11) Q2 vs. Q4: OR: 1.07 (0.99–1.16) 3–4 vs. 0 risk factors: Q1 vs. Q4: OR: 1.12 (0.93–1.34) Q2 vs. Q4: OR: 1.02 (0.84–1.24) Q3 vs. Q4: OR: 0.93 (0.77–1.12)	1–2 vs. 0 risk factors: Q1 vs. Q4: OR: 0.96 (0.88–1.04) Q2 vs. Q4: OR: 0.94 (0.87–1.03) Q3 vs. Q4: OR: 1.01 (0.93–1.10) 3–4 vs. 0 risk factors: Q1 vs. Q4: OR: 1.03 (0.89–1.25) Q2 vs. Q4: OR: 0.99 (0.82–1.20) Q3 vs. Q4: OR: 0.99 (0.82–1.20)
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(continued)

Table 2.1 (continued)

Author(s), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Oksanen et al. (2010) Finland	Cohort study (2000– 2005)	25,763 employees working in 10 towns and 21 hospitals	44.4 (NA)	4,631/21,132	Finland eight items Three items for vertical social capital Five items for horizontal social capital <i>Individual level:</i> Q1 (low), Q2, Q3, Q4 (high)	Self-reported, physician diagnosed depression Antidepressant treatment	Sex, age, marital status, socioeconomic position, place of work	Multilevel logistic regression analysis	Vertical social capital Physician diagnosed depression: Q1 vs. Q4: 1.42 (1.20–1.69) Q2 vs. Q4: OR: 1.06 (0.88–1.28) Q3 vs. Q4: OR: 1.00 (0.85–1.18) Antidepressant treatment: Q1 vs. Q4: OR: 1.36 (1.16–1.66) Q2 vs. Q4: OR: 1.17 (0.96–1.42) Q3 vs. Q4: OR: 1.17 (0.99–1.38)	Not applicable

Horizontal social
capital
Physician
diagnosed
depression:
Q1 vs. Q4:
OR: 1.47
(1.25–1.74)
Q2 vs. Q4:
OR: 1.14
(0.94–1.38)
Q3 vs. Q4:
OR: 1.04
(0.88–1.23)
Antidepressant
treatment:
Q1 vs. Q4
OR: 1.32
(1.11–1.58)
Q2 vs. Q4:
OR: 1.22
(1.00–1.48)
Q3 vs. Q4:
OR: 1.11
(0.94–1.32)

(continued)

Table 2.1 (continued)

Author(s), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Oksanen, Kivimäki, et al. (2011) Finland	Cohort study (2005– 2009)	28,043 employees working in 10 towns and 21 hospitals	45.9 (8.2)	4,956/23,087	The mean of the Finland eight items from the 2 surveys (2000–2002 and mortality 2004) <i>Self-assessed:</i> Continuous variable with a higher value indicating higher social capital <i>Co-workers’ assessment:</i> Continuous variable with a higher value indicating higher social capital	All-cause mortality	Covariates in Cox proportional hazard analysis: position, marital status, smoking, alcohol use, physical alcohol use, physical activity, obesity, psychologi- cal distress, self-rated health, antidepressant prescriptions, chronic illness at baseline Covariates in fixed-effects logistic regression analysis: increase or decrease in psychological distress, self-rated health, or antidepressant use	Cox propor- tional hazard analysis Fixed-effects logistic regression analysis	Cox proportional hazard analysis <i>Self-assessed</i> HR per 1-unit increase: 0.83 (0.67–1.03) <i>Co-workers’ assessment</i> HR per 1-unit increase: 0.77 (0.49–1.21) Fixed-effects analysis OR per 1-unit increase: 0.91 (0.60–1.37)	Not applicable

Oksanen, Kawachi et al. (2011) Finland	Cohort study (2000–2005)	3,515 hypertensive employees working in nine towns and six hospitals	53.9 (6.6) range: 22–66	828/2,687	Finland eight items <i>Self-assessed:</i> Q1 (low), Q2, Q3, Q4 (high) <i>Co-workers' assessment:</i> Q1 (low), Q2, Q3, Q4 (high)	Non-adherence to antihypertensive medication (based on the number of days-not-treated at the year following the survey using comprehensive physical prescription records)	Sex, age, survey year, socioeconomic position, marital status, type of job contract, type of employer, geographical area, duration of hypertension, smoking excess alcohol use, obesity, physical inactivity, comorbid physical illness and depression	Negative binomial regression analysis	<i>Self-assessed</i> Q1 vs. Q4: RR: 1.17 (0.72–1.92) Q2 vs. Q4: RR: 0.85 (0.53–1.38) Q3 vs. Q4: 1.04 (0.62–1.73) <i>Co-workers' assessment</i> Q1 vs. Q4: RR: 0.95 (0.58–1.56) Q2 vs. Q4 RR: 0.92 (0.56–1.52) Q3 vs. Q4: RR: 0.80 (0.48–1.32)	Not applicable
Oksanen et al. (2012) Finland	Cohort study (2000–2005)	60,922 employees working in 10 towns and 21 hospitals	44.1 (NA)	11,777/49,145	Finland eight items <i>Self-assessed:</i> Q1 (low), Q2, Q3, Q4 (high)	Incidence of chronic hypertension	Age, socioeconomic position, marital status, type of employer, employment time, the size, proportion of male employees and geographical location of the work unit, comorbid conditions (diabetes or depression)	Cox proportional hazard analysis	Men <i>Self-assessed</i> Q1 vs. Q4: HR: 1.38 (1.00–1.90) Q2 vs. Q4: HR: 1.03 (0.73–1.47) Q3 vs. Q4: HR: 0.96 (0.67–1.36) <i>Co-workers' assessment</i> Q1 vs. Q4: HR: 1.29 (0.90–1.85) Q2 vs. Q4: HR: 1.17 (0.80–1.70) Q3 vs. Q4: HR: 1.09 (0.73–1.63)	Not applicable

(continued)

Table 2.1 (continued)

Author(s), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Suzuki et al. (2009) Okayama, Japan	Cross-sectional study (2007)	1,105 employees working in 46 companies in Okayama prefecture	NA	781/324	Size of social network at work by asking the number of co-workers in the same company whom they consult with ease on personal issues (one item)	Poor self-rated health	Sex, age, occupational status, education, smoking, alcohol use, blood sugar, high blood pressure, low HDL and/or high triglyceride, social network outside companies	Logistic regression analysis	Medium vs. high: OR: 1.40 (1.00–1.98) Low vs. high: OR: 1.28 (0.81–2.03)	Not applicable
									Women <i>Self-assessed</i> Q1 vs. Q4: HR: 1.10 (0.92–1.31) Q2 vs. Q4: HR: 1.09 (0.91–1.31) Q3 vs. Q4: HR: 1.03 (0.87–1.23) <i>Co-workers’ assessment</i> Q1 vs. Q4: HR: 1.01 (0.84–1.21) Q2 vs. Q4: HR: 1.04 (0.87–1.23) Q3 vs. Q4: HR: 0.92 (0.77–1.09)	

Suzuki, Takao, et al. (2010) Okayama, Japan	Cross sectional study (2007)	1,147 employees working in 46 companies in Okayama prefecture	NA	808/339	<p><i>Individual level:</i></p> <ol style="list-style-type: none"> Trust in the workplace (one item) Reciprocity in the workplace (one item) <p><i>Company level:</i></p> <ol style="list-style-type: none"> Proportion of workers reporting mistrust (one item) Proportion of workers reporting lack of reciprocity (one item) [self-included measure] 	Poor self-rated health	Sex, age, occupational status, education, smoking, alcohol use, physical activity, BMI, high blood sugar, high blood pressure, low HDL and/or high triglyceride	Multilevel logistic regression analysis (MCMC)	Mistrust vs. trust: OR: 2.31 (1.54–3.46) Lack of reciprocity vs. reciprocity: OR: 2.33 (1.56–3.51)	100 % mistrust vs. 100 % trust: OR: 2.52 (0.51–12.37) 100 % lack of reciprocity vs. 100 % reciprocity: OR: 1.32 (0.32–5.72)
Suzuki, Fujiwara, et al. (2010) Okayama, Japan	Cross sectional study (2007)	1,171 employees working in 46 companies in Okayama prefecture	NA	834/337	<p><i>Individual level:</i></p> <ol style="list-style-type: none"> Trust in the workplace (one item) Reciprocity in the workplace (one item) <p><i>Company level:</i></p> <ol style="list-style-type: none"> Proportion of workers reporting mistrust (one item) Proportion of workers reporting lack of reciprocity (one item) [self-included measure] 	Current smoking	Sex, age, occupational status, education, alcohol use, physical activity, BMI, high blood sugar, high blood pressure, low HDL and/or high triglyceride	Multilevel logistic regression analysis (MCMC)	Mistrust vs. trust: OR: 0.90 (0.60–1.35) Lack of reciprocity vs. reciprocity: OR: 1.15 (0.79–1.69)	OR per a 1-SD increase of the proportion of mistrust: 1.25 (1.06–1.46) OR per a 1-SD increase of the proportion of lack of reciprocity: 1.06 (0.89–1.24)

(continued)

Table 2.1 (continued)

Author(s), (year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Sapp et al. (2010) MA, USA	Cross-sectional study (2002)	1,740 employees and 283 managers in 26 manufacturing in Massachusetts	NA	1,170/567 (three missing)	<i>Aggregated individual- level:</i> The Health Behavior Survey (three items) trust, reciprocity, support from manager <i>Contextual-level:</i> Manager survey (four items) cohesion, socializing, support	Current smoking	Sex, age, education, race/ethnicity, language acculturation, occupational status	Multilevel logistic regression analysis	Not applicable	Aggregated social capital: High vs. low: OR: 1.35 (0.84-2.17) High demands×high SC: OR: 0.45 (0.27-0.74) Contextual social capital: High vs. low: OR: 1.15 (0.74-1.79) High demands×high SC: OR: 0.58 (0.35-0.95) Aggregated social capital: High vs. low: OR: 1.37 (0.76-2.50) High strain×high SC: OR: 0.58 (0.27-1.24) Contextual social capital: High vs. low: OR: 1.39 (0.82-2.35) High demands×high SC: OR: 0.54 (0.25-1.16)

Jung et al. (2012) Germany	Cross-sectional study (2009–2010)	328 employees from six companies in the information and communication technology sector	36.5 (10)	238/32 (eight missing)	Social Capital in Organizations Scale (six items) to assess individual-level horizontal social capital Perceived common values Support Cohesion Trust in the organization	Self-reported depressive symptoms (German-version of the World Health Organization Five Item Well-Being Index)	Sex, age, education, spouse/partner status, employment contract, health awareness, job strain	Logistic regression analysis	High vs. low: OR: 0.76 (0.64–0.90)	Not applicable
Helliwell and Huang (2010) Canada	Cross-sectional study	Three Canadian surveys 1. The second wave (2002–2003) of the Equality, Security, and Community (ESC) survey ($n=1,862$) 2. The 2002 post-central Ethnic Diversity Survey (EDS) (n = confidential) 3) the 2003 General Social Survey (GSS) ($n=9,949$)	NA	NA	Canadian ESC: trust in management (0–1 scale) Canadian EDS and GSS: trust in co-workers (0–1 scale)	Life satisfaction (1–10 point scale)	Sex, age, marital status, education, immigration and ethnic information, self-rated health, frequency of contacts with family members outside the household, with friends, and with neighbors, the number of membership in voluntary organizations, trust in general, trust in neighbors, trust or confidence in police, importance of religion, frequency of attending religious services, and in the GSS, a mastery scale as well as satisfaction in various domains outside the workplace	Survey-ordered probit regression	Canadian ESC $\beta=0.56$, SE=0.11 Canadian EDS $\beta=0.81$, SE=0.06 Canadian GSS $\beta=0.38$, SE=0.07 Note: The results of EDS and GSS are not in the paper but they are available upon request from the authors	Not applicable

(continued)

Table 2.1 (continued)

Author(s), (year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Helliwell and Huang (2011) Canada and USA	Cross- sectional study	Three surveys 1. The second wave (2002–2003) of the Equality, Security, and Community (ESC) survey (<i>n</i> =2,480) 2. The 2003 General Social Survey (GSS) (<i>n</i> =8,794) 3. The 2001 US Social Capital Benchmark Survey (<i>n</i> =13,293)	ESC: 40.49 (10.57) GSS: 39.51 (11.43) Benchma rk: 39.75 (12.08)	NA	Canadian ESC: trust in management (standardized score) Canadian GSS and US benchmark: trust in co-workers (standardized score)	Canadian ESC and GSS: Life satisfaction (1–10 point scale) US benchmark: Happiness (1–4 point scale)	Sex, age, marital status, education, immigration and ethnic information, self-rated health, frequency of contacts with family members outside the household, with friends, and with neighbors, the number of membership in voluntary organizations, trust in general, trust in neighbors, trust or confidence in police, importance of religion, frequency of attending religious services	Survey- ordered probit regression	Canadian ESC $\beta=0.185$, SE=0.025 Canadian GSS $\beta=0.179$, SE=0.017 US benchmark $\beta=0.098$, SE=0.012	Not applicable

BMI body mass index, *HDL* high density lipoprotein, *HR* hazard ratio, *MCMC* Markov chain Monte Carlo, *NA* not available, *OR* odds ratio, *SD* standard deviation, *SE* standard error

for at least 6 months. The FPSS was initiated in 1990s, and today it is the largest occupational cohort study in Finland. As of 2000, surveys have been conducted every 2–4 years. They have been sent to employees who have been working in the participating organizations at the time of the survey. Approximately 35,000–50,000 employees have responded to each survey, and response rates have varied between 65 % and 70 %. The strengths of this study include large sample size, longitudinal follow-up, the use of validated and reliable instruments that assessed both the cognitive and structural dimensions of social capital, and well-documented health end points. In fact, of the nine multilevel studies, there were five longitudinal studies, all of which were based on this cohort (Kouvonen, Oksanen, Vahtera, Stafford, et al., 2008; Kouvonen, Oksanen, Vahtera, Väänänen, et al., 2008; Oksanen et al. 2008, 2010; Väänänen et al., 2009). For example, Kouvonen, Oksanen, Vahtera, Stafford, et al. (2008) examined the association between workplace social capital and the onset of depression by using the data of 33,577 public sector employees who had no recent history of antidepressant treatment and who reported no history of physician-diagnosed depression at baseline in 2000–2002. They assessed both individual-level and aggregate-level social capital at the workplace by using eight Finnish items—individual-level social capital was the mean of response scores, whereas the aggregate-level social capital of the work unit was calculated as the mean of individual responses of coworkers from the same unit. By using multilevel logistic regression analysis, they separately examined the effects of individual-level social capital and work unit-level social capital. Their findings suggest that low individual-level social capital at work is associated with the onset of depression. However, when they examined the effect of work unit-level social capital, they found no association with depression. In another FPS study, Kouvonen, Oksanen, Vahtera, Väänänen, et al. (2008) targeted a total of 4,853 employees who classed themselves as smokers in the baseline survey and examined whether high social capital at work is associated with an increased likelihood of smoking cessation. Like depression, they found that work unit-level social capital was not associated with smoking cessation, although individual-level higher social capital at work was associated with smoking cessation. Furthermore, Väänänen et al. (2009) examined the link between workplace social capital and the co-occurrence of adverse lifestyle risk factors such as smoking, heavy drinking, physical inactivity, and overweight. Although low work unit-level social capital was associated with an increased risk of co-occurrence of lifestyle risk factors at follow-up, adjustment for co-occurrence and socioeconomic position at baseline considerably attenuated the association. Therefore, these studies did not support the contextual effects of social capital at the workplace.

More recently, three additional reports have been published from this cohort (Oksanen et al., 2012; Oksanen, Kawachi, et al., 2011; Oksanen, Kivimäki, et al., 2011). Although they did not utilize a multilevel analytical approach, these reports nonetheless sought to rigorously examine the effects of individual-level social capital at work by using two different types of measures, i.e., self-reported perceptions of workplace social capital and the mean of coworkers' assessment of social capital in the same work unit. The coworkers' assessment was used to address potential reporting bias, that is, the subject's characteristics that influenced the assessment of social

capital. Oksanen, Kivimäki, et al., (2011) examined the prospective association between workplace social capital and all-cause mortality by using the responses of 28,043 public sector employees to repeat surveys in 2000–2002 and 2004. They collected data on all-cause mortality from the Statistics Finland register for all participants who died between January 1, 2005, and December 31, 2009. After adjusting for potential confounders in Cox proportional hazard models, one-unit increase in the mean of repeated measurements of self-assessed social capital was associated with a 17 % decrease in the risk of all-cause mortality (HR 0.83, 95 % CI 0.67–1.03). The corresponding point estimate for the mean of coworker-assessed social capital was similar (HR 0.77, 95 % CI 0.49–1.21). Crucially, they leveraged the repeated assessment of workplace social capital in their study to conduct a fixed effects analysis. This analytical approach offers the advantage of controlling for the stable characteristics of the individuals, whether measured or not, by using within-individual variation only to estimate the regression coefficients (see Chap. 4 for a detailed discussion). In fixed effects analysis, a one-unit increase in self-assessed social capital across the two time points was also associated with a lower mortality risk, which was not statistically significant but yielded an effect estimate that was very close to the Cox regression estimates (OR 0.81, 95 % CI 0.55–1.19). Adjustment for changes in health indicators between the two time points attenuated the association (OR 0.91, 95 % CI 0.60–1.37).

In a separate study, Oksanen et al. (2012) examined the association between workplace social capital and the incidence of chronic hypertension (determined from record linkage to national health registers) among 11,777 male and 49,145 female employees who were free of hypertension at baseline. During a follow-up of a mean of 3.5 years, men in work units reporting the lowest workplace social capital were at approximately a 40 % excess risk of becoming diagnosed with hypertension compared to men working in units with the highest workplace social capital (HR 1.38, 95 % CI 1.00–1.90). This association was slightly attenuated when they used coworkers' assessment (HR 1.29, 95 % CI 0.90–1.85). In contrast, no association was found between workplace social capital and incident hypertension among female employees. Further, Oksanen, Kawachi, et al. (2011) examined the association between workplace social capital and adherence to antihypertensive medication among 3,515 hypertensive employees in the same cohort. Survey responses to social capital were linked to nationwide pharmacy records. Non-adherence to antihypertensive medication was determined based on the number of days-not-treated during the year following the survey, found from comprehensive prescription records. Except for the association between workplace social capital and incident hypertension among men, no relationship was found between workplace social capital and adherence to antihypertensive medication.

The authors went further to elucidate the pathways linking workplace social capital and hypertension among men. Although it is claimed that social capital in neighborhoods as well as at workplaces is causally associated with population health, little is known about what the etiological pathways might be. One often claimed notion is that behavioral health risks mediate the associations. Structural equation models were fitted for self-reported and coworker-assessed workplace

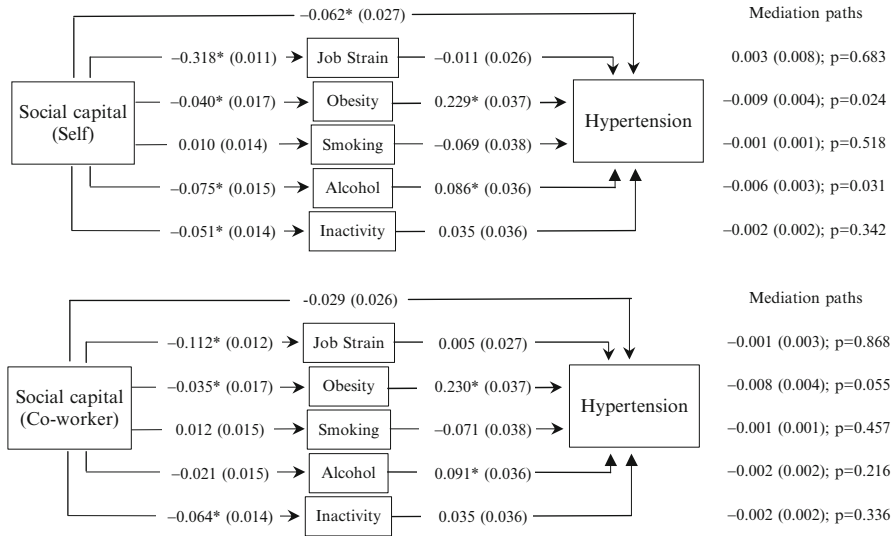


Fig. 2.1 Analysis of mediation pathways in the association between social capital and hypertension in men

social capital to partition the total association into direct and indirect associations. Among men, obesity accounted for 12 % of the association between self-reported social capital and hypertension. The fact that obesity also emerged as a marginally significant mediator in the association for coworker-assessed social capital further supports the status of obesity as a mediator for workplace social capital to hypertension (Fig. 2.1). These results contribute to research on the worldwide epidemic of obesity and hypertension by providing new evidence of obesity as a modifiable factor mediating the association between workplace social capital and health (Siervo, Wells, & Stephan, 2012).

Importantly, of the nine studies on workplace social capital and health using multilevel analyses, only two Japanese studies have examined the contextual effect of workplace social capital by controlling for individual perceptions of social capital at the workplace (Suzuki, Fujiwara, et al., 2010; Suzuki, Takao, et al., 2010). When researchers find an association between work unit- or company-level social capital and employees’ health, they cannot rule out the possibility that the association reflects residual compositional confounding by individual characteristics if they do not simultaneously adjust for individual perceptions of social capital at work. To address this, Suzuki, Takao, et al. (2010), in a cross-sectional study, examined the association between workplace social capital and self-rated health among Japanese private sector employees. Through a two-stage stratified random sampling procedure, they identified 1,147 employees from 46 companies in Okayama prefecture. In this study, workplace social capital was measured through two components: trust and reciprocity. Company-level social capital was measured by aggregating employee responses and calculating the proportion of workers reporting mistrust

and lack of reciprocity (i.e., self-included measure¹). The researchers used multi-level logistic regression analysis via the Markov chain Monte Carlo methods to explore whether individual- and company-level mistrust and lack of reciprocity were associated with poor self-rated health. Workers reporting individual-level mistrust and lack of reciprocity were approximately twice as likely to suffer from poor health, even after controlling for possible confounders. Notably, they found some suggestion of a contextual association between company-level mistrust and poor health, even after taking into account the individual coworkers' perceptions of mistrust. These results suggest that both individual- and company-level perceived trust at workplaces are significant for workers' health independently. Despite the thorough examination of cross-level interaction terms between company-level social capital and individual characteristics, no clear patterns were observed. When Suzuki, Fujiwara, et al. (2010) examined the association between workplace social capital and smoking status, using the same data set, they found that company-level mistrust was associated with higher likelihood of smoking, whereas individual perceptions of mistrust were not. Thus, these two studies suggest that the contextual effects of workplace social capital in Japan are significant. Given the limitation resulting from their cross-sectional manner, further studies are warranted to examine the contextual effects of workplace social capital in longitudinal studies.

Finally, it is worthwhile mentioning that of the 17 studies, one Finnish cohort study examined the vertical component (i.e., respectful and trusting relationships across power differentials at work) and the horizontal component (i.e., trust and reciprocity between employees at the same hierarchical level) of workplace social capital as risk factors for subsequent depression (Oksanen et al., 2010). This study found that employees with either low vertical or horizontal social capital were 30–50 % more likely to be diagnosed with depression or to start antidepressant treatment than their counterparts with high social capital, thus suggesting that both these components may be relevant to employee well-being. We expect, however, that further research will identify dimensions of workplace social capital that either positively or negatively affect health outcomes in different cultural or economic settings.

2.4.2 Findings Regarding Workplace Social Capital and Health in Medical Settings

Table 2.2 provides details of seven studies of workplace social capital and health in medical settings, two of which used particular problems in medical settings as

¹When using multilevel analyses in social capital research, individual variables are usually aggregated into the higher level unit to define group-level social capital. Typically, the aggregated measure includes responses of every individual belonging to that group (i.e., it constitutes a self-included measure). More recently, researchers have developed an aggregate measure which excludes the response of the individual to whom the aggregate measure is linked (i.e., a self-excluded measure). For details about the substantive and technical properties of these two measures, see Suzuki, Yamamoto, Takao, Kawachi, and Subramanian (2012).

Table 2.2 Summary of 7 studies of workplace social capital and health in medical settings

Author(s), year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex(M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Virtanen et al. (2009) Finland	Cross-sectional study (2004)	1,092 patients in 60 non- psychiatric bed wards in six hospitals	NA	NA	<i>Ward-level:</i> From 1, 159 staff survey responses, the mean of indicators of collaboration in each ward was calculated: Trust between ward members communica- tion, justice in the distribution of work, support from supervisor, and quality of the collaboration between supervisors in the ward	Hospital- associated infection among patients	Patients sex, age, surgical status, exposure to devices, hospital type, unit type, number of patients at ward, use of corticosteroids, and prevalence of any diagnosis/ treatment related to immunodefi- ciency	Logistic analysis (GEE)	Not applicable	Trust between ward members Intermediate vs. high: OR: 1.92 (1.02–3.62) Low vs. high: OR: 2.67 (1.42–5.02) Communication Average vs. good: OR: 1.81 (1.00–3.27) Poor vs. good: OR: 1.80 (0.98–3.33) Justice in the distribution of work Intermediate vs. high: OR: 1.76 (0.99–3.14) Low vs. high: OR: 1.81 (1.04–3.16) Support from supervisor Average vs. good: OR: 0.83 (0.38–1.83) Poor vs. good: OR: 1.25 (0.66–2.34) Collaboration between ward supervisors Average vs. good: OR: 1.68 (0.93–3.06) Poor vs. good: OR: 2.46 (1.38–4.38)

(continued)

Table 2.2 (continued)

Author(s), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex(M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Chen et al. (2008) Taiwan	Cross-sectional study (2005)	229 high- and middle-level female managers in 17 hospitals	38.6	0/229	Individual-level social capital (four items) 1. Mentor help promotion 2. Number of mentors in career 3. Relational ties with the significant mentor 4. Same gender of the most significant mentor	Current poor self-rated health Self-rated health change from the previous year	<i>Individual-level:</i> Age, marital status, education, job tenure division chairwoman, work department, perception-induced stress <i>Hospital-level:</i> Hospital ownership, hospital types	Multilevel ordinal regression analysis	<p>Poor self-rated health</p> <p>1. Mentor help promotion Yes vs. no: $\beta=0.75$, SE=0.37, $p=0.04$</p> <p>2. Number of mentors in career (ref: ≤ 1 mentor) 2 mentors: $\beta=-0.57$, SE=0.44, $p=0.20$ 3 mentors: $\beta=-0.59$, SE=0.69, $p=0.39$ ≥ 4 mentors: $\beta=-0.81$, SE=0.46, $p=0.08$</p> <p>3. Relational ties with the significant mentor (ref: coworker) Division supervisor: $\beta=0.12$, SE=0.40, $p=0.76$ Supervisor in different division: $\beta=-0.26$, SE=0.58, $p=0.65$</p> <p>4. Same gender of the most significant mentor Yes vs. no: $\beta=-0.10$, SE=0.42, $p=0.82$</p> <p>Health change</p> <p>1. Mentor help promotion Yes vs. no: $\beta=0.37$, SE=0.37, $p=0.33$</p> <p>2. Number of mentors in career (ref: ≤ 1 mentor) 2 mentors: $\beta=0.22$, SE=0.45, $p=0.63$ 3 mentors: $\beta=0.56$, SE=0.72, $p=0.44$ ≥ 4 mentors: $\beta=0.49$, SE=0.47, $p=0.31$</p> <p>3. Relational ties with the significant mentor (ref: coworker) Division supervisor: $\beta=-0.13$, SE=0.41, $p=0.75$ Supervisor in different division: $\beta=-0.15$, SE=0.43, $p=0.72$</p> <p>4. Same gender of the most significant mentor Yes vs. no: $\beta=-0.15$, SE=0.43, $p=0.72$</p>	Not applicable

Ernstmann et al. (2009) Germany	Cross-sectional study (2002–2003)	959 nurses working in four hospitals Corporate Governance Using Biopsychosocial Indicators (CoBI) study	37.58 (9.76)	112/843 (four missing)	Six items to assess two key features of social capital: 1. Common values 2. Perceived trust at the hospital	Clinical risk management among nursing staff of hospitals (six-item scale)	Sex, age, years of professional experience, surgical care unit, level of care of the hospital	Pearson correlation coefficient Multiple regression analysis	Correlation coefficient between social capital and clinical risk management: 0.472 Social capital was significantly associated with higher clinical risk management in the final model (no estimates were reported).	Not applicable
Ommen et al. (2009) Germany	Cross-sectional study (2002)	277 clinicians working in four hospitals Corporate Governance Using Biopsychosocial Indicators (CoBI)	40.0 (9.9)	163/114	Six items to assess two key features of social capital: 1. Common values 2. Perceived trust at the hospital	Job satisfaction (one item)	Sex, age, years of professional experience, workload	Pearson coefficient Multiple linear regression analysis	Correlation coefficient between social capital and job satisfaction: 0.524 ($p < 0.01$) Social capital was significantly associated with higher job satisfaction in the final model	Not applicable
Kowalski, Ommen et al. (2010) Germany	Cross-sectional study (2002)	959 nurses working in four hospitals Corporate Governance Using Biopsychosocial Indicators (CoBI) study	38.0 (9.8)	112/843 (four missing)	Six items to assess two key features of social capital: 1. Common values 2. Perceived trust at the hospital	Emotional exhaustion based on Maslach Burnout Inventory -General Survey (MBI-GS) (five items)	Sex, age, years of professional experience, job tenure, workload, decision latitude	Logistic regression analysis	OR per 1-unit increase: 0.549 (0.403–0.746)	Not applicable

(continued)

Table 2.2 (continued)

Author(s), (year), location of study site(s)	Study design	Population/setting	Mean age (SD)	Sex (M/W)	Social capital measure	Outcome	Covariates	Analyses	Individual-level effect estimates	Contextual-level effect estimates
Kowalski, Driller, et al. (2010) Germany	Cross-sectional study (2005–2006)	175 caregiving and pedagogical staff of German services Demands and Social Network—Opportunities in the Care for the Disabled (INA Study)	41.9 (9.8)	63/109 (three missings)	Six items to assess two key features of social capital: 1. Common values 2. Perceived trust at the hospital	Emotional exhaustion based on Maslach Burnout Inventory—General Survey (MBI-GS) (five items)	Sex, age, years of professional experience, job tenure, workload, decision latitude	Logistic regression analysis	OR per 1-unit increase: 0.559 (0.290–1.077)	Not applicable
Driller et al. (2011) Germany	Cross-sectional study (2002)	277 clinicians working in four hospitals Corporate Governance Using Biopsychosocial Indicators (CoBI) study	40.0 (9.9)	163/114	Six items to assess two key features of social capital: 1. Common values 2. Perceived trust at the hospital Social capital was grouped by performing median split in logistic regression analysis.	Emotional exhaustion based on Maslach Burnout Inventory—General Survey (MBI-GS) (five items)	Sex, age, marital status, years of professional experience, hospital, self-efficacy	Logistic regression analysis	Low vs. high: OR: 1.62 (1.10–2.30)	Not applicable

GEE generalized estimating equation, NA not available, OR odds ratio, SD standard deviation, SE standard error

outcomes (Ernstmann et al., 2009; Virtanen et al., 2009). A Finnish study examined the association between ward-level collaboration among ward staff as indicated by trust between work unit members (horizontal social capital) and the risk of hospital-associated infection among patients, demonstrating a beneficial effect even after adjusting for hospital factors and patient-related risk factors (Virtanen et al., 2009). Another study from Germany suggested that higher individual-level social capital among nurses is beneficial for integrating clinical risk management into their daily work (Ernstmann et al., 2009). The remaining five studies examined the effect of individual-level social capital on emotional exhaustion (Driller, Ommen, Kowalski, Ernstmann, & Pfaff, 2011; Kowalski, Driller, et al., 2010; Kowalski, Ommen, et al., 2010), job satisfaction (Ommen et al., 2009), and self-rated health (Chen, Lin, & Chung, 2008). Overall, these studies have found that individual-level social capital at the workplace has beneficial effects on these health outcomes.

2.5 Cross-National Comparison of Workplace Social Capital: Japan and Finland

The short measure developed, validated, and frequently used in the Finnish Public Sector cohort (Kouvonen et al., 2006) was translated into Japanese in 2009 at the University of Tokyo. Two Japanese versions were made, one from English to Japanese and the other from Finnish to Japanese, using a translation company and a native Finnish expert. The researchers compared each item of both versions and made a tentative Japanese version and an English back-translated questionnaire from the Japanese version. After several consultations with the Finnish researchers, the Japanese version of the short measure of social capital was finalized.

Researchers from Okayama University in Japan used the Japanese translation of this measure in a survey conducted in a company providing call center services in northeast Japan (an area not severely damaged by the earthquake and tsunami in Japan on March 11, 2011). This made cross-national comparison possible. By looking at data from a cross-national perspective, this investigation is intended to help understand the extent to which this measure of workplace social capital captures the essence of the social relationships in workplaces in different countries and how much they are influenced by employee characteristics.

The Japanese data were gathered in a company which employs 1,193 operators who work in 53 teams; division into teams was based on client companies. The survey was administered to 598 randomly selected employees in May 2011, and 560 (69 % women, mean age 33.4 years) people from 52 teams responded (response rate 94 %).

Then, to allow for best possible comparativeness between the countries, the Finnish participants were sourced from kindergartens. Kindergartens were considered to best represent team-based work organizations in the Finnish public sector. A total of 4,639 members of staff in 452 kindergartens responded to a survey between September and November, 2008 (response rate 73 %). Of the respondents, we excluded those who were not involved in the caretaking of children organized as

teams ($n=369$) leaving 4,270 employees (98 % women, mean age 44.0 years) in the final sample. In both countries, the workplace social capital measure showed good psychometric properties concerning their reliability (Japan: Cronbach's $\alpha=0.92$, Finland: Cronbach's $\alpha=0.86$).

2.5.1 Results from Cross-National Comparisons

There was a slight difference between the countries in the degree of similarity in perceptions of workplace social capital among members of the same work unit. The intraclass correlation coefficient (ICC) estimating the degree of resemblance in individual perceptions of workplace social capital was 13 % in the Japanese sample and 20 % in the Finnish sample. The ICC provides information on the resemblances of individual responses within work units (Diez Roux, 2002). Thus, an employee's perception of social capital at work resembled that of his/her coworkers in the same kindergarten in Finland more strongly than in the teams in the Japanese call center. This indicates that either something about the work units themselves was inherently different or that individuals working in the same work unit or team were more similar to each other. It is, however, noteworthy that previously reported ICCs in non-work contexts have been substantially lower. For example, in a study of neighborhood-level social capital collective efficacy and violent crime in Chicago, ICC was 7.5 % (Sampson, Raudenbush, & Earls, 1997).

The observed levels of workplace social capital and its components tended to be higher in the Finnish sample (Table 2.3). Specifically, in Finland, employees reported higher total social capital at work than their counterparts in Japan (observed means were 3.94 vs. 3.78). Although the sample sizes were different, the sample standard deviations (SD) were similar (SD 0.64 vs. 0.66). The means of horizontal and vertical workplace social capital were 3.83 and 4.13 in Finland and 3.71 and 3.90 in Japan.

Looking at workplace social capital by item showed that in both countries the highest scores were observed in information sharing ("People keep each other informed about work-related issues in the work unit") and in items describing relationships between the supervisor and employee ("Our supervisor treats us with kindness and consideration," "Our supervisor shows concerns for our rights as an employee," and "We can trust our supervisor"), whereas the lowest scores were related to perceptions about cooperation in the work unit.

2.5.2 Individual-Level Correlates of Workplace Social Capital by Country

We further sought to understand the interplay between individual characteristics and workplace social capital and how this might vary between Finland and Japan. At the individual level, social capital is believed to be determined by factors such as

Table 2.3 Mean scores of individual-level workplace social capital by item in Finland and Japan

	Finnish (<i>n</i> =4,270)	Japanese (<i>n</i> =560)
	Mean (SD)	Mean (SD)
Workplace social capital	3.94 (0.64)	3.78 (0.66)
<i>Horizontal social capital at work</i>	3.83 (0.69)	3.71 (0.69)
People keep each other informed about work-related issues in the work unit	4.12 (0.73)	3.87 (0.78)
We have a “we are together” attitude	3.99 (0.90)	3.81 (0.82)
People feel understood and accepted by each other	3.74 (0.93)	3.64 (0.80)
People in the work unit cooperate in order to help develop and apply new ideas	3.65 (0.91)	3.60 (0.84)
Do members of the work unit build on each other’s ideas in order to achieve the best possible outcome?	3.64 (0.81)	3.62 (0.85)
<i>Vertical social capital at work</i>	4.13 (0.88)	3.90 (0.76)
Our supervisor treats us with kindness and consideration	4.17 (0.93)	3.92 (0.81)
Our supervisor shows concern for our rights as an employee	4.13 (0.95)	3.92 (0.79)
We can trust our supervisor	4.10 (1.03)	3.85 (0.89)

SD standard deviation

education, socioeconomic status (SES), and employment status. Therefore, we investigated age, sex, SES, and type of job contract as correlates of workplace social capital. The choice of these variables was mainly determined by availability in both datasets. Furthermore, being healthy may be an important prerequisite for cooperation at the workplace. Still, causality is likely to be bidirectional; for example, participating in social activities at the workplace may also promote better health. Therefore, self-rated health was imported to the data from surveys. In the analysis, we used multilevel linear regression models in which individuals were at level 1 and work units at level 2 (Tables 2.4 and 2.5).

In the Finnish kindergartens, employees in higher SES groups and over 50 years of age had higher workplace social capital and horizontal social capital than that reported by younger coworkers in lower SES groups. There were no differences between men and women. Better health was associated with higher workplace social capital and especially with higher vertical social capital in the workplace. In the Japanese call center, younger age was related to higher vertical social capital at work. In Japan, men tended to have higher social capital, in all aspects, than women. SES and type of job contract did not play a major role in reporting of social capital. In both countries, health was a significant correlate of workplace social capital and its components.

2.5.3 What Do These Comparisons Indicate?

The levels of workplace social capital were higher in the Finnish kindergartens, where employees perceived more social capital at work than the employees in the Japanese call center. In addition, the perceptions of individual employees in Finland

Table 2.4 Mean scores of workplace social capital by correlates in Finland (4,270 employees in 425 kindergartens) and Japan (560 employees in 52 call center teams)

	Finland		Japan	
	<i>N</i>	Mean (SE) ^a	<i>N</i>	Mean (SE) ^a
Age (years)		$p < 0.0001$		$p = 0.09$
<40	1,340	3.91 (0.04)	417	3.80 (0.06)
40–50	1,745	3.96 (0.04)	115	3.66 (0.08)
>50	1,185	4.02 (0.04)	28	3.64 (0.13)
Sex		$p = 0.48$		$p = 0.003$
Men	100	3.98 (0.06)	172	3.87 (0.06)
Women	4,170	3.94 (0.02)	388	3.67 (0.06)
Socioeconomic status		$p < 0.0001$		$p = 0.30$
Upper	267	4.10 (0.05)	0	
Middle	1,659	3.89 (0.04)	182	3.80 (0.06)
Lower	2,344	3.90 (0.04)	378	3.74 (0.05)
Job contract		$p = 0.15$		$p = 0.09$
Permanent	3,816	3.94 (0.04)	99	3.71 (0.07)
Other	454	3.99 (0.04)	461	3.83 (0.05)
Self-rated health		$p < 0.0001$		$p = 0.004$
Good	3,459	4.07 (0.04)	431	3.87 (0.05)
Poor	787	3.86 (0.04)	129	3.67 (0.07)

SE standard error

^aAdjusted for age, sex, socioeconomic status, job contract, and self-rated health**Table 2.5** Mean scores of horizontal and vertical workplace social capital by country and correlates

	Finland		Japan	
	Horizontal	Vertical	Horizontal	Vertical
	Mean (SE) ^a	Mean (SE) ^a	Mean (SE) ^a	Mean (SE) ^a
Age (years)	$p < 0.0001$	$p = 0.69$	$p = 0.15$	$p = 0.03$
<40	3.75 (0.04)	4.18 (0.05)	3.72 (0.06)	3.91 (0.06)
40–50	3.84 (0.04)	4.16 (0.05)	3.61 (0.08)	3.72 (0.08)
>50	3.92 (0.04)	4.18 (0.05)	3.54 (0.13)	3.71 (0.15)
Sex	$p = 0.72$	$p = 0.36$	$p = 0.02$	$p = 0.0005$
Men	3.85 (0.07)	4.21 (0.08)	3.77 (0.07)	4.00 (0.07)
Women	3.83 (0.03)	4.14 (0.03)	3.62 (0.06)	3.74 (0.06)
Socioeconomic status	$p < 0.0001$	$p = 0.02$	$p = 0.13$	$p = 0.89$
Upper	4.02 (0.05)	4.24 (0.07)	–	–
Middle	3.72 (0.04)	4.17 (0.05)	3.74 (0.07)	3.88 (0.07)
Lower	3.77 (0.04)	4.12 (0.05)	3.65 (0.05)	3.87 (0.06)
Job contract	$p = 0.72$	$p = 0.001$	$p = 0.17$	$p = 0.04$
Permanent	3.84 (0.04)	4.11 (0.05)	3.64 (0.08)	3.78 (0.08)
Other	3.83 (0.05)	4.24 (0.06)	3.75 (0.05)	3.96 (0.06)
Self-rated health	$p < 0.0001$	$p < 0.0001$	$p = 0.006$	$p = 0.005$
Good	3.94 (0.04)	4.28 (0.05)	3.79 (0.07)	3.98 (0.06)
Poor	3.73 (0.04)	4.07 (0.06)	3.59 (0.05)	3.77 (0.08)

SE standard error

^aAdjusted for age, sex, socioeconomic status, job contract, and self-rated health

were closer to those of their coworkers than in Japan. These findings may reflect differences in the organization of work, in the shared values that guide day-to-day work, and in the probabilities of employees interacting with each other. For example, in the Japanese call center, division into teams is based on client companies. In practice, this means that social interaction between teams is rare. Of course, the differences may simply reflect compositional or unmeasured differences between the samples and we need to be cautious in the interpretation of the findings.

In both countries, the horizontal aspect of workplace social capital which captures the intra- and intergroup relations at the workplace was best manifested in items assessing shared norms of reciprocity, measured by perceptions of keeping each other informed about work-related issues, and social cohesion and connectedness, measured from perceptions of a united attitude at the workplace. Smaller differences were observed in items measuring vertical social capital. However, in Japan, men perceived higher workplace social capital and especially higher vertical social capital than women. In Japan, prevailing traditional power structures mean that vertical social capital is still largely accessed by men. This means that measuring female social capital at the workplace level may underestimate the total amount of vertical social capital in a Japanese work community.

There was no consistent pattern as to which correlates were associated with social capital in country comparisons, except for health. Those with better health had higher scores of both vertical and horizontal social capital at work. However, cross-sectional data does not permit verification of the direction of the effect. Furthermore, although we accounted for these differences in the analyses, we were only able to take a limited set of potential confounders into account in the models.

2.5.4 What Can We Learn from These Findings?

First, the levels of workplace social capital were reasonably high in both samples, indicating that social capital can provide an important resource for these workplaces. From the employee's perspective, the workplace is a natural site for the accumulation of social capital. Employees feel a sense of community and enjoy mutual help and reciprocity in their jobs (Putnam, 2000). Moreover, workplace social capital can mean access to social connections that help the processes of getting by or getting ahead (Stone & Hughes, 2002). From the employer's perspective, social capital provides a potential resource since it encourages and motivates regular collaborative contacts among peers and between employees and their supervisors. These contacts and connections are potential resources as they offer the employees and their organizations information and credit of various kinds. Thus, workplace social capital reflects the ability of its members to participate, cooperate, organize, and interact. Moreover, social capital offers benefits to organizations by improving knowledge flow due to existing trust, cooperation, and shared values (Prusak & Cohen, 2001). Trust cannot simply materialize: it evolves through processes that embody high levels of interaction, transparency, and foreseeable action. For example, high social capital means that employees can trust that things work

out as planned and feel that their expertise is valued. Furthermore, supervisors can express trust in their subordinates by ensuring that the division of labor follows fair opportunities to use personal skills. However, trust at the workplace may also be a consequence rather than a facet (Putnam, 2001; Woolcock, 2001). Finally, the theory posits that social capital is productive, making it possible to achieve certain ends that are not attainable in its absence (Coleman, 1990).

Second, in the Finnish kindergartens, the level of workplace social capital was higher than that reported in prior studies comprising employees from the whole Finnish Public Sector cohort, for example, those working in hospitals, schools, and administrative offices (Oksanen et al., 2012). This suggests that there may be something specific in kindergartens that is beneficial to the development of workplace social capital. Much of the work in kindergartens is hands-on and done in teams divided according to the ages of the children. At the same time, it involves a specified set of joint tasks, such as eating together and taking the children outside to play, thereby encouraging frequent interaction between coworkers. Alternatively, the explanation may be that the natural aptitude of kindergarten teachers for working with children is reflected in their way of interacting with the whole work community. Furthermore, the level of vertical social capital was relatively high. Kindergartens can be vertically highly organized in general: sometimes they have a strong pre-school policy proposed by the chief manager or school board. Alternatively, the ability to enable the redistribution of resources, ideas, and information is a key function of vertical social capital. In kindergartens, these resources may be leveraged to create effective educational methods thereby creating vertical social capital.

Third, many researchers have called for greater emphasis to be placed on attempts to distinguish between the different dimensions of social capital and their association with health outcomes (Kawachi, Kim, Coutts, & Subramanian, 2004). Based on the data from these two workplaces, it is equally as important to strengthen vertical social capital as it is to focus on horizontal social capital. Without vertical social capital connecting employees to supervisors and leaders to resources, social networks, norms, and trust may not actually be able to improve any aspect of well-being in a work community. In addition, without horizontal links, important information channels, support channels, or other benefits of solidarity will be lost.

Finally, cross-cultural and cross-national comparisons require the use of a uniform measure of workplace social capital. Although it has been questioned whether such measures can be constructed that are locally and contextually relevant, at the same time allowing for cross-cultural comparability (Krishna & Shrader, 2000), there is a clear need for a tool that accounts for the different dimensions and components of social capital among a wide range of community.

2.6 Conclusions

This chapter describes the recent extension of social capital research from residential and geographical areas into workplaces. Workplaces provide a significant basis of relational context—one of the contextual triads—among working populations

(Suzuki, 2012). However, research into workplaces is only emerging in the field of social capital. Studies have been conducted in a handful of countries and a few settings. It is therefore too early to draw any definite conclusion about the associations with health.

Further longitudinal studies are needed to investigate data from a larger variety of countries, jobs, and occupations. Many researchers have called for a greater emphasis being placed on attempts to distinguish between the different dimensions, aspects, and components of social capital and their associations with health outcomes. This also applies to social capital at the workplace. More studies are needed to explore horizontal and vertical social capital at workplaces and their associations with mental and physical illness and recovery.

To date, most of social capital studies at the workplace have measured the cognitive aspect of workplace social capital only. The cognitive aspect of social capital refers to what people “believe” and the structural component what people “do.” Thereby, *cognitive* social capital covers aspects related to beliefs, attitudes, and values such as trust, solidarity, and reciprocity that are shared among members of the same community or work unit. *Structural* social capital, in turn, represents the extent and intensity of associational links or activity. So far, the structural component has included aspects related to the practices of collective action and exchanges of information at the workplace. Future studies might find innovative ways to measure the structural component objectively, for example, by estimating time spent at cooperation and coordination enhancing utilization of available resources. Furthermore, future studies of workplace social capital may benefit from alternative approaches of measurement such as social network mapping to clarify which configuration of workplace social capital is likely to affect workers’ health (Lakon, Godette, & Hipp, 2008).

Workplace policies increasingly let workers engage themselves in community work to promote collective action and social cohesion. These work–community interactions deserve more attention in future studies. Indeed, employers are able to influence factors that produce workplace social capital (Siervo et al., 2012).

Ideally, social capital at the workplace may provide an avenue for health promotion and for tackling increasing social and geographical inequalities in health among the working population (Krieger et al., 2008; Mackenbach et al., 2008; Suzuki, Kashima, Kawachi, & Subramanian, 2012; Thomas, Dorling, & Davey-Smith, 2010). However, intervention studies are needed in order to confirm or refute this hypothesis.

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Chapter 3

Social Capital in Schools

**Marianna Virtanen, Jenni Ervasti, Tuula Oksanen, Mika Kivimäki,
and Jussi Vahtera**

The theory of social capital was first introduced by Hanifan in his rural school community study in 1916. Since then, the theory and research have focused more on family and neighborhood contexts and on adult outcomes. All forms of capital in schools—financial, human and social capital—are recognized predictors of children’s and adolescents’ well-being. Although evidence supporting the existence of a positive effect of school social capital on the well-being of the whole school community is accumulating, less is known about the associations between school social capital and students’ health and health risk behaviors. Most research on school social capital has addressed its impact on academic achievement and social adjustment among young people, and consistent evidence has suggested that these are positively related. The research suggests that it is important to recognize children and adolescents as active agents who create their own social capital, and who themselves shape their communities and schools as contexts where social capital can be developed and maintained.

M. Virtanen, Ph.D. (✉) • J. Ervasti, Ph.D.
Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, 00250 Helsinki, Finland
e-mail: marianna.virtanen@ttl.fi; Jenni.Ervasti@ttl.fi

T. Oksanen, M.D., Ph.D.
Finnish Institute of Occupational Health, Lemminkäisenkatu 14-18B, 20520 Turku, Finland
e-mail: Tuula.Oksanen@ttl.fi

M. Kivimäki, Ph.D.
Department of Epidemiology and Public Health, University College London,
1-19 Torrington Place, London WC1E 7HB, London, UK

Finnish Institute of Occupational Health, Topeliuksenkatu 41, Helsinki 00250, Finland
e-mail: mika.kivimaki@helsinki.fi

J. Vahtera, M.D., Ph.D.
Finnish Institute of Occupational Health, Lemminkäisenkatu 14-18B, 20520 Turku, Finland
e-mail: Jussi.Vahtera@ttl.fi

3.1 Introduction

The theory of social capital has, in fact, its roots in social research on schools. As early as 1916, Hanifan defined social capital in his study *The Rural School Community Center* as follows: “Social capital is good will, fellowship, mutual sympathy, and social intercourse among a group of individuals and families who make up a social unit, the rural community, whose logical center is the school” (p. 180). In his program, a rural community in West Virginia, USA, succeeded in building social capital and using it to promote the well-being of the whole community. The community passed through the three stages: from entertainment to discussion and finally to the stage of action. At that time, a major problem was children’s truancy, which decreased remarkably during the program just through the teachers visiting and having discussions with the families.

Hanifan identified several means to improve social capital and community well-being, such as community center meetings, agricultural fairs and school exhibits, writing up the community history, addressing school attendance, evening classes for adults, lectures given by local people or teachers, establishing school libraries, improving school athletics, etc. His statement about the need to regard people as active agents is still fresh: “If you tell the people what they ought to do they will say ‘mind your own business’ but if you help them to discover for themselves what ought to be done, they will not be satisfied until it is done. The more the people do for themselves the larger will community social capital become and the greater will be the dividend upon the social investment” (Hanifan, 1916, p. 138).

Today, ill-health, in the forms of mental and behavioral disorders (Kessler, Avenevoli, Costello, et al., 2012; Merikangas et al., 2010; Patel, Flisher, Hetrick, & McGorry, 2007), and unhealthy lifestyles (Green et al., 2007; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Zarzar et al., 2012) are highly prevalent in adolescents and young adults. Conduct disorders have increased during the past decades (Collishaw, Maughan, Goodman, & Pickles, 2004), and in addition, there is strong evidence that poor mental health in young people is associated with poorer educational achievement, substance use and abuse, violence, and sexual ill-health (Patel et al., 2007).

Associations between social capital and health have been widely examined among adults (for reviews, see Kim, Subramanian, & Kawachi, 2008; Murayama, Fujiwara, & Kawachi, 2012), but fewer studies to date have focused on social capital and health among children and adolescents. Schools are an important social context in young people’s lives because young people spend a considerable amount of their time in schools. Since research has shown between-school variance in students’ health-related outcomes (Elovainio et al., 2011; Richmond & Subramanian, 2009; Virtanen, Pietikäinen, et al., 2009), schools may influence adolescents’ health and well-being. High level of education can also be seen as an endpoint of coevolution

of human capital with social capital. This is actualized in political and social engagement, such as active voting behavior (Helliwell & Putnam, 2007). In this chapter, we describe how social capital in the school setting is defined and how it is created between students, teachers, parents, and communities, as well as how it can be maintained and distributed. We also review the empirical evidence how social capital in schools may affect young people's health, well-being, and academic performance.

Besides families, neighborhoods are central settings for social development, being one of the places where children form networks and learn social skills (Sellström & Bremberg, 2006). While our main focus is on social capital in schools and its effects on the health and well-being of children, as will be revealed in the following review, forms of capital in the family, neighborhood, and school are tightly interconnected in the theory of social capital among young people. Thus, we will briefly present the concepts of family and neighborhood and the three forms of investments—financial, human, and social—in these contexts.

3.2 Social Capital in the Family and Neighborhood Contexts and Well-Being Among Children and Adolescents

Coleman (1988, 1990a), one of the most cited authors in the field, considered the family to be the most important entity in terms of social capital. More specifically, he observed that in addition to social capital, family systems are made up of financial capital (i.e., financial resources for household and child-rearing expenses) and human capital (i.e., parental education and labor skills). Coleman's definition (1988) of social capital is "not a single entity but a variety of different entities with two elements in common: they all consist of some aspects of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure" (p. 98). Thus, in Coleman's view, social capital is a positive resource and a potentially important resource for the development of human capital.

Bourdieu (1986) meanwhile considers social capital as a mechanism of social reproduction, i.e., processes which sustain or perpetuate characteristics of a given social structure or tradition over a period of time. He uses social capital to emphasize class inequalities in access to institutional and other resources and inequalities in opportunities to develop and maintain human capital and cultural capital. A common point between Bourdieu's and Coleman's concepts is that social capital is a resource to be used to foster the cognitive and social development of children.

Social capital can be further considered in cognitive and structural terms (Bain & Hicks, 1998; Islam, Merlo, Kawachi, Lindström, & Gerdtham, 2006).

Cognitive social capital is an individual's perception of the level of interpersonal trust, sharing, and reciprocity. Structural social capital can be seen in externally observable factors such as the density of social networks or patterns of civic engagement. In children and adolescents, cognitive social capital often refers to their perceptions in contexts such as home, neighborhood, and school. Social capital can also be divided into vertical and horizontal components (Islam et al., 2006). Vertical social capital, i.e., linking social capital, stems from hierarchical or unequal relations due to power differences, differences in resource bases or status. Horizontal social capital includes bonding social capital (interpersonal relationships within homogenous groups, i.e., strong ties that link family members, friends, etc.) and bridging social capital [weaker ties linking different groups of people, and formal or informal social participation (Putnam, 2000)]. Parents' intrafamilial connections are a form of bonding social capital, whereas parents' connections with people outside the family, such as neighbors, school personnel, and coworkers, fall under bridging social capital (Parcel, Dufur, & Cornell Zito, 2010). Due to the main focus on ties between adults, in the works of the major contemporary theorists, children seem not to feature as core actors (Leonard, 2005). However, one may assume that among children and adolescents, bonding social capital refers to social capital in the family, while bridging social capital can be developed, for example, through their participation in various forms of informal and formal activities such as playgroups, sports groups, and after-school activities. Vertical (linking) social capital may among children and adolescents materialize in relationships with teachers, coaches, and employers.

There is a large body of research showing that deficits in familial financial capital, meaning low income, often pose a risk to children's healthy development (Kempf, Rathmann, & Herder, 2008; Lynch, Law, Brinkman, Chittleborough, & Sawyer, 2010) and that deficits tend to persist till midlife (Galobardes, Smith, & Lynch, 2006). Familial financial capital is correlated with high parental education, a foundation for human capital. Thus, human capital has been viewed as something which provides assets on which children can draw (Conger & Donnellan, 2007), and the relationship with school has been suggested to be easier for educated families because they tend integrate more easily with the school system and its expectations (Lareau, 2003; Maier, Ford, & Schneider, 2008).

According to Coleman (1990b), it is *communication* between family members that is important since it is through communication that basic rules and norms as well as obligations and responsibilities within the family are formed (Schaefer-McDaniel, 2004). Still, parents' "investment" in children is more than supervision or control; parents also create a bond along which information, norms, and values can pass (Dufur, Parcel, & McKune, 2008; Parcel & Dufur, 2001a). Social capital in the family, expressed as high levels of cohesion (Forkel & Silbereisen, 2001) and of parental surveillance and interaction with their children (Rothon, Goodwin, & Stansfeld, 2012), has been found to predict better mental health among children and adolescents. Coleman (1988) also suggests that social capital contributes to the development and

transfer of human capital from parents to children. The development of human capital may fail if parents are not involved in their children's lives and if their human capital is employed exclusively at work or elsewhere outside the home.

On the other hand, parent's bridging social capital, meaning their networks and activities that are outside the family but are related to their communities and neighborhoods, may have positive effects on child development (Parcel et al., 2010). Neighborhood social capital is high when the residents have feelings of mutual trust and connection, regularly exchange information and resources, support each other, and are willing to maintain the neighborhood, for example, by controlling the behavior of its residents. Coleman (1988) introduced the concept *intergenerational closure* in his theory to describe social ties linking people in a community: intergenerational closure is a densely knit network attained, for example, when parents know and interact with the parents of their children's friends. Intergenerational closure is also a control mechanism. Disadvantage in the neighborhood has been found to be associated with lower expectations for shared child control (Sampson, Morenho, & Earls, 1999).

Neighborhood social capital is often measured as the participation of children and adolescents in informal and formal activities such as playgroups, sports groups, after-school activities, and religious organizations. Along with learning of social skills, the children who take part may learn to express opinions of how to improve the living environment (Hart, 1992; Moore, 1999). However, there is a specific feature of children's and adolescents' participation in neighborhood activities, i.e., coerced, involuntary participation (e.g., due to parents' requirements), which should be treated as different from voluntary participation (Schaefer-McDaniel, 2004). However, the association between neighborhood social capital and child health may vary across different populations and countries (Drukker, Buka, Kaplan, McKenzie, & Van Os, 2005).

A disadvantaged neighborhood may become a "trap" for young people through dysfunctional relationships such as those seen in violent and criminal gangs (Leventhal & Brooks-Gunn, 2000; Sampson et al., 1999; Sampson, Raudenbush, & Earls, 1997). A safe and trustworthy neighborhood and a sense of belonging to the neighborhood seem to have positive effects on adolescent health (Boyce, Davies, Gallupe, & Shelley, 2008; Eriksson, Hochwalder, Carlsund, & Sellstrom, 2012; Eriksson, Hochwalder, & Sellstrom, 2011; Jain, Buka, Subramanian, & Molnar, 2010; Metzler, Vostanis, Goodman, & Ford, 2007). Indeed, the idea of a "sense of belonging" to a place seems to be an important concept to incorporate in the theory of social capital in young people (Schaefer-McDaniel, 2004). Having a sense of belonging to a place has been shown to facilitate identity formation (Spencer & Woolley, 2000) and to be associated with better health in children and adolescents (Boyce et al., 2008; Eriksson et al., 2011, 2012; Metzler et al., 2007). In summary, forms of capital have been largely considered and investigated within the context of family and neighborhoods, although as the following sections will reveal, the same concepts can widely be applied in school settings. To understand social capital, we first introduce what forms other types of capital take in schools.

3.3 Why Are Schools an Important Context for Understanding Social Capital?

3.3.1 *Financial Capital and Human Capital in School*

Financial capital forms a basis for effective school functioning. Schools with greater financial capital are likely to provide a better learning environment for students than do those with lower levels of financial capital. Smaller class sizes and lower numbers of students per teacher, i.e., smaller student–teacher ratio are examples of learning environment characteristics that are typically reflective of greater school financial resources. In the USA, small class sizes in the early grades (1–3) were shown to be associated with better cognitive capacity and academic achievement among the students, but the effects on health were mixed (Muennig, Johnson, & Wilde, 2011; Muennig & Woolf, 2007). A Finnish study took into account student characteristics (proportion of students with special educational needs) and found that the risk for teacher sick leave increased with the percentage of students with special educational needs, and this association was stronger in schools with a high student–teacher ratio (Ervasti et al., 2012). In other words, working with challenging students might be associated with poor well-being among teachers, especially when school resources are low. At least in the USA, private schools have smaller student–teacher ratios than do public schools (National Centre for Educational Statistics, 2010), and they are usually wealthier than public schools. Lefebvre, Merrigan, and Verstraete (2011) showed that attending a Canadian private school rather than public school increased students’ mathematic achievement even when controlling for socioeconomic covariates. They suggested several possible mechanisms through which the achievement gap between private and public schools could be explained. These include peer effect, close monitoring of performance, strict discipline, higher academic workload, and better work environment for teachers’ in private schools. However, in general the evidence on differences in student outcomes for private vs. public schools has been mixed (Lefebvre et al., 2011).

The discussion on the mechanisms explaining differences in student outcomes brings us to human capital at schools, which in this case refers to teacher qualifications. Students may draw on teachers’ stores of human capital at school in a similar way as they draw on parents’ human capital at home (Parcel et al., 2010). Although the measurement of teacher quality is difficult, educational researchers tend to agree that teacher attitudes can have a profound impact on students’ achievement and educational growth. A study carried out in 84 Flemish secondary schools showed that in schools where teacher expectations were low, students perceived their teachers as less supportive and had higher rates of problem behavior and deviance (Demaneet & Van Houtte, 2012). As suggested by Lefebvre et al. (2011), the lower prevalence of behavioral problems, higher than average student performance, and an environment that rewards achievements may attract better teachers to private schools or to schools with good reputations. Thus, although high human capital and high financial capital are likely to be clustered in the same schools, the review above shows that traditionally schools have tended to be viewed as a *reservoir* of financial

and human capital, which, in turn, affect student outcomes. In the forthcoming sections, we introduce theoretical concepts and empirical evidence on social capital in the modern school settings.

3.3.2 *What Is Social Capital in School?*

In their classic work, Coleman and his colleagues showed that students in Catholic schools had better academic performance and were less likely to drop out than those in public schools (Coleman, 1988; Coleman & Hoffer, 1987; Coleman, Hoffer, & Kilgore, 1982). They explained the better student outcomes as resulting from the functionality of Catholic communities with cohesive, supportive social systems. The Catholic communities were characterized by closeness of social structure, i.e., high social capital between students, families, schools, and communities. Cohesion of social interaction both in school and in the families specifically enhanced students' academic success. The study suggested that attendance at Catholic schools may promote social capital through intergenerational closure, meaning the interaction between parents whose children attend the same school. Coleman (1990b) identified six different types of bidirectional interpersonal relationships in the school setting where social capital can be developed: relationships among students, among teachers, among parents, between teachers and students, between teachers and parents, and between students and parents. In his view, positive outcomes such as good academic performance can be enhanced by increasing social capital at school. He sees parental involvement in school as particularly important in order to increase social capital, and this involvement is facilitated by high levels of intergenerational closure.

While Coleman suggests that family and school settings and their interrelations are the most important foundations of social capital, others' view is referred as *collective asset* at a broader community level (Putnam, 2000; Warren, Thompson, & Saegert, 2001): in a *trusting community*, residents know each other and are actively involved in each other's lives in a positive way which can have its positive effects on schools. Since this community social capital is often studied at the neighborhood level, we refer to it here as neighborhood social capital. High neighborhood social capital has been associated with lower dropout rates in high school students (Smith, Beaulieu, & Israel, 1992). When both family and neighborhood social capital was high, dropout rate was only 2.6 %, while in a situation where both were low, the corresponding rate was 47.7 %.

According to one of the more recent definitions, social capital at school refers to "the bonds between parents, children, and schools that support educational attainment and should have implications for social adjustment" (Parcel et al., 2010, p. 831). Parcel and coworkers' focus was on the investment in children and adolescents in the two important contexts in young people's lives, i.e., family and school. They believe that these investments, or lack thereof, play a major role in the differences in learning and social outcomes that further affect children's transfer into later adolescence. The leading idea was that instead of being separate activities, resources from families and schools can work together.

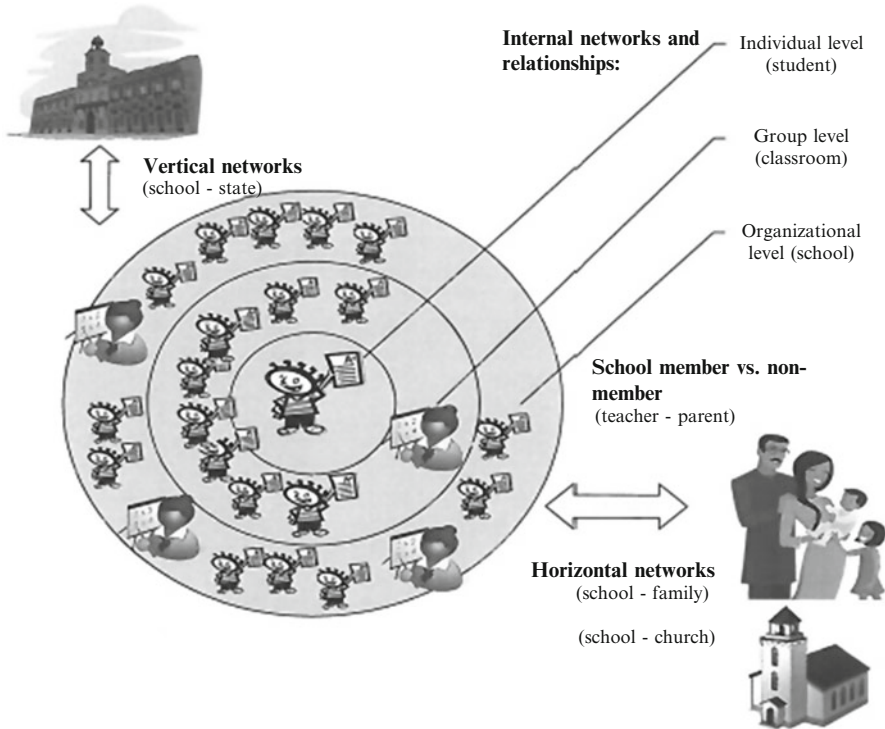


Fig. 3.1 School social networks (examples of possible networks in parentheses) (Modified from Tsang, 2010)

However, Tsang (2010) warns about confounding in the use of the term *social capital at school*; defining social capital as some aspects of social structures by their function may not be concrete enough. In addition, while Coleman's theory may be suitable, for example, for explaining student academic performance, regarding more complex concepts such as school-level efficacy, the theory may be limited (Cheng, 2005). Recently, a *social network theory of social capital* has been introduced in education and school settings (Lin, 2001). The theory defines social capital not as consisting of social networks, trust, and norms, but rather as the social resources rooted in social networks that can enhance the outcomes of actions. In that approach, the position of actors in a social structure, the nature of social ties between actors, and the location of social ties in the social networks will determine the possession of social capital. Thus, school social capital can also be defined as the social resources embedded in the internal and external social networks of a school. According to Tsang (2010), school social capital can develop from internal and external networks and from both of them, at three levels. Figure 3.1 illustrates these school social networks. Internal networks and relationships consist of individual-, group-, and organization-level relationships. External networks and relationships consist of vertical, horizontal, and member vs. nonmember relationships. Individuals can have

social ties within and between social groups and institutions. These connections will help develop social ties within and between social groups and institutions.

A variety of ways have been introduced to assess social capital among children and adolescents, but Morrow (1999) identified three forms of social capital that have relevance to children and young people in their everyday life contexts: (a) sense of belonging, (b) autonomy and control, and (c) social networking. Indeed, *feeling connected to school* has emerged as a important indicator of social capital, potentially even more so than, for example, structural factors such as school type, class size, or teacher training (Kidger, Araya, Donovan, & Gunnell, 2012). The factors that seem to foster school connectedness are fair treatment of students, the emotional closeness of students to each other, and student participation in common affairs at school (Blum & Rinehart, 2001).

The existing research suggests that all forms of capital at home, in the neighborhood, and in school settings may relate to each other and that they each contribute to child well-being. Also, these contributions may be additive (Eriksson et al., 2011; Sanderfur, Meier, & Campbell, 2006). Parcel and Dufur (2001a) call them *resource boosters*; children who usually are privileged in one context (e.g., family financial capital) are also favored in other spheres (e.g., family human capital, school social capital). This effect is suggested to be one of the mechanisms that increase social inequalities in young people's well-being and academic achievement. However, a *compensation effect* is also possible; that is, favorable conditions in one context (e.g., school) may offset unfavorable conditions in another context (e.g., family). Social capital at school can also be transformed into other forms of capital (Tsang, 2010). Some studies have found evidence of compensation effects, for example, a study by Hoffman and Dufur (2008) suggested that high-quality schools may substitute for poor parental attachment and low parental involvement in school. However, financial capital at home may be an almost irreplaceable basis of other forms of social capital; in one study, reduction of financial capital led to deterioration of social capital at home and at school (Vandewater & Landford, 2005).

3.4 School Social Capital and Student Outcomes: The Evidence

In this section, we present research evidence on the association between social capital in schools and student outcomes. The longest research tradition is social capital as a predictor of students' academic achievement and social adjustment. Recently, other outcomes, such as health and health risk behaviors, have received more attention.

3.4.1 Academic Achievement and Social Adjustment

The most researched outcomes regarding the topic of social capital at school are academic achievement and social adjustment, the latter usually measured by the level of behavior problems, delinquency, and substance use. Indeed, some scholars

suggest that elements of social capital, such as social ties, social control, collective efficacy, and mutual trust, can even form the basis of major criminological theories (Kubrin & Weitzer, 2003). However, it is still debatable to what extent schools have independent effect on young people's health and well-being or whether the outcomes are mainly due to family characteristics (Dufur et al., 2008).

Both *internal* and *external* social capital has been associated with better academic achievement among students (Tsang, 2010). Social capital (Haghighat, 2005) and feeling connected to school (Edwards & Mullis, 2001) have been associated with better academic achievement, whereas lack of such feeling is related to higher prevalence of violent behavior at school (Edwards & Mullis, 2001). However, not all studies have shown an association between social capital at school and students' academic achievement (Domina, 2005). A specific form of social capital, social support from various sources (parents, teachers, friends), has been found to be associated with protection against depression (Colarossi & Eccles, 2003) and against school-related burnout (Salmela-Aro, Kiuru, Pietikäinen, & Jokela, 2008) among adolescents. Still, the relationships may be more complex than previously thought: a study of Brazilian youth found that characteristics of the network (e.g., whether the closest friends are from school or church) may determine the risk of unhealthy lifestyle habits (Zarzar et al., 2012).

In many studies, efforts have been made to simultaneously assess the contribution of different forms of capital in different settings in relation to various outcomes in young people. Different forms of family capital, for example, have been found to be persistent and important for academic achievement among children, and evidence consistent with both boosting effects and compensation effects has been reported (Crosnoe, 2004; Dufur & Troutman, 2005; Huang, 2009; Kim & Schneider, 2005; Parcel & Dufur, 2001a, 2009). Several types of low capital have also been related to behavioral problems among children (Dufur et al., 2008; Hoglund & Leadbeater, 2004; Parcel & Dufur, 2001b; Rodgers & Rose, 2002), with family forms of capital usually showing stronger effects than forms of school capital. In addition, higher social capital either at home, at school, or both have been found to be associated with better academic achievement (Huang, 2009), lower rates of delinquency (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002; Dornbusch, Erickson, Laird, & Wong, 2001; Meadows, 2007; Salmi & Kivivuori, 2006; Schwartz et al., 2009; Wright & Fitzpatrick, 2006), lower rates of handgun carrying (Luster & Oh, 2001), and lower rates of risky behaviors (Booth, Farrell, & Varano, 2008). In one study, family financial capital and both school and neighborhood social capital were associated with higher levels of civic engagement in adolescents from five European countries (Lenzi et al., 2012).

3.4.2 Health and Health Risk Behaviors

The strongest evidence across all health-related outcomes has been found for family and school sense of belonging and for being involved in neighborhood activities (Morgan & Haglund, 2009). The research on school social capital is scarce and the

results are less consistent. However, adolescent smoking has been linked to various relevant correlates for social capital at school: school nonsmoking policies (Pinilla, Gonzáles, Barber, & Santana, 2002), teachers as role models for smoking (Poulsen et al., 2002; Virtanen, Pietikäinen, et al., 2009), peer group behavior (Turner, West, Gordon, Young, & Sweeting, 2006), and teacher–student relationships and school’s focus on caring and inclusiveness (Henderson, Ecob, Wight, & Abraham, 2008). Other studies show student-reported cognitive social capital to be associated with smoking (Takakura, 2011) and *school culture* to be associated with adolescent substance use: schools providing appropriate support and control for students had a reduced risk for student use of alcohol and illicit drugs (Bisset, Markham, & Aveyard, 2007). Student-reported social capital as measured by perceived trustworthiness and helpfulness of others at school was also associated with reduced risk for suicide attempt, especially among girls (Langille, Asbridge, Kisely, & Rasic, 2011). However, Takakura (2011) studied the effects of contextually measured social capital at school on students’ smoking and alcohol use and found no association. Table 3.1 summarizes studies on the associations between school social capital and students’ health indicators.

Because most studies rely on students’ self-perceptions of both the school characteristics and the measured outcomes, a methodological problem arises; individual-related factors (e.g., response style, negative affectivity) may artificially inflate the associations. Indeed, a recent systematic review (Kidger et al., 2012) summarized prospective studies where “objective” indicators of social capital were measured at the school level and found no clear evidence of its beneficial effects on mental health among students. In the same review, students’ individual perceptions of high social capital at school, especially perceived support from teachers and student’s own connectedness to school, did associate with better mental health outcomes.

Furthermore, it is possible that the level of well-being among young people depends on the quality of relationships *between adults* in the community (Putnam, 2000). This proposal leads to a hypothesis that the quality of relationships between adults at school may also be important in relation to well-being among young people. This question was addressed in large-scale studies of over 24,000 students in 136 Finnish secondary schools (Elovainio et al., 2011; Virtanen, Kivimäki, et al., 2009). In these multilevel studies, the perceptions of school staff of their working environment were aggregated at school level and linked to individual students’ perceptions of their well-being, school environment, health and behavioral outcomes, and academic achievement. Because the measures of exposure and outcome came from two independent samples, the studies avoided the problem of common method bias. In these studies, *vertical* social capital at school was indicated by supervisors’ ability to suppress personal biases, to treat subordinates with kindness and consideration, and to take steps to deal with subordinates in a truthful manner, i.e., relational justice (Moorman, 1991). The study by Elovainio et al. (2011) showed that when teachers perceived their schools as having low relational justice, their students had a higher risk for poor academic performance, truancy, and for reporting more psychosomatic and depressive symptoms. In a similar vein, *horizontal* social capital at the workplace was indicated by team climate, especially its component of trust and

Table 3.1 A sample of studies on school social capital and adolescent health indicators

Indicator of school social capital (predictor)	Indicator of adolescent health/health behavior (outcome)	Author(s)	Study design
Social support (from parents, teachers, friends)	Less depression	Colarossi and Eccles (2003)	Longitudinal
Social support (from parents, teachers, friends)	Less school-related burnout	Salmela-Aro et al. (2008)	Cross-sectional
Social support (from parents and teachers)	Lower rates of delinquency (in males), less depression (in females)	Meadows (2007)	Longitudinal
Classroom concentrations of pro-social behaviors	Less behavior problems	Hoglund and Leadbeater (2004)	Longitudinal
School attachment (fair rules at school, school satisfaction)	Less health risk behaviors, less depressive symptoms	Rodgers and Rose (2002)	Cross-sectional
School attachment (fair rules at school, school satisfaction)	Lower rates of delinquency, less smoking	Dornbusch et al. (2001)	Longitudinal
School attachment (fair rules at school, school satisfaction)	Lower rates of delinquency	Wright and Fitzpatrick (2006)	Cross-sectional
Parent-child relationships			
Parental support, teacher control, interpersonal trust	Lower rates of delinquency	Salmi and Kivivuori (2006)	Cross-sectional
School climate (respect, peer relationships, intervening, school order)	Less health risk behaviors (e.g., smoking, drinking), less serious delinquency (fighting, gun carrying)	Booth et al. (2008)	Cross-sectional
Democratic school climate	Higher levels of civic engagement in the community	Lenzi et al. (2012)	Cross-sectional
School sense of belonging	Better self-rated health, less depressive symptoms, less health risk behaviors	Morgan and Haglund (2009)	Cross-sectional
School nonsmoking policies	Less smoking	Pinilla et al. (2002)	Cross-sectional
Teachers as role models for nonsmoking	Less smoking	Virtanen, Pietikäinen, et al. (2009)	Cross-sectional, data from independent sources

(continued)

Table 3.1 (continued)

Indicator of school social capital (predictor)	Indicator of adolescent health/health behavior (outcome)	Author(s)	Study design
Teacher–student relationships at school, school focus on caring and inclusiveness	Less smoking	Henderson et al. (2008)	Longitudinal, data from independent sources
Individual cognitive social capital (trust)	Less smoking and drinking	Takakura (2011)	Cross-sectional
Contextual level social capital (aggregated school-level trust)	Inconclusive evidence on smoking		
School culture (support and control for students)	Reduced risk of alcohol and illicit drug use	Bisset et al. (2007)	Cross-sectional
Perceived trustworthiness and helpfulness of others at school	Reduced risk of suicide attempt, especially among girls	Langille et al. (2011)	Cross-sectional
Parental involvement in advising the school, participating in program design, participating in policy decisions, and volunteering in after-school programs (administrator responses)	Social adjustment (less behavior problems)	Dufur et al. (2008)	Cross-sectional, data from independent sources
Teacher perceptions of supervisor justice (relational justice), i.e., vertical social capital (teacher responses)	Less psychosomatic and depressive symptoms	Elovainio et al. (2011)	Cross-sectional, data from independent sources
Teacher perceptions of team climate, i.e., horizontal social capital (teacher responses)	Less physical and psychological symptoms	Virtanen, Kivimäki, et al. (2009)	Cross-sectional, data from independent sources

opportunity for participation (Kivimäki & Elovainio, 1999). The study by Virtanen, Kivimäki, and colleagues (2009) showed that poor trust and opportunities for participation among the school staff were associated with students' opinions of not being heard at school, high truancy, and physical and psychological symptoms.

3.4.3 *Effects of School Social Capital on Teachers*

High social capital at schools has been linked to school efficacy, which has been defined, for example, as the achievement of stated goals, as the healthy internal processes and smooth operation that determine the quality of output and the degree

to which the stated goals can be achieved, or as a set of elements in the input, process, and output of schools that provide services in order to satisfy the needs and expectations of all stakeholders (Tsang, 2010). Both internal and external social capital have been associated with better teaching efficacy among teachers (Tsang, 2010). Thus, social capital at school may have a positive effect on teachers' well-being as well. In one study, student problem behaviors, namely, vandalism and bullying at school, and low levels of school satisfaction were used as indicators of low social capital at school. These variables were aggregated at school level in 90 Finnish secondary schools, and the results showed that high rates of vandalism and bullying behavior were associated with lower well-being among teachers, as indicated by taking of sick leaves (Ervasti et al., 2012a). Moreover, low student school satisfaction was associated with an increased risk of teachers' long-term sick leaves, especially due to mental disorders (Ervasti et al., 2012b). It is however likely that the association is bidirectional; low levels of social capital increase teacher ill-health, and teacher ill-health (frequent sick leaves) further deteriorates social capital at school. Finally, such schools may get poor reputations and thus become unattractive to the most effective teachers with the most human capital.

3.5 How Can Social Capital Among Young People Be Generated and Maintained?

The above reviewed studies present a rather clear picture on the association between social capital at school and student outcomes. However, less is known about how social capital among young people can be generated and maintained. Are there actually "separate" social capitals among young people and the adults around them? Leonard (2005) argues that children and adolescents are actually neglected in the theories and empirical research on social capital. They are often seen as passive respondents who internalize or reject the norms and sanctions imposed by influential adults such as parents and teachers. Social capital in young people is seen more like a "by-product" of parental social capital or as a parental asset that children can draw on. This is visible, e.g., in Coleman's (1988) concept of intergenerational closure.

Children and adolescents may benefit from social capital through an increase in their own social networks and resources. They can generate their social capital in family, neighborhood, and school settings; about half of their waking time is spent at school. Communities and neighborhoods high in social capital are characterized by, for example, young people's active participation in informal and formal playgroups, sports groups, and other leisure activities. Offer and Schneider (2007) studied network building among 500 working families and found that children—instead of being just the outcome of parents' investments—are active social motivators of network building and of the creation of social capital in families. Their viewpoint is that because adolescents are active in the local community (as opposed to modern middle-class parents whose long working and commuting hours limit such activity),

they can act as “social brokers” for their parents and connect them to other adults in the community. Leonard (2005) found paid employment such as delivering flyers or babysitting to be a form of generation of social capital in young people which has received little attention. However, young people are more dependent on the quality of the local environment than other age groups, except the elderly. Thus, areas characterized by poverty and deprivation are likely to be seen as unattractive sites for leisure and to prevent social connections between the residents. Leonard (2005) found in her studies that the majority of children and adolescents living in disadvantaged neighborhoods said that the major problem was the lack of amenities in their locality, such as playgrounds or other play areas. This may make watching television at home the most attractive leisure activity or keep young people solely in the web-based social networks. This highlights a certain level of community financial capital as a prerequisite for the development of young people’s social capital in communities. In line with Bourdieu’s (1986) view, social capital becomes effective when it is reinforced with other forms of capital.

Schools are at the core of communities and may even be indistinguishable from the surrounding community. Schools should therefore be involved in all attempts to improve social capital in communities. Ways to promote child and adolescent well-being through increasing social capital include the following: supporting positive parenting skills and activities that build parental social capital; building safe and comfortable neighborhoods where networks of communication, trust, and assistance can be evolved; enhancing children’s and adolescents’ sense of belonging, autonomy, and control; and enhancing social networking in each context. Hanifan (1916) argues that “First, there must be an accumulation of community social capital. This can be done by gathering together upon occasions for entertainment. Then, by skillful leadership this social capital can be easily directed towards improvement of community well-being” (p. 131).

According to Tsang (2010), the key to maintaining school social capital is school social networks with expressive action. As a basis for this, there is the school administrations’ recognition of trust, norms, and values within and between school social networks (Driscoll & Kerchner, 1999). School social capital cannot be maintained unless values and norms are commonly shared by actors, and this may be a challenge as schools tend to have different social groups and networks with possibly conflicting norms and values. Following Hanifan’s stages of building of social capital, at the entertainment stage, *cultural interventions* have been suggested to have potential in attempts to develop increased school social capital (Cavanaghi & Dellar, 1997). Instrumental actions are also essential in order to create and maintain social capital at school (Tsang, 2010). One of these, *outreach strategy*, means, for example, contacting parents to participate in voluntary activities at school (Haghighat, 2005). Another instrumental action is institutionalizing external school networks, such as setting up site-based management councils (Driscoll & Kerchner, 1999). What should not be forgotten is the students’ participation and “voice” (Virtanen, Kivimäki, et al., 2009); because as Hanifan (1916) suggested, “the more the people do for themselves the larger will community social capital become” (p. 138). In this way, children and adolescents can have an opportunity to create their social capital themselves.

Indeed, a review of four intervention studies concluded that changes to the school social environment that increase participation, improve relationships, and promote a positive school ethos may be associated with reduced drug use among young people (Fletcher, Bonell, & Hargreaves, 2008).

3.6 Concluding Remarks

Higher levels of social capital in many contexts, including in schools, is associated with better health, greater well-being, and higher academic achievement in young people. In addition, the contribution of social capital may be additive (boosting other forms of capital in other settings). Different forms of capital in different settings may also compensate for the lack of any one type of capital. High social capital seems to be beneficial to the whole school community, including teachers.

However, as many studies have been cross-sectional, there still are significant methodological challenges, such as proving the direction of causality. More research is needed to increase understanding of the mechanisms that connect social capital to health and well-being in young people. These have been suggested to be linked with strengthened social networks and increased trust and a sense of belonging to one's community which, in turn, improve the quality of life and reduce stress. Other mechanisms are the promotion of health information, adopted healthy norms or behaviors, social control over unhealthy behavior, and increased access to local services and amenities (Kawachi & Berkman, 2000; Kawachi, Kennedy, & Wilkinson, 1999). Exploring the causal pathways through which capital in one context may affect capital in another and their association with young people's health and well-being is also of importance (Parcel et al., 2010).

It is also necessary to recognize school as a separate entity from the community albeit it is at the core of it; the advantage of this approach is that schools are more clearly defined than are neighborhoods, and such an institutional context provides an opportunity to test specific interventions and to link any outcomes to a well-defined setting. As we demonstrated in our review, education, learning, and health are linked to each other, which means there is the potential for positive spillover when the focus is on schools. Finally, it is highly important to increase our understanding of how children and adolescents create their social capital and how they themselves shape the community around them.

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Chapter 4

Causal Inference in Social Capital Research

**Ichiro Kawachi, Yukinobu Ichida, Gindo Tampubolon,
and Takeo Fujiwara**

Indicators of social capital—trust, reciprocity, participation—are *associated* with health outcomes; however, association does not imply causation. A systematic review of the literature featured in the first edition of the book *Social Capital and Health* (Kim, Subramanian, & Kawachi, 2008) concluded that the majority of studies published up to that point had been cross-sectional in design and failed to utilize methods to strengthen causal inference, such as fixed-effects analyses and instrumental variable (IV) estimation. The goals of this chapter are to (a) describe the threats to causal inference in observational studies of social capital and health, (b) highlight two analytical approaches—instrumental variables estimation and fixed-effects analyses—that strengthen causal inference, and (c) summarize the findings of empirical studies that have sought to address causal inference by going beyond simply correlating X with Y.

I. Kawachi, M.D., Ph.D. (✉)

Department of Social and Behavioral Sciences, Harvard University, Boston, MA, USA
e-mail: ikawachi@hsph.harvard.edu

Y. Ichida, Ph.D.

Doctoral Institute for Evidence based Policy, Maru-taka Haccho-bori Building 3F,
Haccho-bori 2-chome 30-16, Chuo-ku, Tokyo 104-0032, Japan

Nihon Fukushi University, Aichi, Japan

e-mail: ichida@doctoral.jp

G. Tampubolon, Ph.D.

Institute for Social Change, University of Manchester, HBS Room 2.13E,
Oxford Road, Manchester M13 9PL, UK

e-mail: tampubolon@manchester.ac.uk

T. Fujiwara, M.D., Ph.D., M.P.H.

Department of Social Medicine, National Research Institute for Child Health
and Development, 2-10-1 Okura, Setagaya-ku, Tokyo 157-8535, Japan

e-mail: fujiwara-tk@ncchd.go.jp

4.1 Threats to Causal Inference

In this section we highlight some common threats to causal inference in studies of social capital and health. Some problems identified during the first generation of research—such as dealing with the ecological fallacy—have been handled quite well through the widespread use of multilevel modeling (Subramanian et al., 2003). It has become quite *de rigueur* to employ multilevel statistical techniques when evaluating the independent contribution of community (or workplace) social capital on individual health outcomes, net of individual characteristics. The motivation for the multilevel analytical approach has been extensively dealt with previously (see Kawachi, Subramanian, & Kim, 2008, Chap. 1) and will not detain us here. We discuss below some of the remaining challenges to causal inference in the field.

Temporal Order

Studies have measured and analyzed social capital either at the individual level (i.e., perceptions of the trustworthiness of others in the group) or at the group level (individual perceptions aggregated to the community level). Whichever approach is adopted, the most basic requirement for causal inference is temporal order, i.e., the cause should precede the effect. Cross-sectional designs are fundamentally limited by their inability to tease out temporality. If an association is discovered between trust and health status, cross-sectional designs cannot distinguish whether lack of trust led to ill health or the reverse (ill health resulted in a more pessimistic evaluation of the world). The possibility of reverse causation is heightened in the case of behavioral indicators of social capital such as participating in social groups, where the ability to participate is likely to be a marker of health (or at least the ability to get out of the house). In Sect. 4.2.2, we shall describe a detailed case example, the Taketoyo Intervention Study, which sought to address the issue of reverse causation between social participation and health through the use of a longitudinal design combined with instrumental variable estimation (more about this later).

Cross-sectional studies can be helpful in generating new hypotheses; however, the field has just about exhausted what can be learned from cross-sectional data, and it is time to focus more on longitudinal and panel data. Murayama and colleagues recently conducted a systematic review of published multilevel, longitudinal studies addressing the relationship between social capital and health (Murayama, Fujiwara, & Kawachi, 2012). Table 4.1 summarizes the methods and findings of the 13 studies that were identified by Murayama and colleagues. The prospective studies include a mix of studies conducted in community settings ($N=9$) and workplace settings ($N=4$). Studies used different indicators of social capital—ranging from proxy measures of social cohesion, such as volunteering (Blakely et al., 2006) and voting (Islam, Gerdtham, Gullberg, Lindström, & Merlo, 2008; Lofors & Sundquist, 2007; Sundquist, Johansson, Yang, & Sundquist, 2006), to psychometrically validated multi-item instruments that captured both the cognitive and structural dimensions of

Table 4.1 Summary of prospective multilevel studies of social capital and health (adapted from Murayama et al., 2012)

Author	Country	Setting	Year	Study subjects	Indicator of social capital	Outcome	Analysis	Findings
Blomgren et al. (2004)	Finland	Community	Baseline: 1990 Follow-up: until 1999	Community-dwelling males aged 25–64 ($n = 6,516,066$) in 84 regions	Family cohesion (proportion of persons living alone, divorced, and living in one-parent families); and civic participation (voting turnout) in regions	Alcohol-related mortality	Multilevel Poisson regression	Low family cohesion and voting turnout in region associated with alcohol-related mortality, after adjustment for individual socio-demographics and area characteristics
Desai et al. (2005)	USA	Community	Baseline: 1994–1998 Follow-up: until 1999	Psychiatric patients ($n = 121,933$) discharged from 128 US Department of Veterans Affairs hospitals	Social cohesion and trust at state-level regions	Suicide mortality	Multilevel Poisson regression	Suicide risk was lower in states that had higher social capital, after adjustments for individual socio-demographics and clinical characteristics
Mohan et al. (2005)	UK	Community	Baseline: 1984–1985 Follow-up: until 2001	Community-dwelling adults ($n = 7,578$) in 396 electoral wards	Engagement in activities, voting, sense of community, social networks	All-cause mortality	Multilevel logistic regression	Lower proportions of engagement in activities in the neighborhood area were associated with lower mortality

(continued)

Table 4.1 (continued)

Author	Country	Setting	Year	Study subjects	Indicator of social capital	Outcome	Analysis	Findings
Wen et al. (2005)	USA	Community	Baseline: 1993 (individual-level), 1994–1995 (contextual level) Follow-up: until 1999	Patients newly diagnosed in 1993 with 1 of 13 serious illnesses (acute myocardial infarction, congestive heart failure, central nervous system, etc.) (<i>n</i> = 12,672) in 51 ZIP code areas in Chicago	Collective efficacy (seven items; i.e. mutual help, social trust), social network density, social support, local organizations and voluntary associations (the numbers of these organizations in the area) at the ZIP code area level (aggregated)	All-cause mortality	Multilevel Cox proportional hazards	Contextual collective efficacy had a protective effect on mortality, whereas community social network density was detrimental. Social support, local organizations, and voluntary associations did not affect mortality after adjustments for socio-demographic characteristics and health status at the baseline
Blakely et al. (2006)	New Zealand	Community	Baseline: 1996 Follow-up: until 1999	Community-dwelling residents aged 25–74 (4.75 million person years) in 1,683 census area units in 73 regions	Unpaid voluntary activities outside the respondent's home at neighborhood-level and regional-level (aggregated)	Mortality (all-causes, cardiovascular disease, cancer, unintentional injury, and suicide)	Multilevel Poisson regression	There were no significant associations for neighborhood- and regional-level volunteering with any cause of death, after adjustments for socio-demographics

Sundquist et al. (2006)	Sweden	Community	Baseline: 1997 Follow-up: until 1999	Community-dwelling residents aged 45–74 (<i>n</i> = 280,567) in 9,667 small administrative area units (neighborhood areas)	The proportion of people in the neighborhood who voted in local government elections	First hospitalization for a fatal or non-fatal coronary heart disease (CHD) event	Multilevel logistic regression	Lower voting was associated with hospitalization for CHD in both men and women, after adjustments for socio-demographics
Lofors and Sundquist (2007)	Sweden	Community	Baseline: 1997 Follow-up: until 1999	The entire Swedish population aged 25–64 (<i>n</i> = 4,516,787) in 9,120 neighborhood units	Mean voting participation at neighborhood unit-level	First hospitalization for psychosis or depression	Multilevel logistic regression	Low levels of voting in neighborhoods was associated with hospitalization for psychosis in both men and women, but not associated with hospitalization for depression, after adjustment for individual socio-demographics and neighborhood-level deprivation

(continued)

Table 4.1 (continued)

Author	Country	Setting	Year	Study subjects	Indicator of social capital	Outcome	Analysis	Findings
Islam et al. (2008)	Sweden	Community	Baseline: 1980–1997 Follow-up: until 2000	Community-dwelling residents aged 20–84 (<i>n</i> = 94,537) in 275 municipalities	Election participation rate and registered number of crimes per 1,000 population	Mortality (all-causes, cancer, cardiovascular, other diseases, suicide, and other external)	Cox proportional hazards	Both high election participation rates and low crime rates were protectively associated with individual risk from all-cause mortality for males, but not for females. Higher election participation rate and a low crime rate also associated with lower cancer mortality for males and females aged 65+ and females aged 65+ area social trust were inversely associated with poor self-rated health, but civic participation was not associated with health after adjustment for socio-demographics and health-related behaviors
Snelgrove, Pikhart, and Stafford (2001)	UK	Community	Baseline: 1998–1999 Follow-up: 2003	Community-dwelling residents (<i>n</i> = 3,075) in 250 postcode sectors	Social trust and civic participation at individual-level and area-level (aggregated)	Self-rated health	Multilevel logistic regression	

Kouvonen, Oksanen, Vahtera, Stafford, et al. (2008)	Finland	Workplace	Baseline: 2000–2002 Follow-up: 2004–2005	Finnish public sector employees (<i>n</i> = 33,577; non-depressed respondents at baseline) in 3,236 functional work units	Cognitive and structural workplace social capital (eight items: sense of cohesion, mutual acceptance, trust for the supervisor, etc.) at individual-level and work unit-level (aggregated)	Self-reported, physician-diagnosed depression; antidepressant treatment	Multilevel logistic regression	Lower individual social capital at work was associated with subsequent self-reported depression, but aggregate-level social capital was not, after adjustments for socio-demographics. No association between individual- and work unit-level social capital and anti-depression treatment
Kouvonen, Oksanen, Vahtera, Väätänen, et al. (2008)	Finland	Workplace	Baseline: 2000–2002 Follow-up: 2004–2005	Finnish public sector employees (<i>n</i> = 4,853; smokers at baseline) in 1,946 functional work units	Cognitive and structural workplace social capital (eight items: sense of cohesion, mutual acceptance, trust for the supervisor, etc.) at individual-level and work unit-level (aggregated)	Smoking cessation	Multilevel logistic regression	High individual-level social capital in work-places is associated with increased likelihood of smoking cessation, after adjustments for socio-demographics, health-related behaviors, and depression. Work unit-level social capital was not associated with smoking cessation

(continued)

Table 4.1 (continued)

Author	Country	Setting	Year	Study subjects	Indicator of social capital	Outcome	Analysis	Findings
Oksanen et al. (2008)	Finland	Workplace	Baseline: 2000–2001 Follow-up: 2004	Finnish public sector employees (<i>n</i> = 9,524; healthy employees at baseline) in 1,522 work units	Cognitive and structural components of workplace social capital (eight items: sense of cohesion, mutual acceptance, trust for the supervisor, etc.) at individual-level and work unit-level (aggregated)	Self-rated health	Multilevel logistic regression	Both a low level of social capital and a decline in social capital at an individual-level were associated with the impairment of self-rated health after adjustments for socio-demographics and health-related behaviors. Low levels of social capital in work units were marginally associated with risks of poor health, after adjustments for work unit characteristics

Väänänen et al. (2009)	Finland	Workplace	Baseline: 2000–2002 Follow-up: 2004–2005	Finnish public sector employees ($n = 31,373$) in 29,676 work units	Cognitive and structural components of workplace social capital (eight items: sense of cohesion, mutual acceptance, trust for the supervisor, etc.) at individual-level and work unit-level (aggregated)	Co-occurrence of lifestyle risk factors (current smoking, heavy drinking, overweight, and physical inactivity)	Multilevel logistic regression	Social capital at individual- and work unit-levels at baseline were not associated with an increased risk of co-occurrence of lifestyle risk factors at follow-up, after adjustments for socio-demographics
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social capital (e.g., Kouvonon, Oksanen, Vahtera, Stafford, et al., 2008; Oksanen et al., 2008; Wen et al., 2005).¹ Part of the heterogeneity of findings across studies is likely to be attributable to the practice of resorting to proxy indicators when survey measures are not available.

On the whole, however, the conclusion from these studies (to quote Murayama et al., 2012) is that “both area/workplace social capital and individual social capital generally appear to have a positive effect on health outcomes,” but “due to the limited number of studies, the robustness of the evidence is questionable” (p. 184). Although the link between individual-level perceptions of social trust appears to be quite robustly associated with different health outcomes, an association between contextual-level social capital and health is less secure. Of the thirteen studies identified in the systematic review, eight of them did not simultaneously adjust for individual-level perceptions when examining the association of contextual-level social capital with health (Blakely et al., 2006; Blomgren, Martikainen, Mäkelä, & Valkonen, 2004; Desai, Dausey, & Rosenheck, 2005; Islam et al., 2008; Lofors & Sundquist, 2007; Mohan, Twigg, Barnard, & Jones, 2005; Sundquist et al., 2006; Wen, Cagney, & Christakis, 2005). Thus, even when the authors reported an association between area-level cohesion and health, it is not possible to exclude the possibility that the association reflected residual compositional confounding by individual characteristics.

Some of the strongest evidence of a contextual effect of social capital derives from studies of social cohesion in the workplace (see also Chap. 2). In fact, of the 13 prospective multilevel studies reviewed, four of them were based on the same cohort—the Finnish Public Sector cohort, consisting of public sector employees in the service of 10 towns and 21 hospitals throughout Finland. The findings from this cohort provide some of the strongest evidence to date of a contextual effect of social capital, and the strengths of this study include large sample size, longitudinal follow-up, the use of validated and reliable instruments that assessed both cognitive and structural dimensions of social capital, as well as well-documented health end points. Three additional reports have been published out of this cohort since the 2008 systematic review which did not utilize a multilevel analytical approach but nonetheless contrasted self-reported perceptions of workplace social capital with coworker-perceived social capital (i.e., aggregated perceptions of all other employees in the same work unit) (Oksanen et al., 2012; Oksanen, Kawachi, et al., 2011; Oksanen, Kivimäki, et al., 2011). These studies of workplace social capital and health are reviewed in detail in Chap. 2 (Workplace Social Capital and Health). We briefly touch upon their findings here. Oksanen, Kivimäki, et al. (2011) examined the prospective association between workplace social capital (assessed by a validated 8-item scale inquiring about norms of trust and reciprocity in the work unit as well as practices of collective action) and all-cause mortality during 5-year

¹The cognitive dimension of social capital is tapped by values, beliefs, perceptions, and attitudes—for example, perceptions of trust and reciprocity or sense of belonging to the community. By contrast, the structural dimension of social capital is tapped by behavioral manifestations such as civic participation, informal socializing, and the ability of the group to undertake collective action.

follow-up. Cox proportional hazards models adjusting for age and sex suggested that each unit-unit increase in the mean of repeated measurements of self-reported social capital (range 1–5) was associated with a 19 % decrease in the risk of all-cause mortality (hazards ratio (HR): 0.81, 95 % confidence intervals (CI): 0.66–0.99). The corresponding point estimate for coworker-assessed social capital was quite similar (HR=0.77, 95 % CI: 0.50–1.20).

In a separate study, Oksanen, Kawachi, et al. (2011) examined the association between social capital and incidence of hypertension (determined from record linkage to national health registers) among 11,777 male and 49,145 female employees who were free of hypertension at baseline. During a mean of 3.5 years of follow-up, male employees in work unit characterized by low workplace social capital were 40–60 % more likely to develop hypertension compared to men in work units with high levels of social capital. Again, the point estimates were similar for coworker-assessed social capital.² Path analysis suggested that the association between low social capital and hypertension was partially mediated by risk of increased obesity as well as excess alcohol consumption. Most recently, Oksanen et al. (2012) examined the association between workplace social capital and adherence to antihypertensive medication in the same cohort. Survey responses to social capital were linked to nationwide pharmacy records for a subsample of the cohort consisting of 3,515 hypertensive employees (mean age 54 years, 76% women). In that study, no relationship was found between workplace social capital and medication compliance (as assessed by the number of days during the year following the social capital survey in which prescriptions for drugs remained unfilled).

One clear conclusion is emerging from the rich data of the Finnish Public Sector cohort, viz., not every health outcome is associated with workplace social capital. Thus, all-cause mortality (Oksanen, Kivimäki, et al., 2011) and poor self-rated health (Oksanen et al., 2008) were associated with work-unit social capital even after controlling for individual perceptions and other covariates.³ By contrast, new onset depression (Kouvonen, Oksanen, Vahtera, Stafford, et al., 2008) and smoking cessation (Kouvonen, Oksanen, Vahtera, Väänänen, et al., 2008) were not associated with social capital. That is, we have no reason to believe that social capital is predictive of every health outcome under the sun; indeed, others have pointed out that a construct that predicts everything ends up predicting nothing at all (Sampson, 2003). Greater understanding is called for in delineating the specific mechanisms through which social cohesion influences different health outcomes. Thus, for instance, it is informative and workplace social capital predicts the onset of hypertension (Oksanen, Kawachi, et al., 2011), whereas it does not predict adherence to antihypertensive medication, conditional on a diagnosis of the disease (Oksanen et al., 2012). Such observations offer us vital clues as to how social cohesion might operate to influence different health outcomes.

² Though no association was found between social capital and incident hypertension among women.

³ Albeit the associations were imprecisely estimated—i.e., marginally statistically significant.

Common Method Bias

The next challenge to causal inference arises from the method by which social capital is usually assessed, viz., via self-reported perceptions of trust or reciprocity. This is particularly problematic when (a) the analysis of social capital is conducted at the individual level (e.g., correlating the health status of an individual to that individual's perceptions of the trustworthiness of others) and (b) the health outcome is also self-reported, e.g., self-assessed health. "Common method variance" is the formal term used to describe systematic error variance shared among variables introduced as a function of the same method of ascertainment (self report) or shared source (the same individual). In the 2008 systematic review alluded to earlier (Kim et al., 2008), a sizable proportion of studies of social capital and health identified in the literature were of the type linking individual perceptions of trust to individual self-assessments of health status. The suggested fixes for this problem include (a) using independent sources of data to assess social capital (which is typically accomplished by aggregating the perceptions of *other* respondents within the same unit, whether it be the community or the workplace) and (b) using objective or validated measures of health as opposed to self-assessed health. For example, in the Project on Human Development in Chicago Neighborhoods, the measurement of social capital was carried out via a community survey of residents that was independent of the sample of individuals among which health outcomes were ascertained (Sampson, Raudenbush, & Earls, 1997).

Trust or Trustworthiness?

One problem that often seems to go unnoticed is the subtle but important distinction between "trust of others" and the "trustworthiness of others." Individual responses to questions such as "In general, would you say that your neighbors can be trusted? (Strongly Agree Strongly Disagree)" cannot distinguish between an individual's proclivity to trust others and the "actual" trustworthiness of her neighbors. When researchers analyze the relationship between individual perceptions of social capital and health, the target of inference is the latter, i.e., the researchers are presumably interested in the question of whether being surrounded by trusting neighbors can be good for their health, as opposed to whether mistrust of their neighbors (as a personality characteristic) is a predictor of bad health. Unfortunately, individual-level analyses of trust perceptions and health are consistent with both interpretations. Indeed there is a substantial literature in health psychology on *hostility* as a predictor of bad health outcomes (e.g., risk of heart disease and premature death) (Barefoot et al., 1995). Interestingly, mistrust of others is one of the items that load most strongly on multi-item scales that tap the construct of hostility.

Hence, for social capital researchers looking to differentiate their work from personality psychology, they need to find a way to capture the *trustworthiness* of the group, which is closer to the constructs of social capital and social cohesion. One approach to accomplish this is to aggregate individual responses to the trust item to the level of the group, whether it be the work unit or the residential neighborhood. The group average is then assigned to each individual. In multilevel analysis, it is

moreover possible to examine the cross-level interactions between individual perceptions and the group average. Thus, for example, we may be interested in asking whether a hostile, mistrustful loner can nevertheless benefit from being surrounded by neighbors who express a high level of trust and reciprocity.⁴

The distinction between “trust” and “trustworthiness” also touches on the issue of the target of inference in social capital research. Researchers have debated whether social capital ought to be conceptualized as an individual attribute (Portes, 1998) or as a characteristic of the group (Kawachi, 2006). If the target of the inference is the individual—i.e., we are solely interested in whether the tendency to trust other people is good for your health—then we suggest that there is no need to use fancy terms such as “social capital” to describe that characteristic; it is sufficient to stick with “hostility.” If on the other hand, the target of the inference is the group—i.e., we are trying to assess the trustworthiness of the social environment—then the valid approach is to model the group’s stocks of trust while controlling for the individual’s level of trust (accomplished via multilevel modeling). Admittedly, in many published studies, the sample was not obtained via cluster sampling, or the researchers did not have access to information (such as residential addresses) to partition the respondents into meaningful clusters, or, occasionally, there have been too few level-2 units (e.g., neighborhoods) to perform meaningful multilevel analysis. Given these limitations, researchers have often resorted to using individual perceptions of social capital as a proxy assessment of the social environment. The limitations of this approach are readily acknowledged by the researchers (e.g., it assumes that respondents are reliable), but the important issue is being clear about what is the target of inference.

Endogeneity

In summary, social capital research has advanced in some areas including the widespread adoption of multilevel analyses and the increasing use of longitudinal data. Nonetheless, significant challenges remain, particularly with respect to the problem of endogeneity. Most social behaviors—such as whether to trust someone sufficiently to lend him money or whether to reciprocate a favor—are rooted in *choice and preferences* and hence endogenous in any equation linking social capital to health outcomes. Addressing endogeneity can be extremely challenging. No amount of statistical adjustment for covariates will convince a skeptic that endogeneity has been purged from the data; there will always be yet another unobserved and unmeasured variable that could have produced a spurious correlation between *X* and *Y*.

To give a hypothetical example, suppose that a researcher demonstrates that willingness to lend \$30 to a neighbor is associated with better health. Suppose further that the association survives statistical adjustment for a host of potential confounding factors such as education, wealth, and personality. Nonetheless a

⁴Or alternatively, whether a misanthropic individual might be *harm*ed by being surrounded by trusting neighbors—see Subramanian, Kim, and Kawachi (2002).

hard-boiled skeptic will assert that causation is still not proved because the lender of the money holds private information which the researcher does not have access to and which is a common prior cause of both the willingness to lend money to a neighbor as well as future longevity. (Perhaps the respondent has recently stopped smoking and believes that his chance of living long enough to see his loan repaid has just gone up.) The researcher could attempt to address this critique by going back into the field and collecting information on the smoking status of his respondents and incorporating it into his multivariable models. As a practical matter, however, researchers seldom have the time (or the money) to go back to the field to keep collecting data on more variables from a potentially infinite sea of confounders. Life is too short (or NIH funding scarce) to pursue this as a routine strategy. This brings us to the discussion of techniques to strengthen causal inference in the context of observational data.

For the remainder of this chapter, we shall focus on the more recent innovations and imports into the field of social capital and health—instrumental variable estimation and fixed-effects analyses—to address the problems of endogeneity.

4.2 Analytical Approaches to Address the Endogeneity of Social Capital

4.2.1 Instrumental Variable Estimation

Instrumental variable (IV) estimation is not new, at least in economics and other social sciences, but it is a comparatively recent import into the field of health, including social capital research. The idea of IV estimation is to find variables that induce exogenous variation in the treatment of interest (in this instance, variations in the level of social capital) without directly influencing the outcome variable of interest (health). To provide consistent estimates of causal effect, IV analysis requires instruments to be both “relevant” and “exogenous.” A relevant instrument is defined as a variable that is correlated with the endogenous exposure such that it captures adequate variation in the treatment. To be valid and exogenous, the instruments must have no direct effect on the outcome, i.e., pick up only random variation in the endogenous exposure (the so-called exclusion criterion) (Angrist & Pischke, 2009). IV estimation can be conceptualized as being carried out in a two-stage regression procedure. In the first stage, the endogenous exposure is regressed on its predictors (i.e., “instrumented”). In the second stage, the outcome (health) is then regressed on the instrumented values of the exposure, controlling for additional observed covariates.

In Sect. 4.2.2, we present a detailed case example of an IV analysis in the field of social capital research. Section 4.2.3 summarizes the empirical studies to date which have utilized this approach to estimate the causal effect of social capital on health. Section 4.2.4 describes the statistical tests for checking the validity of IV estimates.

4.2.2 Case Example of IV Estimation: The Taketoyo Intervention Study

In this section, we illustrate the use of instrumental variable (IV) estimation in microlevel research linking social capital to health: the Taketoyo Intervention Study from Japan. The town of Taketoyo is located near Nagoya city (the third largest metropolitan area in Japan, 100 min west of Tokyo by bullet train), with a resident population of about 42,000, 17.2 % of whom are 65 years and older. Beginning in 2006, the municipal authorities launched an intervention to build several “salons” (Japanese term for senior centers) with the aim of promoting social interactions among citizens in the community.

The salons were established mainly by the effort of volunteers. The town selected the locations for salon openings based on the availability of public space and cost. All citizens over the age of 65 years in Taketoyo are eligible to participate in the salon activities free of charge, which include arts and crafts, cultural activities (singing, playing instruments, *haiku* composition), and informal socializing.

In 2006, a team of researchers based at the Nihon Fukushi University in Nagoya conducted a baseline survey of a random sample of Taketoyo residents over the age of 65 years ($N=2,795$) (Kondo, 2010; Ichida et al., 2013 in press). The survey included items inquiring about social capital (trust and social participation) as well as self-rated health. A follow-up survey was conducted in 2008 that inquired about whether the respondents had participated in any of the salon activities. The study hypothesis was that participation in salons would be linked to increased social capital (higher perceptions of trust of community members) as well as healthy aging, i.e., maintenance of functional independence in older individuals.

Although social participation has been repeatedly linked to healthy aging, causality nonetheless remains tenuous because of the strong possibility of reverse causation (healthy individuals selectively participate in social activities). In the ideal case, the solution to overcome this problem is to conduct a randomized trial, assigning individuals to participation in social activities based on the toss of a coin. However, the Taketoyo Intervention Study was not based upon randomized assignment of individuals to treatment, and indeed to our knowledge, no randomized trials have been conducted to examine the effect of social participation on health. The next best solution is to look for instruments—or *natural experiments*—in which the investigator can move closer to causal inference by observing a change in the outcome (e.g., improvement in health) following a quasi-experimental disturbance in exposure (opening of a salon in the community).

The instrument selected in this instance was the inverse of the distance between each resident’s dwelling and the nearest salon. Had the individuals in Taketoyo been randomly assigned to salon participation, it could be assumed that, in the long run (statistical expectation), there is no selection bias and that unmeasured (and indeed, even unthought-of) confounders are balanced (Glymour, 2006; Hannan, 2006). In the Taketoyo Intervention Study, however, participation in the salons was not randomly assigned; instead, individuals made their own choice. It is therefore possible that healthier or more sociable people were more likely to

use the salons and consequently stayed healthier during follow-up. Stated differently, subtle (and unmeasured) differences in baseline health status could be a common prior cause—i.e., confounder—of the association between salon participation and future health. Note that to the dyed-in-the-wool skeptic, even the use of longitudinal data cannot get around this bias. This is an instance of self-selection biasing the estimate of the effect of the intervention. Depending on how these choices are made, the effect of salon participation on health may overstate or understate the true effect. A convincing analysis of the link between participation in salon programs and health therefore requires an exogenous source of variation in the choice of participation. As stated earlier, IV estimation is a method for inducing exogenous variation in the treatment (participation in salon programs). Geographic distance of the study participants to the nearest salon serves as a potential source of such exogenous variation—on the grounds that the municipal authorities established the salons in random locations where there happened to be available space.⁵

Following Card (1993), to understand the econometric issues in IV estimation, consider a simple two-equation system describing the relationship between participation (p_i) and self-rated health in 2008 (h_i) for individual i :

$$p_i = X_i \times \gamma + v_i, \quad (4.1)$$

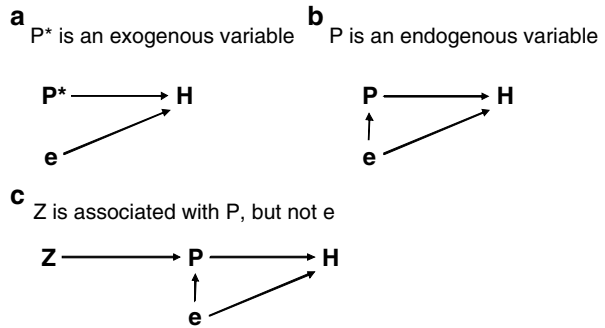
$$h_i = X_i \times \alpha + p_i \times \beta + u_i. \quad (4.2)$$

Here X_i is a matrix of observed variables at baseline in 2006 (with $E(X_i \times v_i) = E(X_i \times u_i) = 0$) and β is regarded as the “true” causal effect of participation. Equation (4.1) describes the variables in 2006 that affect participation in salon programs (p_i), while (4.2) describes how self-rated health in 2008 (h_i) is affected by the variables measured in 2006 as well as participation in the salon programs. If we substitute (4.1) into (4.2), we can see that v_i and u_i are mutually dependent. However, the estimate of β by ordinary least squares is consistent if and only if v_i and u_i are uncorrelated. Otherwise, the estimate of β is biased.

A consistent estimate of the true effect of salon program participation can be obtained if there is a component of the vector X_i that affects participation but not self-rated health in 2008. If participation was randomly assigned, the randomization process could be used to estimate (4.2) by the instrumental variable (Z). Stated differently, the outcome of the coin toss would serve as the instrument determining assignment to treatment, without directly affecting the outcome of interest. In the absence of such “pure” random assignment, however, one needs to identify a causal determinant of participation that can be legitimately excluded from (4.2).

⁵ Or at least in locations that were orthogonal to the survey respondents’ health status. Of course, if the town officials selected location based on lobbying by health-conscious residents, the instrument would not work. But that was not the case.

Fig. 4.1 Illustration of causal relationships between social participation and health



In Taketoyo, the proximity of residents to the nearest salons can be considered the equivalent of the coin toss.

Figure 4.1 illustrates the relationships between distance, participation, and self-rated health in 2008, based on Cameron and Trivedi (2005). Standard regression assumes that the regressor ($=P^*$) is uncorrelated with the errors ($=e$) (Fig. 4.1a). In our intervention, however, an association may exist between regressors ($=P$) and errors ($=e$) (Fig. 4.1b). The instrument (inverse distance to the salon, Z) is associated with the participation in salon programs ($=P$) but not associated with self-rated health in 2008 ($=H$) (Fig. 4.1c).

In the IV analysis to follow, the authors used a treatment effect model to take into consideration the bias caused by self-selection and the dichotomous-exposure variable, estimated with STATA 11 (Ichida et al., 2013 in press). The treatment effect model estimates the effect of binary treatment on continuous, fully observed variables. Maximum likelihood estimation was used to estimate the treatment effect model. The clustered sandwich estimator was used to estimate the standard errors of coefficients in the models, taking into account the clustering of samples within the three salons (Rogers, 1993).

The outcome variable was self-rated health, determined by responses to the question, “How would you rate your current health status: excellent, good, fair, or poor?,” transformed into z -scores. All regressions were adjusted for age (in 5-year groups), sex, equivalized household income (categorized into quartiles), as well as baseline self-rated health in 2006 (i.e., prior to the opening of the salons). The instrumental variable—the inverse of the distance to the nearest salon from each respondent’s residence—was calculated by geocoding their addresses and using GIS (Hanibuchi, Ichida, Hirai & Kondo, 2007).

As a check of the relevance of the instrument, Fig. 4.2 displays the relationship between average distance to the nearest salon and probability of participation in the salon.

As can be seen, the inverse of the distance is correlated with participation in the salon programs (Spearman’s $\rho = -0.22$). On the other hand, the inverse of the distance did not strongly correlate with z -scores of self-rated health in 2006 (Spearman’s $\rho = 0.05$), suggesting that the locations of salons were independent of self-rated health of residents at baseline.

Fig. 4.2 Relationship between average distance to the nearest salon and probability of salon participation. Reproduced with permission from Ichida et al. (2013 in press)

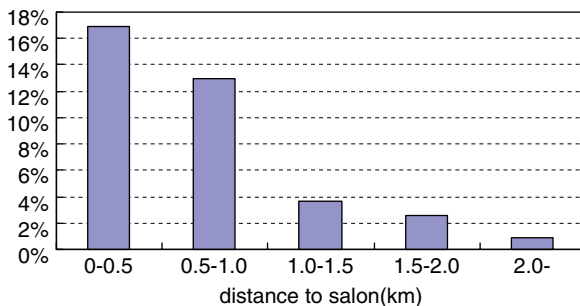


Table 4.2 contrasts the estimates obtained using the ordinary least squares (OLS) approach versus the treatment effect model (IV). In Models 1–2, the dependent variable is standardized self-rated health at follow-up in 2008, and covariates include baseline self-rated health in 2006, age, sex, and equivalized income. In Model 1, salon participation was entered without being instrumented and shows a significant association with better self-rated health in 2008. The other predictors of better self-rated health in 2008 are self-rated health at baseline (in 2006) and younger age. Model 2 shows the IV estimates. The lower part of the panel (4.1) is from the first stage of the IV estimation, indicating that salon participation was significantly associated with the inverse of the distance to the nearest salon ($p < 0.05$). In the upper half of the panel (4.2), the instrumented values of salon participation (“estimated participation”) is shown to be significantly and positively associated with better self-rated health in 2008 ($p < 0.05$), after adjusting for age, sex, equivalized income, and baseline self-rated health. The IV estimate of salon participation on health is roughly twice the size of the OLS estimate.

Two standard checks are carried out to test the validity of IV estimators—for relevance and exogeneity. The first check is whether distance is a weak instrument. Instruments that correlate poorly with endogenous variables have been shown to give an inconsistent estimator of the effect of the endogenous variables on the outcome (Hahn & Hausman, 2002). However, just-identified IV (one exposure variable is estimated by one instrument) has been shown to be median-unbiased and therefore less subject to a weak instruments critique (Angrist & Pischke, 2009). In the Taketoyo study, participation in salon programs was instrumented by a single instrument, i.e., the distance to the salons, and the distance to the salons is significant and improves the fit of first-stage regression. This suggests that distance to the salons is not a weak instrument. Furthermore, the first-stage regression yielded an F-statistic of 66.3, which is considerably larger than the general cutoff value of 10 (Staiger & Stock, 1997). The second check of validity is for the exogeneity of the instrument. The F -statistic of the Durbin–Wu–Hausman test of endogeneity was 28.4 ($p = 0.03$), and hence, the null hypothesis was rejected. (We provide a more detailed treatment of checking for the validity of IV model specification in Sect. 4.2.4.)

Table 4.2 Estimates contrasting OLS to IV treatment model: Taketoyo Intervention Study

	Model 1 OLS		Model 2 treatment effect model (IV)	
	Coefficient	Std. error	Coefficient	Std. error
Dependent Var.	Self-rated health 2008		Self-rated health 2008 equation (4.2)	
Constant	0.230	(0.076)	0.205	(0.086)*
Baseline self-rated health	0.495	(0.016)**	0.490	(0.017)**
Male	-0.034	(0.025)	-0.018	(0.025)
Age 65–69	Reference		Reference	
Age 70–74	-0.196	(0.102)	-0.205	(0.098)*
Age 75–79	-0.344	(0.061)*	-0.350	(0.053)**
Age 80–84	-0.311	(0.022)**	-0.319	(0.032)**
Age 85–	-0.418	(0.039)**	-0.409	(0.044)**
Equiv_inc <=159	0.011	(0.058)	0.004	(0.052)
Equiv_inc 159–225	-0.013	(0.031)	-0.017	(0.032)
Equiv_inc 225–275	0.066	(0.036)	0.067	(0.038)
Equiv_inc >275	Reference		Reference	
Equiv_inc_missing	0.040	(0.041)	0.035	(0.043)
Participation	0.204	(0.021)*		
Estimated participation			0.458	(0.074)**
Dependent Var.			Participation equation (4.1)	
Constant			-1.678	(0.209)**
Baseline self-rated health			0.143	(0.008)**
1/distance (km)			0.125	(0.023)**
Male			-0.364	(0.099)**
Age 65–69			Reference	
Age 70–74			0.236	(0.057)**
Age 75–79			0.230	(0.168)
Age 80–84			0.245	(0.271)
Age 85–			-0.198	(0.218)
Equiv_inc <=159			0.228	(0.168)
Equiv_inc 159–225			0.085	(0.032)**
Equiv_inc 225–275			0.033	(0.145)
Equiv_inc >275			Reference	
Equiv_inc_missing			0.115	(0.099)

** and * denotes significance at 99% and 95% level, respectively

Notes: “Self-rated health” is standardized (z -scores)—see text; “Equiv_inc” denotes equivalized income categorized by quartile; In Model 2, the two equations were estimated simultaneously Adapted from Ichida et al. (2013 in press)

In summary, the Taketoyo Intervention Study provides novel empirical support for the claim that interventions to promote social participation can enhance the health of older adults.

In a qualitative study published previously by the same investigators involving interviews with 33 participants in the salon programs, an overwhelming majority (85 %) reported that their perception of emotional social support had increased after

participation (Takeda, Kondo, & Hirai, 2009). It remains to be seen whether these beneficial changes translate over time into the maintenance of functional and cognitive status and, hence, the prevention of long-term care dependency.

4.2.3 Summary of Social Capital Research Utilizing the IV Estimation Approach

Having illustrated the IV estimation approach via our detailed case study of Taketoyo town, we turn now to the use of the technique by other social capital researchers. Table 4.3 summarizes the six studies to date which have sought to implement the IV estimation approach to derive consistent estimates of the effect of social capital on various health outcomes. A variety of instruments have been suggested so far. For example, Folland (2007) conducted an ecological analysis of six different cross sections of 48 contiguous US states, forming a panel in which sampling occurred every 4 years over the period from 1978 to 1998 (the DDB Needham Lifestyle Database). As instruments, he selected three state-level variables: (1) the employment rate per capita, on the grounds that “work is a socializing experience and helps to build social capital, yet it is unlikely to be a health input per se” (p. 2349); (2) geographic latitude, because there is a marked North-South gradient in social capital across the US states based upon historical patterns of immigration and political culture; and (3) state government contributions to colleges per capita, because in economic theory, public contributions to education is an indicator of the community’s commitment to the public good.

As can be seen from Table 4.3, there is considerable variation and creativity in the use of various instruments. Schultz, O’Brien, and Tadesse (2008) analyzed the association between individual perceptions of trust and self-rated health, using the duration of residence in the community as well as degree of religiosity as instruments. D’Hombres, Rocco, Suhrcke, and McKee (2010) and D’Hombres, Rocco, Suhrcke, Haerpfer, and McKee (2011) as well as Kim, Baum, Ganz, Subramanian, and Kawachi (2011) used variations on the theme of population heterogeneity as instruments for social cohesion—for example, religious fractionalism, income inequality, and perceptions of corruption of public officials and institutions. Finally, Ronconi, Brown, and Scheffler (2012) used access to public transport among a sample of older individuals to instrument their level of informal socializing.

The target of inference in the majority of these studies is the individual. In other words, the authors were primarily interested in whether an individual’s perceptions of trust, or informal socializing, or participation in associations was associated with their chances of health. By and large, the studies summarized in Table 4.3 do seem to find an association between instrumented values of social capital and health outcomes. However, there is a clear gap in the literature of studies that have attempted to identify the causal effect of contextual-level social capital on health outcomes. Obviously some careful theorizing will need to be devoted to such studies because of the two sets of endogenous treatments required—one at the individual level and the other at the group level.

Table 4.3 Summary of studies employing IV estimation in social capital research

Author	Study design	Indicators of social capital	Instrumental variables	Findings
Folland (2007)	Ecological study of six different cross-sections of 48 US states forming a panel, sampling every 4 years over the period 1978–1998 (DDB Lifestyle Database)	Index of social capital constructed from indicators including: trust (“most people are honest”); attendance at club meetings; participation in community projects; volunteering; informal socializing	1. Employment per capita 2. Geographic latitude 3. State government contributions to colleges per capita	IV estimates indicated that the index of social capital was associated with significantly lower rates of total mortality and infant mortality
Schultz et al. (2008)	Individual-level cross-sectional survey of 468 residents of Minnesota and Wisconsin (the 2006 Social Capital Community Survey)	Indices of social capital including: social trust, associational involvement, informal socializing, organized group interaction, and social support (Cronbach alphas: 0.3–0.7)	1. Whether the respondent resided in the community for <6 years 2. Religiosity—whether the individual reported attending church at least once per month	A 1 % increase in instrumented trust increased the individual probability of reporting excellent/very good health by 1.03 %. A 1 % increase in instrumented associational involvement and informal socializing increased the probability of excellent health by 3.3 % and 2.3 %, respectively

(continued)

Table 4.3 (continued)

Author	Study design	Indicators of social capital	Instrumental variables	Findings
D'Hombres et al. (2010), (2011)	Cross-sectional survey of 11,187 individuals in eight Commonwealth of Independent States — Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia and Ukraine (2001 Living Conditions, Lifestyles and Health survey)	Three indicators — individual degree of trust, participation in local organizations, social isolation	1. Degree of heterogeneity (measured by the Herfindhal Index) in religious beliefs, level of education, and income 2. Community-aggregated averages of all other respondents (excluding the respondent) of the three social capital indicators	Instrumented values of social capital (trust, membership, social isolation) significantly associated with self-rated health in expected directions
Kim et al. (2011)	Repeated cross-sections of 167,344 individuals responding to the European and World Values Surveys in 64 countries (1981–1984, 1990–1993, 1995–1997, 1999–2004)	Trust (“Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?”)	1. Country-level corruption 2. Logarithm of population density 3. Religious fractionalism	Higher instrumented levels of social trust associated with better self-rated health (associations stronger in women than in men)
Ronconi et al. (2012)	Individuals over 65 years ($N=6,287$) surveyed in Argentina — 1997 <i>Encuesta de Desarrollo Social survey</i>	Index of informal social interactions, consisting of three indicators: (1) whether respondent often meets with friends, (2) whether person meets with relatives, (3) whether person lives alone	Access to public transportation	Higher instrumented values of social interaction associated with better self-rated health A 1.0 standard deviation increase in the social interaction index reduces the probability of reporting poor health by about 68 %

4.2.4 *Tests of Validity of IV Estimates*

The task of identifying the causal effect of social capital (measured at either the community or individual level) using instrumental variable estimation requires finding a set of instruments satisfying the two conditions discussed earlier: (a) the rank/relevance condition in which the instruments are demonstrated to be strongly correlated with social capital and (b) and exclusion/orthogonality condition where the instruments are not correlated with the outcome of interest (or more formally stated, where the instruments are not correlated with the unobserved error term in the main health regression). There is a proliferation of diagnostics or tests to check that both conditions are satisfied, but we focus on a small set that should be routinely used. We briefly sketch what we consider to be the core set of diagnostic tests, referring the interested reader to a more detailed discussion in the literature (Angrist & Pischke, 2009, Baum, 2006).

The relevance condition aims to ensure that the instrument is in fact relevant to (or correlated with) social capital in the “first-stage” regression. The quotes are now used, whereas two decades ago they were not, because the practice of first-stage regression followed by second-stage or main health regression is now routinely performed simultaneously by most software packages such as STATA or SAS. Relevance is usually tested using the F -statistics compared to the nonstandard (Bound–Jaeger–Baker) F -distribution. The null hypothesis is that there is zero correlation between the instrument and the treatment variable, but due to the nonstandard distribution, a more stringent critical value of 10 is widely used as a rule. Another test of relevance stands on its own when more than one endogenous variables are suspected; such is the case when both community and individual social capital are modeled. Anderson (canonical) correlation k test improves on the F test in such cases since it is based on correlations between multiple endogenous variables and, necessarily, multiple instruments. Hence, this test uses canonical correlations involving matrices as different from correlation involving vectors. The null hypothesis is zero correlation and the critical values come from the normal distribution. These tests (F and k) are important in diagnosing the relevance of the instrument set and should be routinely reported.

The orthogonality condition is equally important and is often misunderstood and misapplied. The condition is essentially untestable because it posits no correlation between the instruments with the essentially unobserved error term in the health regression. If the unobserved confounders were in fact observable, one would simply plug it into the regression equation as just another covariate.⁶ Instead, the orthogonality condition can be plausibly argued using biology, psychology, or other

⁶ Stated another way, we cannot ever empirically disprove that there does not exist a direct connection between the instrument and the set of unobserved confounds or that there does not exist a set of unobserved variables that are common prior causes of both the instrument and the outcome of interest.

relevant theories of mechanisms linking social capital to health. In turn, the theorized mechanisms are strengthened through replicable and repeated survival in empirical tests, which motivates the quest to improve our estimation method from traditional estimation to instrumental variable estimation.

There are common diagnostics that enhance the argument for orthogonality. If more than one instrument is used (as is the case for several studies summarized in the previous section), an overidentification test (Hansen J test) can be used to assess whether they are jointly necessary. The null hypothesis is that the model is correctly specified or the instruments are jointly orthogonal. The underlying need for this test is to use the smallest set possible to enhance efficiency. The logical conclusion of this need is a set of no instrument—that is, we are back in the realm of traditional linear estimation where it is known that the linear estimator is the most efficient. But this situation of no instrument is also precisely where endogeneity raises doubt about the possibly biased estimate. This is the classic instance of the efficiency—bias trade-off.

One step before this logical conclusion is where there is one instrument for one endogenous variable, known as the just-identified case. This is probably the best or the happy medium in the trade-off. But in the just-identified case, the orthogonality condition solely rests on the theory arguing for no correlation between the instrument and the error term or between the instrument and health. This heavy burden is probably one reason why most studies attempt to use more than one instrument for each endogenous variable. Another reason for having more instruments is to have a strong instrument set. Weakly correlated instrument or barely relevant ones pose their own problems (see the literature spawned by Stock, Wright, & Yogo, 2002).

In short, two sets of tests and a theoretical mechanism should generally be reported for instrumental variable estimation. The rank test includes the F -statistic, Anderson k -statistic, or Kleibergen-Paap LM -statistic, while the joint overidentification test includes the Hansen J test. Their use should be accompanied with a theoretically plausible mechanism.

Turning to the published studies summarized in Table 4.3, D'Hombres et al. (2010, 2011) examined (binary) self-rated health focusing on (binary) individual social capital (trust, associational membership, social isolation) and used community heterogeneity and community social capital as instruments. The sample consisted of individuals from eight countries in the Commonwealth of Independent States in 2001. The study finds a positive effect of individual social capital on individual self-rated health. In the context of post-Soviet societies, the authors theorized that (a) there is a link between community heterogeneity (as measured by the Herfindahl index of heterogeneity in religious beliefs, education, and income) and health *and* (b) there is no direct link between community heterogeneity and the error term or health.

The relevance condition was tested using the F test and k test in that study, while the overidentification condition was tested using the Hansen J test (both tests passed). As an alternative set of instruments, the authors used the community level of social capital (i.e., assigning the mean values averaged over all individuals in the community *minus* the respondent value), arguing that the community average

values of social capital are linked to health *exclusively* through providing a substrate for the social connectedness of each individual in the community. In other words, the authors argued that there is no direct link between community social capital and individual health. This motivation for using community social capital as an instrument is at variance with the literature which has documented an association between community social capital and individual health and similarly reported on the multiple mechanisms how community social capital works in these situations (Kawachi et al., 2008). This illustrates the debates that can arise in IV estimation, as well as the need to carefully ground theoretical motivation in the empirical literature.

Ronconi et al. (2012) examined (binary) self-rated health focusing on a continuous measure of informal social interaction (as an individual-level indicator of social capital), and used access to public transport (as well as whether transport is a problem) in the instrument set. The sample consisted of older people in Argentina in 1997. The analysis showed a positive effect of individual and social capital on health. The mechanism posits (1) a link between access to public transport and informal social interaction and (2) no correlation between access to public transport and the error term or and health. The validity of this instrument rests on the assumption that part from fostering informal social interaction, there is no additional pathway through which access to public transport can influence individual health, e.g., not even through an increase in individual leisure becoming more affordable. In this study, the relevance condition was tested using the F test, while the overidentification condition was tested using the Hansen J test (and Anderson–Rubin test).

Folland (2007) examined various state-average health outcomes focusing on a state-average social capital index akin to Putnam's and using employment per capita, geographic latitude, and state contribution to colleges as instruments. The sample consisted of pooled cross sections of 48 US states followed every 4 years for two decades. The study found mostly positive causal effects of social capital on health outcomes. Unfortunately, since no diagnostic tests were reported, it is difficult to assess the quality of the instruments.

Kim et al. (2011) examined (continuous) individual self-rated health focusing on country-average social trust and using log population density, perceptions of corruption, and religious fractionalization as instruments. The sample was derived from multiple World Values Surveys and European Values Surveys. The study found a positive effect of contextual social capital on individual health. The mechanism relies on the social psychological theory of interpersonal trust and the political economic theory of corruption. The relevance condition was tested using the F test (and Kleibergen–Paap LM test), while the overidentification condition was tested using the Hansen J test (and C test for individual instrument).

In summary the theoretical mechanisms invoked to motivate the various instruments vary in their degree of veracity and plausibility. This implies that instrumental variable estimation cannot substitute for strong theory as well as a solid study design which collects measures operationalizing clear theoretical constructs. Because of the essentially untestable orthogonality condition, substantive theories—whether derived from the biomedical, psychosocial, or economic literature—are crucial. These studies also suggest that measures reflecting community or contextual heterogeneity

seem to be good candidates for consideration as instruments for social cohesion since they can be grounded in broader theories of community based on psychosocial theory or social epidemiology or political science.

4.2.5 Experimental Manipulation of Social Capital

The core idea of instrumental variable estimation is to find *natural experiments* which lead to fluctuations in the stocks of social capital. A more direct method of establishing the causal effects of social capital would be to intentionally manipulate it through some sort of intervention. For reasons of feasibility, such examples remain sparse. Part 2 of this book (*Social Capital and Health Policy*) will describe some of these case examples. For example, Chap. 8 (Social Capital interventions to Promote Healthy Aging) describes the results of the Experience Corps[®], an intervention that sought to mobilize community-dwelling retirees in order to train them and place them in public elementary schools as teacher assistants (Fried et al., 2004). The program has been couched as an attempt to foster social interactions between the volunteers, the schoolchildren, their parents, and teachers, thereby boosting horizontal as well as intergenerational social capital (Glass et al., 2004; Rebok et al., 2004). Evaluations suggest that the intervention resulted in improvements in both the volunteers' level of well-being as well as children's academic achievement, and the program has been subsequently rolled out nationally.⁷

Chapter 9 (Microfinance and Social Capital) discusses case examples of the use of microfinance to build social capital and improve health outcomes. Pronyk, Harpham, Busza, and colleagues (2008) conducted a cluster randomized trial in rural South Africa that combined group-based microfinance with participatory gender and HIV training with the goal of bolstering solidarity. After 2 years of the intervention, the researchers found increases in both the cognitive and structural dimensions of social capital (measured by intensity of participation in community organizations and perceived levels of reciprocity, solidarity, and collective action). In turn, increased levels of cognitive social capital were found to be associated with higher condom use and lower HIV prevalence among men and women. Increased structural social capital (civic participation) was associated with protective trends in risk behavior; however, it was also associated with increased rates of HIV infection. Thus, not all forms of social capital are created equal from the point of view of health promotion and that "getting the balance right" is critical to informing HIV prevention efforts (Pronyk, Harpham, Morrison, et al., 2008).

Brune and Bossert (2009) report on a 2-year intervention to build social capital in three post-conflict communities in Nicaragua. In the aftermath of a long civil war

⁷Similar interventions to build social capital through fostering intergenerational social linkages have been conducted also in Brazil (De Souza & Grundy, 2007) and in Japan (Fujiwara et al., 2006)—see Chap. 8 for further description.

(1981–1989), many communities in that country were established by resettling pro-Sandinista guerilla armies and the armed opponents of the Sandinista regime. As a consequence, “issues of distrust and violence were evident throughout the country, particularly in rural communities” (Brune & Bossert, 2009, p. 886). Following a baseline survey, the researchers implemented a management and leadership (M&L) training intervention⁸ in two communities that were diagnosed as having low levels of social capital (one control community received no intervention). Two years after the intervention, a household survey was repeated in the communities to gauge whether the intervention had strengthened community social capital. Relative to the control community, intervention communities reported increased levels of social cohesion (the belief that neighbors were ready to assist in times of need), increased likelihood of working together with neighbors on projects to benefit the community, as well as increased likelihood of respondents contacting local health officials about a local problem.⁹ Although the intervention did not gather health information at baseline, higher levels of social capital at follow-up were associated with some positive health behaviors (e.g., improved child nutrition).

Our last example of a social capital intervention is the study by Fujiwara, Natsume, Okuyama, Sato, and Kawachi (2012) which evaluated a home-visiting program introduced by the Japanese government in 2007 (*Konnichiwa Akachan Jigyō*) to support new mothers with preterm infants. In this program, public health nurses visited the new mothers at 1 month post-discharge from the hospital to provide assistance with the care of preterm infants, while trained community staff conducted a home visitation at 4 months to help establish connections between the mothers and their community. In a postal survey mailed to new mothers when their infants were 2–4 weeks of age, the authors inquired about social capital (trust and sense of security in the community) and parenting stress. The survey was repeated at the 4-month postnatal visit. Trust increased among mothers who were visited by public health nurses, while sense of security was increased among mothers visited by trained community staff. Although suggestive, the results need to be interpreted with caution because the assignment to home visits was not randomized. In addition, although levels of parenting stress improved during follow-up, no statistically significant differences were detected between the home-visit group and the non-visited group, i.e., it was not possible to distinguish the pre-/post-intervention difference from the natural history of parenting stress. To summarize, attempts to intentionally generate social capital through interventions remain sparse, and the use of randomized trials is even rarer.

⁸The intervention was designed to develop leadership capacity in the community with the goal of strengthening community organization, as well as to encourage civic participation among village households.

⁹Interestingly, the intervention was associated in a positive direction with increased levels of trust, but the estimate was not statistically significant. The researchers speculated that “trust takes more time” to develop (p. 891).

4.3 Fixed-Effects Models

The second approach to strengthening causal inference that we wish to briefly highlight in this chapter is the use of fixed-effects regression to address time-invariant unobservables. As Angrist and Pischke (2009) noted, good instruments can be hard to find and we need alternate ways to address unobserved confounders. One approach is to leverage repeated measures of the treatment within individuals (or communities, if that happens to be the target of inference) to observe the effects of changes in the level of the exposure over time on changes in the health outcome while netting out the time-invariant characteristics as a set of fixed parameters. Obviously, this requires a longitudinal design with repeated assessment of the exposure (social capital), as well as some sort of meaningful change in the level of exposure overtime. As we discussed in Sect. 4.2, prospective studies of social capital and health still remain sparse, and ones that feature repeated exposure assessment are rare.

A recent report from the Finnish Public Sector cohort (Oksanen, Kivimäki, et al., 2011, alluded to earlier) represents a move in this promising direction. In that study, the responses of 28,043 participants to repeat surveys in 2000–2002 and 2004 were linked to national mortality registers through 2009. The surveys inquired about social capital in the workplace (see also Chap. 2). During the 5-year follow-up, each unit increase in workplace social capital was associated with a 19 % decrease in the risk of all-cause mortality (age- and sex-adjusted HR=0.81; 95 % CI 0.66–0.99). Crucially, the authors leveraged the repeated assessment of workplace social capital in that study to conduct a fixed-effect analysis, which showed that a one-unit increase in self-assessed social capital across the two time points was also associated with a lower mortality risk, which was not statistically significant but yielded an effect estimate that was very close to the conventional regression analysis (OR=0.81, 95 % CI 0.55–1.19).

A special instance of the fixed-effects approach can be seen in the use of twin studies. Studying twins provides a unique opportunity to isolate the effect of social capital from unmeasured confounds. The reason is because twins share not only genetic and perinatal factors but often also their family environment during childhood. Thus, studying twins discordant for social capital offers an opportunity to determine whether the association between social capital and health outcomes is consistent after canceling out some unknown predisposing factors.

For instance, we alluded in an earlier section to the problem of common method variance—i.e., when both the treatment (perceptions of trustworthiness of neighbors) and the outcome (perceived physical health) are self-reported. In such cases, bias can arise when unobserved personality traits, such as negative affectivity, end up influencing both social capital perceptions as well as perceptions of health status. Additionally, the association between social capital and health outcomes might be confounded by other unmeasured common prior causes, such as adverse childhood circumstances, as well as possible genetic factors (e.g., a personality trait that predisposes an individual to being hostile, mistrusting, and unhealthy).

A study by Fujiwara and Kawachi (2008) exemplifies the use of the twin fixed-effects design, utilizing twin data from the National Survey of Midlife Development in the United States (MIDUS). In that study, 944 twin pairs—351 pairs of MZ (37.2 %) and

593 pairs of DZ twins (62.8 %)—answered a survey which included items inquiring about perceptions of community social capital. A range of self-reported outcomes were examined—including perceived physical health, perceived mental health, major depression (measured by the Composite International Diagnostic Interview Short Form (CIDI-SF)), and the total number of depressive symptoms. Individual perceptions of community social capital were assessed within both cognitive and structural domains. Cognitive social capital indicators included questions about social trust and sense of belonging. Structural social capital was assessed by inquiring about amounts of volunteer work in the recent past and community participation.

Fixed-effects analyses were carried out among twin pairs (see Greene (1993) and Hsiao (2003) for a detailed description of the statistical approach). Briefly, in the fixed-effects approach, the effect of social capital on health outcomes was calculated by canceling the effect of unknown shared factors, such as genetic or early family environmental influences which might affect health outcomes. An equation representing the association between health and social capital for each pair of twins (let the first subscript, i , represent the twin pair, and let the second subscript represent either twin 1 or 2 in the pair) can be written as follows:

$$y_{i1} = \beta_{11}x_{i1} + \beta_2d_{i1} + \beta_3w_{i1} + \beta_4m_{i1} + \beta_5s_{i1} + g_{i1} + f_i + \varepsilon_{i1},$$

$$y_{i2} = \beta_{12}x_{i2} + \beta_2d_{i2} + \beta_3w_{i2} + \beta_4m_{i2} + \beta_5s_{i2} + g_{i2} + f_i + \varepsilon_{i2},$$

where y represents the health outcome, x is the social capital indicator, and (d , w , m , and s) represent the observed covariates in the regression (standing for, in order, educational attainment, working status, marital status, and sex), while \mathbf{g} and \mathbf{f} , respectively, represent unmeasured genetic endowment (g) and early family environment (f), and ε represents a normal error term.

In the fixed-effects model, the effects of these unmeasured factors (i.e., fixed effect) can be canceled by subtracting the equations as follows:

$$y_{i1} - y_{i2} = \beta'_1(x_{i1} - x_{i2}) + \beta'_2(d_{i1} - d_{i2}) + \beta'_3(w_{i1} - w_{i2}) + \beta'_4(m_{i1} - m_{i2}) + \beta'_5(s_{i1} - s_{i2}) + (g_{i1} - g_{i2}) + (f_i - f_i) + (\varepsilon_{i1} - \varepsilon_{i2}),$$

which can be rewritten as follows:

$$y_i^* = \beta'_1x_i^* + \beta'_2d_i^* + \beta'_3w_i^* + \beta'_4m_i^* + \beta'_5s_i^* + g_i^* + f_i^* + \varepsilon_i^*,$$

where the asterisk indicates the difference of variables within each twin pair. As early family environment was the same in both monozygotic and dizygotic twins, f_i^* is equal to zero.¹⁰ In monozygotic twins, the genetic endowment is the same; hence, g_i^* is equal to zero. For monozygotic twins and same-sex dizygotic twins, s_i^* is equal to zero.

¹⁰That is, by design, the MIDUS sample of twins was restricted to those who were reared together until at least the age of 14.

Table 4.4 Results of twin fixed-effects analysis of social capital on health among monozygotic and dizygotic twin pairs (adapted from Fujiwara & Kawachi, 2008)

Health outcomes	Social capital measurements	Monozygotic (total pair of $n=351$)		Dizygotic (total pair of $n=593$)	
		<i>B</i>	95 % CI	<i>B</i>	95 % CI
Perceived physical health	Social trust	0.183	0.038, 0.327	0.148	0.027, 0.270
	Sense of belonging	-0.042	-0.197, 0.113	0.021	-0.101, 0.142
	Volunteer activity	-0.125	-0.142, 0.117	0.002	-0.108, 0.111
	Community participation	-0.054	-0.148, 0.039	0.052	-0.030, 0.134
Perceived mental health	Social trust	0.071	-0.062, 0.205	0.104	-0.015, 0.222
	Sense of belonging	0.021	-0.120, 0.163	0.148	0.034, 0.261
	Volunteer activity	0.037	-0.082, 0.155	-0.015	-0.121, 0.091
	Community participation	0.027	-0.059, 0.112	0.042	-0.037, 0.122
Number of depressive symptoms	Social trust	0.116	-0.176, 0.408	-0.143	-0.380, 0.094
	Sense of belonging	-0.132	-0.449, 0.184	-0.240	-0.476, -0.004
	Volunteer activity	0.087	-0.178, 0.352	-0.074	0.288, 0.139
	Community participation	-0.019	-0.209, 0.171	-0.161	-0.321, -0.0004
Major depression		OR	95 % CI	OR	95 % CI
	Social trust	1.11	0.58, 2.14	0.78	0.47, 1.28
	Sense of belonging	0.66	0.33, 1.31	0.68	0.41, 1.14
	Volunteer activity	1.32	0.60, 2.88	0.86	0.54, 1.37
	Community participation	0.77	0.45, 1.30	0.76	0.53, 1.09

Table 4.4 shows the results of fixed-effects models of social capital indicators on the health outcomes. In MZ twins, social trust was significantly positively associated with perceived physical health after differencing out unknown predisposing factors shared within twin pairs, such as genetic and early family environment ($\beta=0.183$, 95 % CI=0.038, 0.327). In DZ twins, the association was also significant ($\beta=0.148$, 95 % CI=0.027, 0.270). However, none of the remaining indicators of social capital (sense of belonging, volunteer activity, or community participation) were associated with perceived physical health among MZ or DZ twins.

With regard to perceived mental health, among DZ twins, a significant association was found between sense of belonging ($\beta=0.148$, 95 % CI=0.034, 0.261), while a marginally significant association was found with social trust ($p<0.1$; $\beta=0.104$, 95 % CI=-0.015, 0.222). However, no significant association was found among MZ twins. The number of depressive symptoms was significantly associated with sense of belonging and community participation in DZ twins ($\beta=-0.240$, 95 % CI=-0.476, -0.004; $\beta=-0.161$, 95 % CI=-0.321, -0.0004, respectively). Similar to perceived mental health, no significant association was found among MZ twins. Major depression was not associated with social capital measurements in either MZ or DZ twins.

In summary, in this twin fixed-effects analysis, individual-level social trust perception was found to be associated with better self-rated physical health, even after differencing out the effects of unknown predisposing factors, such as genetic factors or early family environment. Although the coefficient of social trust on self-rated physical health among DZ was smaller than MZ, the difference was not significant ($p > 0.3$). This suggests that any confounding of the association between social trust and self-rated physical health by unobserved genetic traits is likely to be slight. This bolsters the case that the association between trust and self-rated health is causal. With regard to mental health outcomes, sense of belonging was positively associated with the single-item mental health measure, while sense of belonging and community participation were negatively associated with number of depressive symptoms, although only among DZ but not among MZ pairs. This suggests that the association between social capital indicators and mental health among DZ twins may be residually confounded by unmeasured genetic factors. For example, there may be some genetic factors which are associated with a preference to “belong” and, simultaneously, resilience against developing depressive symptoms. Lastly, major depression, defined as having four or more depressive symptoms, was not associated with social capital in the fixed-effects model.

4.4 Concluding Remarks

The overarching theme of this chapter has been that researchers need to be cautious about inferring causality from observational data. This caution cuts in both directions—just as we need to be circumspect in inferring that X causes Y just because they happen to be correlated, we need to be equally cautious about rejecting a hypothesis because an association was not found. Stated another way, an ill-considered rejection of social capital based on a selective reading of the evidence can be as equally damaging as an overenthusiastic embrace of the concept—examples of both can be found throughout the literature. Our discussion has focused more on the instances where a *positive* association between social capital and health needs to be more carefully evaluated. For example, if social participation is associated with better health, it might be due to selection and reverse causation. But we also note that when a study fails to find an association between social capital and health, it does not prove that the theory is intrinsically wrong—a null finding could be due to other factors such as poor measurement (e.g., using proxy indicators of social capital). Or if social capital is found to be associated with health in the *opposite* direction to that hypothesized by the investigator (e.g., social participation leads to worse health), it should not automatically spur the global conclusion that all social participation is detrimental to health. The nature of the association between social capital and health is contingent. Occasionally, it can be a burden to be asked to participate in social interactions—or what has been called the “dark side” of social capital. The sophisticated analytical methods described in this chapter do not substitute for good theory—a point forcefully made by Deaton’s recent critique of the mindless

application of instrumental variable estimation and experimental approaches to identify causal relations in the social sciences (Deaton, 2009).

In this chapter, we have tried to highlight some of the salient challenges in drawing causal inferences in the field of social capital research. Our list is by no means comprehensive. Other topics such as the problem of identifying the relevant *scale* for social capital research, and the modifiable area unit problem (MAUP) in studies of neighborhood social capital will be covered by other chapters (Chap. 6).

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Chapter 5

Contextual Determinants of Community Social Capital

Tomoya Hanibuchi and Tomoki Nakaya

In this chapter, we summarize current progress in the study of determinants of community social capital. Given that many studies have reported a positive association between social capital and health (and many other outcomes), why are some communities richer in social capital than others? Compared to the studies on the health *effect* of community social capital, less attention has been devoted to understanding the *determinants* of community social capital. Recently, researchers have examined the influence of area characteristics, such as degree of urbanization/suburbanization, neighborhood walkability, and community history on the accumulation of community social capital. Traditional urban centers have been hypothesized to be more walkable, and walkable built environments may help form a more sociable neighborhood community. In the following section, we describe how these hypotheses have been tested, with a particular focus on the case studies conducted in Japan. Subsequently, we will discuss some further challenges and policy implications regarding the studies of the contextual determinants of community social capital.

T. Hanibuchi, Ph.D. (✉)
School of International Liberal Studies, Chukyo University, 101-2 Yagoto Honmachi,
Showa-ku, Nagoya, Aichi 466-8666, Japan
e-mail: info@hanibuchi.com

T. Nakaya, Ph.D.
Department of Geography, College of Letters, Ritsumeikan University,
56-1 Toji-in kita-machi, Kita-ku, Kyoto 603-8577, Japan
e-mail: nakaya@lt.ritsume.ac.jp

5.1 Analytical Framework of Social Capital and Its Determinants

Parallel approaches have been used in social capital theory, the individualistic approach stems from sociology, and the collective approach originates in political science. The former considers social capital in relation to the characteristics of individuals, while the latter considers social capital as the product of the features of community (i.e., neighborhood, town, school, or workplace). Since the publication of influential books by the political scientist, Robert D. Putnam (Putnam, 1993, 2000), many researchers have taken the second approach, focusing on the *contextual* effects of community social capital on a variety of outputs/outcomes for both individuals and communities.

Putnam (2000) stated that “of all the domains in which I have traced the consequences of social capital, in none is the importance of social connectedness so well established as in the case of health and well-being.” (p. 326) In the field of public health and social epidemiology, many empirical studies have tested whether or not social capital can explain variations in population health. Although many authors have analyzed the effects of individual social capital on the health of individuals (i.e., traditional risk factor studies), some have tried to reveal the contextual effects of community social capital on health.

The Roseto story (Bruhn & Wolf, 1979) is a classic study demonstrating the putative influence of community social capital on population health. Unusually low rates of cardiovascular disease in Roseto, compared to surrounding communities, were said to be explained by the unusually cohesive social relationships of the town residents, which had been originally settled by Italian immigrants from southern Italy beginning in the 1880s. After many years, Kawachi, Kennedy, Lochner, and Prothrow-Stith (1997) used an ecological analysis to “rediscover” the importance of community-level social capital in explaining the linkage between income inequality and population health. Kawachi et al.’s paper has been cited nearly a thousand times (according to Web of Science’s citation index) and has influenced the direction of studies on social capital and health.

Numerous studies have tried to link collective social capital to a variety of health outcomes, including mortality (Lochner, Kawachi, Brennan, & Buka, 2003; Martikainen, Kauppinen, & Valkonen, 2003; van Hooijdonk, Droomers, Deerenberg, Mackenbach, & Kunst, 2008), self-rated health (Kawachi, Kennedy, & Glass, 1999; Kim, Subramanian, & Kawachi, 2006), mental health (Lofors & Sundquist, 2007), and health behaviors (Kim, Subramanian, Gortmaker, & Kawachi, 2006; Poortinga, 2006). In many of the studies on collective social capital, community-level social capital was measured by aggregating the responses of the residents in the community, e.g., the rate of those who answered “Yes” to the question of general trust (i.e., Would you say that most people can be trusted?) or to questions about the respondents’ participation in organized activities like sports clubs or neighborhood associations. In short, the places where many people have a trust in their neighbors or where they participate in community organizations are considered to have a high level of community social capital.

Although much attention has been directed toward demonstrating the contextual effects of community social capital on health outcomes, scant attention has been devoted to understanding the determinants of community social capital (Kaasa & Parts, 2008; Wood & Giles-Corti, 2008). In other words, a major focus of social capital research has been to test whether or not neighborhoods or community-level variations in the indicators of social capital can explain geographical variations in health outcomes, but far less attention has been paid to explaining the geographical variations in the indicators of social capital.

Understanding the determinants of community social capital is important to both academic and policy research agendas. Even if community social capital is found to be a key explanatory factor in population health, it does not necessarily mean that we can improve population health through interventions on the social capital conditions. Without knowing the determinants of social capital and possible intervention, the significance of community social capital for policy making will remain limited and ambiguous. Given that many previous studies have reported a positive association between social capital and health, examining why some communities are richer in social capital than others is important for improving public health (Leyden, 2003).

When considering the concept of social capital, and its determinants, compositional and contextual aspects need to be distinguished. The question, “Why are some communities more sociable than others?” turns out to have multiple levels. At the individual level, characteristics such as educational attainment, marital status, age, gender, income, and employment status are associated with degrees of trust and civic participation (Groot, Maassen van den Brink, & van Praag, 2007; Huang, Maassen van den Brink, & Groot, 2009; Kaasa & Parts, 2008). For example, income and education are basically related to higher social capital (e.g., Kaasa & Parts, 2008; Subramanian, Lochner, & Kawachi, 2003). Thus, in areas where many people reside with high socioeconomic status, the communities tend to have rich social capital, determined by the compositional effects of the residents.

Nevertheless, residual variation exists in the community social capital even after controlling for the individual characteristics of residents (Lindström, Merlo, & Ostergren, 2002; Subramanian et al., 2003). This implies that it is not sufficient to inquire only about the characteristics of individual residents that produce area variations in social capital; we also need to examine contextual determinants of social capital along with the individual-level determinants (Fig. 5.1). As mentioned above, since community-level social capital is usually measured by aggregating individual responses, the model that explains the determinants of community-level social capital resembles the model that explains individual-level social capital.

As for the contextual determinants of social capital, several factors have been implicated so far. In this chapter, we will focus on (a) the degree of urbanization/suburbanization; (b) neighborhood walkability; and (c) the historical development of the community, which have all been suggested to be contextual determinants of community social capital. These factors have often been analyzed separately in empirical studies, but theoretically, they can also be characterized as a series of hypotheses. For example, older neighborhoods located in the center of a city are

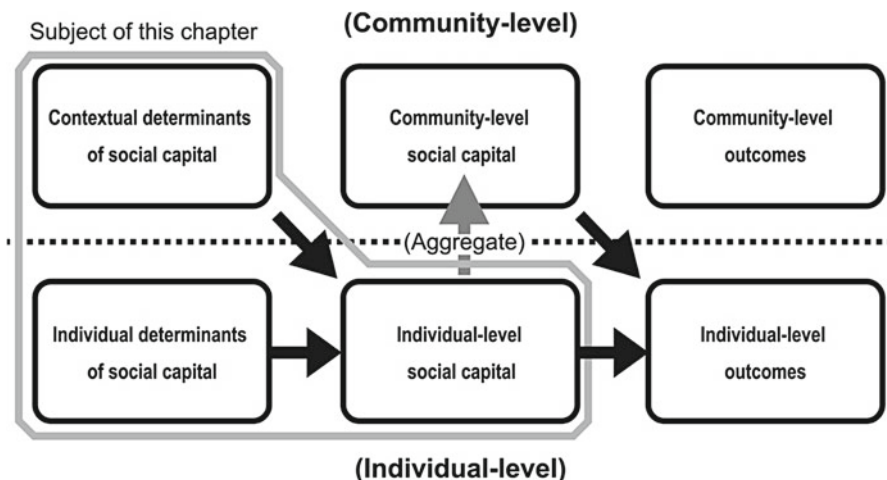


Fig. 5.1 Conceptual framework of the determinants of community social capital

supposed to be more walkable than newly developed suburban residential areas. This is because the built environments of traditional urban centers were designed with pedestrian movements in mind, while new suburban residential areas have been developed based on the premise that residents use automobiles to go everywhere. Therefore, researchers have hypothesized that people residing in urban centers would tend to walk more in their daily lives and have more opportunities for informal social interactions with neighbors, resulting in more accumulation of social capital in traditional urban centers, compared to suburbs. Such hypothetical relationships also need to be critically assessed from a wider contextual perspective by accounting for the variations in social backgrounds and contextualizing the spatial formation of residential places and community developments.

5.2 Previous Studies on the Contextual Determinants

5.2.1 *Urbanization and Suburbanization*

Table 5.1 summarizes the recent empirical studies on contextual determinants of community social capital. The degree of urbanization is a basic geographical characteristic of an area and has been considered to be associated with the formation of social networks and cohesion. Generally speaking, urbanization has been regarded as influencing the attenuation of human relations. People can live without strong ties with family or friends if they reside in a city, where many goods and services can be easily received through the market. Thus, for people in urban places, community social capital (at least the bonding type) is not necessary for everyday life,

Table 5.1 Recent empirical studies on the contextual determinants of community social capital

Study	Design	Setting	Sample	Dependent variables	Key independent variables	Key findings
Williamson (2002)	Cross-sectional study (Social Capital Benchmark Survey)	USA	Not reported	Political engagement (participation in protest-type activity, petition signing, attending a partisan political meeting, belonging to a group engaged in local reform efforts, belonging to a political organization, interest in politics, and voting in national elections)	Central city residence, population density, transportation patterns, commuting time, and neighborhood age	Residents of neighborhoods built before 1950 are significantly more likely to belong to a political organization, belong to a local reform organization, attend a partisan political event, attend a march or demonstration, vote in a national election, or attend a public meeting
Lund (2002)	Cross-sectional study	Portland, Oregon, USA	106	Psychological Sense of Community Scale	Neighborhood layout (pedestrian-oriented traditional neighborhoods vs. automobile-oriented modern suburban neighborhoods) and subjective evaluations of their neighborhood pedestrian environment	Sense of community was higher in the traditional neighborhood and pedestrian environment factors significantly influenced sense of community

(continued)

Table 5.1 (continued)

Study	Design	Setting	Sample	Dependent variables	Key independent variables	Key findings
Lund (2003)	Cross-sectional study	Portland, Oregon, USA	Not reported (1,454 distributed and 34 % returned)	Pedestrian travel behavior (consisted of frequency of strolling trips and frequency of destination trips) and neighboring behavior (consisted of frequency of unplanned interactions with one's neighbors, local social ties, and supportive acts of neighboring)	Neighborhood variables (objective and subjective evaluations of the physical environment)	The findings provide some support for the hypothesis that neighboring behaviors are related to objective physical factors. The hypothesis that neighboring behaviors are related to subjective physical factors is also somewhat supported
Leyden (2003)	Cross-sectional study	Galway, Ireland	279	How well residents knew their neighbors, their political participation, their trust or faith in other people, and their social engagement	Perceived neighborhood walkability	Respondents living in walkable neighborhoods were more likely to know their neighbors, participate politically, trust others, and be socially engaged
du Toit, Cerin, Leslie, and Owen (2007)	Cross-sectional study (PLACE: Physical Activity in Localities and Community Environments)	Adelaide, SA, Australia	2,194	Sense of community scale, informal social control, social cohesion, and local social interaction	Walkability index (by dwelling density, street connectivity, and net retail area) at urban census collection districts	A weak positive relationship between the walkability index and sense of community was found. No associations were found between walkability and local social interaction, informal social control, or social cohesion

<p>Brueckner and Largey (2008)</p>	<p>Cross-sectional study (Social Capital Benchmark Survey)</p>	<p>USA</p>	<p>14,823</p>	<p>How often the respondent socializes with neighbors, the number of people the respondent can confide in, the number of close friends, the frequency of socializing with friends in a public place, the frequency with which friends are invited to the respondent's home, cooperation with neighbors to get something fixed or improved, membership in a hobby-oriented club, the frequency of attendance at any club meetings over the previous 12 months, and the number of formal nonchurch groups to which the member belongs</p>	<p>Population density at census tract level</p>	<p>Social interaction tends to be weaker, not stronger, in high-density census tracts</p>
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(continued)

Table 5.1 (continued)

Study	Design	Setting	Sample	Dependent variables	Key independent variables	Key findings
Cohen, Inagami, and Finch (2008)	Cross-sectional study (L.A.FANS: Los Angeles Family and Neighborhood Survey)	Los Angeles County, California, USA	2,431	Collective efficacy [social cohesion (five items) and informal social control in a neighborhood (three items)]	Characteristics of the built environment (presence of parks, alcohol outlets, elementary schools, and fast food outlets)	Parks were independently and positively associated with collective efficacy; alcohol outlets were negatively associated with collective efficacy only when tract-level disadvantage was not included in the model. Fast food outlets and elementary schools were not linearly related to collective efficacy
Wood et al. (2008)	Cross-sectional study	Metropolitan Perth, WA, Australia	335	Social capital scale (comprised of factors measuring trust, concern, reciprocity, civic engagement, friendliness, and networks), participation scale (measured participation in 13 community activities), and safety scale (comprised of five items measuring feelings of safety in various situations)	Street pattern and "upkeep" at suburb level, the number of destinations within an 800 m buffer, the network distance to the nearest destinations (school, bus stop, shop, park, and postbox), and perceived adequacy of facilities	Social capital had a negative relationship with the number of local destinations, but a positive association with perceived adequacy of facilities and proximity to shops. A high level of neighborhood upkeep was associated with both higher social capital and feelings of safety

<p>Wood, Frank, and Giles-Corti (2010)</p>	<p>Cross-sectional study (part of the SMARTRAQ: Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality)</p>	<p>Atlanta, Georgia, USA</p>	<p>609</p>	<p>Sense of community scale</p>	<p>Objective measures of built environment (land use mix, connectivity, commercial floor area ratio, net residential density) within a 1 km road network-based buffer around each participant's household. Perceptions of built environment (perceptions about access to walkable shops and services, seeing neighbors when walking, safety from traffic and crime when walking, as well as the presence of interesting sites, good sidewalks, safe street crossings, adequate street lighting, and steep hills)</p>	<p>Sense of community was associated with living in neighborhoods with lower levels of land use mix, but with higher levels of commercial floor area ratio</p>
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Table 5.1 (continued)

Study	Design	Setting	Sample	Dependent variables	Key independent variables	Key findings
Nguyen (2010)	Cross-sectional study (Social Capital Benchmark Survey)	USA	22,191	Social trust, diversity of friendship, the number of group involvements, informal social interaction, organized group interaction, faith-based social capital, giving and volunteering, non-electoral participation, and electoral politics	Sprawl index (composed of residential density and street accessibility) at county level	Compact living at the county level was found to be unfavorable to social interaction, faith-based social capital, and giving and volunteering, while it is positively related to political participation such as voting, involvement in political groups and local reforms, and interest in national affairs
Hanibuchi, Nakaya, Hanaoka, and Muranaka (2012)	Cross-sectional study (JGSS: Japanese General Social Surveys)	Japan	12,299	General trust, attachment to place, horizontal organization, and vertical organization	Urbanization and suburbanization (MUEA) at municipality level	The respondents who resided in rural municipalities were more likely to belong to both vertical and horizontal organizations. No differences were seen between urban centers and suburbs within these metropolitan areas studied

<p>Hanibuchi, Kondo et al. (2012)</p>	<p>Cross-sectional study (AGES: Aichi Gerontological Evaluation Study)</p>	<p>Chita region, Aichi Prefecture, Japan</p>	<p>11,876</p>	<p>General trust, norms of reciprocity, attachment to place, horizontal organization, vertical organization, meeting friends</p>	<p>Walkability, community age, and urbanization at network buffer ($r = 500$ m)</p>	<p>Respondents who lived in older neighborhoods tended to report higher social capital than those who lived in newly developed neighborhoods. Significant associations were also observed between urbanization and social capital indicators (though the direction of associations was mixed), while walkability was generally not associated</p>
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compared to those who reside in traditional rural communities. In addition, increased anonymity and diverse social differences among residents, resulting from large immigrations into cities, particularly during the modern age, have made it difficult to have a shared social norm. Thus, researchers often insist that urbanization erodes the social capital. For example, Rosero-Bixby (2006) examined the levels of social capital in eight countries in Latin America and found that the social capital (community participation and trust in neighbors) clearly declines with urbanization.

More importantly, suburbanization and urban sprawl, rather than urbanization itself, have been examined in relation to the erosion of community social capital. In *Bowling Alone*, Putnam (2000) blamed urban sprawl for the decline of social capital in the USA during the last 30 years. He stated that “it is difficult to overstate the symbiosis between the automobile and the suburb” (p. 212) and went on to say that “the car and the commute, however, are demonstrably bad for community life. In round numbers the evidence suggests that *each additional 10 min in daily commuting time cuts involvement in community affairs by 10 %*—fewer public meetings attended, fewer committees chaired, fewer petitions signed, fewer church services attended, less volunteering, and so on” (p. 213; emphasis in original). Moreover, he pointed out that “strikingly, increased commuting time among the residents of a community lowers average levels of civic involvement even among noncommuters” (p. 213), indicating a contextual effect of the suburban community on social capital.

In recent empirical studies, however, more complex and contradictory findings have also been reported. For example, Nguyen (2010) found that urban sprawl may support some types of social capital, while negatively affecting others. Compact living at the county level (high population density and street accessibility) was found to be unfavorable for social interaction, faith-based social capital, and giving and volunteering. Nevertheless, it is positively related to political participation, for example, voting, involvement in political groups and local reforms, and interest in national affairs. Brueckner and Largey (2008) tested whether or not low-density living reduces social capital, using an instrumental-variable approach. They found a negative link between social interaction and population density, and therefore, social interaction tends to be weaker, not stronger, in high-density census tracts.

In countries in the non-Western context, Hanibuchi, Nakaya, Hanaoka, and Muranaka (2012) examined the association between urbanization/suburbanization and social capital in a region of Japan. Hanibuchi, Nakaya, et al. (2012) reported that the respondents who lived in rural areas were more likely to belong to both vertical and horizontal organizations, compared to those in the centers of large cities. Significant differences were seen between urban and rural areas for belonging to organizations, while no clear differences were seen between urban centers and suburbs. Although suburbs receive much attention as places of social capital erosion, as typified by Putnam’s criticism toward sprawl, supporting evidence was not found in Japan. Thus, the association between urbanization/suburbanization and social capital appear to vary according to the study area, sample population, and other variables used in the model, suggesting that further study is warranted.

5.2.2 *Walkability*

Although closely related to suburbanization and sprawl, the concept of walkability, as a more specific aspect of the neighborhood built environment, has recently received a lot of attention. Walkability is a new concept for urban design that refers to how much the area can be considered pedestrian friendly. Walkability is mainly evaluated and measured by neighborhood characteristics, such as residential density, street connectivity, land use mix, or access to local destinations, and more specific environment characteristics, such as the presence of sidewalks, green spaces, and streetlights. In public health, researchers have examined whether or not living in a walkable neighborhood increases the levels of physical activity, mainly through walking (Brownson, Hoehner, Day, Forsyth, & Sallis, 2009).

Studies in urban planning and public health have begun to use the concept of walkability to examine the neighborhood determinants of social capital (or closely related concepts, such as collective efficacy or sense of community) (Frumkin, Frank, & Jackson, 2004; Wood & Giles-Corti, 2008). Such works are largely informed by claims made by New Urbanism that walkable neighborhoods enhance community social capital by increasing opportunities for informal social interaction among residents (Lund, 2002, 2003).

So far, some positive associations have been reported, while other studies find limited support or mixed results for the association between walkability and social capital. For example, from a survey in Galway, Ireland, Leyden (2003) reported that respondents who were living in walkable neighborhoods were more likely to know their neighbors, participate politically, trust others, and be socially engaged, compared to those who were living in the car-oriented suburbs. Cohen et al. (2008) found that the number of parks was positively associated with collective efficacy. Other studies have also supported the premise that pedestrian-friendly environments are related to increased social capital (Lund, 2002, 2003; Podobnik, 2002; Rogers, Halstead, Gardner, & Carlson, 2011).

Nevertheless, other authors have found limited support or mixed results for the association between walkability and social capital. Based on data from an Australian sample and objective measures of walkability, du Toit et al. (2007) could not conclude that walkable neighborhoods were necessarily sociable. They found a weak positive relationship between their walkability index and the sense of community but found no association between walkability and local social interaction, informal social control, and social cohesion. Wood et al. (2008) also reported complex results from Perth, Western Australia. They found that social capital had a negative relationship with the number of local destinations, but a positive association with the perceived adequacy of facilities and proximity to shops. Similarly, Wood et al. (2010) reported that a sense of community was associated with living in neighborhoods with lower levels of land use mix, but with higher levels of commercial floor area ratios.

In a Japanese case study, Hanibuchi, Kondo, et al. (2012) measured the objective walkability score using a geographical information system (GIS) approach and

analyzed its association to social capital. No significant positive association was found between the walkability score and any of the social capital indices, indicating that walkable does not mean sociable, at least for the population of older Japanese adults.

5.2.3 *Historical Development*

Among the possible contextual determinants of social capital, the historical dimension of the community has received less attention, despite its theoretical importance. The historical origins and the development process of the community appear to influence the quantity and quality of social interactions among residents. The Roseto story is a notable case study that reveals the importance of history when considering the determinants of community social capital. Nevertheless, such historical dimensions are difficult to understand quantitatively, even when considering basic information on community history, such as the time when the community (residential area) was initially developed.

In US and Australian studies, older or more traditional neighborhoods are often regarded as being more walkable, with their interconnected street networks, streets with sidewalks, and mixed land use, in contrast to newly developed and automobile-dependent suburbs (Frumkin et al., 2004; Smith et al., 2008). In other words, the dimensions of walkability and history were not clearly distinguished in previous studies. Traditional neighborhoods may also indicate the presence of long-standing organizations that encourage cohesive networks among residents and indicate the shared norms of reciprocity based on the historical background in the area. For example, in a community that had once experienced a disaster, volunteer disaster prevention groups may be organized more readily and norms of mutual help may be stronger, due to past experience. Thus, the effects of walkability on the community social capital need to be carefully teased from the historical context.

Except for Williamson (2002), who reported that residents of neighborhoods built before 1950 (housing age) were more likely to attend public meetings (a measure of social capital), no other studies have quantitatively addressed this issue, probably because of the difficulties in quantifying historical aspects of neighborhoods, such as their period of development. Consequently, most of the previous studies on the contextual determinants of social capital overlook the historical development of communities. Some earlier studies (not on the determinants of social capital) also used housing age as a proxy for neighborhood age (Berrigan & Troiano, 2002; Boer, Zheng, Overton, Ridgeway, & Cohen, 2007; Smith et al., 2008), but this indicator is limited as it cannot be a direct measurement of the age of the “community” or “neighborhood.” Thus, determining the time when a neighborhood was developed can be an important methodological challenge.

Hanibuchi, Kondo, et al. (2012) analyzed the association between community age and social capital, using old topographic maps of Japan in a GIS environment. They found that the respondents who lived in the oldest neighborhoods tended to

report higher social capital than those who lived in newly developed neighborhoods. Four of six indicators of social capital (general trust, attachment to place, vertical organization, and meeting friends) were significantly associated with the date of settlement, indicating that the historical “age” of the community was a stronger predictor of social capital among residents. In particular, the likelihood of belonging to a vertical organization was quite high in the oldest neighborhoods.

Nonetheless, Hanibuchi, Murata, et al. (2012) noted that a specific residential area in Japan came to have “exceptionally” high levels of social capital, even though the area had been developed relatively recently. They reported that the area’s social capital was rooted in the sense of solidarity fostered by the fact that many residents worked for the same company. Geographical determinants are not necessarily systematic, since each place has its own unique history, as in the case of the Roseto story. This suggests the importance of exploring place-specific origins of social capital as well as systematic historical determinants, to explain why some communities are richer in social capital than others.

5.3 Some Challenges for Further Study

5.3.1 *Geographical Contexts*

Although the number of studies on the contextual determinants of social capital is increasing, they are still sparse and inconclusive about the possible effects that contextual factors can have on community social capital. One of the biggest challenges in this regard is in filling the geographical gaps between countries. To date, most studies have used data from a few Western societies, primarily the USA and Australia. Nevertheless, the geographical determinants of social capital may not be the same in different countries where the social contexts are different.

The findings of the Japanese case studies (Hanibuchi, Kondo, et al., 2012; Hanibuchi, Nakaya, et al., 2012) were not in-line with the hypotheses that had been originally proposed in the context of Western societies; namely, traditional urban centers are more walkable, and walkable built environments can contribute to the formation of more sociable neighborhood communities. On the other hand, traditional neighborhoods in Japan tended to have a higher social capital than that of the newer communities. What can we learn from these findings?

First of all, the premise that older urban centers are more walkable than newly developed suburban residential areas needs to be reconsidered. No significant differences were seen between the social capital of city centers and suburbs in the Japanese study. As a possible explanation, the suburbs in Japan may generally be more walkable and more mixed in terms of residents and land use and therefore less likely to be car dependent, compared to suburbs in the USA and Australia, leading to the apparent lack of difference between levels of social capital in city centers and suburbs. According to Hanibuchi, Nakaya, et al. (2012), “urban vs. rural” may be more important than “center vs. suburbs” in the Japanese geographical context.

In addition, the relation of community age to walkability requires further discussion. According to Hanibuchi, Kondo, et al. (2012), the proportion of the oldest neighborhoods showed a weak *negative* correlation with the walkability score, indicating that the oldest neighborhoods were not pedestrian friendly, at least in the study area. This may be due to the fact that many of the traditional neighborhoods in Japan had been developed many years ago. Older cities and towns in Japan tend to be less walkable environments, i.e., narrow streets, absence of sidewalks, poor visibility, low-rise buildings (= less populated), and fewer open spaces, which suggests a setting that is distinctly different from that of the USA and Australia (the “New World”), where most of the earlier studies were conducted.

In any case, community age has been associated with social capital. Thus, the length of history of a community appears to influence the social capital, but the association is not mediated by walkability. Put simply, traditional does not mean walkable and walkable does not mean sociable, but traditional does mean sociable. Again, the presence of long-standing traditional neighborhood associations, or the norms of reciprocity, based on the historical background in the community may provide the answer. Overall, community age needs to be distinguished from walkability in studies that explore the contextual determinants of social capital.

To summarize, future studies will need to carefully consider the geographical context and the generalizability of evidence from a given place. The characteristics of place, as represented by words such as “suburban” or “traditional,” may have different features of the built and social environments due to their geographical contexts of country/region.

5.3.2 *Geographic Scales*

The way in which a geographical area of reference is defined in a questionnaire on social trust or social participation, for example, could affect the responses. Most of the indices used by Hanibuchi, Nakaya, et al. (2012), Hanibuchi, Kondo, et al. (2012) were not specific to the local/neighborhood environments of the respondents. The measurement of neighborhood trust, referring to trust in/among neighborhoods, was not used, but instead, the measurement of general trust was used. When survey questions are specific to the respondents’ neighborhood, more sensitivity may be possible when analyzing the association to the geographical determinants. Future research studies will need to use specific survey questions to examine the geographical distribution of community social capital in different geographical areas.

Studies of community social capital must also choose appropriate geographical areas for the analyses. Although this chapter has focused on a relatively small area of analysis (i.e., neighborhood), studies that explore the contextual determinants of social capital often range from local to global areas (e.g., Park and Subramanian (2012), dealing with the country-level determinants of trust). Many different geographical scales have been used for the analytical grouping units (i.e., “level 2” in multilevel analysis) based on data availability, though explanations are not always provided.

While some authors are aware of the ecological fallacy, they remain unaware of the MAUP (modifiable areal unit problem) (Openshaw, 1984), where different sets of areal units for data aggregation lead to different analytical results based on the areal units.

Neighborhood has been used as a remarkable geographical area of reference in recent studies. For example, Nakaya (2011) examined the frequency of keywords used in articles in *Health & Place* and found that “neighborhood” was most frequently used (it was situated at the center of a keyword cloud). Nevertheless, the term “neighborhood” can be ambiguous. Even in a single country (e.g., Japan), some studies of social capital have used various geographical areas in the analysis. No clear definition of “neighborhood” has been established, and the ambiguity is still problematic. Although the GIS approach seems to improve on the arbitrarily defined administrative units, with its proposed buffer zones around each respondent, recent studies have reported that the actual spatial behaviors of residents are not consistent with their buffer zones (e.g., Zenk et al., 2011). Geographical scales, or areas of reference, will continue to be crucial aspects in the study of social capital.

5.4 Policy Implications

One of the reasons for exploring the determinants of social capital is to seek out possible interventions. With clear evidence that neighborhood walkability increases the community social capital and that social capital improves the health of residents, policy implications for health promotion can be derived for interventions in the built environments. Nevertheless, the case study of Japan showed that community social capital can be determined from the history of community and from other individual or geographical determinants. Does this imply that we cannot change social capital, just as we cannot change history?

From the case study, we need to be aware of the importance of policy aimed at maintaining (not increasing) social capital. Usually, eroding social capital is thought to be easier than increasing it. Since community age seems to influence community social capital, policies to maintain social capital would be useful in preventing its erosion. For such policies, the first step would be to evaluate and understand the existing community social capital, so that researchers, policy makers, and residents could monitor its change within the community.

When the Great Hanshin-Awaji Earthquake happened in 1995, many disaster victims were forced to move into temporary housing. The housing assignments were sorted by age and household composition, without considering existing communities. The process has been considered as a cause of the erosion of neighborly ties and interactions in the temporary housing. The “solitary deaths” of earthquake victims resettled into temporary housing became a big social issue and was attributed by some to the breakup of social capital that existed in communities prior to the disaster. As a result of these lessons, following the Niigata Chuetsu Earthquake of 2004, the temporary housing was designed with a consideration of the previous community. The approaches have contributed to an improved maintenance of the community social capital (Ishida, 2008).

As indicated by Hanibuchi, Murata, et al. (2012), we need to consider the place-specific contextual determinants of social capital (e.g., immigrants with a common sociohistorical background), as well as the systematic part (e.g., community age). Policy makers need to understand the historical background of a specific region to appropriately evaluate the level of community social capital and consider policies that are aimed at maintaining the existing social capital.

5.5 Conclusion

In this chapter, we have devoted special attention to the contextual determinants of community social capital and looked at previous studies (mostly in the USA, Australia, and Japan) focusing on urbanization/suburbanization, walkability, and history of the community. As discussed in Sect. 5.2, the study of contextual determinants of social capital remains sparse, and the contexts that might determine levels of community social capital are not well understood. Other contextual factors, such as ethnic diversity (Letki, 2008, McCulloch, 2003, Stolle, Soroka, & Johnston, 2008), may also be important determinants of local social capital (see Chap. 12 by Gilbert and Dean). Studies in Japan have revealed different conclusions for the hypotheses based on the geographical settings of Western societies. Since contextual determinants depend on the context of a given study area, further studies in different countries and regions would be useful for understanding the effect of different sociohistorical contexts.

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Chapter 6

Neighborhood Social Capital and Crime

Daisuke Takagi

This chapter introduces empirical studies on the relationship between social capital and crime in Japan. In particular, this chapter emphasizes the problem of the unit of analysis in neighborhood social capital studies and attempts to empirically examine this problem using spatial data and spatial analyses. This chapter is divided into four sections. In Sect. 6.2, I will introduce several studies that have explored the relationship between social capital and crime and the possible mediating factors. In Sect. 6.3, I will discuss the Modifiable Areal Unit Problem that is inherent in multilevel models, which are commonly used in public health, and show how the effect of social capital on crime varies depending on the spatial scale of the neighborhood in analyses. In Sect. 6.4, I will describe an empirical investigation of the link between community social capital and crime using an innovative tool for spatial analysis—the spatial Durbin model.

6.1 Introduction

According to Putnam (1995, p. 67), social capital consists of the “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit.” Close network ties within a group generate higher levels of trust and create a norm of reciprocity. Trust and reciprocity encourage cooperative behaviors, which have been hypothesized to yield many positive benefits, particularly the prevention of crime (Healy, Cote, Helliwell, & Held, 2001; Putnam, 2000). In addition to Putnam, Bourdieu (1986, p. 248) has defined social

D. Takagi, M.A. (✉)
Department of Social Psychology, Graduate School of Humanities and Sociology,
The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
e-mail: dtakagi@l.u-tokyo.ac.jp

capital as “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 or recognition.” It is important to note that Putnam views social capital as a public good that contributes to collective gains among people who are embedded in local communities or groups, while Bourdieu views social capital as a private good that contributes to private gains. Because the theme of this chapter is crime prevention in local neighborhoods, it is reasonable to conceptualize social capital as a public good that influences crime victimization among neighborhood residents. Thus, in this chapter, social capital is composed of neighborhood features, such as networks, trust, and norms of reciprocity, on the basis of Putnam’s definition.

Studies of the relationship between neighborhood social capital and crime are discussed in this volume because social capital, crime, and health have a close triangular relationship. Researchers have often noted the overlap between the contextual determinants of crime and health outcomes (Sampson, 2003). Often, the same urban neighborhoods that suffer high rates of crime also tend to exhibit higher rates of infant mortality, low birth weight, accidental injury, obesity, and diabetes (Sampson, 2003). For example, Wilkinson, Kawachi, and Kennedy (1998) suggested that violent crime was closely related to income inequality, social trust, and mortality rates, based on state-level data from the USA. A Swedish cohort study using neighborhood-level data on social capital examined the relationship between crime rates and mortality rates and revealed that high crime rates were significantly linked to high mortality rates (Islam, Gerdtham, Gullberg, Lindström, & Merlo, 2008). In a multilevel study of elderly people in the USA, Wen, Gagney, and Christakis (2005) found that perceived violence at the neighborhood level was associated with high mortality rates.

The similar results of these studies have spurred the search for a unifying theory to account for these outcomes at the neighborhood level. Neighborhood deprivation is an obvious candidate; material deprivation may increase the incidence of crime and also act as a risk factor for poor health (Kawachi & Berkman, 2003). Beyond the effects of deprivation, researchers have also focused on social capital (or community social cohesion) as a common driver of crime and health at the neighborhood level. Social capital may be linked to neighborhood-level health outcomes through two distinct pathways: (a) a “direct” path between social capital and health, mediated by mutual support between neighbors, collective efficacy, etc. (Kawachi, Subramanian, & Kim, 2008) and (b) an “indirect” path between social capital and health, mediated by reductions in the level of community crime. With regard to the latter pathway, crime is an important determinant of public health outcomes, including quality of life, mental well-being, and health behavior (such as walking in residential areas) (Hale, 1996). Thus, any contextual factor that influences residents’ exposure to crime may also affect their health outcomes. For example, fear of crime can cause mental distress and social exclusion (Acheson, 1998). Using the SF-36 Mental Health Index and its subscales, Green, Gilbertson, and Grimsley (2002) showed that crime and fear of crime were associated with adverse mental health outcomes. Moreover, the fear of crime discourages people from walking outside

in areas where there is violent crime (Roman, 2008). Thus, exploring the contextual determinants of crime is an important public health issue. In this chapter, I focus on the association between neighborhood social capital and crime victimization. I view crime victimization as an important public health issue in its own right but also as a potential window into the mechanism linking social capital to health outcomes at the neighborhood level.

Another main purpose of this chapter is to demonstrate spatial analysis techniques that can be applicable to health research by describing analyses of data in criminological studies. In the research on neighborhood factors related to health, according to Kearns and Joseph (1993), there have been two main streams focusing on the concepts of “place” and “space.” In the research focusing on “place,” researchers have studied neighborhood-level welfare policies, the quality of social environments, neighborhood resources, and other factors that influence residents’ health (Diez Roux & Mair, 2010; Gnanasekaran et al., 2008; Jia, Moriarty, & Kanarek, 2009). Multilevel modeling is the principal method of analysis used for this type of study. Researchers have investigated the effects of neighborhood-level factors on individuals’ health using two distinct levels of data: from the neighborhoods and from the individuals embedded in the communities. However, in studies focusing on “space,” researchers have proposed models that recognize a spatial continuum and processes such as epidemic prevalence and spillover effects from adjacent neighborhoods (Elliott & Wartenberg, 2004), which multilevel models ignore. This chapter will demonstrate that a problem with multilevel models is that they ignore neighborhoods’ spatial proximity, and it will also introduce analyses of criminological data that focus on the spatial relationships among residents. In particular, this chapter will address the Modifiable Area Unit Problem (MAUP) of the multilevel approach and propose an avenue of research using Geographic Information Systems and spatial analysis to address the problem.

6.2 The Relationship Between Social Capital and Crime

The effect of social capital on crime has been discussed for many years. In Jacobs’ *The Death and Life of Great American Cities* (1961), social capital was characterized as the interpersonal relationships within neighborhoods that develop over long periods of time, which reduced the rates of crime and delinquency in the community because of the constant surveillance of the residents (i.e., “eyes on the street”). Relatively recently, Sampson, Raudenbush, and Earls (1997) empirically examined the influence of collective efficacy (a summary measure of social cohesion, trust, and informal social control) on crime in Chicago, using the data from the Project on Human Development in Chicago Neighborhoods. They classified Chicago neighborhoods into 343 neighborhood clusters and found that the collective efficacy of the neighborhood clusters reduced the respondents’ perceptions of neighborhood violence, violent victimization of the residents, and neighborhood homicide rates. In other research, Kennedy, Kawachi, Prothrow-Stith, Lochner, and Gupta (1998) reported

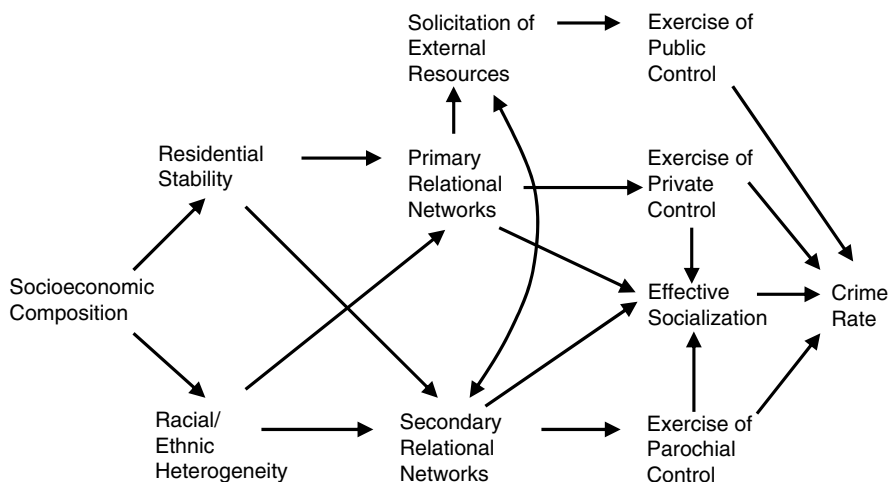


Fig. 6.1 The basic systemic model of crime (Bursik & Grasmick, 1993)

that generalized trust and civic participation were associated with lower gun violence at the US state level. Rosenfeld, Messner, and Baumer (2001) found an inverse association between an index of social capital and homicide at the US county level. Using data from 39 countries, Lederman, Loayza, and Menendez (2002) showed that homicide rates are low in countries where levels of social trust are high. In addition, some researchers have investigated the causal association between social capital and crime—that is, they asked the question, “Which is the cause?” Rosenfeld et al. (2001) created a non-recursive model in which they examined the possible reciprocal effects between social capital and homicide using structural equation models. Lederman et al. (2002) tested the causal association using instrumental variables that were correlated with the explanatory variable (i.e., the social capital indicators) but uncorrelated with the regression residuals. They used regional dummy variables to group countries by geographic location or stage of development, and they used the numbers of telephones per capita and radios per capita in the country as instrumental variables. The studies by Rosenfeld et al. and Lederman et al. both found robust evidence that the direction of the relationship is such that social capital reduces crime. Thus, a number of studies have consistently found that social capital inhibits crime. Many researchers share the belief that crime rates are reduced in neighborhoods that have high social capital.

Why is social capital linked to crime rates? This section discusses this question from the perspective of several criminology theories. In a recent theoretical extension of traditional social control theory, the systemic model of crime proposed by Bursik and Grasmick (1993) focused on informal social control by neighborhood residents and formal social control by public institutions as the social factors that contribute to crime reduction (Fig. 6.1). Formal social control includes public goods or services allotted by public institutions that are located outside or inside the neighborhood. The public service that is the most relevant to crime reduction is the police.

This theory assumes that the ability of communities to attract resources from public institutions stems from the social networks among the neighborhood residents. In other words, this theory suggests that strong social capital in neighborhoods allows residents to access public social control beyond residents' cooperative behaviors (Rosenfeld et al., 2001). For example, in local communities with affluent social capital, networks, and social cohesion, residents can access public resources by collaborating with the police and alerting the police to neighborhood problems. Sampson (1988, 1995) viewed poor social capital as one of the features of local communities that are socially disorganized and showed that mistrust and a lack of social ties (i.e., friendship networks and social participation) disrupt effective social control in neighborhoods. Using data from the General Social Survey, Rosenfeld et al. (2001) found that social capital encouraged informal and formal social control and thereby reduced crime victimization. Based on Bursik and Grasmick's (1993) systemic model, Rose and Clear (1998) also theoretically mentioned that residential instability and racial/ethnic heterogeneity inhibited social capital, which ultimately influenced social control and crime rates.

As another form of the social control theory described above, Sampson et al. (1997) advocated the concept of collective efficacy. Collective efficacy is the belief that the neighborhood residents are willing to intervene for the public good, and the concept includes two dimensions. The first dimension is "informal social control," which is the perception that neighborhood residents are willing to intervene in the problems of the community. The second dimension is "social cohesion and trust." In neighborhoods where residents' trust is high, there is a strong sense that residents work together cooperatively, and this perception is associated with low crime rates. These two dimensions of collective efficacy align well with social capital theory; social cohesion and trust are synonymous with social capital's concepts of networks and generalized trust.

In summary, trust, social participation, and networks facilitate informal social control by residents and collective efficacy and formal social control by public institutions, and they contribute to crime reduction in neighborhoods.

As the second type of criminological theory related to social capital, Rosenfeld et al. (2001) theoretically discuss a negative link between social capital and crime from the perspective of anomie theory. Anomie theory defines a situation in which a harmonious relationship between a goal defined by a culture and the means to achieve that goal falls apart as "anomie" (Merton, 1938, 1968). While goals shared by many people (e.g., economic success) are strongly emphasized in modern societies, the opportunities to attain those goals are limited or restricted for some people. These people lose their support for social norms and their empathy for other people, and they only think about the means to achieve their goals; Merton called this state "innovation." This situation weakens the social norms that control deviant behaviors. Therefore, in "anomic" environments where strong order is lacking, people behave egotistically and are willing to exploit others. Social trust declines, while crime and violence intensify (Rosenfeld et al., 2001). Thus, anomie theory describes a covariant relationship between social capital, anomie, and crime, rather than a one-way effect of social capital on crime.

6.3 How Does the Geographic Range of the “Neighborhood” Affect the Effect of Social Capital on Crime?

6.3.1 *The Modifiable Areal Unit Problem in Multilevel Approaches*

In recent empirical studies on neighborhood social capital, researchers have mainly used multilevel models. Multilevel models are statistical tools that incorporate independent variables at multiple levels and estimate their effects on an individual-level outcome. More specifically, this method estimates how the features of social environments, such as counties, states, or countries, affect the crime victimization of the people embedded in these environments while controlling for individual-level covariates (see Kreft and Leeuw (1998) and Raudenbush and Bryk (2002) for more detailed statistical explanations).

For example, we may need to measure the effect of neighborhood-level social capital as a factor predicting individual-level burglary victimization, in addition to the effects of individual-level independent variables (e.g., sex, age, household income). For criminal research that includes both individual-level and neighborhood-level independent variables as explanatory factors for crime victimization, a multilevel model is a very useful analytical tool.

Including the studies described in the previous section, many studies have reported findings on the relationship between social capital and crime using multilevel data. In the research to date, the spatial scale adopted at the “macro-level” has varied enormously, ranging from entire countries (Lederman et al., 2002), to states (Kennedy et al., 1998), to counties (Rosenfeld et al., 2001), to town blocks (Takagi, Tsuji, & Ikeda, 2010), to schools (Lindström, 2001), and to apartment buildings (Saegert & Winkel, 2004).

Although the association between social capital and crime has been consistently demonstrated across studies regardless of their spatial scale, the artificiality of geographic boundaries does raise the Modifiable Areal Unit Problem (MAUP) as well as the problem of capturing potential spillover effects across neighborhood boundaries. The MAUP states that the results of multilevel research may be inconsistent across models that use different areal aggregations (Mobley, Kuo, & Andrews, 2008). To date, there are few multilevel studies that empirically address this problem. Not only in criminology but also in epidemiology, it is common practice for researchers to operationally define multiple administrative boundaries and conduct multilevel analyses for each definition of the “neighborhood” to test for the MAUP. For example, Mobley et al. (2008) investigated whether different areal definitions affected the results of multilevel analyses using four different areal units: counties ($n=57$), Primary Care Service Areas ($n=333$), Medical Service Study Areas ($n=519$), and US Census Zip Code Tabulation Areas ($n=1,450$). They examined the effects of managed care penetration at each contextual level on mammography use among elderly women living in California. Their results suggested that area-level

variables (such as racial segregation, the proportion of elderly women living alone, and the proportion of elderly people living in poverty) differed according to the areal unit of analysis. Tarkiainen, Martikainen, Laaksonen, and Leyland (2010) also examined the relationship between neighborhood characteristics, such as the proportion of manual workers in the area, and mortality using two alternative areal units (70 districts vs. 258 subdistricts in Helsinki, Vantaa, Espoo, and Kauniainen). Although they found that the effects of neighborhood-level characteristics on mortality were slightly stronger when using smaller areal units (subdistricts), it was suggested that the choice of scale did not significantly change the estimates of neighborhood effects on mortality.

However, regardless of the size of the areal unit, it is questionable whether it is appropriate to consider the geographic areas defined by administrative boundaries as “neighborhoods.” According to Morenoff, Sampson, and Raudenbush (2001, p. 522), the problem with assigning boundaries in multilevel models is that “two families living across the street from one another may be arbitrarily assigned to live in different ‘neighborhoods’ even though they share social ties.” Therefore, the use of administrative boundaries to define the contours of “neighborhood social capital” may result in misclassification and inaccurate estimations of the contextual effects of social capital.

Administrative areas such as blocks, counties, and states, which are generally used as units of analysis, may not be appropriate for testing the effects of contextual characteristics. For example, Chaix, Merlo, Subramanian, Lynch, and Chauvin (2005) argued that administrative boundaries enclose areas that are too large to capture an association between neighborhood deprivation and health. Because fixed boundary areas cannot effectively capture spatial information about the residents living near the borders between administrative areas, these researchers defined “neighborhoods” as small circles centered on each household and measured contextual deprivation in each small area to investigate the relationship between neighborhood deprivation and mental disorders due to psychoactive substance use. Thus, they examined whether the association between contextual deprivation and mental health was found within the administrative boundary or within a smaller or larger area. They sent questionnaires to 65,830 residents of Malmö in Sweden to measure mental or behavioral disorders due to psychoactive substance use. While Malmö was divided into 100 administrative boundaries, the researchers operationally redefined the “neighborhood” to include the 100, 200, 500, 1,000, and 1,500 “neighbors” nearest to each household, and then they tested the relationships between neighborhood-level income and mental health disorders. They found that the association between contextual deprivation and the prevalence of mental health disorders increased as the size of the neighborhood decreased. The risk of substance-related disorders was 1.97 times higher in the highest versus the lowest quartiles of contextual deprivation when deprivation was measured in administrative neighborhoods, but the risk was 4.12 times higher when the 100 nearest neighbors were considered. Thus, these results suggested that administrative boundaries may not be the most appropriate spatial scale to examine neighborhood effects.

6.3.2 *Case Example of Spatial Exploration to Select an Appropriate Geographic Range for a Neighborhood*

In this subsection, I will introduce my empirical study as a case example of spatial exploration for appropriate geographic range of neighborhood (Takagi, Ikeda, Harihara, & Kobayashi, 2011). As previously mentioned, Chaix et al. (2005) suggested that the contextual effects were stronger when a smaller spatial scale was used, compared to the effects measured using administrative boundaries. In this research, we defined spatial scales using physical distances between residents, disregarding administrative boundaries. By defining various geographic areas and conducting multiple analyses, we examined how the effects of social capital on crime vary depending on the spatial scales of the aggregate-level units used in the analyses.

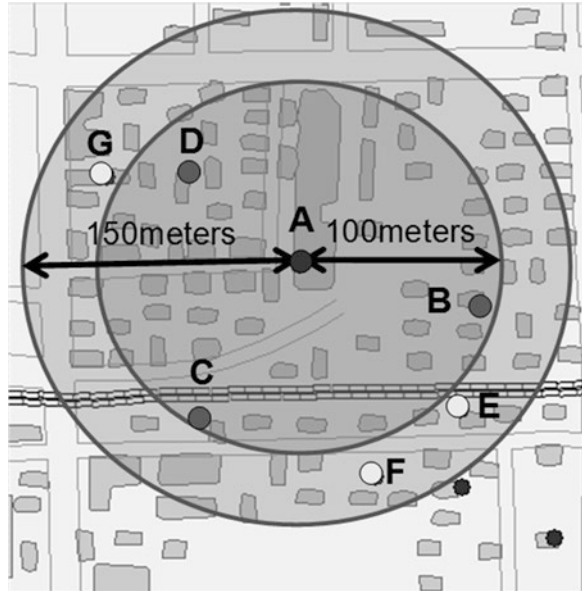
Incidentally, this study does not necessarily argue that using physical distances between neighborhood residents is the best way to detect the link between social capital and crime. For example, if researchers regard neighborhood watches conducted in school districts as a form of social capital and examine their effect on crime, then the school district is clearly the most appropriate unit of analysis. However, if researchers are attempting to resolve the areal unit problem of neighborhood research, in which administrative areas are not always the appropriate place to measure social capital, then varying the physical areas and exploring different spatial scales to find a significant effect of social capital may be an appropriate starting point to approach this problem.

The outline of the method is illustrated in Fig. 6.2. First, we converted the addresses of the respondents to a mailed survey into coordinate data, and then we plotted the addresses on an electronic map as point data using Geographic Information Systems software. Thus, each respondent's social capital indices (as measured by a mailed survey) and the spatial distances between the respondents were available.

To define neighborhood-level units using the distances between respondents, this study manipulated the data as described below (Fig. 6.2).

For example, when the "neighborhood" was defined as the people living within 100 m of a respondent, we drew a circle around central respondent A, defined the other respondents in this circle (in this case, B, C, and D) as "A's neighbors," and used the average of their social capital indices as an independent variable explaining A's burglary victimization. The same processes were conducted for all respondents. When the definition of "neighborhood" was extended to 150 m, as the outer circle shows in Fig. 6.2, the average of B, C, D, E, F, and G's social capital indices were used to represent neighborhood social capital for the central respondent A. The same processes were followed for all respondents, creating circles with radii of 60–500 m in 10-m increments. For these manipulations, the *Generate Spatial Weight Matrix* tool of ArcMap10 was used.

Fig. 6.2 Conceptual diagram when defining the “neighbors” as people living 100 or 150 m around (Takagi et al., 2011)



6.3.2.1 Data

In 2009, we sent a questionnaire to 1,000 residents of Musashino City in Tokyo, Japan. Musashino City is located in central Tokyo and has a population of 135,065. The subjects were chosen from among eligible voters using a two-stage random sampling strategy. While Musashino is the 13th largest city in Tokyo for population size, it has the highest population density (12,990/km²). The response rate was 34.3 %.

Figure 6.3 shows the point data created by converting the respondents' addresses to coordinates. The respondents who had experienced burglary victimization are expressed as black points. (Because some respondents lived in the same condominium building, some points overlap.) Because this study used a two-stage random sampling method, as previously mentioned, there are some places where the density of respondents is sparse.

This study measured respondents' trust in others as a social capital index according to previous studies (e.g., Kennedy et al., 1998; Lederman et al., 2002). Trust was assessed using the following items, which were derived from T. Yamagishi and M. Yamagishi's (1994) generalized trust items: “Most people can be trusted,” “Most people are basically good and kind,” and “I basically trust in other people.” The responses were collected using a Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree). In the analysis, we used the average of these three items.

As sociodemographic covariates, this study included sex, years of residency, annual household income, and type of housing. For annual household income, the participants were asked to identify their income level using 12 predetermined categories (1=less than 2 million yen, 2=2–3 million yen, 3=3–4 million yen,

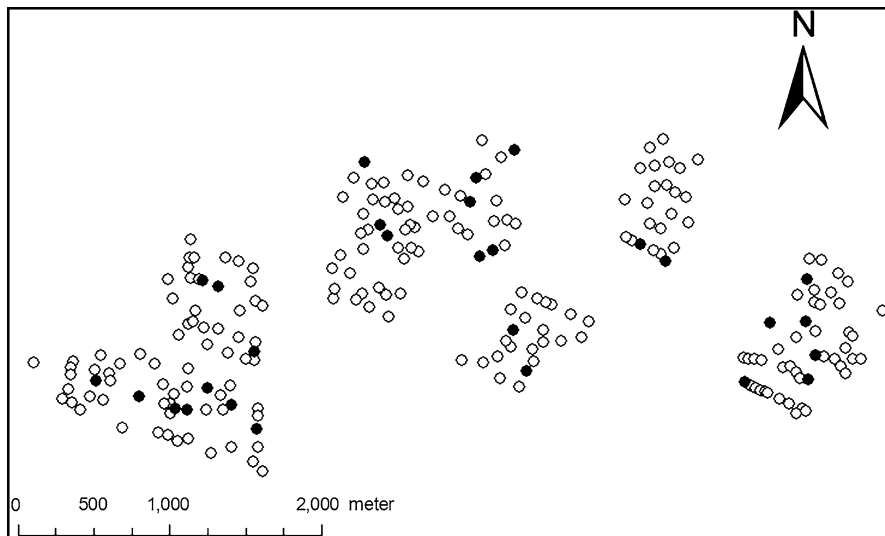


Fig. 6.3 Distribution of respondents in Musashino City (Takagi et al., 2011)

4=4–5 million yen, 5=5–6 million yen, 6=6–7 million yen, 7=7–8 million yen, 8=8–10 million yen, 9=10–12 million yen, 10=12–14 million yen, 11=14–20 million yen, 12=more than 20 million yen). Annual household income was treated as a continuous variable in the analyses. For the type of housing, detached (free-standing) homes were coded as 1, and other types of homes were coded as 0.

The dependent variable in this study, crime victimization, was measured by asking whether the respondents had been victims of a burglary in the past 5 years. The respondents who had been victimized were coded as 1, and the participants who had not been victimized were coded as 0. The percentage of respondents who had been victims of a burglary was 9.5 %.

6.3.2.2 Statistical Analysis

As previously noted, we changed the range of the “neighborhood” from 60 to 500 m in 10-m increments, and we examined the varying effects of neighborhood trust on individual burglary victimization for each “neighborhood” area. For each analysis, binomial logistic regression was used.

Next, we conducted a piecewise regression analysis to explore the slopes of the variation in the effect of trust as the neighborhood range changed. The piecewise regression method described the changes in the data trends by connecting several different regression line segments at “join points.” The analysis begins with the minimum number of join points (0, representing a straight line) and tests the model fit with a maximum number of join points. In our analyses, the maximum number

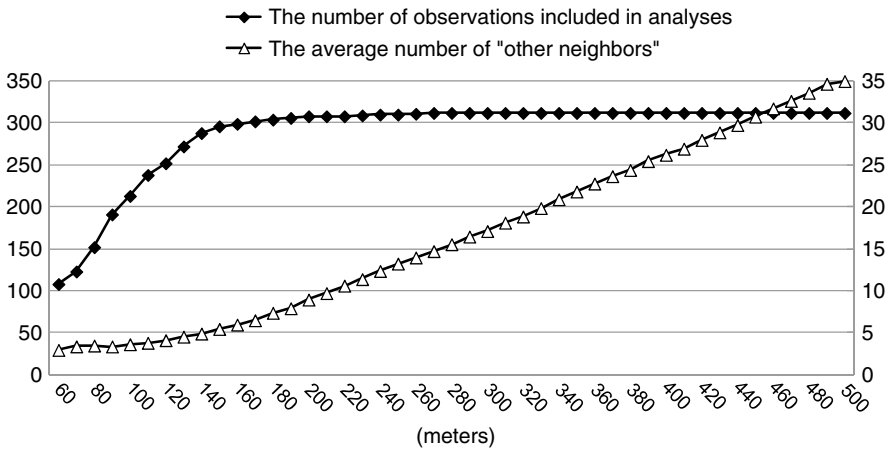


Fig. 6.4 The number of respondents included in analyses and the average of “other neighbors” in each geographical range of neighborhood (Takagi et al., 2011)

of join points was set at 4. For the piecewise regression analyses, we used the *Joinpoint Regression Program* (version 3.4.2) developed by the National Cancer Institute in the USA.

6.3.2.3 Results

We conducted binomial logistic regression analyses, changing the range of the “neighborhood” from 60 to 500 m in 10-m increments. In the analyses for each range, the respondents who did not have two or more “neighbors” were omitted from the analyses for that range. Therefore, when the neighborhood area was small, the number of respondents included in the analyses was low. Figure 6.4 shows the number of respondents included in the analyses and the average number of “other neighbors” included for each geographic range. The left vertical axis represents the number of respondents included in the analyses, and the right vertical axis represents the average number of “other neighbors.” As Fig. 6.4 shows, in these analyses, the narrower the range of the “neighborhood” was, the fewer the respondents and the “other neighbors” that were included in the analyses. For example, the average number of “other neighbors” was 2.95 in the analysis for the 60-m neighborhood range, while the average number was 35 in the analysis for the 500-m neighborhood range. When the range of the neighborhood was small, it is possible that the few observations included in the analyses may have caused instability in the neighborhood indices. Additionally, although the influence of outliers was a concern in the analyses for small neighborhoods because of the small number of respondents included as “other neighbors,” we determined that the influence of outliers was low because the independent variable trust was measured on a Likert scale, and extreme outliers did not emerge.

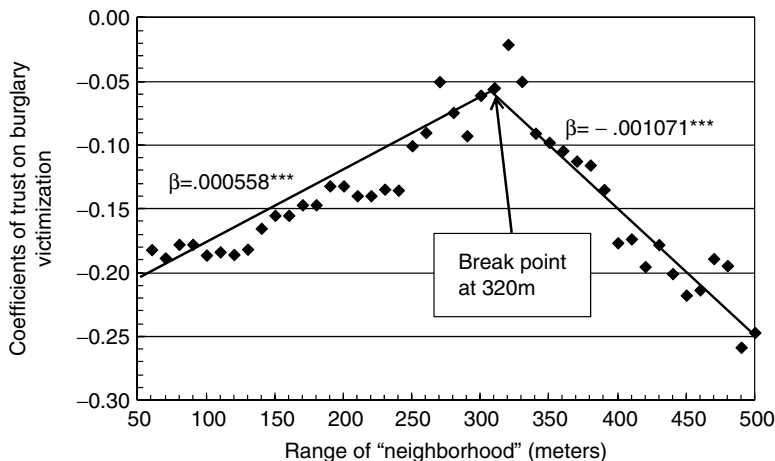


Fig. 6.5 Effects of trust on burglary victimization on each range of “neighborhood” (Takagi et al., 2011)

Figure 6.5 represents the variation in the effects of trust on burglary victimization according to the geographic range of the neighborhood. The vertical axis represents the regression coefficients of trust, and the horizontal axis represents the range of the neighborhood. From this figure, we can judge that two break points (join points) were the most appropriate using joinpoint regression. The β s in the figure are the coefficients of each slope of variation in the effects of trust. Figure 6.5 shows that the effects of trust are larger in both narrower and wider ranges of neighborhood size.

As shown in Fig. 6.5, while trust had a crime reduction effect at the 60-m neighborhood range (coefficient: -0.18), the effect decreases as the range of the neighborhood expands. However, at 320 m, the effect of trust begins to increase again, and the largest coefficient was associated with the 500-m neighborhood range (coefficient: -0.25). In other words, the results suggest that the crime reduction effect of neighbors’ trust is found in areas that are either smaller or larger than areas defined by administrative boundaries. (While the average size of administrative areas in this city is 211,061.90 m², our 60-m “neighborhood” was approximately 11,304.00 m², and the 500-m neighborhood was approximately 785,000.00 m².) Thus, our results suggest that administrative boundaries may not indicate the most appropriate spatial scale for detecting the effect of neighborhood social capital on crime.

What makes the crime reduction effect of trust bipolar? To answer this question, several theories from criminal sociology and environmental criminology may offer clues. Researchers have accumulated considerable knowledge on neighborhood crime control, much of it closely related to social capital.

We can interpret the crime reduction effect in the neighborhoods with a wide geographic range from the perspective of the systemic model (Bursik & Grasmick, 1993). The systemic model focuses on both informal social control by neighborhood

residents and formal social control by public institutions. This model assumes that trust and social ties among neighborhood residents make resources available for crime control from public institutions; this is the process of formal social control. In this model, the crime reduction effect of neighborhood residents' trust is supplemented by the formal social control of the police, and the spatial scale of the neighborhood where the effect of trust is significant depends on the geographic range covered by the police. The police cover a wide geographic neighborhood area (e.g., a town or a school district), rather than a small geographic neighborhood area, such as a block. Thus, from the viewpoint of this model, we can predict that the crime reduction effect of trust will increase as the spatial scale of the neighborhood used as the unit of analysis widens.

The present study also found strong crime reduction effects of trust in the narrow-range neighborhoods. We can interpret this result as an effect of "management activities" among immediate neighbors (e.g., cleanup activity). For example, "signs of occupancy" (Cirel, McGillis, & Whitcomb, 1977) suggest that neighborhood residents care about their community and demonstrate crime reduction effects. While it is assumed that the systemic model's crime control processes emerge in a fairly wide-ranging neighborhood, it is assumed that the crime reduction effect of "signs of occupancy" stems from the appearance of residents' care for their close neighbors.

In summary, the result of this study suggests that the effects of trust on crime vary depending on the geographic definition of the neighborhood, which means that traditional multilevel analyses using one type of administrative boundary may not accurately detect the effects of social capital in some cases. In addition, this result suggests that multiple crime reduction processes occur in neighborhoods, both in a narrow geographic area and a wider geographic area.

6.4 Comparison of Spatial Regression Analysis and Multilevel Regression Analysis

6.4.1 A Remaining Problem

In the preceding section, I showed that the crime reduction effect of social capital varied according to the geographic range of the "neighborhood." In this section, as in the previous section, I focus on the areal unit problem and introduce another spatial study that examined the variance in the effects of social capital according to the distance between neighborhood residents.

Social epidemiology is one of the fields that has carefully studied the contextual effects of neighborhood characteristics, including social capital. Many studies have used multilevel models when investigating neighborhood effects (Kawachi et al., 2008). However, research that is concerned not with the "effect of place" but with the "effect of spatial proximity" among neighborhoods has recently increased. The assumption is that an individual or neighborhood outcome is affected by the

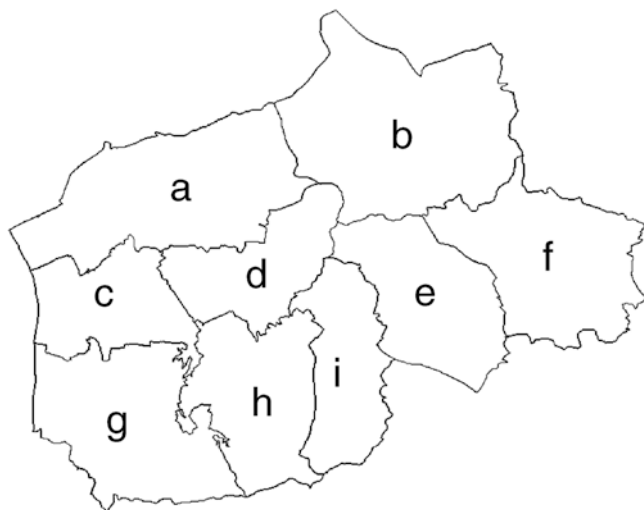


Fig. 6.6 Illustrative map of adjacent areas

Table 6.1 Illustrative adjacency matrix

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>
<i>a</i>	0	1	1	1	0	0	0	0	0
<i>b</i>	1	0	0	1	1	1	0	0	0
<i>c</i>	1	0	0	1	0	0	1	1	0
<i>d</i>	1	1	1	0	1	0	0	1	1
<i>e</i>	0	1	0	1	0	1	0	0	1
<i>f</i>	0	1	0	0	1	0	0	0	0
<i>g</i>	0	0	1	0	0	0	0	1	0
<i>h</i>	0	0	1	1	0	0	1	0	1
<i>i</i>	0	0	0	1	1	0	0	1	0

values of the outcome among other adjacent individuals or neighborhoods. In other words, these analyses aim to build models incorporating the spatial dependence and the spatial spillover effect of outcomes. Such spatial proximity can be represented as below. Figure 6.6 is a map of a neighborhood that includes 9 small areas (*a–i*). In this figure, all the areas share boundaries with certain other areas. When defining the adjacency relationships among these areas, depending on whether they share boundaries, the relationships can be shown in a matrix (Table 6.1) using a binary code (1, 0). For example, reading across the first row of the matrix, the second, third, and the fourth cells contain 1 in Table 6.1 because area *a* shares a boundary with areas *b*, *c*, and *d* in Fig. 6.6.

Arcaya, Brewster, Zigler, and Subramanian (2012) analyzed the spatial dependency of county-level average life expectancy using the spatial-weighting matrix described above. They fitted a Bayesian conditional autoregressive model (Bayesian CAR model)

Fig. 6.7 Illustration of the problem of the arbitrarily assigning (Takagi, Ikeda, & Kawachi, 2012)



to the average life expectancy data from 2,063 counties in the USA. They examined whether the residuals, both at the level of the state that each county belonged to and at the level of the spatial patch (i.e., a spatial group that ignored state borders), had spatial dependency. Spatial patches were created for each county to include the county itself and the adjacent counties (based on a spatial-weighting matrix similar to Table 6.1). They found that the percentage of variance explained by the spatially structured component was much larger than the percentage of variance explained by state membership. In other words, because much of the variance that exists between neighborhoods cannot be explained by state membership alone, models that account for the spatial distribution of outcomes are needed.

Consider again the problem of the unit of analysis in multilevel models. According to Morenoff et al. (2001, p. 522), the problem of artificiality of boundaries is that “two families living across the street from one another may be arbitrarily assigned to live in different ‘neighborhoods’ even though they share social ties.” This problem is illustrated in the figure. Consider a case in which we apply a multilevel model to a neighborhood such as the neighborhood in Fig. 6.7. In this figure, the residents are represented as points. Suppose that the residents are grouped into neighborhood X or neighborhood Y according to an administrative definition. Resident A, who is located in the center of this figure, may be influenced by resident H, who is grouped into a different neighborhood, more strongly than by resident B, who is located within the same neighborhood Y. However, the traditional multilevel approach ignores these distances between residents.

In the present section, I examine the relationship between social capital and crime victimization using an approach in which we modeled each resident's unique "exposure" to community social capital by calculating the weighted distance from every other resident in one geographic area. This approach avoids the problem of using artificial administrative boundaries to operationalize community social capital.

In this approach, I assume that local residents are influenced by other nearby residents, regardless of the political boundaries in which they are embedded. This approach weights the unique "force" of social capital felt by each individual according to the inverse of the distance between that individual and all of the other individuals who responded to a mailed survey. To calculate these weighted indices, an inverse-distance spatial-weighting matrix is used.

I assume that the statistical method that uses inverse distances between neighborhood residents can model the real world more appropriately than the multilevel approach. In the next section, I will investigate whether the spatial model can detect the effect of social capital more successfully than a multilevel model by comparing the results of the two models.

6.4.2 Case Example of Spatial Regression Analysis in Arakawa Ward, Tokyo

In this subsection, I will introduce a study conducted by the author of this chapter that used spatial regression analysis, based on the inverse distance between respondents who responded to a mailed survey (Takagi et al., 2012). In 2009, we sent a questionnaire to 1,000 residents of the Arakawa Ward in Tokyo, Japan. The Arakawa Ward is located in northeastern metropolitan Tokyo and has a population of 191,207. The subjects were chosen from among eligible voters using a two-stage random sampling strategy. The response rate was 43.7 %.

Figure 6.8 represents the point data created by translating the respondents' addresses into GPS coordinates.

The survey items related to social capital, including items about generalized trust, norms of reciprocity, and two types of networks, served as the independent variables. Generalized trust was assessed with the following items, which were derived from T. Yamagishi and M. Yamagishi's (1994) generalized trust item: "Most people can be trusted" and "Most people are basically good and kind." The responses were captured on a Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree). In the analysis, we used the sum of these two items. Norms of reciprocity were measured using the following questions: "If someone helps you, you would also help any other person" and "If you see people who cooperate with one another, you also feel that you would help someone in need." The responses were arranged on a Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree). In the analysis, we used the sum of these two items. Two network variables, supportive network size and personal network size, were also assessed. The size of the supportive network was measured with two items: "Number of acquaintances who

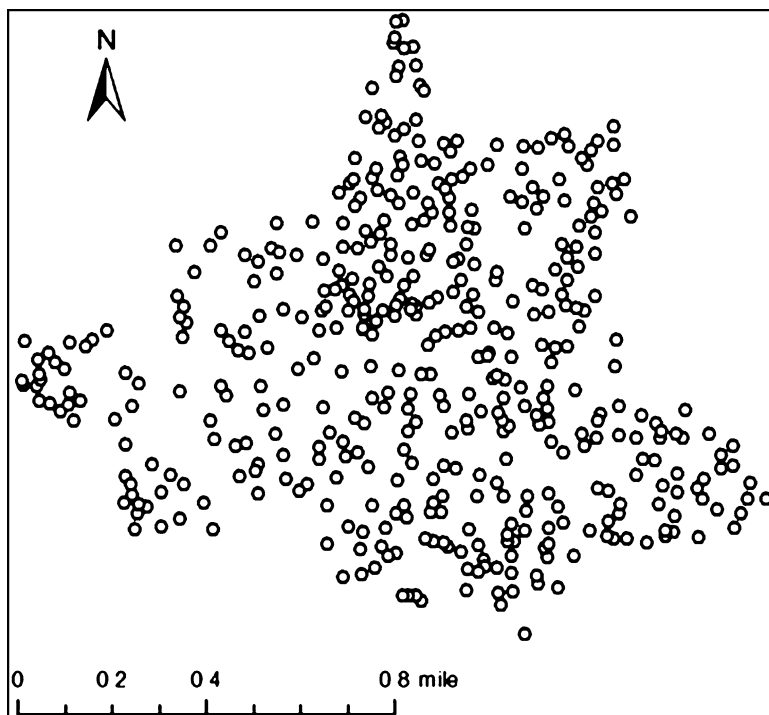


Fig. 6.8 Distribution of respondents in Arakawa Ward (Takagi et al., 2012)

cooperate with you” and “Number of acquaintances who go to neighborhood events or meetings with you.” In the analysis, we used the sum of these two items. The size of the respondent’s personal network was measured with two items: “Number of acquaintances whom you greet when meeting on the street” and “Number of acquaintances with whom you talk casually.” The size of the supportive network and personal network size were not measured on a scale. Because this type of scale has a power law distribution or a lognormal distribution (Barabasi, 2002; Watts, 2003), we translated these network items into natural logarithms.

As sociodemographic covariates, we included sex, age, years of residence, type of housing, and perceived social class. For the type of housing, detached (freestanding) homes were coded as 1, and other homes were coded as 0. We measured respondents’ perceived social class as a proxy for household income, as response rates to survey questions about income are typically very low in Japanese society. Perceived social class was assessed by asking the following question: “If current Japanese society is divided into five layers, which group do you think you belong to?” The responses were selected from five predetermined categories (1=lowest, 2=upper lower, 3=lower middle, 4=upper middle, 5=highest). The perceived social class variable was treated as a continuous variable in the analyses.

Table 6.2 Summary of inverse-distance spatial-weighting matrix

Dimensions	401 × 401
Inverse distance	
Min > 0	0.386604
Max	75.46031

Finally, the dependent variable, crime victimization, was measured by asking whether respondents had experienced the following crimes in the past 5 years: burglary, auto theft, car break-in, bicycle theft, vandalism, mugging, blackmail, accosted by stranger, and arson. We used the sum of the victimization experiences in all categories as the dependent variable. The mean value of the dependent variable was 0.69.

6.4.2.1 Creating Neighborhood Variables (Spatial Lag Variables)

Next, we created an inverse-distance spatial-weighting matrix using the *spmat* command in STATA.

The *spmat* command specifies the location of each unit in a q -dimensional space using q variables that represent the coordinates of each unit on a geospatial map. Let these q variables in the list of coordinate variables be x_1, x_2, \dots, x_q , and denote the coordinates of observation i as $(x_1[i], x_2[i], \dots, x_q[i])$.

The distance between observation s and observation t is calculated using the following equation (Drukker, Peng, Prucha, & Raciborski, 2011):

$$d_{st} = \sqrt{\sum_{j=1}^q (x_j[s] - x_j[t])^2}$$

In this study, there were only two (q) coordinate variables that represent latitude and longitude, because the respondents in this study were located on a planar electronic map.

Table 6.2 shows a summary of the inverse-distance spatial-weighting matrix created from this study's dataset.

From the summary table, we can see that the distance between the two closest respondents was 0.013252 km (1/75.46031). However, the two most geographically disperse respondents were 2.586623 km apart (1/0.386604).

Second, we created spatial lag variables using the inverse-distance spatial-weighting matrix. For each respondent, we weighted the other respondents' scores for generalized trust, reciprocity, supportive network size, personal network size, and social capital index according to the inverse distance between the residents, and we assigned each respondent the average of the weighted scores of all other respondents, yielding unique measurements of "exposure" to "neighborhood generalized trust," "neighborhood reciprocity," "neighborhood supportive network size," and "neighborhood personal network size."

6.4.2.2 Statistical Analysis

We investigated the effects of social capital variables on crime victimization using the spatial Durbin model.

The spatial Durbin model utilizes the following equation (Anselin, 1988):

$$y = \rho Wy + X\beta_1 + WX\beta_2 + \varepsilon$$

$$\varepsilon \sim N(0, \sigma^2 I_n)$$

In this equation, ρ is the spatial autoregression parameter, representing the effect of the neighborhood crime victimization rate on a respondent's individual crime victimization risk, $X\beta_1$ is the regression coefficient for the independent variable X , and β_2 is the regression coefficient for the neighborhood-level independent variable (spatial lag). That is, this model explains the respondents' individual crime victimization experiences using neighborhood crime victimization, each respondent's own set of independent variables, and the neighborhood-level independent variables (i.e., social capital indicators), weighted by the inverse-distance spatial-weighting matrix.

In addition, we conducted an analysis using a multilevel model to compare the results of the spatial Durbin model to those of a traditional multilevel model (i.e., a model that uses the aggregate-level data derived from political boundaries). In the multilevel model, we grouped respondents into 17 neighborhoods and used average (and aggregated) values for generalized trust, reciprocity, supportive network size, and personal network size as neighborhood contextual-level variables. The contextual-level unit for the multilevel model in this study was the "chouchou-moku," which is a small neighborhood unit in Japan (the average areal size of the target areas for this survey was 0.17507 km²). In this analysis, we intended to identify the differences between the results of the spatial Durbin model and the results of the traditional multilevel model and to show that the administrative neighborhood boundaries may be inappropriate to use as units in neighborhood research that examines the relationship between social capital and crime victimization in Japan.

6.4.2.3 Results

The estimates from the spatial Durbin model are shown in Table 6.3.

First, the model showed that women were more likely than men to be victims of crime. Second, the model suggested that perceived social class was negatively related to crime victimization. However, years of residency and type of housing were not significantly linked to crime victimization.

Neighborhood generalized trust was inversely associated with crime victimization, while respondents' individual generalized trust scores were not related to crime victimization. Similarly, while the respondents' individual reciprocity scores

Table 6.3 Spatial Durbin model estimates for crime victimization (Takagi et al., 2012)

Dependent variable:	Crime victimization
Independent variables:	Coefficients
Intercept	0.38*
Sex (male = 1, female = 0)	-0.25*
Years of residency	-0.01
Type of housing	0.01
Perceived social class	-0.14*
Perceived social class (Spatial Lag)	0.04
Generalized trust	-0.03
Generalized trust (Spatial Lag)	-0.50***
Reciprocity	-0.01
Reciprocity (Spatial Lag)	-0.42**
Supportive network	0.03
Supportive network (Spatial Lag)	-2.15**
Size of network	-0.01
Size of network (Spatial Lag)	1.06**
ρ	0.33***
Log likelihood	-532.338***
<i>N</i>	383

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

were not linked to crime victimization, neighborhood reciprocity was significantly related to the risk of victimization. Stronger neighborhood supportive networks were associated with lower crime victimization. By contrast, individuals who were exposed to larger personal network sizes at the neighborhood level were more likely to be victimized. The respondents' individual supportive network size and personal network size were not significantly associated with crime victimization.

6.4.2.4 Comparison to the Multilevel Model

We repeated the analysis of the same data using the multilevel model to compare the results to the spatial Durbin model. In this analysis, as previously mentioned, we grouped the respondents into small areas defined by administrative boundaries in Japan ("chouchoumoku") and used the average values for generalized trust, reciprocity, supportive network size, and personal network size in each chouchoumoku as the contextual-level variables. There were 17 units at the contextual level. The average size of these areas was 0.17507 km², and the average population was 3,811.88. In our dataset, the average number of respondents in each area was 28.76.

Table 6.4 shows the results of the multilevel model. As shown in the table, there were statistically significant inverse associations between male sex and crime victimization and between higher perceived social class and crime victimization. These results were consistent with the results of the spatial Durbin model.

Table 6.4 Multilevel model estimates for crime victimization (Takagi et al., 2012)

Dependent variable:	Crime victimization
Independent variables:	Coefficients
Intercept	0.84***
Sex (male = 1, female = 0)	-0.27**
Years of residency	-0.01
Type of housing	0.08
Perceived social class	-0.15**
Perceived social class (Macro-Level)	-0.07
Generalized trust	-0.06
Generalized trust (Macro-Level)	-0.49
Reciprocity	-0.01
Reciprocity (Macro-Level)	-0.38 [†]
Supportive network	0.07 [†]
Supportive network (Macro-Level)	-0.41
Size of network	-0.02
Size of network (Macro-Level)	0.20
Random effect (Intercept)	0.04**
Level 1 <i>N</i>	416
Level 2 <i>N</i>	17

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [†] $p < 0.10$

However, in contrast to the spatial Durbin model, in the multilevel model, the only contextual-level variable that had a marginally significant association with lower crime victimization was reciprocity. In addition, the size of the respondents' individual supportive networks had a marginally statistically significant association with crime victimization, but the direction of the relationship was positive.

6.4.2.5 Summary

In this section, I will summarize several of this study's key findings. First, based on the spatial Durbin model, neighborhood crime victimization predicts individual victimization; thus, we may conclude that crime victimization is geographically concentrated. These results are consistent with the findings from previous studies that have used spatial autocorrelation analysis to conclude that crime does not occur at random but occurs in spatial patterns (Kamber, Mollenkopf, & Ross, 2000; Messner & Anselin, 1999). That is, crimes tend to cluster in certain neighborhoods.

Second, crime victimization of an individual is associated with the level of social capital reported by other respondents in the same area, weighted by the inverse of their distance from the victimized individual. This finding aligns with the spillover effect of social capital (Putnam, 1993); people can receive the benefits of high levels of trust and reciprocity among their neighbors, even if they themselves do not hold the same sentiments.

The third finding of this study is that different aspects of social networks have opposite associations with crime victimization. Thus, while supportive networks are associated with lower crime, larger personal networks work in the opposite direction (i.e., they are associated with more crime). One possible explanation for this finding is that larger networks also tend to be more diverse. Although network diversity enhances certain processes (e.g., the diffusion of information), it may also create more opportunities to be exposed to crime.

The fourth noteworthy finding of this study concerns the comparison between the spatial Durbin model and the multilevel model. This study found that using administrative boundaries to define neighborhoods (in the multilevel model) resulted in mostly null findings for the associations between social capital and crime victimization.

Notably, the contextual-level random parameters were significant in the multilevel model, suggesting that although there is significant variation in crime victimization across neighborhoods, social capital did not “explain” the heterogeneity in the multilevel models.

This study’s findings add credence to Morenoff’s argument (2001) that arbitrary geographic boundaries may result in the misclassification of exposures and thus lead to an underestimation of neighborhood contextual influences.

6.5 Conclusion

In this chapter, I discussed the relationship between social capital and crime, drawing on empirical studies. In particular, I described two studies that addressed the Modifiable Area Unit Problem in neighborhood research. These studies suggested that the effect of social capital on crime varies according to the spatial scale used to define the neighborhood for the analysis. In addition, the estimates of the effect of each respondent’s unique exposure to neighborhood social capital were better when they were weighted by inverse distances than when they were produced by a multilevel model using administrative boundaries.

Using data from Japan, researchers have often failed to find a significant link between social capital and crime, while Western studies have consistently found significant effects of social capital on crime. Some researchers believe that variance among neighborhoods cannot be explained well because the interregional variation in social capital and crime rates is very small in Japan compared to Europe and the USA. However, even if an association between social capital and crime is not found in this context, it does not prove that the association does not exist. It is possible that the unit of analysis may not be an appropriate spatial unit for studying social capital.

The spatial approaches discussed in this chapter are applicable for research on the association between social capital and health, which is the main theme of this volume. There are few studies to date that empirically address the Modifiable Area Unit Problem in research on social capital and health. It is expected that studies utilizing spatial statistics will be accumulated in health outcomes research.

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Chapter 7

Disaster, Social Capital, and Health

Jun Aida, Ichiro Kawachi, S.V. Subramanian, and Katsunori Kondo

Disasters are widely recognized as causing major public health problems (Limpakarnjanarat & Ofrin, 2009; Noji, 2005) and are responsible for morbidity, sudden and otherwise, among individuals. For example, approximately 280,000 people in Asian countries died following the severe earthquake and tsunami in Indonesia in December 2004 (Kohl, O'Rourke, Schmidman, Dopkin, & Birnbaum, 2005). In January 2010, 222,570 people died following the Haiti earthquake, while 72,210 deaths resulted from the summer heat wave in Western Europe in 2003 (Knight, 2011). Worldwide, there were 406 natural disasters and 234 technological disasters in 2010, which caused 297,752 and 6,724 deaths, respectively (Center for Research on the Epidemiology of Disasters, 2012).

Disasters also cause serious physical and mental health problems in populations (Hussain, Weisaeth, & Heir, 2011; Neria, Nandi, & Galea, 2008; Perlman et al., 2011; Reacher et al., 2004; Thienkrua et al., 2006; van Griensven et al., 2006; Yzermans et al., 2005). It is common for the general population to be exposed to disasters during their lifespan; 22 % of individuals are exposed to one or more natural disasters in their lifetime (Briere & Elliott, 2000). Recent increases in population, aging, poverty, and globalization have made communities more vulnerable to disasters (Arnold, 2002). Trends in the number of disasters and damage caused by

J. Aida, D.D.S., M.P.H., Ph.D. (✉)

Department of International and Community Oral Health, Graduate School of Dentistry, Tohoku University, 4-1, Seiryō-machi, Aoba-ku, Sendai, Miyagi 980-8575, Japan
e-mail: j-aida@umin.ac.jp

I. Kawachi, M.D., Ph.D. • S.V. Subramanian, Ph.D.

Department of Social and Behavioral Sciences, Harvard School of Public Health, Harvard University, Huntington Avenue 677, Kresge Bldg., 7th floor, Boston, MA 02115, USA
e-mail: ikawachi@hsph.harvard.edu; svsubram@hsph.harvard.edu

K. Kondo, M.D., Ph.D.

Center for Well-being and Society, Nihon Fukushi University, 5-22-35 Chiyoda, Naka-ku, Nagoya, 460-0012, Japan
e-mail: kkondo@n-fukushi.ac.jp

disasters are increasing (Center for Research on the Epidemiology of Disasters, 2012; Limpakarnjanarat & Ofrin, 2009). Therefore, it is important for population health to study the impact of disasters on morbidity.

In addition to fatalities and morbidity, disasters also destroy the physical and social environment, including the community, social network, healthcare system, work environment, and various infrastructures. In 2010, the economic costs associated with natural disasters reached \$123.3 billion (Knight, 2011). These huge changes in environments caused by disasters also affect the population health in the long term. Access to care for chronic illnesses is interrupted by the conditions caused by a disaster (Jhung et al., 2007). Lack of access to routine healthcare causes mortality following a disaster (Spiegel, Sheik, Gotway-Crawford, & Salama, 2002). Forced relocation following the destruction of a community caused by a disaster also increases health problems (Uscher-Pines, 2009; Yzermans et al., 2005). Because natural disasters affected 304 million people in 2010 (Knight, 2011), the impact on the population health in the long term can be crucial.

A certain amount of impact from disasters is considered to be mitigable (Levac, Toal-Sullivan, & O'Sullivan, 2012; Limpakarnjanarat & Ofrin, 2009). Disparities exist between communities that are vulnerable to disasters and the speed in responding to and recovering from a disaster. Although it is commonly assumed that the speed of recovery following a disaster will be determined primarily by the extent of the initial damage and economic conditions, recent research has begun to challenge this assumption (Aldrich, 2011). Not only have technical solutions been proposed to reduce the threat of disasters, but social solutions have been proposed as well (Nakagawa & Shaw, 2004). Social capital has drawn increased attention as a key factor in relation to a disaster.

This chapter explains the important role that social capital plays in disaster impact reduction and health following a disaster. At first, we introduce the conceptual backgrounds of disaster research and contribution of social capital on each disaster phase. Reports on disaster and social capital are reviewed. Then we discuss the roles of social capital on health in disaster settings. Epidemiological studies on disaster and health are also reviewed. Finally, we suggest directions for further research on social capital and health in disaster settings.

7.1 Social Capital and Disasters

7.1.1 Variability in the Use of Social Capital in Disaster Research

An emerging puzzle in disaster research is determining what accounts for the differential recovery rate of communities (Aldrich, 2011). From a disaster preparedness perspective, the extent of communities' vulnerability can be predicted from physical characteristics. For example, in the 1995 earthquake that rocked the Kobe

area of Japan, older wooden houses were significantly associated with worse fire damage (Murosaki, 2007). In the Indian Ocean tsunami, the extent of damage correlated with the distance from the epicenter, as well as the slope of the land, water depth, and topography (Ramakrishnan, Ghosh, Raja, Chandran, & Jeyram, 2005). However, in contrast to these well-understood predictors of differential vulnerability during the acute phase of a disaster, far less is understood about the phenomenon of differential recovery. It is commonly assumed that the speed of recovery following a disaster will be determined primarily by the extent of the initial damage, but recent research has begun to challenge this assumption (Aldrich, 2011). For example, researchers noted in the aftermath of the Kobe earthquake that neighborhoods recovered at different rates, but these rates were not strongly correlated with the scale of initial damage (Aldrich, 2011). Instead, disaster research has begun to identify a list of community-level factors that appear to facilitate or impede recovery, including population density, socioeconomic status, and community levels of economic inequality (Ahern & Galea, 2006; Aldrich, 2011). Another community-level variable that has drawn increasing attention is social capital (Nakagawa & Shaw, 2004).

7.1.2 Categorization and Phases of the Disaster

There are two broad categories in disasters: natural and human generated (Limpakarnjanarat & Ofrin, 2009; Rutherford & de Boer, 1983). Natural disasters include such events as earthquakes, tsunamis, hurricanes, floods, volcanoes, wild-fires, and extremes of temperature. Human-generated disasters are divided into two categories: accidental (technological) disasters, such as chemical factory explosions, and man-made disasters caused by warfare, economic or social disruptions, and civil disturbances. Sometimes, the distinction between natural and human-generated disasters is unclear (Limpakarnjanarat & Ofrin, 2009; Neria et al., 2008) because some human-generated disasters are caused by natural disasters [e.g., a flood may cause chemical contamination (Appel, 2005)].

Previous literature related to disasters has divided disasters into several phases (Limpakarnjanarat & Ofrin, 2009; Moore et al., 2004). Following the previous research on social capital and disasters, this chapter identifies the following phases: preparedness, response and relief, and recovery. Preparedness is the knowledge, capabilities, and actions of governments, organizations, community groups, and individuals to effectively anticipate, respond to, and recover from the impacts of disasters (Levac et al., 2012). Disaster preparedness planning is crucial to reduce the impact of disasters (Levac et al., 2012; Limpakarnjanarat & Ofrin, 2009). It includes determining the community's vulnerability, developing emergency planning, and stocking an emergency kit, food, water, and medical supplies in homes (Levac et al., 2012). Disaster response and relief refers to the actions taken during or after a disaster to preserve life and meet the basic subsistence needs of victims (Limpakarnjanarat & Ofrin, 2009). The efforts involved in response or relief can be protracted over a prolonged duration. Recovery is the efforts involved in restoring or improving the

pre-disaster living conditions of the affected community, which include reducing the disaster risk. Recently, resilience (i.e., the community's intrinsic capacity to resist and recover from disasters) (Castleden, McKee, Murray, & Leonardi, 2011) has become increasingly important in disaster preparedness (Levac et al., 2012).

7.1.3 Social Capital and the Phases of a Disaster

Social capital, which is related to social support, formal and informal social ties, organizational linkages and cooperation, citizen participation, leadership and roles, attachment to a place, and a sense of community, potentially affects the impact of disasters as well as economic development, information and communication, and community competence (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). Studies have shown the various roles of social capital in each disaster phase: preparedness (Allen, 2006; Koh, Elqura, Judge, & Stoto, 2008; Levac et al., 2012), response to disasters (Brouwer & Nhassengo, 2006; Moore et al., 2004), relief (Moore et al., 2004), and disaster recovery (Aghabakhshi & Gregor, 2007; Aldrich, 2012; Buckland & Rahman, 1999; Nakagawa & Shaw, 2004). In addition, social capital is considered to be a key element of resilience (Allen, 2006; Castleden et al., 2011; Cox & Perry, 2011; Dynes, 2005; Ebi, 2011; Levac et al., 2012; Norris et al., 2008), as well as of communication, learning, adaptation, and risk awareness (Castleden et al., 2011). As part of the contribution of social capital on disaster impact, the beneficial effects of social capital on health following a disaster were also reported (Ali, Farooq, Bhatti, & Kuroiwa, 2012; Beaudoin, 2007; Beiser, Wiwa, & Adebajo, 2010; Wind, Fordham, & Komproe, 2011; Wind & Komproe, 2012). Figure 7.1 shows the concept of social capital as it is applied to disaster settings.

7.1.4 Findings Regarding Social Capital and Disaster

In this section, we introduce the roles that social capital plays in each phase of disaster by reviewing several articles on social capital and disaster.

Hanshin-Awaji Earthquake in Japan, 1995

Nakagawa and Shaw (2004) reported the various roles that social capital plays in disaster resistance and recovery and suggested the importance of social capital to resilience. On January 17, 1995, at 5:46 a.m., an earthquake with a magnitude of 7.2 on the Richter scale struck the Hanshin-Awaji area of Japan. More than 6,400 people died, 43,000 people were injured, 104,000 homes were completely destroyed by the earthquake, and 7,000 homes were completely destroyed by fires. During the disaster, the government had limited operational capacity; thus, individuals and their neighbors played important roles in responding to the disaster. In the Mano area

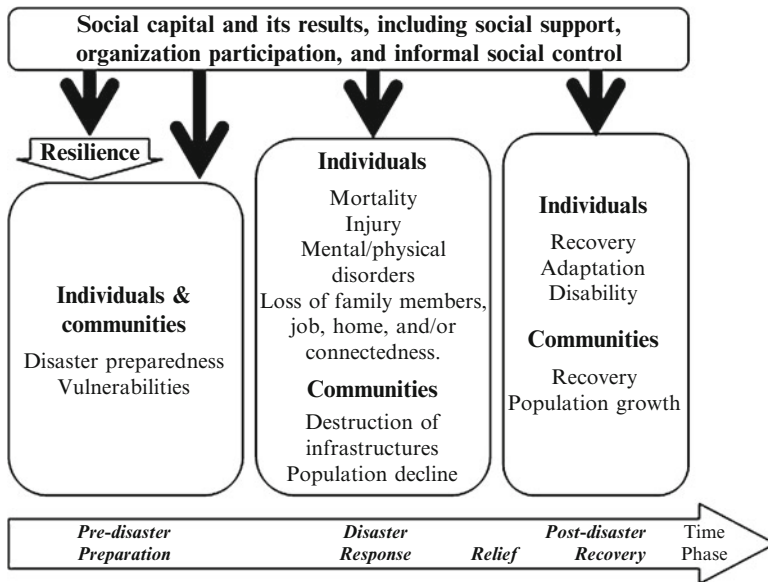


Fig. 7.1 Time and phases of disasters and social capital

of Kobe, town development organizations and a historically active civic movement were in place prior to the earthquake. After the earthquake, intensive community activities were conducted, including extinguishing fires immediately after the earthquake, pursuing rescue efforts, evacuating affected residents to nearby schools, establishing a community kitchen, and providing night guards. The fire-related efforts produced a remarkable contrast between the disaster-related outcomes of the Mano area and the Chitose area, where fires destroyed nearly everything. After the disaster, various community activities, such as conducting building inspection surveys, publishing a weekly community newsletter, implementing a signature collection campaign, and lobbying for the construction of public housing, resulted in more rapid adaptation and recovery. During the reconstruction, there were many difficulties (e.g., negotiations between residents and the government), and there were obvious differences in the speed and the degree of community involvement. Bonding, bridging, and linking social capital were considered to explain the differences between the two towns' recovery from the disaster.

Aldrich (2011) also examined the association between social capital and recovery following the Hanshin-Awaji earthquake. His quantitative data analysis revealed that the number of NPOs created per capita, used as a social capital variable, was significantly associated with recovery, measured by population growth and adjusted for damage, population density, economic conditions, inequality, and other variables. Importantly, his results showed that social capital was the strongest and most robust predictor of population recovery after a catastrophe.

Red River Flood in Canada, 1997

Buckland and Rahman (1999) showed the associations between social capital, community preparedness, and response to disaster. During the Red River Flood in Manitoba, Canada, in the spring of 1997, commonly referred to as the “Flood of the Century,” the flooded river covered 2,000 km², and an estimated 25,000 residents were forced to flee their homes. Research was conducted immediately following the spring flood, from May through October 1997, in three riverine communities: Roseau River Anishinabe First Nation, Rosenort, and Saint Jean Baptiste. Social capital was measured by involvement in civic organizations. Residents who had a greater amount of social capital tended to prepare and respond to the disaster through civic organizations. In Rosenort and Saint Jean Baptiste, 53 % and 22 % of respondents, respectively, participated in flood preparation and response through their civic organizations. In the community with the least social capital, only 6 % of respondents from Roseau River participated in disaster-related activities. In relation to household-level preparation and response, such as building a sandbag dike in the upstream area following the flood, respondents in Roseau River were reported to have engaged in the fewest preparation activities. Although greater social capital was associated with a greater amount of disaster preparation activities and responses, it was also associated with more conflicts. Conflicts during various phases of the flood were frequently reported in Rosenort. In Roseau River, which had the least amount of social capital, only a small number of conflicts were reported. Social capital was considered to “*foster greater co-operation through exploitation of pre-existing networks, but it can also lead to greater conflict in decision-making as a result of flatter social structure*” (Buckland & Rahman, 1999).

Hurricane Floyd in the United States, 1999

The contribution of social capital, social cohesion, and collective efficacy to community preparedness, responsiveness, relief, and recovery from a flood caused by Hurricane Floyd in the United States was examined by Moore et al. (2004). On September 16, 1999, in the early morning hours, Hurricane Floyd hit Cape Fear, North Carolina, USA. The massive rain caused flooding along three river basins: Northeast Cape Fear, Neuse, and Tar. Floyd brought floods, high winds, tornadoes, and a tidal surge, which caused damages across eastern North Carolina. The floods isolated communities and resulted in people having to flee from their homes. Over 56,000 houses were damaged, 17,000 houses became uninhabitable, and 7,000 houses were destroyed by floods in North Carolina. Fifty-two people died in the disaster. In response to the needs of the affected communities, “Health Works After the Flood” was founded by investigators engaging in a health promotion study in five counties: Duplin, Lenoir, Pender, Sampson, and Wayne. Through qualitative research, they examined the social determinants of community preparedness, response, and recovery from the disaster. The team developed locally specific, “homegrown,” contextualized measures of social capital, social cohesion, and collective efficacy. The residents in the five counties were relatively poor, and a high

percentage were minorities. In relation to disaster preparedness, those with lower socioeconomic status and of a different ethnicity were considered more vulnerable. People with lower socioeconomic status were more vulnerable because they lived on lower ground where the risk for flooding was higher. In the disaster preparedness phase, local authorities and the media provided sufficient information to some county residents of potentially severe flooding; however, other residents had insufficient information, especially the Spanish-speaking minority population. In this situation, the authors suggested the possibility that people with abundant social networks might be less vulnerable to a disaster because they can easily gain access to resources. Additionally, their focus group interview revealed that in the immediate response and relief phases of the flood, people recognized the value of “neighbors helping neighbors” and there were a lot of collaborative actions taking place in the community. Business, community, and religious organizations also supported flood victims, although there were exceptions. However, most of these “altruistic communities” had not progressed to the recovery phase.

Gujarat Earthquake in India, 2001

Following an earthquake in Gujarat, India, in 2001, Nakagawa and Shaw (2004) examined their previous theory regarding the Hanshin-Awaji earthquake. In their results, social capital partially accounted for the recovery rate and residents’ satisfaction with the plans for the new town. This episode also supports the importance of social capital in communities before disasters occur, in terms of improving resilience, which reduces the risks associated with disasters and promotes recovery after a crisis.

Hurricane Katrina in the United States, 2005

As mentioned in the case of the Japan earthquake (Nakagawa & Shaw, 2004), government officials’ top-down efforts to respond to a large disaster are often limited to immediately after a disaster; therefore, a bottom-up approach, which links to social capital, is crucial when responding to a disaster (Allen, 2006; Baker & Refsgaard, 2007; Castleden et al., 2011). Baker and Refsgaard (2007) reported on government institutions’ failures and the important roles of nongovernmental voluntary networks soon after Hurricane Katrina hit the United States in August 2005. Katrina, with sustained winds of 140 mph, caused 1,053 deaths in Louisiana and 228 deaths in Mississippi. Nongovernmental rescue groups arrived in stricken areas before the Federal Emergency Management Agency (FEMA). When official aid failed to arrive, nongovernmental institutions improved or built other delivery systems. In relation to financial aid and materials in the ten weeks following Katrina, voluntary nongovernmental networks offered key sources; \$2.6 billion was donated, which was about two-thirds of FEMA’s contribution during the first six weeks. Volunteers also assisted with rebuilding the city. For example, within a week of the hurricane, the Common Ground Collective, consisting of more than 10,000 volunteers, began digging out the Lower Ninth Ward with plans to rebuild it; this was one of the

hardest hit and most neglected areas in New Orleans. Later, the organization became involved in representing residents in government dealings and physical planning, as well as building resilience through the development of social capital (Baker & Refsgaard, 2007).

A qualitative study by Hawkins and Maurer (2010) examined the utilization of social capital to help victims of Hurricane Katrina relocate and restore individual houses and communities. They measured bonding, bridging, and linking social capital. Bonding social capital was defined as giving and receiving help from the network within racial and socioeconomic lines. Bridging social capital involved creating capital that went across lines. Linking social capital was connected to other communities and organizations outside New Orleans. Results showed that bonding social capital, or close networks, was important for immediate support, but bridging and linking social capital offered pathways to longer-term survival and wider neighborhood and community recovery. Those with low incomes particularly relied on all levels of social capital for individual, family, and community survival (Hawkins & Maurer, 2010).

7.1.5 Mechanisms Linking Social Capital to the Impact from a Disaster

Social capital has been defined in at least two different ways: (a) the network-based definition—“the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationship[s] of mutual acquaintance or recognition” (Bourdieu, 1986) and (b) the cohesion-based definition—“features of social organization, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions” (Putnam, 1993). Whichever way it is defined, the resources obtained from social capital mitigate the impact of a disaster through several mechanisms.

In the phase of disaster preparation, studies showed that communities with many civic organizations (higher stock of social capital) were more highly prepared for disasters through the civic organizations (Buckland & Rahman, 1999; Murphy, 2007). These results suggested that social capital promoted the establishment of formal networks in the community prior to the disaster, which worked as good channels for combining disaster response activities both during and after the disaster. From a political perspective, social capital may also be useful for disaster preparedness planning. Bihari and Ryan (2012) showed the association between community social capital, measured by various indices, and wildfire preparedness. They contend that planners can take advantage of social capital to increase citizen participation in disaster preparation (Bihari & Ryan, 2012).

Social capital also helps people in the response and relief phases, during and immediately after the disaster. In these phases, government officials' top-down efforts are often limited; therefore, the bottom-up approach, which arises from the community, is important. Social capital improves such mutual help as it results in

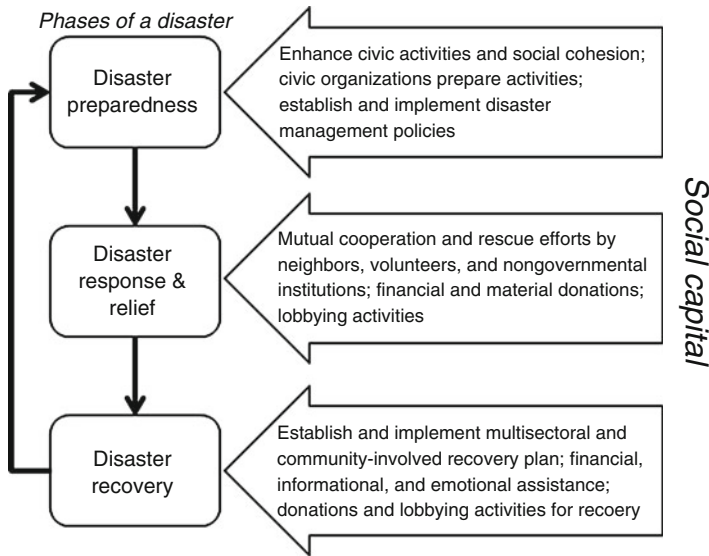


Fig. 7.2 Mechanisms that link social capital to various phases of a disaster

“neighbors helping neighbors” to survive a disaster (Baker & Refsgaard, 2007; Moore et al., 2004; Nakagawa & Shaw, 2004). In relation to the dimension of social capital, bonding social capital, or close networks, was important for immediate support, but bridging and linking social capital offered support for longer-term survival and wider neighborhood and community recovery (Hawkins & Maurer, 2010). Social capital also increases financial and material donations (Baker & Refsgaard, 2007) as well as lobbying activities for disaster response (Nakagawa & Shaw, 2004).

In the recovery phase of a disaster, Aldrich (2011) has posited three mechanisms that result in communities with greater social capital stock recovering more quickly from a disaster: (a) social connections can serve as “informal insurance,” allowing victims to draw upon preexisting support networks for financial, informational, and emotional assistance; (b) better-connected communities are more effective at mobilizing residents to voice their demands and extract resources from authorities (referred to as “collective efficacy”); and (c) cohesive communities raise the cost of “exit” from embedded networks, thereby increasing the probability that residents will be invested in returning to their communities to work together toward reconstruction. In fact, varied emotional assistance was observed in a case study that reported the benefits of social capital for women survivors of an earthquake in Turkey in 1997. Social capital and emergent civic networks not only helped the women overcome the psychological impact of the disaster but also empowered them and helped them overcome the “stigma” (hesitation) to accept public assistance in Gölcük (Ganapati, 2012).

Figure 7.2 shows the mechanisms that link social capital to various phases of a disaster.

7.1.6 The Dark Side of Social Capital in Disaster Settings

In contrast to the beneficial effects of social capital, the dark side of social capital has also been reported (Putnam, 2000). In disaster settings, negative effects of social capital have been suggested (Buckland & Rahman, 1999; Elliott, Haney, & Sams-Abiodun, 2010).

Elliott et al. (2010) reported that inequalities in social capital widen during periods after disasters. Inequalities caused less effectiveness of social safety nets for disadvantaged populations. Another study suggested that discrimination, considered to be linked to lower levels of social capital, caused unfair distribution of post-disaster aid (Aldrich, 2010). As mentioned in the previous section, although Buckland and Rahman (1999) showed the beneficial effects of social capital in disaster preparedness and recovery, they also reported that higher levels of social capital lead to greater conflicts in decision making as a result of a flatter social structure.

7.2 Disasters, Social Capital, and Health

Disasters cause fatalities (Center for Research on the Epidemiology of Disasters, 2012; Knight, 2011; Pradhan et al., 2007) and affect the physical and mental health of populations (Hussain et al., 2011; Neria et al., 2008; Perlman et al., 2011; Reacher et al., 2004; Thienkrua et al., 2006; van Griensven et al., 2006; Yzermans et al., 2005). In particular, a substantial number of studies have reported serious impacts of disasters on the mental health of surviving victims (Neria et al., 2008; Perlman et al., 2011; Thienkrua et al., 2006; van Griensven et al., 2006). The prevalence of posttraumatic stress disorder (PTSD) after man-made disasters is often higher than it is after natural disasters (Neria et al., 2008). In addition to the direct consequences of the disasters themselves, disasters affect health in the long term. Disasters destroy not only physical environments but social networks and relationships in communities as well. Such loss of community causes secondary trauma (Long & Wong, 2012). Forced relocation following the destruction of a community by disaster also increases health problems (Uscher-Pines, 2009; Yzermans et al., 2005). Disaster also affects chronic illnesses by interrupting access to healthcare (Jhung et al., 2007), and lack of access to routine healthcare causes mortality after a disaster (Spiegel et al., 2002).

Social capital potentially promotes health following disasters. The following requirements to protect and recover mental health in the short and mid terms after disasters were reviewed by experts: (1) a sense of safety, (2) a sense of calm, (3) a sense of self- and community efficacy, (4) connectedness, and (5) hope (Hobfoll et al., 2007). Connectedness is linked to social capital. Additionally, regardless of whether there is a disaster or not, social capital is considered to promote mental health by reducing psychological distress (Kawachi & Berkman, 2000; Phongsavan,

Chey, Bauman, Brooks, & Silove, 2006). Reviews of literature suggest a protective effect of individual social capital on mental health (De Silva, McKenzie, Harpham, & Huttly, 2005), although the association is less consistent in neighborhood social capital (Almedom & Glandon, 2008; Kim, 2008). In addition to these psychosocial processes, social capital encourages reconstruction in disaster-affected communities (Aghabakhshi & Gregor, 2007; Aldrich, 2012; Buckland & Rahman, 1999; Moore et al., 2004; Nakagawa & Shaw, 2004) and may help reduce the long-term health impact caused by a disaster and promote the mental and physical health of the population.

7.2.1 Findings Regarding Social Capital and Health in Disaster Settings

In this section, we review literature on social capital and health in disaster settings. Literature that examined the associations between social capital and health after disasters was sought using PubMed issues published through August 20, 2012. Terms used were “social capital” along with one of the following: disaster, earthquake, tsunami, hurricane, flood, fire, rain, or heat wave. The search returned 34 unique abstracts; among these, there were only six epidemiological studies from four disasters. All six of these pieces of literature were included in the review (Ali et al., 2012; Beaudoin, 2007, 2011; Beiser et al., 2010; Wind et al., 2011; Wind & Komproe, 2012). Five studies investigated individual social capital and there was a multilevel study. The indicators of social capital were different in each study. The outcomes used were PTSD (Ali et al., 2012; Beiser et al., 2010; Wind et al., 2011; Wind & Komproe, 2012), anxiety (Wind et al., 2011), depression (Beaudoin, 2007; Wind et al., 2011), and smoking and alcohol consumption (Beaudoin, 2011). In the following section, we provide details of these six studies from the four disasters. In addition, Table 7.1 shows the summary of these studies.

Human-Initiated Disaster (Severe Criminal Violence) in Nigeria, 1995

The association between social capital and PTSD was examined among the survivors of a human-initiated disaster (severe criminal violence) in the Niger Delta region of Nigeria in 1995. Beiser et al. (2010) conducted a cross-sectional study in 2002 that included 45 adult residents from a village affected by a human-initiated disaster and 55 from a non-affected village. PTSD was diagnosed using the PTSD module of the WHO Composite International Diagnostic Interview (WHO, 1997). Individual social capital was conceptualized as being comprised of the following factors: economic security, feeling safe, sense of moral order, and social support. Logistic regression models revealed that lower levels of social capital were significantly associated with a higher probability of PTSD after adjustment for residence, exposure, and age. The results of this study suggested that attention should be paid to both individual and social wounds caused by violence and abuse.

Table 7.1 Summary of the studies on social capital and health after disasters

Author	Country	Setting	Year	Study subjects	Indicator of social capital	Outcome	Analysis	Findings
Wind and Komproe (2012)	UK	Community, flood	2009	Community-dwelling males and females, all ages ($n=232$) in Morpeth	Community (postcode area) structural social capital (aggregated eight items, frequency of interaction between community members) and community cognitive social capital (aggregated seven items, trust, mutual help, reciprocity) measured by SA-SCAT	PTSD (PTSD Checklist—Civilian Version)	Multilevel structural equation modeling	Community social capital was indirectly salutary for individual PTSD. Higher structural social capital was associated with higher cognitive social capital and collective efficacy. In these salutary social contexts, individuals employed fewer coping strategies and less social support, which decreased PTSD
Ali et al. (2012)	Pakistan	Community, earthquake	2008	Earthquake survivors aged 18 years or older lived in three districts ($n=300$)	Individual social capital by Onyx and Bullen (2000)	PTSD (Davidson Trauma Scale)	Logistic regression	High social capital was significantly associated with lower odds for having PTSD, adjusting for sociodemographic characteristics

Wind et al. (2011)	UK	Community flood	2009	Community-dwelling males and females, all ages (<i>n</i> = 232) in Morpeth	Individual structural social capital (eight items, frequency of interaction between community members) and individual cognitive social capital (seven items, trust, mutual help, reciprocity) measured by SA-SCAT	Anxiety, depression (Hopkins Symptom Checklist-25), and PTSD (PTSD -Civilian Version)	Linear regression and path analysis	High individual cognitive social capital was significantly associated with lower risks for three mental health outcomes. However, high individual structural social capital was significantly associated with a higher risk of anxiety after being adjusted for sociodemographic characteristics, individual appraisal processes, social support, and coping behaviors
Beaudoin (2011)	USA	Community hurricane	Before hurricane: 2004–2005 Follow-up: 2006	African-American adults (2004, <i>n</i> = 1,867; 2005, <i>n</i> = 879; 2006 June/July, <i>n</i> = 500; September, <i>n</i> = 500)	Individual neighborliness (three items, mutual help, social participation)	Smoking and alcohol consumption	Logistic regression and OLS regression	High social capital increased alcohol consumption even after being adjusted for sociodemographic characteristics, disaster exposure, smoking, PTSD, news attention, and social support. There was no significant association between smoking and social capital

(continued)

Table 7.1 (continued)

Author	Country	Setting	Year	Study subjects	Indicator of social capital	Outcome	Analysis	Findings
Beiser et al. (2010)	Nigeria	Community, severe criminal violence	2002	45 adult residents from a village affected by a human-initiated disaster and 55 from a non-affected village	Individual social capital (economic security, feeling safe, sense of moral order, and social support)	PTSD	Logistic regression	Lower levels of social capital were significantly associated with a higher probability of suffering from PTSD, after adjusting for residence, exposure, and age
Beaudoin (2007)	USA	Shelter, hurricane	2005	57 shelter residential adults	Individual social interactions before and after the hurricane	Depression/illness and injury	Logistic regression	Pre- and post-hurricane positive social interactions were associated with lower odds for depression after adjusting for sociodemographic characteristics. Post-hurricane negative social interactions were associated with higher odds for depression. There was no significant association between illness and injury and social interactions

Earthquake in Pakistan, 2005

In October 2005, a 7.6-magnitude earthquake occurred in Pakistan, with tremors being felt across regions from Kabul to Delhi, claiming almost 87,000 lives. Ali et al. (2012) conducted a cross-sectional study that explored protective factors against PTSD in order to generate suggestions for future interventions. Three hundred earthquake survivors aged 18 years or older from three districts were enrolled. An interview survey using a semi-structured questionnaire was conducted from April to June 2008. PTSD was used as the observed outcome, and the Davidson Trauma Scale was applied for this measurement. Social capital was measured via Onyx and Bullen's validated questionnaire (Onyx & Bullen, 2000). Logistic regression models were applied to calculate the odds ratio for having PTSD. Information about age, gender, family head status, employment status, current civil status, living place, income, whether respondents were religious, whether they prayed regularly, social capital, past medication history, life impairments, educational status, and the degree of exposure to the earthquake were included in the model. Their analysis showed that social capital was the strongest predictor of PTSD, followed by being head of a family, having a low income, and being religious minded. Individuals with abundant social capital have a lower risk of suffering from PTSD. In contrast, females, the elderly, unmarried persons, heads of families, the unemployed, persons with low incomes, and persons living in temporary housing were associated with a higher risk of PTSD. The authors suggested that efforts to enhance the social capital of survivors' surroundings might promote their mental health by efficiently helping to enhance their coping abilities and lives in general.

Hurricane Katrina in the United States, 2005

Hurricane Katrina hit the United States in August 2005. Beaudoin (2011) used cross-sectional ($N=1,867$ in 2004, $N=879$ in 2005) and panel survey data ($N=500$ in June/July 2006, $N=500$ in September 2006) from African-American adults in New Orleans, Louisiana, to determine trends regarding addictive behavior and their predictors. Alcohol consumption and cigarette smoking were used as outcomes. Social capital-related measurements including neighborliness such as reciprocity and participation (Beaudoin, 2009) and the outcome of social capital (provided social support) (Piferi & Lawler, 2006) were used. High levels of an individual social capital-related measure (neighborliness) corresponded with an increase in alcohol consumption even after adjustment for age, gender, education, household income, disaster exposure, smoking, PTSD, news attention, and social support. There was no significant association between smoking and neighborliness. Providing support was inversely associated with smoking. There was a significant, positive interaction between PTSD and neighborliness for the dependent variable of alcohol consumption. There were complex associations between addictive behaviors and social capital-related measurements. The author insisted that future research using other measurements of social capital was needed.

Beaudoin (2007) also examined the associations between social capital, depression, illness, and injury after Hurricane Katrina. A semistructured interview survey was

conducted with 57 shelter residents between four and six weeks after the hurricane. Self-reported responses to questions were used to measure two outcomes: depression, and illness and injury. Illness and injury were combined into an overall index. Social interactions before and after the disaster were measured and used as a variable representing social capital. Logistic regression analysis was used to estimate the odds of having health problems. Pre- and post-hurricane positive social interactions were associated with lower odds of having depression after adjustment for race/ethnicity, age, gender, income, and education. Post-hurricane negative social interactions were associated with higher odds of depression. Both post-hurricane positive and negative social interactions showed stronger associations with depression than pre-hurricane social interactions did. There was no significant association between the factor of illness and injury and measured social interactions. This study suggested the importance of social capital in determining mental health outcomes, regardless of race/ethnicity, income, and education.

Flood in Morpeth in the United Kingdom, 2008

In September 2008, the worst flood since 1961 struck Morpeth, Northumberland County, UK. There were two reports on the cross-sectional study, which consisted of face-to-face interviews with 232 flood-affected respondents in August 2009 (Wind et al., 2011; Wind & Komproe, 2012). The first study used anxiety and depression, measured by the Hopkins Symptom Checklist-25, and PTSD, assessed through the PTSD Checklist—Civilian Version (PCL-C), as the mental health outcomes observed in their study (Wind et al., 2011). Both structural and cognitive social capital were measured using the Short Social Capital Assessment Tool (SA-SCAT) (De Silva, Huttly, Harpham, & Kenward, 2007). Sequence of linear regression models, which accounted for the “unequal proximity problem” (Weitkunat & Wildner, 2002), revealed that high individual cognitive social capital was significantly associated with lower risks of three mental health outcomes after adjustment for gender, age, education, and disaster-related factors (including social support). However, high individual structural social capital was significantly associated with a higher risk of anxiety (but not with PTSD or depression) after adjustment for sociodemographic characteristics, individual appraisal processes, social support, and coping behaviors. This study suggested the possibility that psychosocial intervention could foster the development of cognitive social capital to reduce mental health problems.

In the second study, the association between community social capital and PTSD was examined by using multilevel structural equation modeling (Wind & Komproe, 2012). Community was defined by postcode area. Their analyses showed that community social capital was indirectly salutary for individual PTSD. Higher structural social capital was associated with higher cognitive social capital and collective efficacy. In these salutary social contexts, individuals employed fewer coping strategies and sought less social support, which decreased PTSD. These results suggest that individuals living in communities with greater social capital suffer less from PTSD. Disaster victims in communities with high social capital rely on the social context to address disaster-related demands rather than relying on individual resources, such as coping strategies and social support.

7.3 Further Study on Disaster and Health

Disasters alter social and physical environments where people live. Disaster research is important to extract implications to promote recovery from disasters and prepare for future disasters. One problem with studies on disaster and health is that there are fewer studies on physical health compared to mental health studies that are rich in information, especially regarding the PTSD that surfaces immediately after disasters (Neria et al., 2008; Uscher-Pines, 2009). Disasters destroy healthcare systems as well as communities, which causes a long-term impact on health, affects control of chronic illnesses, and increases mortality (Jhung et al., 2007; Spiegel et al., 2002). Studies on physical health and long-term observations on physical and mental health in the recovery phase of disasters are needed.

Another problem related to disaster research is the study design. Because disasters cause tremendous changes in social and physical environments, disaster research has the possibility to determine the effect of communities on the population health. However, it is difficult to infer causality between the characteristics of the community and health because (a) there is an absence of an appropriate control group (those who were unexposed to the disaster) in order to draw appropriate counterfactual comparisons and (b) there is an absence of information on pre-disaster levels of health and variable confounders, or the use of retrospective recall, which can be biased (Buttenheim, 2010). A notable exception is the Study of the Tsunami Aftermath and Recovery (STAR) following the December 26, 2004, Indian Ocean tsunami (Frankenberg et al., 2008). In that study, residents in Indonesia had been interviewed ten months before the tsunami as part of the National Socioeconomic Survey (SUSENAS) conducted by Statistics Indonesia. A follow-up survey was conducted during 2005–2006, in which investigators recontacted over 25,000 individuals who had participated in the original survey. The study found that symptoms of PTSD were highest among respondents from the most heavily damaged areas and among those who suffered loss of kin and property damage (Frankenberg et al., 2008). There is another solution to obtaining data before a disaster. For example, Yzermans et al. (2005) used the electronic medical records of general practitioners before and after a disaster. Such studies can avoid recall bias, even though available data may be limited.

7.4 Concluding Remarks

In this chapter, the roles of social capital in disaster settings were explained. In addition, studies examining the associations between social capital and health status after disasters were reviewed.

Although disasters are common and suddenly damage communities and the health of population, damages are mitigable through the appropriate preparation of, response to, and recovery from disasters. Recent research has revealed that social capital is a key element for establishing resilient communities. In communities with

an affluent stock of social capital, people participate in social activities, trust and help each other, and enjoy their social networks. Government organizations cooperate with other sectors and involve residents in implementing disaster preparation policies. In such communities, people can effectively deal with the impact of disasters using resources that arise from rich social capital. After disasters, social capital in communities promotes the recovery of people and the community. Financial, informational, and emotional support is provided among neighbors. Demands of residents reach governmental organizations relatively easily. A community-involved recovery plan will be implemented.

Various sociological studies have focused on the positive roles social capital plays in disaster preparedness, response, recovery, and resilience. In contrast, there have been fewer epidemiological studies examining the effects of social capital on health after disasters. In addition, previous epidemiological studies did not capture all of the roles of social capital and their effects on various health outcomes. Future studies, such as multilevel studies, panel studies, and natural experiment studies using pre- and post-disaster health and social status, are needed in order to determine the beneficial effects of social capital in terms of health resilience to disasters.

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Chapter 8

Advancing Social Capital Interventions from a Network and Population Health Perspective

Spencer Moore, Jon Salsberg, and Janette Leroux

Understanding the causal pathways linking social capital to health and health behaviors has been a key challenge within social epidemiological research over the past 15 years. Most studies on social capital have been cross sectional and observational, which has limited their capacity to identify causal pathways and draw conclusive inferences (Kawachi, Subramanian, & Kim, 2008; see Chap. 4). The relative shortage of published social capital and health intervention studies would seem to testify to the fact that social capital theory has yet to be successfully translated into intervention research. Besides lacking causal guarantees, there is also an identity crisis when it comes to social capital interventions. What is a social capital intervention? How would a social capital intervention differ from more familiar interventions seeking to improve such factors as social support or community capacity? Without a clear identity, the concept of a social capital intervention risks being essentially all things to all people. This chapter seeks to address the identity crisis facing research and practice on social capital interventions. The chapter takes a network approach to social capital to advance a definition of social capital interventions and a set of guiding principles for developing social capital interventions.

Social capital has been defined as resources embedded in social networks which may be accessed and/or mobilized in purposive actions (Lin, 2001b). This chapter will focus specifically on network capital as a theoretical approach for examining the relationship between social capital and health and designing interventions that improve population health and/or reduce health inequities. Interventions may be thought of as critical events in the history of particular systems, leading to the

S. Moore, Ph.D., M.P.H. (✉) • J. Leroux, M.Sc.
Queen's University, 28 Division Street, Kingston, ON, Canada K7L 7N9
e-mail: mooresp@queensu.ca; 3jl19@queensu.ca

J. Salsberg, M.A.
Department of Family Medicine, McGill University, 517 Pine Avenue West,
Montreal, QC, Canada H2W 1S4
e-mail: jon.salsberg@mcgill.ca

development of new structures and shared meanings (Hawe & Potvin, 2009). Interventions may involve singular or multiple activities operating across sectors and levels that are meant to alter specific elements of a system. Population health interventions are those that aim to shift the distribution of risk in society with the goal of improving population health and/or reducing health inequities (Hawe & Potvin, 2009).

Social capital interventions refer in this chapter to those population health interventions in which network social capital theory informs the design and character of the intervention. Conceptually, social capital interventions may take different forms. Whichever form that a social capital intervention assumes, such an intervention should elucidate the environmental, social, and behavioral change processes that theoretically operate within the specific social context and across different levels of influence, e.g., community, interpersonal, and individual. The goals of this chapter are threefold: (a) describe network social capital theory and the mechanisms theorized to link social networks to health, (b) provide a program typology for classifying network social capital interventions, and (c) present a set of guiding principles for defining and advancing social capital intervention work.

8.1 Network Social Capital Theory

A comprehensive review of the different theoretical approaches linking social capital to individual-level outcomes, including health, is beyond the scope of this particular chapter. Researchers interested in these theoretical debates may find a number of books and articles more informative (Fine, 2001; Kawachi, 2006; Portes, 1998; Szreter & Woolcock, 2004). Instead, for the purposes of this work, we will focus exclusively on network approaches to social capital as a theoretical and practical means of distinguishing social capital interventions from other types of behavioral and environmental interventions. The aims of this section are therefore to present key elements of network social capital theory and highlight how these elements can inform the development of social capital intervention research. These three elements are (a) the definition of network social capital, (b) the theoretical implications of taking a network social capital approach, and (c) the social and psychosocial mechanisms linking social capital to health.

8.1.1 *What Is Network Social Capital?*

Network social capital consists of several key dimensions: (a) social networks, (b) resources, and (c) the mobilization or use of these resources (Lin, 2001a). Social networks refer to the linkages or relational ties that exist among a given set of actors (e.g., individuals), as well as the overall pattern or structure that emerges through those relationships. Relational ties serve as channels for the transfer or flow of

resources (Wasserman & Faust, 1994). Resources may be material (e.g., financial aid) or immaterial (e.g., advice) and are “network embedded” in that they inhere within interpersonal relationships and networks themselves and are not the property of individuals. Finally, the mobilization of social capital for personal or group benefits implies some type of purposive action on the part of an actor. Lin (2001a) argues that these actions may be distinguished according to whether the actor already possesses the particular resources or not. Instrumental actions are those taken to obtain resources not possessed by an actor, whereas expressive actions are those taken to maintain and preserve resources already possessed (Lin, 2001a). Instrumental and expressive actions can mutually reinforce each other.

One of the challenges in network social capital research is developing a measure that captures each of the three dimensions. Researchers have tended to prioritize either the network or the resource dimension of the concept in their measures. For example, Burt (2005) defines social capital as the advantage created by a person’s location in a social network, specifically being someone with networks rich in structural holes (i.e., the empty spaces in a social network). Structural holes represent and provide opportunities for people to span different groups and access a broader diversity of resources (Burt, 2005). Bourdieu, on the other hand, focuses on the total volume of resources available in a network (Bourdieu, 1986; Bourdieu & Wacquant, 1992). Although both researchers reference the importance of social networks and resources, each gives priority to one or the other dimension. Seeing social capital in structural or resource terms can have intervention implications. For example, if social capital is structural, an intervention might seek to target the patterns of social connections within a network, possibly through a type of buddy program. If social capital is considered to be the volume of resources, an intervention might seek to infuse a network with a greater amount of material aid. These strategies are not mutually exclusive and may have reciprocal effects on the other. Less is known about the action-oriented dimension of social capital. Under what circumstances are actors capable or willing to take advantage of their social capital to reap instrumental or expressive returns? Having access to a rich diversity of resources does not imply that individuals need to mobilize those resources for every occasion. Understanding the process by which social capital leads to instrumental or expressive returns, particularly health and well-being, is a critical step in leveraging social capital for health promotion purposes.

8.1.2 Theoretical Implications of a Network Social Capital Approach

Adopting a network approach to the study of social capital and health has a number of theoretical implications for the manner in which social capital interventions might be conceived and evaluated. Five theoretical implications will be highlighted: (a) the level(s) of analysis, (b) the determinants or sources of social capital,

(c) network data needs, (d) the presence of social capital inequalities, and (e) the role of personal agency. First, should network social capital be considered a property of spatial groupings (e.g., neighborhood), interpersonal relationships, or other collectives? Research on social capital and health has examined social capital at various levels. Debates on the appropriate level of analysis have often pitted communitarian against network approaches to social capital. Communitarian approaches have focused on social capital as the property of spatially defined groups (e.g., neighborhoods, countries), whereas network approaches have tended to examine social capital at the personal or interpersonal levels. Nevertheless, as Bourdieu (1986) emphasized, network social capital operates across both levels since such capital is collectively owned but mobilized through individual and group actions. Hence, a network approach to social capital implies the consideration of how social capital operates across multiple levels of influence.

Second, network approaches often focus attention on the determinants or sources of social capital in society. Macro-level factors such as social stratification and discrimination may influence the volume, range, and diversity of social capital potentially accessible to persons and groups. Lin (2001b), for example, proposed a model of social capital whereby collective assets (e.g., economy, political and social participation) and positional embeddedness (i.e., personal location within a network) influence personal outcomes through their impact on social capital. Portes (1998) has referred to social capital as inhering in the structure of social relationships with the personal sources of social capital as being expressed in the consummatory and instrumental motivations of one's network in making resources available. Consummatory motivations refer to those that emerge from social norms of reciprocity and the sense of communal solidarity; instrumental motivations are those that originate from reciprocal exchange relationships and the power of the community to enforce obligations. Regardless of whether the sources of social capital are in macro- or meso-level factors, a network approach to social capital implies some consideration of how social capital takes shape.

Third, a network approach to social capital requires formal network data to measure and assess the effectiveness of social capital interventions. Network data enable the analysis of social connections among those network members, the structures that emerge from those relationships, and how these structures may in turn influence individual attributes, access to various types of resources, and outcomes (Wasserman & Faust, 1994). Network capital studies have tended to rely on a variety of measurement instruments (e.g., position, name, and resource generators) to assess the types and volume of resources available and accessible within personal or group networks. Researchers can use these instruments, which have been described extensively elsewhere (Van der Gaag & Webber, 2008), to construct objective measures of social capital. Most studies using network measures of social capital tend to focus on the individual or interpersonal levels, but such measures can be aggregated to higher levels so as to describe group-level social capital.

Fourth, early public health research on social capital and health tended to characterize social capital as a public good, equally available to all members of a

particular community or group (Moore, Shiell, Haines, & Hawe, 2005). Network approaches to social capital emphasize the potential emergence of social capital inequalities within and between groups. Within groups, social capital inequalities may emerge as a product of the different positions that persons occupy within a social network. For example, according to Burt (2005), persons who have more structural holes within their networks have greater social capital than those persons with few structural holes. Between groups, inequalities in social capital can emerge through social marginalization and homophily (Lin, 2000). Marginalization creates differential opportunities for certain social groups often defined in terms of social categories such as gender, education, race, or ethnicity. Homophily refers to the general tendency of persons to interact with others similar to themselves. The confluence of these processes leads to the emergence of resource-poor and resource-rich networks differentiated by both the volume and diversity of resources present (Lin, 2000).

Finally, network approaches to social capital provide a theoretical entree into current debates on the role of agency in health promotion theory. Lin (2001a) argues that the conceptualization of social capital as network-embedded resources promises to make contributions to any theory on the interaction between structure and agency. Social structure limits the range of connections and resources to which individuals have access. For example, a person who is positioned higher within the social hierarchy will likely have access to and use more socially valued resources. Yet, at any given position within the social structure, individuals may leverage their particular social connections to achieve personal benefits. Agency thus represents an actor's capacity or willingness to mobilize social capital under particular structural constraints.

8.1.3 Mechanisms Linking Network Social Capital and Health

Research on network social capital and health has shown network capital to be associated with a range of health behaviors and health conditions, including self-reported health, depressive symptoms, physical inactivity, and obesity (Carpiano & Hystad, 2011; Haines, Beggs, & Hurlbert, 2011; Legh-Jones & Moore, 2012; Moore, Daniel, Gauvin, & Dubé, 2009; Moore et al., 2011; Song & Lin, 2009; Verhaeghe, Patyn, Bracke, Verhaeghe, & Van de Putte, 2012). Most of the research on network capital and health is relatively recent, and little is known about the mechanisms that may link network social capital to health. Because of this, researchers often draw from sociological research on the benefits of social capital for job acquisition or epidemiological research on the links between social networks and health. From a sociological perspective, Lin (2001a) explains the personal benefits of network social capital as emerging through four mechanisms: information, influence, social credentials, and reinforcement. First, social capital facilitates the flow of information, thus reducing transaction costs among actors. Second, social connections may be

leveraged to exert influence on those persons who make decisions involving the actor, e.g., “putting in a good word.” Third, having the right connections may provide a person with the type of social credentials needed to obtain a new position or resource. Finally, having social connections helps to reinforce a person’s sense of identity, recognition, and belonging within a group. Of the four elements, Lin (2001a) suggests that social reinforcement is most relevant for achieving expressive returns and obtaining health and life satisfaction benefits.

Research on social networks and health has focused on the psychosocial and psychological mechanisms by which networks may impact behavior and physical and mental health outcomes. Berkman and Glass (2000) proposed that networks operate through five mechanisms: (a) social support, (b) social influence, (c) social participation, (d) person-to-person contact, and (e) access to resources and material goods. Social support refers primarily to the functions that members of an individual’s social network perform for them (Thoits, 2011). These functions tend to be emotional, instrumental, appraisal, and informational in nature. Social influence refers to the normative guidance and pressures that members of a person’s network may directly or indirectly place on an individual. Networks may influence health by encouraging social participation, which helps reinforce meaningful social roles, stable identity, and opportunities for companionship. Person-to-person contact refers primarily to the physical spread of infectious disease within social networks. Finally, Berkman and Glass (2000) suggest that social networks may influence health through their regulation of people’s access to various life opportunities, resources, and material goods.

Identifying the specific mechanisms linking social capital to health behaviors and conditions is important in establishing the links between social capital intervention activities and health outcomes. As we move from more distal to more proximal influences on individual health, we would anticipate greater variation in the effect of specific mechanisms, such as participation or social support, on a person’s health. Knowledge of whether the mechanisms linking social capital to health differ by sociodemographic, psychosocial, or psychological factors may be useful in segmenting groups for particular types of intervention activities.

8.2 Social Capital Interventions

There have been relatively few public health interventions that have actually targeted the social capital of individuals or populations to improve health. Challenges often exist in translating social science theory and research into health promotion models and practice. In this section, we describe (a) several general criticisms that have been made about social capital as a potential type of intervention and (b) the different conceptual models for specifying the position of social capital within an intervention.

8.2.1 *General Criticisms*

Four general criticisms have been made about the concept of social capital interventions: (a) social capital interventions are palliative and fail to address underlying structural determinants of health, (b) social capital interventions are merely social support interventions in a new guise, (c) social capital interventions may have negative effects on population health and well-being, and (d) the causal evidence is weak. First, the early emergence and popularity of social capital in public health might be attributed in part to the promise that the concept held as a target for health promotion interventions. Social capital was viewed as a psychosocial mechanism that might bridge the social cleavages induced by income inequality, thereby mediating the impact of income inequality on health (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Wilkinson, 1996). As such, policies or health promotion programs that built social capital could alleviate or reduce the harmful health effects of income inequality. Critics have charged that such interventions are palliative and fail to address the fundamental structural conditions giving rise to low social capital or poor health (Lynch, Due, Muntaner, & Davey-Smith, 2000; Pearce & Davey-Smith, 2003). Failure to recognize the influence of macroeconomic policies on social capital leads to ineffective interventions, the overloading of community resources, and “blaming the victim” (Pearce & Davey-Smith, 2003). To address this particular criticism, social capital interventions would need to include policy- or program-related activities that would address the sources or determinants of social capital.

A second criticism of social capital is that the construct is a repackaging of the social support construct. Social support is often defined in terms of the participatory characteristics of a person’s social life (e.g., associational memberships, marital status), the sources of support (e.g., friends, peers, family), and the particular functional form that support assumes (e.g., appraisal, informational, or emotional) (Cohen, 1988, Uchino, 2006). Proponents of social cognitive theory in health promotion have often used social support constructs to implement strategies and activities to enable and reinforce individual behavioral change (Bandura, 1998). In a cursory review of 51 social interventions (i.e., social capital, social cohesion, social support, and social network) addressing obesity, 90 % of the studies targeted the social support of individuals. Most of these social support interventions aimed to alter self-efficacy and lacked attention to broader structural determinants of obesity. Social support has a rich tradition and evidence base in health promotion research and practice. Yet, social support interventions that fail to address the underlying structural determinants of support provisioning may ultimately be ineffective as a population health intervention. From a health promotion perspective, network social capital interventions may be directed theoretically toward addressing the structural causes of social disadvantage (Verhaeghe, Patyn, Bracke, Verhaeghe, & Van de Putte, 2012).

A third potential criticism of the development of social capital interventions concerns the negative effects of social capital and the possible downsides of such interventions. Sociability cuts both ways (Portes, 1998). Although the focus of most

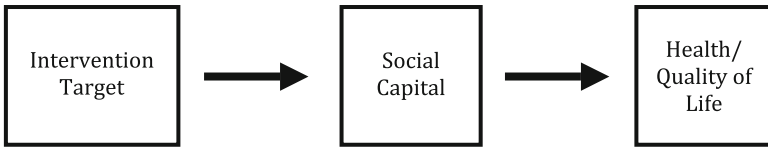
social capital research is on the benefits of social capital, studies have also pointed out its negative consequences. Social capital can provide benefits such as familial support and privileged access to economic resources, but it can also result in restricted individual opportunities and excessive obligations being placed on a person (Portes & Sensenbrenner, 1993). At the community level, a higher sense of social cohesion may be built on exclusionary processes in which certain groups are marginalized or persecuted. Research on social capital and health has shown that social capital can be negatively associated with health or psychological well-being (Carpiano, 2007; Caughy, O'Campo, & Muntaner, 2003; Moore et al., 2009; Rojas & Carlson, 2006). To avoid the possibility of doing harm, health promotion practitioners may be more reluctant to develop social capital interventions. Although the negative consequences of a social capital intervention should be considered, we would suggest that a social capital intervention is not any more likely to result in harm than any other type of community or social intervention. Regardless of the type of intervention, intervention processes should be monitored and evaluated to identify potential harms, and, if identified, intervention strategies should be implemented to negate the harm.

Fourth, the causal evidence demonstrating that changes in social capital lead to changes in health remains weak (see Chap. 4). McKenzie, Neiger, and Thackeray (2013) suggest that without “guarantees of improved outcomes,” social capital should not be considered an intervention. While the evidence base on social capital interventions needs to be further developed, this does not preclude the use of network social capital theory to design, implement, and evaluate social capital interventions. Theory-driven interventions and evaluations specify what works for whom and under what circumstances of program implementation (Tudor-Locke, Myers, & Rodger, 2001). An essential element in this process is having a program theory in place that includes testable assumptions linking intervention inputs with the anticipated outcomes or objectives (Green & Kreuter, 2005). Having specific social capital program models in place that allow researchers and practitioners to organize and explain the links between intervention activities and outcomes could contribute toward advancing social capital interventions.

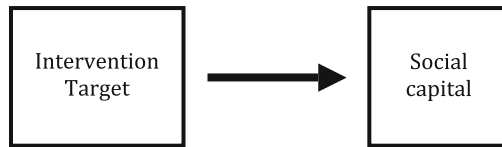
8.2.2 Social Capital Intervention Models

Social capital interventions may be defined as population health interventions in which network social capital theory informs the design and character of the intervention. From a network perspective, such interventions would address social networks, resources (psychological, material, or social), individual or group agency, or some combination of the three elements. As a key construct in the intervention, social capital might occupy one of four different roles in a program model: (a) the channel (i.e., mediating variable) through which alterations in more macro-level intervention targets come to influence health, (b) the intervention target itself, (c) the ultimate intervention outcome or objective, or (d) a segmenting device (i.e., a moderating

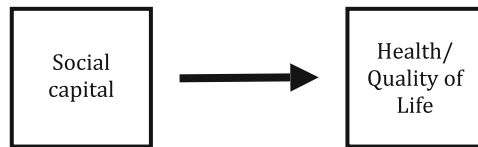
Model 1: Social capital as channel for health objectives



Model 2: Social capital as ultimate objective



Model 3: Social capital as intervention target



Model 4: Social capital as segmenting device

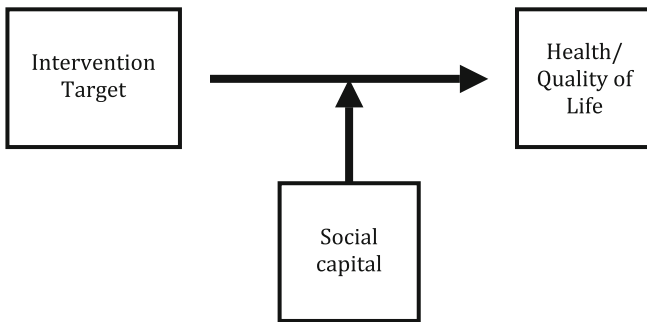


Fig. 8.1 Social capital intervention models

variable). The term intervention target refers in this case to the proximal factors that a program or policy aims to change so as to affect the outcome.

Figure 8.1 illustrates these four different models. First, as a channel, social capital mediates the effects of the intervention on the outcome. The intervention targets the source of social capital. Changing that construct is viewed to impact social capital and health in turn. For example, Pronyk et al. (2008) undertook an intervention in which social capital acted as a channel for the influence of other program elements on health outcomes: microfinance and gender and HIV training strategies

were combined in an effort to stimulate changes in solidarity and social group membership as a means to reduce women's vulnerability to intimate partner violence and HIV. Moreover, as highlighted in Chap. 11 of this volume, national policies, e.g., maintaining a strong social welfare system, may act as upstream determinants of social capital, improving social capital through direct and indirect ways. Second, as the intervention target, program activities would intervene directly on network social capital (i.e., resources, connections, or mobilization) with the goal of improving health or reducing health inequities. For example, network intervention strategies, such as rewiring networks, may be used to alter the structure of the social network and the flow of resources within the network (Valente, 2012). Network interventions are purposeful efforts to use social networks and network data to promote behavioral change and improve health (Valente, 2012). Other types of social intervention activities, such as social gatherings or peer buddy systems, may also alter network capital directly. Interventions may also act more directly on the volume of resources in a network through the direct infusion of material aid to a group. Third, changes in social capital may be the anticipated program outcome. For example, Michael, Farquhar, Wiggins, and Green (2008) describe a community health worker intervention (*Power for Health* project) that increased the social capital of African American and Latino communities. Improvements were found in participants' levels of social support and civic engagement (Michael et al., 2008). Finally, network social capital might serve as a segmenting device. In this case, program planners might divide the target population(s) according to their level of network social capital (e.g., network position) under the premise that those with greater social capital will likely respond to the intervention differently than those with lesser social capital. Few examples exist of the use of social capital in this fashion. Yet, segmentation may provide an intervention device that would allow practitioners to prevent potentially negative effects of social capital on health. The conceptual models or intervention examples presented in this subsection are not unique to a network social capital compared to any other type of social capital intervention (e.g., cognitive capital). However, as a network social capital intervention, program theory needs to explain the conceptual role that resources, connection, and mobilization play in the intervention. Selecting the appropriate model on which to base a social capital intervention depends on a number of factors, including the setting of the intervention, intervention goals, the social-ecological level(s) that the program is seeking to influence, and the type and quality of network capital data available to support measurement and evaluation.

8.3 Guiding Principles for Social Capital Interventions

Social capital intervention research and practice is only emerging. Little is known about the specific intervention strategies or the policy and programmatic content that may lead to effective social capital interventions. Given the fluidity and emerging nature of the field and the contextual nature of social interventions, we view it as premature to propose any particular strategy or content for a network social capital

intervention. Instead, we aim to propose a series of guiding principles for advancing social capital intervention research. These principles are not intended to be exhaustive but to emphasize important issues that may need to be considered in the design, implementation, and evaluation of social capital interventions. While a few of the principles are not unique to a network social capital intervention per se, we believe that taken as a whole, these five principles represent a theoretically and practically informed approach for guiding future social capital intervention research. Finally, these are meant to be working principles and should be revised as the evidence base on social capital interventions builds.

8.3.1 Social Capital Interventions Should Rest on Social and Collective Action Theories That Help to Explain and Address the Sources or Determinants of Social Capital

Research on social capital has increased attention to the social determinants of health, particularly those determinants related to collective action, social and civic engagement, social cohesion, and social networks. Social capital research in public health has long held the promise of interventions that improve the health of communities and groups. Social capital interventions should thus proceed from social and collective action theories that seek to alter fundamentally individual and group access to resources and thereby the social structures underlying health and health inequities. Model 3 (Fig. 8.1) is the only one that does not include reflection on the sources of social capital. As such, if Model 3 is used as the basis for an intervention, researchers might nevertheless explain the sources or determinants of social capital in their population and the rationale for not addressing these sources as a part of the intervention. Addressing the sources of social capital ultimately increases the sustainability and transformative potential of the intervention. Moreover, harnessing social capital intervention research to a sociological understanding of social capital may help to shift attention from purely relational aspects of social capital, such as building social connections, toward the broader issues of power, policy, and resource inequalities that also inform social capital theory (Hawe & Shiell, 2000).

8.3.2 Social Capital Interventions Should Aim to Reduce the Existing and Emergent Inequities in the Resources Available and Accessible Within and Between Networks

Research on network social capital has highlighted the importance of social capital for a range of health outcomes as well as the existence of social capital inequities within and between networks. Two consequences for the conceptualization of social capital interventions follow. First, interventions that aim solely to increase the resources available to a group may exacerbate both within- and between-group inequities in social capital. Increases in the volume of resources alone would not

address directly the intra-network barriers that may limit the access of marginalized individuals to valued resources, nor would such an intervention reduce inter-network inequities in social capital. Given the role of homophily in producing inequalities in social capital (Lin, 2000), interventions might aim to increase network diversity and heterogeneity to reduce those inequalities. Second, interventions should not assume that individuals or groups rely on social capital in the same fashion or to the same degree to achieve health or other types of personal benefits. Even if social capital is available and accessible, individuals or groups may not need to mobilize their capital if they have sufficient personal resources. In such cases, interventions may need to address preexisting structural inequities before seeking to leverage social capital to improve overall health.

8.3.3 Social Capital Interventions Are Most Usefully Viewed as Events in Complex Systems

Applying a complex systems lens to social capital intervention research has several implications. First, a complex systems approach highlights the diverse, far-reaching, and nonlinear effects that an intervention may have within social contexts (Shiell, Hawe, & Gold, 2008). Rather than asking on which social-ecological level (e.g., community, interpersonal, or individual) social capital interventions operate, a complex systems approach draws attention to the particular social context in which the intervention occurs and how that context influences intervention effectiveness. Second, social capital interventions may be most usefully viewed as those events that are grounded in participatory processes that engage the public and other stakeholders in efforts to increase the availability of and their accessibility to valued resources. In some contexts, this may involve the implementation of various social activities or network interventions, such as peer support systems or social gatherings, to increase network diversity or local participation; in other instances, social movement and collective mobilization efforts may be required to ensure equitable access to resources. Ideally, a complex systems approach to social capital interventions will allow recognition of contextual variations in intervention content, e.g., strategies and activities, while guaranteeing fidelity to certain theoretical premises and participatory processes.

8.3.4 Social Capital Interventions Should Aim to Identify Specific Behavioral, Psychosocial, and Psychological Mechanisms in Which Network Social Capital Influences Health

Social capital interventions should not preclude the strategic use of behavioral change or psychosocial theories to achieve specific program objectives. Psychosocial and behavioral change theories can contribute toward our understanding of how

individual psychology, behaviors, and beliefs interact with social contexts and conditions to shape health. While the exclusive use of agentic intervention approaches is to be avoided, particularly if the goal is to reduce or minimize health inequities, identifying the specific mechanisms linking network social capital to health is important to the development of effective population health interventions.

8.3.5 Social Capital Interventions Should Be Evaluable Using Network Concepts, Methods, and Measures

Measuring the effectiveness of interventions in reducing inequities in social capital and improving health is critical in building the evidence base of social capital interventions. The use of formal network methods and measures may not always be appropriate for measuring the effectiveness of an intervention. However, formal network concepts, methods, and measures should form the basis of network social capital intervention research. Network capital data collected using name-, position-, or resource-generator instruments are integral in assessing the three-dimensions of network capital—networks, resources, and mobilization. The effectiveness of social capital interventions should be weighed against actual and fundamental improvements in individual or group network capital and whether those improvements have reduced population health inequities.

8.4 Conclusion

Advancing social capital intervention research requires that we recognize early on that the content of social capital interventions may vary significantly across different social contexts. Rather than thinking about social capital interventions as being characterized by certain common activities or strategies, we propose that social capital interventions be guided by certain theoretical and methodological principles. These principles highlight the role that social capital interventions can play in addressing population health and health equity issues.

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Chapter 9

Social Capital Interventions to Promote Healthy Aging

Hiroshi Murayama, Katsunori Kondo, and Yoshinori Fujiwara

Our rapidly aging population is a worldwide issue in the twenty-first century. In 2010, the total world population was approximately 6.9 billion, and the proportion of people aged 65 or older was 7.6 %. By 2060, it is estimated that the world's population will surpass 9.6 billion, and 18.3 % of the population will be aged 65 or older. In particular, currently 15.9 % of the population in developed countries is aged, but by 2060, that number is predicted to rise to 26.2 % (Fig. 9.1).

Geometric growth in the size of the elderly population will present a challenge for researchers and policymakers alike. In Japan, which has the fastest graying population in the world, a number of challenges have emerged: financial crunches in medical and long-term care, an increasing number of elderly households and elderly living alone (National Institute of Population and Social Security Research, 2008), anxiety relating to receiving necessary care (Murayama, Taguchi, Ryu, Nagata, & Murashima, 2012), and social isolation and solitary death (Murayama, Shibui, Fukuda, & Murashima, 2011). How will nations afford the social and monetary costs of a rapidly aging population? How should nations allocate limited resources? These challenges have led researchers and policymakers to focus on the

H. Murayama, Ph.D., R.N., P.H.N. (✉) • Y. Fujiwara, M.D., Ph.D.
Research Team for Social Participation and Community Health, Tokyo Metropolitan Institute of Gerontology, 35-2 Sakae-cho, Itabashi-ku, Tokyo 173-0015, Japan
e-mail: murayama@tmig.or.jp; fujiwayo@tmig.or.jp

K. Kondo, M.D., Ph.D.
Center for Well-being and Society, Nihon Fukushi University, 5-22-35 Chiyoda,
Naka-ku, Nagoya, 460-0012, Japan
e-mail: kkondo@n-fukushi.ac.jp

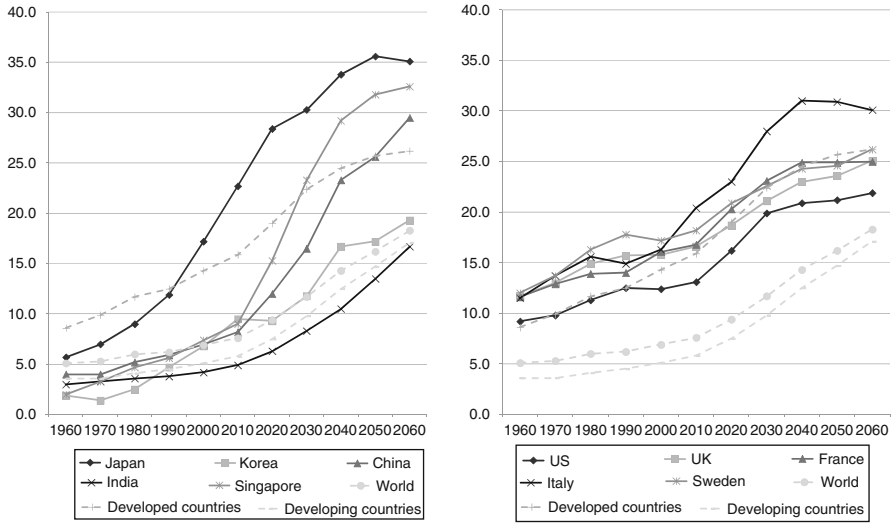


Fig. 9.1 Predicted trends of worldwide population aging. *Left:* Asian countries. *Right:* Western countries (Source: United Nations, World Population Prospects: The 2010 Revision)

critical need to prevent and delay age-related diseases and disabilities. In fact, delaying the onset of disease and disability will, theoretically, lead to the “compression of morbidity,” resulting in progressively smaller portions of a person’s lifespan lived in a state of illness and dependency. However, there are many possible risks for the onset of disease and disability (Stuck et al., 1999), and therefore, it would not be efficient or realistic for health policymakers to deal with various individual risks for disease and disability. At the same time, it would be inefficient to target at-risk individuals (high-risk strategy). In a rapidly aging world, the strategy that should be awarded a higher priority in relation to funds and resource allocation is a “population-based approach,” which can target the broader population and become embedded within the social and physical structures of community function. This approach will require new policies to address or correct significant shortfalls in housing, education, employment, income, neighborhood environment, and, of course, social capital.

In this chapter, we will review evidence on interventions conducted in Japan that have leveraged the concept of social capital to improve health outcomes among aging populations. We will describe evidence from model interventions that attempted to boost social capital by promoting intergenerational interaction between seniors and schoolchildren [*RE*search of *PR*oductivity by *INT*ergenerational Sympathy (*REPRINTS*)] and that promoted social interaction among the elderly within a municipality (the Taketoyo Project).

9.1 Introduction

The effectiveness and efficiency of community-based health promotion programs vary depending on their context and location, even when the programs have a similar design. Such variation may be due to differences in the background characteristics of the settings in which the interventions are conducted. One such characteristic is “social capital,” a concept that has been used in recent years to explain health disparities. Social capital is one possible theoretical basis for assessing the impact that community-based health promotion programs have on the broader health and life of a community (Baum, 2003).

The existing literature highlights two distinct concepts of social capital (Kawachi, 2006). One states that social capital represents the resources available to members of tightly knit communities. This interpretation could be defined as social cohesion definition. This form of social cohesion tends to emphasize social capital as a group attribute and to analyze it as a contextual influence on individual health. In contrast, Bourdieu (1986) defined social capital as “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,” which focuses on the resources of individuals (Baum & Ziersch, 2003). Moreover, the network theory of social capital defines the concept in terms of resources that are embedded within an individual’s social networks that is defined as the property of individuals (Lin, 1999).

Prospective epidemiological studies suggest robust evidence supporting the effect of social capital on health. The existence of multiple programs leveraging the concept of social capital as improving health outcomes is testament to this. We will introduce several prospective studies regarding both individual-level and community-level social capital and health in the following section.

9.2 Prospective Effect of Social Capital on Health

9.2.1 *Individual-Level Social Capital*

We identified several cohort studies that examined the influence of individual-level social capital on health outcomes. These studies generally demonstrate the protective effects of social capital on adverse health outcomes, although each study used varying social capital indicators such as participation in group activities, voting participation, social networks, and social trust.

A Finnish population-based survey by Hyypä, Mäki, Impivaara, and Aromaa (2007) defined three types of individual social capital by factor analysis (leisure participation, interpersonal trust, and residential stability). In relation to all-cause mortality, active leisure participation performed a protective function for men. For women, both active leisure participation and high interpersonal trust levels were

found to be important. A Japanese cohort study of community-dwelling elderly by Aida et al. (2011) reported that lower friendship network levels were associated with all-cause mortality in men and women. Lower general trust levels reduced all-cause mortality but only in women. These contrasting findings suggest the importance of considering the influence of different cultural backgrounds on social capital studies.

In addition to mortality, several prospective research projects both in community and workplace settings examined the relationship between individual social capital and health outcomes including self-rated health (Giordano & Lindstrom, 2010; Liukkonen, Virtanen, Kivimäki, Pentti, & Vahtera, 2004), health-related behavior (Kouvonen et al., 2008; Väänänen et al., 2009), and depression (Fujiwara & Kawachi, 2008; Oksanen, Kouvonen, Vahtera, Virtanen, & Kivimäki, 2010; Webber, Huxley, & Harris, 2011; Wu et al., 2010). Kondo, Minai, Imai, and Yamagata (2007) confirmed that higher levels of engagement in a cohesive group (a traditional Japanese rotating saving and credit association known as *Mujin*; see Chap. 10) positively affected greater functional capacity among the elderly.

9.2.2 Community-Level Social Capital

In social cohesion theory, social capital is a contextual concept which emphasizes social capital as a group attribute. Machinko and Starfield (2001) identified four analytic levels in the association between social capital and health: the macro level (countries, states, regions, and local municipalities), meso level (neighborhoods and blocks), microlevel (social networks and social participants), and individual psychological level (trust and norm). To examine the influence of the contextual effect of social capital on individual health outcomes over and above the individual effect, a multilevel approach needs to be adopted in studies of social capital and health. Murayama, Fujiwara, and Kawachi (2012) reviewed prospective multilevel analytic studies of the association between social capital and health and highlighted a number of trends.

Studies of all-cause mortality reported both positive and negative contextual effects of social capital. Mohan, Twigg, Barnard, and Jones (2005) reported that less engagement in neighborhood activity was associated with all-cause mortality. In contrast, a study conducted in Chicago found that the higher density of community social networks had a detrimental effect on mortality, although community collective efficacy had a protective association (Wen, Cagney, & Christakis, 2005). In a study in New Zealand, Blakely et al. (2006) found no association between neighborhood social capital (proportion of participation in unpaid voluntary activities in the neighborhood) and all-cause mortality. Regarding cause of death, some studies indicated evidence of the protective effect of community-level social capital: suicide (Desai, Dausey, & Rosenheck, 2005), alcohol-related mortality (Blomgren, Martikainen, Mäkelä, & Valkonen, 2004), and cancer-related mortality (Islam,

Gerdtham, Gullberg, Lindström, & Merlo, 2008). Some studies revealed the effect of community-level social capital on hospitalization. The contextual protective effects of social capital (voting participation rate in small administrative area units) were demonstrated in hospitalizations for coronary heart disease and psychosis (Lofors & Sundquist, 2007; Sundquist, Johansson, Yang, & Sundquist, 2006), but no association was found for hospitalizations due to depression (Lofors & Sundquist, 2007). Regarding self-rated health, after adjustment for sociodemographic characteristics and health-related behaviors, one study found that both high individual- and area-level social trust were inversely associated with poor self-rated health, but civic participation was not associated with individual or area levels (Snelgrove, Pikhart, & Stafford, 2009).

In addition to a community-based setting, some studies discussed the contextual effect of social capital on health in a workplace setting using prospective data. Using a prospective cohort study on public-sector employees in Finland, a Finnish group established that self-assessed workplace social capital decreased the risk of all-cause mortality (Oksanen et al., 2011). Additionally, lower levels of workplace social capital were associated with poor self-rated health (Oksanen et al., 2008).

Our review indicates that individual-level and community-level social capital generally appears to have positive effects on health outcomes, although the studies varied with regard to participants, setting (including country), follow-up period, and variables used such as social capital and health outcomes. However, we can suggest some research perspectives which future studies should tackle. Studies focusing on the effect of social capital on the elderly are very few (in particular, there are no studies examining the prospective effect of community-level social capital.). Studies exploring the effects of social capital on elderly health are becoming increasingly necessary. Moreover, the above studies were mainly conducted in Western countries. Community-level or multilevel evidence from Asian settings was limited. In comparison to Western countries, Asian countries are facing a dramatically worsening aging crisis (see Fig. 9.1). This means that collection of evidence from Asian countries should be prioritized. In addition, social capital does not always generate a beneficial effect on health outcomes: the effect of social capital might provide a benefit for one population while disadvantaging another (Mitchell & LaGory, 2002; Ziersch & Baum, 2004). One direction for future research was suggested by a recent Japanese study which explored the effects of different components of social capital on health, using four components broken down by combination of the cognitive/structural aspect and the horizontal/vertical dimension (Murayama, Wakui, Arami, Sugawara, & Yoshie, 2012). In that study, a multilevel analysis showed that higher individual neighborhood mistrust and nonparticipation in sports, hobby, or recreation groups and higher district-level institutional mistrust (aggregated individual responses within each district) were associated with individual self-rated poor health, but higher district-level mistrust in neighbors was inversely associated with it, after adjusting for individual-level covariates. To corroborate these findings, it is expected that further research will identify dimensions of social capital that positively or negatively affect health outcomes.

9.3 Planning and Implementing an Intervention Program

The previous studies mentioned above provide important evidence about the relationship between social capital and health. Generally, analytical observational studies (i.e., cohort and case-control studies) look at the relationships between risk factors or characteristics of participants and their likelihood of contracting a particular disease or developing certain health conditions. In this case, we can understand the possibility that specific exposure regarding social capital such as civic participation and social trust would influence health conditions. In contrast, intervention studies differ from observational studies in that the investigator can assign the exposure. Different exposures can be used to determine the effectiveness of an intervention or the effectiveness of the delivery of a healthcare service. They can also be used to establish the safety, cost-effectiveness, and acceptability of an intervention.

9.3.1 *Selecting the Level of an Intervention*

There are two types of intervention studies: randomized controlled trials and non-randomized or quasi-experimental trials. The randomized controlled trial is considered to be the gold standard of clinical research because it is the only known way to avoid selection and confounding biases. However, for example, in implementing a large-scale program in community settings, it is often difficult to conduct randomized controlled trials because the researchers and program staff cannot ideally control and manage all aspects of the intervention. In order to deal with this difficulty, the use of a clustered randomized trial was recommended (Bland, 2004; Murray, Varnell, & Blitstein, 2004). A cluster randomized trial involves randomizing social units or clusters of individuals rather than the individuals themselves. The two main advantages of cluster randomized trials are that study participants cannot be randomly allocated as individuals and that researchers retain control over contamination between individuals (e.g., one individual's changing behaviors may influence another individual).

A variety of approaches can be used to implement an intervention in the community setting. Using an ecological perspective, interventions can generally be classified into four levels: "individual level," "group/organizational level," "community level," and "policy level." Individual-level interventions target the individual's knowledge, attitudes, practices, and health conditions. Individuals are one of the essential units of health intervention. Health guidance based on the results of medical examinations is included at this level. Group-level or organizational-level interventions work to change not only health perceptions and health behaviors of members of a target group/organization but also the group/organizational environment that influences members' health perceptions and behaviors. This type of intervention, such as the REPRINTS program (see details in Sect. 9.5), considers a group

or an organization as a unit of intervention and uses the shared connection between individuals to build changes in health behaviors and environment. Health promotion interventions at self-help groups, schools, or worksites take place at this level. Community-level interventions, such as the Taketoyo Project (see details in Sect. 9.6 and also Chap. 4), work to change environmental or social structures, which could improve the health of the community members. Any intervention that enhances the health of people throughout a geographic community occurs at this ecological level. Policy-level interventions work to change laws or policies that will facilitate health, such as total smoking bans in the community.

Health promotion interventions that target only individual behavior have a lower-than-expected impact in health outcomes. If the intervention is to be conducted in the community and is intended to target community residents, then the broader social context must be taken into account (Glass, 2000).

9.3.2 Assessing Needs

A needs assessment provides staff (practitioners or researchers) who are planning an intervention with a road map. This helps them decide what direction to take, what intervention goals to focus on, and what objectives are necessary to reach the goal or desired end point (outcomes). Moreover, conducting a needs assessment provides an unbiased look at a target population within a particular setting and provides a foundation for the work of putting together a program that is effective and culturally appropriate in order to address identified health problems and concerns (Price, Dake, & Ward, 2010). When conducting a needs assessment, it is essential to collect and analyze various data from both primary and secondary sources and to conduct a capacity assessment of the target settings. In partnership with the advisory board, program participants, staff, and stakeholders develop a working group. This consists of different types of stakeholders who can establish program priorities and build networks in order to maximize program support in subsequent program planning decisions as well as during program implementation and evaluation (Guttmacher, Kelly, & Ruiz-Janecho, 2010).

9.3.3 Action Planning

While the overall aim of an intervention remains the same throughout the program period, objectives of specific activities within the intervention must be set individually. In this stage, the staff must move from program planning to action planning. One of the most critical steps in the planning process is the creation of practical and specific “action plans” (Breny Bontempi, Fagen, & Roe, 2010). These practical documents are based on the program’s goals, objectives, and interventions and provide a summary of how the program needs to progress in order to achieve the desired

outcomes (including concrete activities, contact personnel, and time frames). Once developed, the action plan helps staff members track progress, adapt to change, and document accountability as the program unfolds.

Preparing a logic model is also useful in implementing action planning. A logic model is a visual depiction of the underlying logic of a planned initiative, and therefore, it helps communicate the relationships between program elements and garner agreement on the overall plan among stakeholders and potential partners as well as the target population (Breny Bontempi et al., 2010; W. K. Kellogg Foundation, 2004). This shows the relationship between the program's resources (inputs), its planned activities (outputs), and the anticipated change (outcomes). "Input" includes major resources such as funding, staff, equipment, materials, and space. "Activities" focuses on the specific strategies and interventions of the program. "Outcomes" refers to the predicted and hoped for results in implementing the program. This can be divided into three types according to the anticipated time to change: short-term outcomes, intermediate outcomes, and long-term outcomes.

These tools are extremely helpful for the program staff and stakeholders in building and shaping a program. In addition, in implementing the program, the tools help the program staff and stakeholders shape a program and accomplish the program's objectives on time and in the way intended.

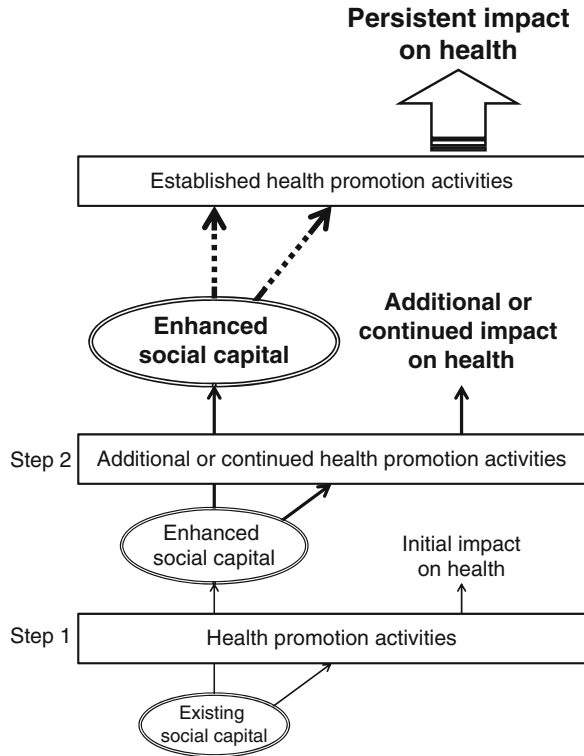
9.4 Intervention Program to Foster Social Capital

Multiple studies exist that analyze the effect of both individual-level and community-level social capital on health. Many indicate that increased cognitive and structural social capital has beneficial effects. However, in exploring ways to intervene in order to foster social capital, it is argued that stimulating structural social capital such as group participation is more feasible, because the target event is concrete. In contrast, programs facilitating cognitive social capital with abstract aims such as social trust are more difficult to implement and evaluate.

There is no easy way to build social capital. It requires significant material and human resources. Prevention and intervention efforts have traditionally targeted either the general population (through, for instance, the mass media) or individuals who are at risk of adverse health outcomes. The results of prospective multilevel studies support associations between social capital at a neighborhood level (or geographic area) and different aspects of health outcomes. This implies that neighborhoods or other social contexts with low contextual levels of social capital should be targeted.

Social capital does not incidentally arise in communities. Rather, it is itself shaped by the broader structural forces operating at the community level. These include historical patterns of residential mobility and municipal investment in housing and local infrastructure, as well as policies that perpetuate residential segregation or planned reductions in services and amenities (Kawachi, Subramanian, & Kim, 2008). Moreover, the building of social capital must be considered as a

Fig. 9.2 Illustration of the desired relationship between social capital and health promotion intervention programs (Murayama, Fujiwara, et al., 2012)



complement to, rather than a replacement for, broader structural interventions (Szreter & Woolcock, 2004). Figure 9.2 shows the relationship between social capital in the community and health promotion activities (intervention programs) (Murayama, Fujiwara, et al., 2012). Every community has their own level and type of social capital. The existing social capital within a community—which is closely related to civic mobilization, a sense of coherence, and a sense of commitment—can influence both the efficiency and effectiveness of a program. Therefore, the health effectiveness of a program may depend not only on the program itself and the individual participants but also on community social capital. At the same time, social capital can be affected (preferably enhanced) by the implementation of a program. Enhanced social capital can positively influence the next program or continuation of the current program, as well as the effect of the program on the community. This cycle enables the program to have a continuing effect on health in the community. Thus, intervention programs and social capital have a reciprocal relationship.

A number of programs exist that are aimed at fostering social capital (Baum & Palmer, 2002; de Souza & Grundy, 2007; Fujiwara, Natsume, Okuyama, Sato, & Kawachi, 2012; Hampshire & Matthijsse, 2010; Jones et al., 2010; Ottesen, Jeppesen, & Krustup, 2010; Pronyk et al., 2008). A Brazilian study by de Souza

and Grundy (2007) reported increased individual social capital as a result of a 4-month program of intergenerational activities in which the elderly shared their memories with seventh and eighth grades students in secondary school, using a randomized control design. The elderly in the intervention group were over twice as likely as those in the control group to report positively on cognitive social capital (recognitions that the neighbors are helpful, people are honest, and quality of their family relationships are good). Among the students, those in the intervention group were nearly three times more likely to rate their health as good as compared to those in the control group; however, they were also more likely to judge that most people were selfish.

Ottesen et al. (2010) examined the effects of an intervention program that used physical activity to build individual social capital among inactive women in Denmark. They focused on football and running. The results indicated a positive development in bonding and bridging social capital in the two different types of physical activity but implied that team sports such as football may have an advantage over individual sports in the development of social capital.

A study by Pronyk et al. (2008) examined the changes to both individual- and community-level social capital through community-based intervention. They attempted to explore the effect of the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) program to generate changes in social capital (solidarity, reciprocity, and social group membership) in rural South Africa, using a cluster randomized design (for further detail on microfinance as an intervention to boost community social capital, see Chap. 10). IMAGE combined a microfinance program and training intervention on levels of HIV and intimate partner violence. Evaluation of the intervention was performed using both quantitative and qualitative approaches. After 2 years, higher levels of structural social capital (increased participation in social groups) and cognitive social capital (solidarity, taking part in collective action) were found in the intervention group than in the comparison group. A qualitative approach revealed a decidedly complex picture of the diverse responses to IMAGE in terms of structural social capital (social network), bonding social capital (social support and social norms), and bridging social capital (participation in collective action).

Initially conducted in Baltimore, USA, the Experience Corps® is a social approach to health promotion using elderly volunteers in the community (Fried et al., 2004). The program places a critical mass of older adult volunteers in public elementary schools to generate a significant individual-level impact on the educational outcomes of children and to improve the volunteers' health and well-being (Fried et al., 2004; Rebok et al., 2004). The Experience Corps® uses public elementary schools as the core of the intervention program. The program was designed to impact on school-level and community-level social capital as well as at an individual level, involving children, their parents, teachers, and residents in the community, all to encourage multilevel interactions (individual, school, and community level) (Glass et al., 2004; Rebok et al., 2004).

However, there is still only a limited number of empirical intervention studies relating to fostering social capital. This field of research would greatly benefit from

further studies of interventions aimed at fostering social capital. This would help in establishing positive methods of intervention and the best ways to improve health through building social capital.

In the next two sections, we will introduce two trials that aim to foster social capital in the community in Japan. One is the *RE*search of *PR*oductivity by *IN*Tergenerational Sympathy (REPRINTS) program, promoting intergenerational interaction between seniors and schoolchildren, and the other is the Taketoyo Project, promoting social interaction among the elderly within a municipality (“salon” activities).

9.5 “REPRINTS”: Reciprocal Effect of an Intergenerational Health Promotion Program for Older Adults in Japan

A major hurdle facing Japanese society today is the future economic burden on younger generations due to the predicted growth of welfare and healthcare needs of the older generations. However, rather than focusing on an intergenerational inequity argument, Japan should place priority on energizing older adults’ social participation for the benefit of all generations and Japanese society as a whole. Therefore, there is a need for intergenerational initiatives in Japan to encourage older generations to pursue physical and psychological health promotion activities. This is in order to respond to issues among younger generations and represents an opportunity to boost social capital in the community.

Tokyo Metropolitan Institute of Gerontology (TMIG) launched one such intervention research project, REPRINTS, in 2004 (Fujiwara et al., 2006, 2007, 2009, 2010), that educates and engages senior volunteers in picture book reading to young and school-aged children in educational settings. It was decided to base the REPRINTS program in public elementary schools, as modeled by the Experience Corps® program in the USA. This is because public elementary schools have been cores in communities for a long time. The program has been conducted in collaboration with organizations at three locations in Japan. Currently, the program is at a semi- and self-sustainable stage, as it is being operated by participating senior volunteers with supervision and support from TMIG and local municipal entities. In this section, the rationale and underlying conceptual framework of the program, research methods, and the most recent short-term results of the program evaluation will be shared and discussed.

9.5.1 Rationale of the Program

In the USA, the productive aspects of aging have been considered as an essential aspect of a successful aging concept since the beginning of the 1990s. Volunteering as well as paid work are understood as activities that constitute productive aging

(Morrow-Howell, Hinterlong, & Sherraden, 2001). In literature in the USA and Canada, volunteer activities were found to have a high correlation with the physical and psychological health of older participants, although the mechanism of causal relation remains unclear (Fujiwara, Sugihara, & Shinkai, 2005). In addition, in terms of independent activity, which is another important aspect of successful aging, longitudinal studies conducted on a large section of Japan's older adults found that the decline in social roles and intellectual activity could predict instrumental activities of daily living (IADL) disability among older participants (Fujiwara et al., 2003a, 2003b). These studies used the TMIG-Index of Competence (Koyano, Shibata, Nakazato, Haga, & Suyama, 1991), which is one of the Japanese standardized measures to assess the degree of IADL functions. Thus, it is necessary for elderly Japanese to maintain social roles and to engage in intellectual activity in a way that helps to maintain their physical and psychological health. The REPRINTS program was planned and implemented as a health promotion program that utilized an intergenerational engagement approach to respond to such needs while at the same time enabling the volunteers to contribute to society and younger generations.

As mentioned above, the REPRINTS program is based in public elementary schools which are cores in most communities. Moreover, not only senior volunteers but also other people in the community such as students, their parents, teachers, and school volunteer coordinators are involved in the program. Therefore, it is argued that this program is instrumental in promoting intergenerational relationships between different actors in the community and fostering beneficial community social capital. Figure 9.3 is a logic model of the REPRINTS program.

9.5.2 Conceptualization of the Program

There are three conceptual pillars underlying the REPRINTS program: intergenerational engagement, intragenerational relationship building, and lifelong learning. The first pillar refers to intergenerational engagement where older participants contribute to children's growth. Erikson (1982) defined "generativity" as adults' fundamental and inherent need to expand their attention from self to others, including younger generations, to transfer knowledge and wisdom, and to care for them. In this intergenerational program, senior participants are expected to share their accumulated cultural knowledge and values with the young participants, as well as to generate mutual trust between the children's parents' generation and themselves by engaging in volunteer activities with children. In general, older persons tend to be inhibited in being generative when surrounding people, including younger persons, lack the understanding about the needs and capabilities of older persons. Thus, it is not only preferable but also important for older people to demonstrate their generativity by responding to such ageism (Palmore, Branch, & Harris, 2005) and building relationships based on mutual trust with younger generations.

The second pillar refers to "building intragenerational relationships," which means encouraging the senior volunteers to build new social networks by working

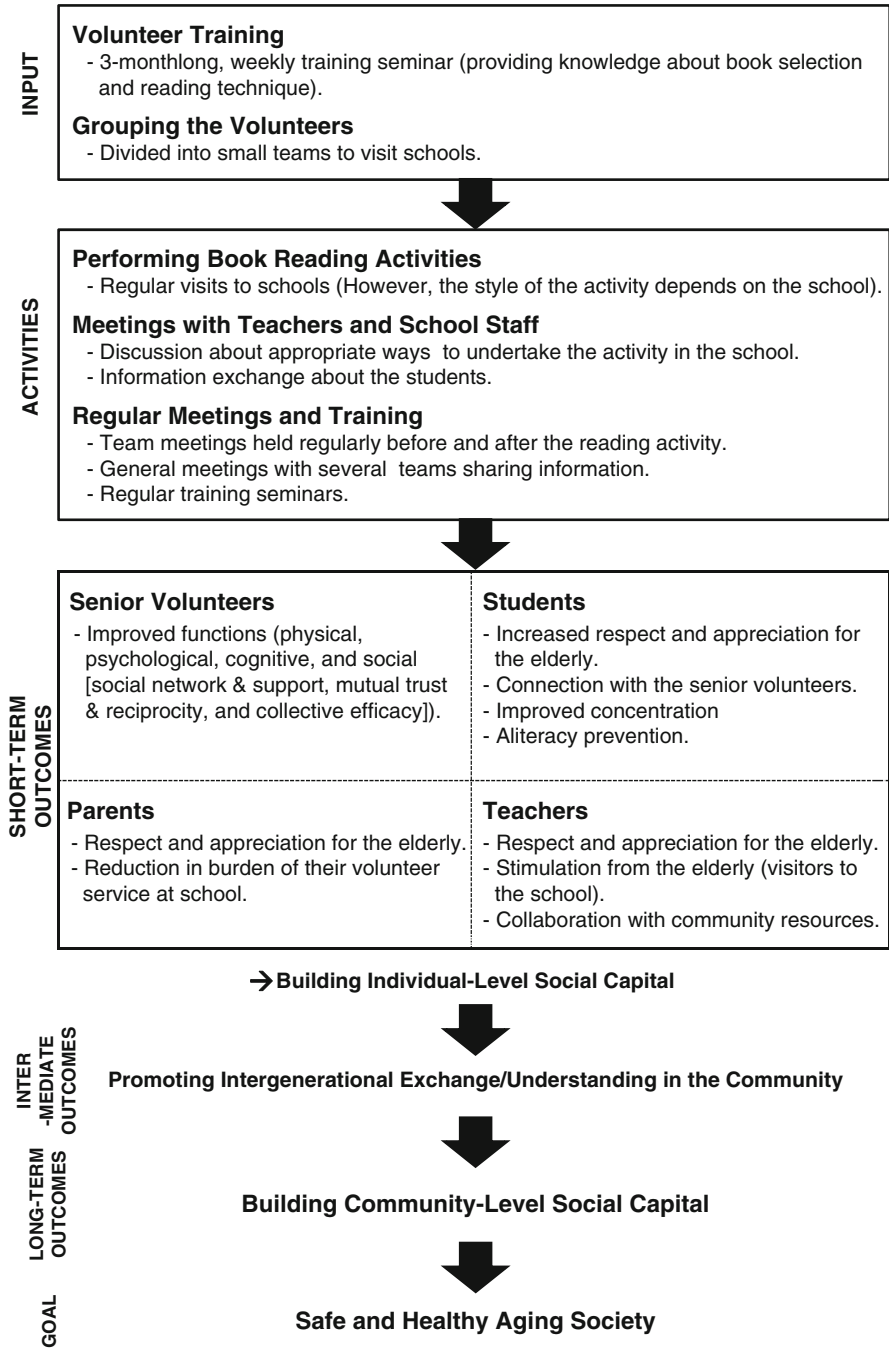


Fig. 9.3 Logic model of the REPRINTS program

closely with other volunteers in group settings. Strong social networks can strengthen subjective health status and contribute significantly to psychological well-being in later life (Masuchi & Kishi, 2001; Ryff & Singer, 1996). The REPRINTS program was designed in a way that would enable senior volunteers to continuously and closely work with peer volunteers so that they could develop meaningful relationships with one another.

The third pillar refers to “lifelong learning.” Volunteer activities with intensive learning opportunities have been found to improve cognitive ability (Fried et al., 2004). The program provided the senior volunteers with initial intensive learning opportunities over a 3-month long period, with weekly training sessions before the start of volunteering and continuous and ongoing learning experiences while they studied about picture books, selected appropriate books for children at each session, rehearsed for the school sessions, and received feedback from peer volunteers.

The program uses picture books as the main tool to connect children and senior volunteers. Picture books were thought to be appropriate for the senior volunteers’ learning for several reasons. First, picture books do not necessarily require intensive previous reading experiences on the part of the senior volunteers. Instead, it was expected that senior volunteers would feel familiar with those books targeting young children. Secondly, developing various styles of book reading entails complex skill development and hence is an ideal activity through which to engage practitioners in continuous learning for quality improvement. Three trainers with extensive experience in picture book reading lectured at the initial training sessions and provided ongoing advice and feedback to the senior volunteers about book-reading techniques. Thirdly, reading picture books is considered developmentally appropriate not only for children but also for adults. There is a Japanese saying that one should read a picture book at three different times through one’s life: first in childhood, secondly during the child-rearing years, and thirdly later in life (Yanagida, 2004). Older people are thought to be particularly touched and feel empathy when reading picture books because of their rich life experiences.

9.5.3 Program Settings and Stakeholders

Three experimental areas were selected for the program: Chuo Ward in central Tokyo; Tama Ward in Kawasaki City in Kanagawa Prefecture, a suburban area of Tokyo; and Nagahama City in Shiga Prefecture, a local city in the west of Japan. The populations of these three areas in 2004 were approximately 90,000, 94,000, and 62,000, respectively. When the project team sought collaboration with local municipalities in March 2004, these three municipalities became counterparts for this research project and formed project teams with TMIG staff. The Chuo Ward Board of Education agreed to promote children’s reading practices and lifelong education for older residents, and Tama Ward Health and Welfare Centers and Nagahama City Health Promotion Centers agreed to develop and undertake new health promotion strategies for older residents.

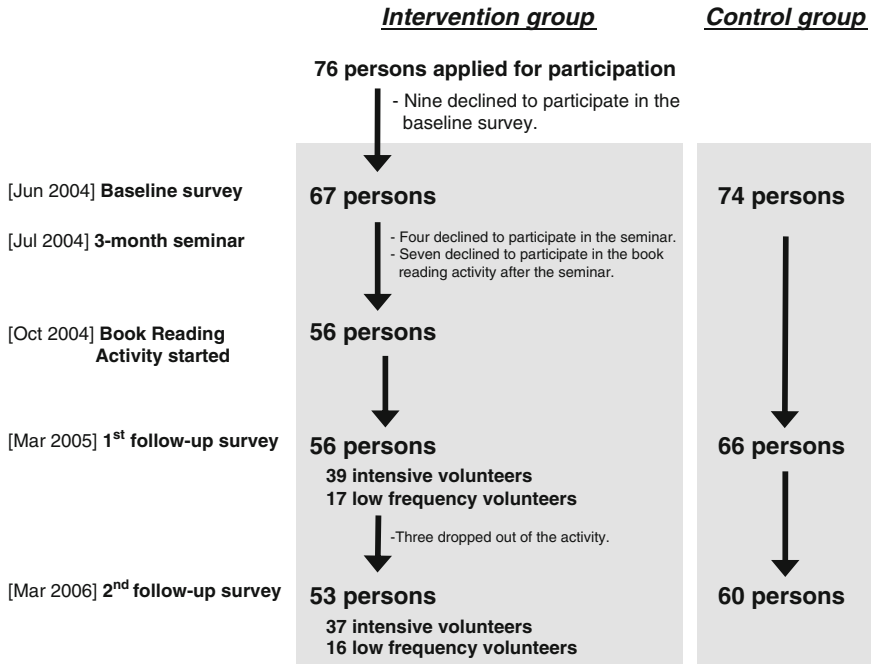


Fig. 9.4 Flow diagram of the elderly participants in the REPRINTS program

As the REPRINTS program is a school-based program, it was necessary to propose the idea to negotiate and plan the program with the municipal school board and school staff. In addition, as the short-term aim for the senior volunteers was to improve their health status and functions, municipal staff from the healthcare sector were involved in the program development process. Thus, multi-sector collaboration was an essential task in creating this program.

9.5.4 Program Effects on Senior Volunteers

9.5.4.1 Design and Recruitment

We adapted a nonrandomized trial design, setting intervention and control groups in order to evaluate the effects of REPRINTS on the senior volunteers. Data collection was performed in three points: before the program (baseline), at the 1-year mark, and 2 years after the program started (Fig. 9.4).

In order to recruit the senior participants in the program (the intervention group), the project team advertised the REPRINTS program through community newspapers and newsletters in the three target municipalities and held events to disseminate the

program, from March to July 2004. Those who decided to participate in the program submitted application forms to the project members. After the volunteer applications were submitted, the senior applicants attended an intensive training seminar, conducted weekly, over a 3-month period (from July to September 2004). Among the 76 persons who applied for participation, 67 older persons participated in the seminars. After completing the seminars, all 67 persons agreed to participate in the project. The participants of the intervention group agreed to work as book-reading volunteers for the children at each collaborating educational institution and participate in the surveys for data collection purposes continuously. Twenty-seven senior volunteers in Chuo Ward, 19 in Tama Ward, and 21 in Nagahama City were determined as the participants of the intervention group. The book-reading activity started in October 2004, after the training was completed.

The participants in the control group were also recruited through the same methods as the intervention group and through word of mouth via the project staff and the participants in the intervention group. Seventy-four older persons were selected as the control group participants. The participants in the control group were recruited from various kinds of social activity clubs for adults other than the REPRINTS program, including hobby clubs, volunteering for adults, and community-based health promotion programs, but none of them were allowed to engage in intergenerational programs with children. After project staff explained the protocol of the project in detail and obtained informed consent, individuals in the control group engaged in conventional social activities and participated in the same health checkup as the intervention group, but did not take part in any specific training or intervention programs.

The first follow-up data was collected in March 2005 (9 months after the baseline survey). The follow-up data consisted of the same items as the baseline. Fifty-six volunteers out of the 67 participants in the intervention group, who participated in the baseline health checks, continued to volunteer, and 11 volunteers withdrew. Thirty-nine volunteers who had participated in more than a few sessions every month were defined as “intensive volunteers” and 17 volunteers with session attendance of once a month or less as “low-frequency volunteers.” In the control group, 66 participants were included in the first follow-up data collection. In March 2006, the second set of follow-up data was collected from 53 intervention volunteers (37 intensive volunteers and 16 low-frequency volunteers) and 60 control group participants (21 months after the baseline survey).

9.5.4.2 Structure Building of Volunteer Group: Training and Organizing

Volunteer Training Sessions

The participants in the intervention group attended weekly training sessions for a 3-month period from July 2004 to learn about book selection and reading techniques. Basic knowledge about contemporary Japanese school life and the rules for school-based volunteer activities were also introduced so that the participants could start their work as book-reading volunteers.

Grouping the Volunteers

After finishing the training seminars, the volunteers were divided into groups of 6–10 volunteers to visit six elementary schools, three kindergartens, and six child-care centers for after-school children once a week or once every 2 weeks beginning in October 2004. Each volunteer chose a group mostly because of the location of the school or childcare center that the group was to visit regularly. The volunteer groups worked intensively with peer volunteers. Each group had regular meetings before and after the reading sessions in order to share information, to discuss how to improve the quality of reading techniques, and to receive organizational updates. In addition, the groups in the same area met monthly for information exchange and mutual learning purposes. Book-reading trainers and other professionals in related fields, such as gerontology and lifelong learning, were invited to the area meetings to provide lectures in which they shared their knowledge about picture books, volunteerism, aging, and issues in the lives of contemporary children.

Planned Volunteer Activities

Although there was some variation in participating schools in terms of the style of volunteer activities, there was also a high degree of consistency across sites. At each kindergarten, the group members played action songs with approximately 20 children and then read three or four picture books for them for a 30-min session. At each elementary school, one of the group members read one or two picture books before the first class in the morning in each weekly session, and the rest of the members assisted the reader or kept notes about book-reading quality, children's responses, and other occurrences during the session. The volunteers sometimes secured extra time to read picture books for 20–30 min during other breaks on the same day in response to students' occasional requests.

9.5.4.3 Measurements

The main measurements were as follows: the TMIG-Index of Competence as higher-level functional capacity (Koyano et al., 1991); walking speed, the one-leg standing duration test, and grip strength as physical function; self-rated health (ranging 0–3; 0=poor health, 3=good health), the short version of the Geriatric Depression Scale with 15 items (GDS) (Burke, Roccaforte, & Wengel, 1991; Schreiner, Hayakawa, Morimoto, & Kakuma, 2003), and Rosenberg's Self-Esteem Scale with ten items (Rosenberg, 1979) as psychological function; episodic memory, language capability using "Story Recall" from the Japanese version of the Rivermead Behavioral Memory Test (Watomori, Hara, Miyamori, & Eto, 2002), and phonological and semantic verbal fluency tests (Sasanuma, 1988) as cognitive function; and the numbers of individuals whom the respondents had daily contact with fitting into four different types of relations (relatives, business acquaintances, neighbors, and others) and the frequency of personal contacts with four different

types of relations (grandchildren, children in the neighborhood, other children they had contact with in the volunteer program or events, and friends or neighbors) as social function. The frequency of personal contacts was split into six categories (0=no contact, 1=less than once a month, 2=once a month, 3=twice or three times a month, 4=once a week, and 5=more than twice a week).

9.5.4.4 Results

The subjects were all independent in basic activities of daily living (walking, eating, toileting, incontinence, dressing, and bathing). A comparison of the baseline characteristics of the intervention group and the control group revealed a number of differences. Compared to the participants in the control group, higher proportions of those in the intervention group had no grandchildren (41.8 vs. 20.3 %) but had volunteer experience (79.1 vs. 52.7 %), longer educational years (13.4 ± 2.5 vs. 12.3 ± 2.5 years), and faster usual walking speed (86.7 ± 12.3 vs. 81.3 ± 12.9 m/min) at baseline. However, there were no significant differences on other variables between the two groups.

We divided the program participants in REPRINTS ($n=67$) into two groups according to frequency of engagement in activities: 56 volunteers engaged in the program for more than 9 months (continuing until the first follow-up survey), and 11 volunteers withdrew from the program within the first 9 months. Between these two groups, there was no significant difference in characteristics such as demographics, functional capacity, and any functions at baseline (data not shown). In addition, there was also no significant difference in any functions between the intensive volunteer group ($n=37$) and the group of volunteers with low frequencies ($n=17$) at baseline (data not shown).

Regarding the effects of the intervention program, we found significant interaction between the groups (intensive volunteer group vs. control group) and time of surveys (baseline, first follow-up, second follow-up) with regard to frequency of interchange with children in the volunteer program or events ($p<0.01$) and self-rated health ($p<0.01$), using the generalized linear model adjusted for gender and age. These positive effects on intensive volunteers continued for 12 months more for these two variables (Figs. 9.5 and 9.6).

9.5.5 Reciprocal Effects on Children and Their Parents

As mentioned above, the REPRINTS program had a positive effect on the senior volunteers. It is argued that these effects were generated through reading picture books with children, intensively reading and practicing book readings before each performance, and discussing these books and book-reading methods and styles with other volunteers at weekly school-based training meetings. In addition to the effect

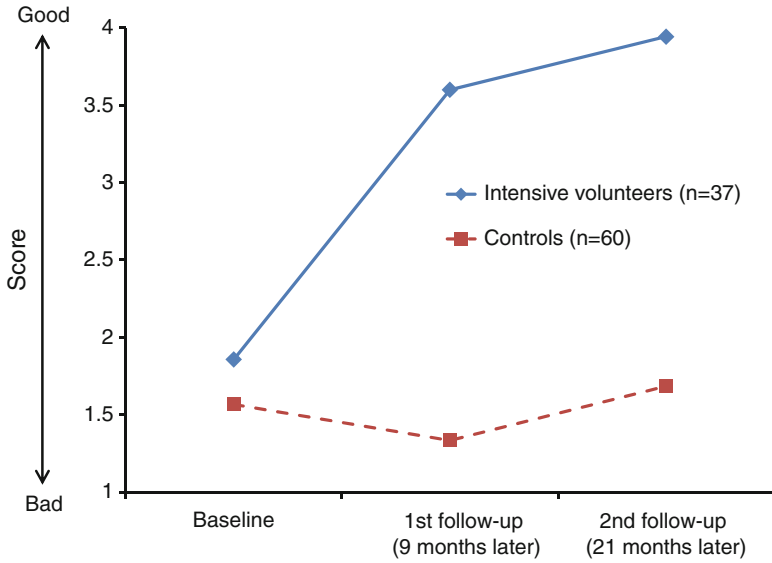


Fig. 9.5 Transition of frequency of interchange with children in volunteer program or events among participants during the 21 months (range 0–5) (Fujiwara et al., 2009)

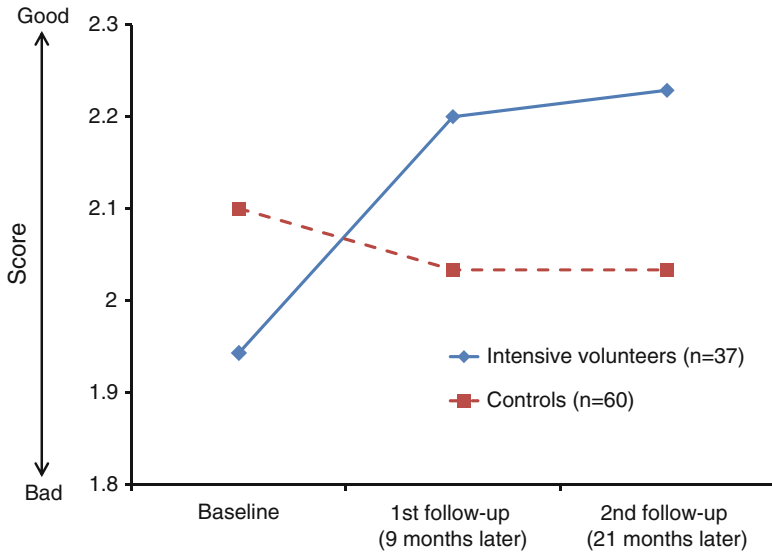


Fig. 9.6 Transition of self-rated health among participants during the 21 months (range 0–3) (Fujiwara et al., 2009)

on senior volunteers, we also examined the program effects on other people involved. These included elementary school children who were the direct recipients of the volunteer services (picture book reading) and parents who experienced indirect effects of school volunteering by senior citizens through REPRINTS.

9.5.5.1 Setting and Participants

Of three areas where the REPRINTS program has been implemented, we selected Tama Ward in Kawasaki City for more intensive research. In this setting, a group of four to six volunteers have visited an elementary school in the suburb of the city (470 students) twice a week to read picture books since November 2004. In this school, the book-reading session itself usually took 15–30 min. The volunteers stayed at the elementary school for 2 hours total. They conducted a meeting, prepared for the session, and performed a book reading. The program was offered to the students of all grades in the library, twice a day (in the morning and noon recess). In particular, class teachers in the first to fourth grades encouraged the students to participate in the book-reading program, and the volunteers also invited them before the program started.

We included all 402 students of the first to fifth grades in the 1-year longitudinal evaluation but excluded 68 students of the sixth grade because they could not be followed up after their graduation from elementary school. Surveys were conducted three times using a self-administered questionnaire: baseline survey (November 2004; after the volunteer activity started) and first and second follow-up surveys at 6-month intervals after the program started (May and November 2005).

For parent evaluation, all 230 parents whose children were in the first to fourth grade at baseline were included in the 2-year longitudinal evaluation: 114 in the first and second grade (lower grade) and 116 in the third and fourth grade (middle grade). We excluded the parents whose children were in the fifth and sixth grade at baseline because they would graduate from elementary school before the follow-up surveys were conducted. The self-administered questionnaire surveys were conducted with the parents five times: baseline survey (November 2004) and four follow-up surveys at 6-month intervals after the program started (May and November 2005 and 2006). We described the response distribution at every survey (repeated cross-sectional design).

9.5.5.2 Measurements

In the survey for student evaluation, a ten-item emotional image of older adults using the semantic differential (SD) method was originally set as the outcome variable in this study (e.g., warm–cold, affable–unaffable, strong–weak). Factor analysis for these ten items indicated two factors: “evaluation” for six items (ranging 6–30) and “potency/activity” for four items (ranging 4–20), and therefore, we used these two subscales in analysis.

The parents were asked to rate the effect of the REPRINTS program on aspects such as “promotion of reading for children,” “children’s respect for older adults,” “children’s appreciation for older adults,” “children’s familiarity with older adults,” “promotion of community safety,” “reduction in parent’s physical burden of volunteer service at school,” and “reduction in parent’s psychological burden of volunteer service for school” (each item had a range of 1–5).

9.5.5.3 Results

Students

Of 402 students in the first to fifth grade, 345 who responded to all three surveys were included in the analysis. Among the participants, half were male and three quarters had no experience living with their grandparents at baseline. The participants were divided into two groups in terms of frequency of interchange with volunteers: participants who answered that they had participated in the book-reading activity twice or three times in total (counting all three surveys) were defined as the high-frequency group ($n=170$), and participants who answered that they had participated in the book-reading activity once or less in total (counting all three surveys) were defined as the low-frequency group ($n=175$). In the subscale for “evaluation,” a generalized linear model demonstrated a significant interaction between the group and number of surveys, adjusted for school grade of children, gender, experience of interchange with older people, and social desirability scale for children (Nakatani, 1991) ($p=0.012$). Figure 9.7 illustrates the score trends of the two groups. In contrast, there was no significant interaction in the subscale of “potency/activity.”

Parents

Figure 9.8 shows the trends of the rating scores for “parents’ physical and psychological burdens of volunteer service at school” of lower and middle grade children. Using two-way analysis of variance, rating for “parents’ physical burden of volunteer service at school” was significantly affected by the school grade of children ($p=0.031$) and time of surveys ($p<0.001$). Rating for “parents’ psychological burden of volunteer service at school” had a significant effect of time of surveys ($p<0.001$). These two rating scores decreased during the 2-year period for the parents of both lower and middle grade children.

9.5.6 Anticipated Effects on Teachers and Communities

Unfortunately, it was not possible to quantitatively evaluate the effect of the REPRINTS program on teachers. However, teachers in the school that the program has been taken have requested to continue the program in the school. This implies that

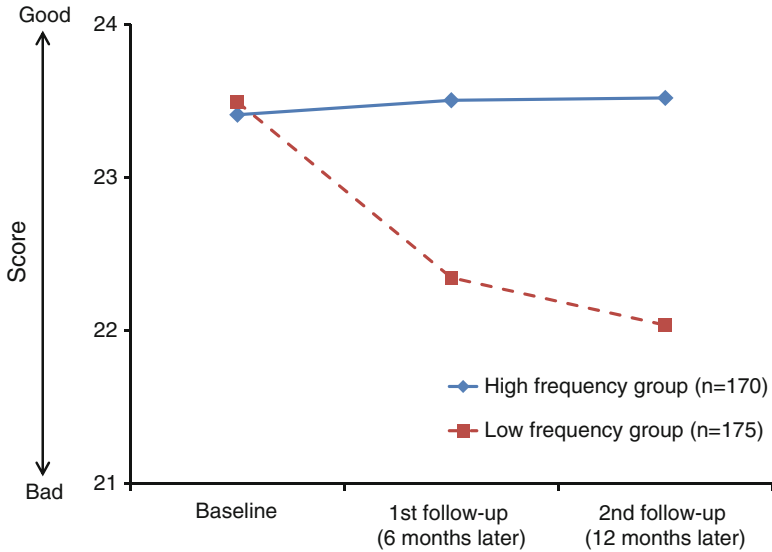


Fig. 9.7 Transition in perceptions of the elderly among elementary school students, stratified by frequency of interchange with REPRINTS senior volunteers using “evaluation” subscale (range 6–30)

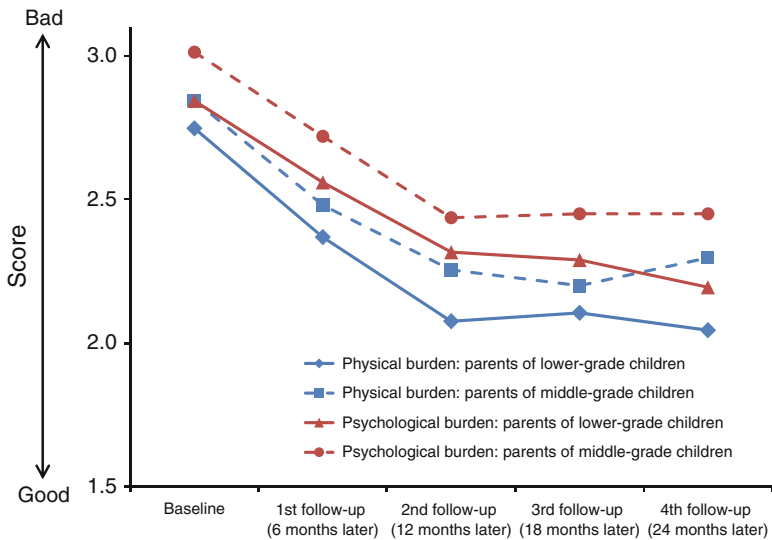


Fig. 9.8 Transition of the ratings for “physical and psychological burdens of parents’ volunteering service at school” during 24 months (range 1–5)

the teachers appreciate the program. In addition, through interviews, we found that the teachers had formed opinions about the effect of the volunteer program in the school setting. The teachers felt that they were very inspired by the volunteers, particularly in relation to instructional approach. They were able to observe how the volunteers interacted with the students, and this provided fresh insight for their own teaching practices. These could be regarded as a positive program effect on the teachers.

Furthermore, we still have not examined the community-level effect of the program. This trial would be quite important to test whether the program has the power to influence or stimulate community social capital. As REPRINTS is a school-based intervention program, a cluster controlled trial may be a preferable design. Exploring the program's effect on the community should be considered a high-priority, highly urgent task.

9.5.7 Summary

The REPRINTS program aimed to activate senior volunteers' intellectual activities regularly and cyclically through reading picture books with children, intensively reading and practicing reading these books before performance, and discussing these books and book-reading methods and styles with other volunteers at weekly school-based training meetings. In fact, several effects of the program were obvious: the participant's self-rated health and some aspects of social support and networking were significantly improved in senior volunteers. Moreover, this program had reciprocal effects on students, their parents, and teachers. Evaluating the effects of the program on the whole community is the next important area of study.

This section indicates that the REPRINTS program can contribute not only to volunteers' health but also in activating psychological and physical interactions among the volunteers, the children, their parents, and teachers. Interestingly, although the parents did not have any direct contact with the senior volunteers, there were notable flow-on effects from the program to the parents. This means that the program fosters relationships between generations of older adults and parents of school children with the children as mediators. The REPRINTS program has the potential to establish social trust, reliance, and reciprocity among multiple generations. That is, REPRINTS, a school-based intervention program, has the potential to serve as a trigger to boost social capital in the community as a whole.

9.6 The Taketoyo Project: A Community Intervention Trial

As another example of an intervention trial, we will introduce "the Taketoyo Project," which is a part of the Aichi Gerontological Evaluation Study (AGES) Project managed by the Center for Well-being and Society, Nihon Fukushi University (Kondo, 2010). This project facilitated social participation through interventions into existing social environments, based on theories relating to social capital.

9.6.1 Project Rationale

Kondo and his colleagues evaluated the risk factors of functional decline using the AGES cohort data to develop an intervention trial (Nishi, Kondo, Hirai, & Kawachi, 2011). The subjects used in one analysis were healthy at point of survey but come to require long-term care or died within 1 year after the survey. In the evaluation, five risk factors for functional decline set by the national government were used: poor oral health, malnutrition, a history of falling, depression, and social isolation. They found about half the people were low risk in the year before they declined in their physical or cognitive functions and/or died. It means that the high-risk strategy, in which individuals of a high-risk group have been screened and then offered intervention, was not sufficient, because about half were low risk 1 year before. Consequently, in light of these results, a new program based on population strategy along with high-risk strategy was developed.

Other analyses showed that hobbies, social networks, and social participation were good for healthy aging. Older persons who had no hobbies and were socially isolated were at higher risk of losing functions or mortality (Hirai & Kondo, 2007; Hirai, Kondo, Ojima, & Murata, 2009; Takeda, Kondo, & Hirai, 2010; Yoshii, Kondo, Kuze, & Higuchi, 2005). The relationship between poorer social capital and poorer self-rated health observed in multilevel analysis might mean that increased social capital helps to bring about good health in older people (Ichida et al, 2009). Moreover, it was also found that the location of facilities, a relatively short distance from each other, lead to a higher rate of facility usage (Hirai & Kondo, 2008b) and that living in higher population density areas was associated with less social isolation among older people (Hirai, Kondo, & Hanibuchi, 2008).

9.6.2 Project Concept

The purpose of the Taketoyo Project is to develop a prevention program aimed at helping to arrest the physical or cognitive functional decline of older people. The project intended to increase social support networks and social capital in the program through modifying social environment based on social capital theory. The changes in social support networks and social participation were expected to bring about good health and well-being on an individual level. The interventions were also expected to foster social capital on the community level. The town of Taketoyo is located on the Chita Peninsula, 45 min from Nagoya. The population of Taketoyo town was 42,000 and the proportion of older people was 17.2 % in 2007. Taketoyo town's participation in the AGES Project was aimed at arresting functional decline.

According to the above-mentioned evidence from AGES, five key program concepts were developed (Table 9.1). First, it is based on population strategy. The main aim is to intervene in various social environments. Programs called "salons" have been developed at various sites in the communities. Second, the program is provided not only at a few sites located in the center of the town but also at several other

Table 9.1 Key concepts of the program in the Taketoyo Project

Population strategy	Program is designed to intervene in social environment. Program sites are called “salons”
Multiple locations	Programs is held in not only a few sites located in the center of the town but many sites through the town. Older people can easily come to the sites on foot
Volunteer staff	Program is managed by volunteers, not professionals. Multiple locations requires large staff numbers
Municipal support	Programs are supported by the municipality through the provision of meeting places, financial assistance, and public relation activities
Various activities	Not only physical exercise but also a variety of enjoyable social programs are provided

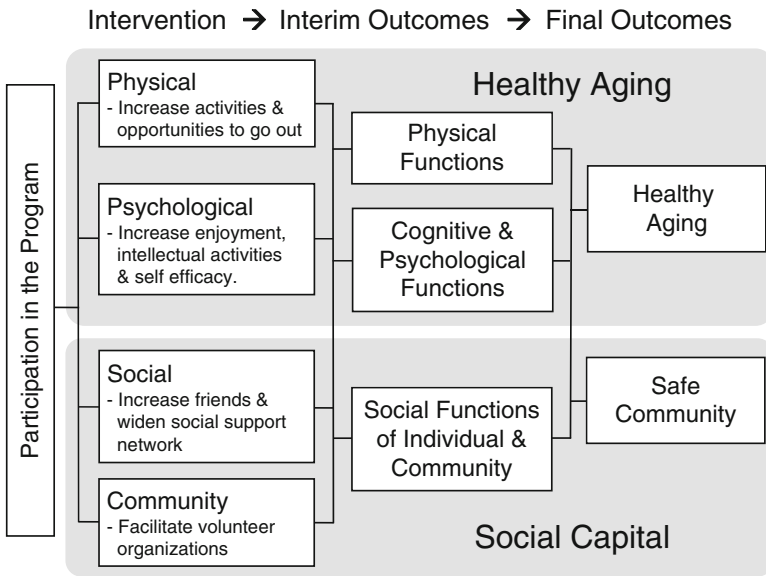


Fig. 9.9 Program theory for healthy aging and a safe community (Takeda et al., 2009)

locations around the town. The aim is to provide easy access for older people by selecting sites within walking distance of various elderly communities. Third, the program is managed by volunteers, not professionals. This is because multiple locations require many staff members, and volunteering is believed to be good for their health. Fourth, the programs are supported by the municipality through the provision of meeting places, financial assistance, and public relations activities. Fifth, not only physical exercise but also a variety of enjoyable social programs are provided.

Figure 9.9 shows the program theory in the Taketoyo Project. The program aims to facilitate healthy aging for individuals through the promotion of physical, psychological, and intellectual activities. Another final outcome is to develop safe communities with rich social capital. Increasing friends and social support networks

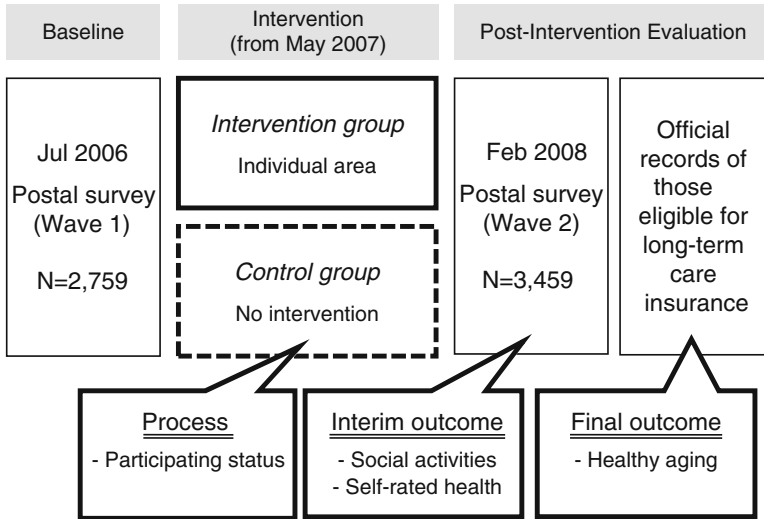


Fig. 9.10 Schedule of program evaluation (Hirai, 2009)

facilitates volunteer activities and promotes healthy social functions within the community. The expectation is that these activities will foster social capital (Hirai & Kondo, 2008a). Some examples of programs include writing short poems, recreational games, and physical exercises such as ping-pong and calisthenics. Just chatting is very popular, in particular for women. In recent, the number of the exchange program with children has increased. The various programs are run by volunteers.

9.6.3 Program Evaluation

A postal survey in 2006, as a part of AGES Project, provided information regarding pre-intervention status. Three salons were opened in 2007 with nine salons in operation by 2012. Follow-up surveys for participants were conducted annually. In 2008, post-intervention evaluation was conducted, with questionnaires sent to all older people in Taketoyo Town except for those eligible for long-term insurance. Evaluations of interim outcomes and the final outcome using hard data from official records are currently ongoing (Fig. 9.10).

9.6.4 Interim Results of Evaluations

In May 2007, three salons were in operation. As of February 2008, 39 sessions of this program have been held over the span of 10 months. In other words, on average,

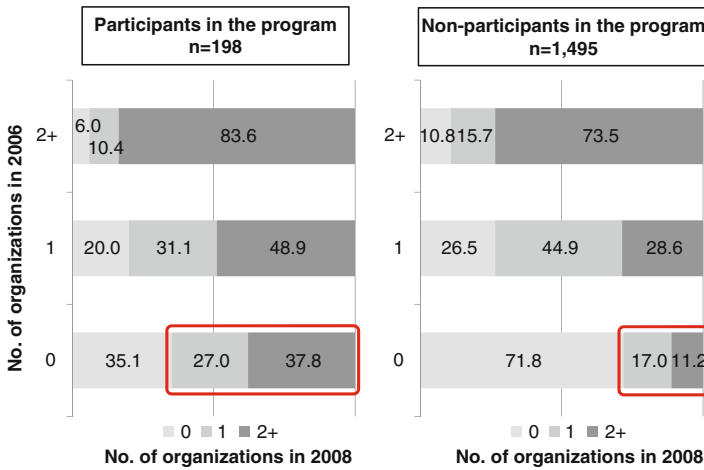
one or two sessions per month were provided per site. Participants included a total of 548 persons, 2,341 times total attendance, and 87 registered volunteers. The participant rate was made up of 9.4 % healthy, older people who were not eligible for long-term care insurance. Numbers of participants between 2006 and 2007 were compared. In 2006, during the pre-intervention period, 93 persons attended a total of 328 times. In 2007, during the 8 months after introduction of the program, 412 persons attended a total of 1,555 times. In calculating the ratios of 2007/2006 (per month), it was found that the number of participants increased by 6.6 times, whereas attendance had increased by 7.1 times (Hirai & Kondo, 2008a). Analysis of participants' residence distribution using geographic information system showed that most participants came from neighborhoods near the sites. After successful introduction of the new program, Taketoyo Town decided to set the target of opening 14 sites by 2020. The number of 14 sites is more than the current number of 11 sites for nurseries.

In the survey for the program participants, among the 321 respondents, more than 30 % reported that they began to feel happier, increased their number of friends, and obtained health-related information through the program.

Moreover, difference in several aspects between participants and nonparticipants was examined. A total of 1,693 subjects responded to both pre- and post-intervention surveys conducted in 2006 and 2008. Variables for social capital included perceived trust and reciprocity, social support, and social participation (Hirai, 2010; Hirai & Kondo, 2011). Among these variables, we will introduce the evaluation of social participation here. The number of community organizations that participants and nonparticipants were a part of were counted and compared. Community organizations included eight types of organizations, such as residents' associations, sports clubs, hobby circles, religious and/or volunteer organizations (Fig. 9.11) (Kondo, Hirai, Takeda, Ichida, & Aida, 2010). Because socially active persons tend to participate in other programs or organizations, subjects were divided into three groups according to the number of organizations they participated in, in 2006. In the same strata in 2006, it was found that participants in the program experienced a statistically significant increase in the numbers of community organizations they participated in, in 2008, compared with the nonparticipants group. For example, among the persons who did not originally participate in any organizations in 2006, 28 % of the nonparticipants group began to participate in some type of community organization by 2008. In comparison, 65 % of the participants group began to do so.

In addition to change in the number of community organizations which the participants were a part of, increase in provided and received social support among the program participants was examined. Data was from the survey for volunteers ($n=40$) and participants ($n=33$) of the program. One third to four fifths of participants felt that both provided and received social support, including emotional, instrumental, and informational support, and increased 6 months after the introduction of the program (Fig. 9.12) (Takeda et al., 2009).

According to these limited interim findings, the development of a program with the aim of building social capital through promoting social participation seems to have had a significant impact on social interactions among older people in the community.



Eight types of organizations were included: residents' associations, sports clubs, hobby groups, religious, volunteer, political, industrial, and civic organizations

Fig. 9.11 Change in the number of organizations participated in comparing the program participants and nonparticipants (Kondo et al., 2010)

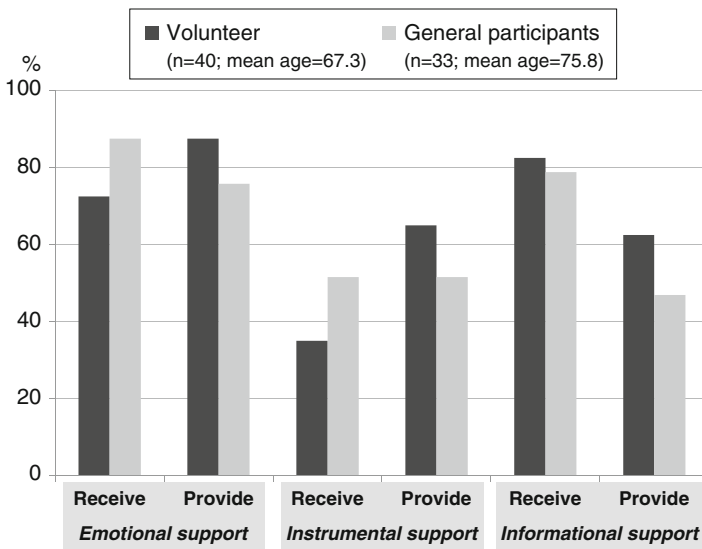


Fig. 9.12 Prevalence of increase of social support after 6 months from introduction of the new program

9.6.5 Summary: *The Pathway from Social Capital to Health*

Kawachi and Berkman (2000) proposed a number of hypotheses relating to the pathway from social capital to health: (1) health-related information and behavior, (2) access to services and amenities, (3) psychosocial process, and (4) social capital at the policy unit level. These hypotheses are partially supported by observations of the Taketoyo Project. For health-related information and behavior, participants reported that they obtained health-related information from the program. Older people in the town gained access to the program because of the easily accessible program sites managed by volunteers. Observed increase of social support and participation implies improved health. As the introduction of the program was successful, the target number of program sites has been added to the town's development policy. Although additional observation of which pathways most effectively facilitate a successful shift from the interim outcome to the final outcomes is necessary to study the effects on health improvement, these observations seem to partially support the hypotheses that a mechanism exists which links social capital and health.

9.7 Conclusion

In this chapter, we discussed the evidence of interventions that have leveraged the concept of social capital to improve health outcomes among aging populations and introduced two Japanese examples: the REPRINTS program and the Taketoyo Project. These trials are currently being conducted in limited areas, but general aspects of the programs can be expanded throughout the country because the programs have been developed in popular settings.

Ongoing analysis revealed a number of clues as to how to perform social capital boosting interventions in the community. The first point is that the target population should not be limited. Although the rapidly aging population is a worldwide issue, community is a collectivity consisting of multiple generations. From the experiences of the REPRINTS program, a spillover effect on other generations as a result of the intervention (intergenerational interaction) would be one of the desirable outcomes. The second is about the intervention unit size. The REPRINTS program is a school-based (specifically, elementary school-based) intervention program, and the Taketoyo Project is on a municipality level. The effect of contextual social capital in relation to the size of a community (or district/neighborhood) unit on people's health should be examined further, but a larger intervention unit might further reduce its effectiveness because people's connections and relationships become more tenuous, the larger the range of the unit. The unit size of intervention would be better defined by the range of the resident's daily activities and interactions and by people's perceived range of the community (or district/neighborhood). The third is about the program setting. As we mentioned above, the settings of these two trials are not special but represent popular existing resources in the community (e.g., elementary school).

Usually, preparing special settings for a new program requires a lot of time and effort. Therefore, in order to foster social capital, it is most certainly more effective to utilize a place everyone knows well as a program setting.

It is highly likely that further analysis will reveal other clues as to how to successfully implement an intervention program in the community which fosters social capital in practical settings. It is necessary to review and analyze other community interventions and accumulate further evidence from all over the world. This research must be prioritized as an urgent matter in order to facilitate and develop programs that foster a healthy aging society.

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Chapter 10

Microfinance and Health

Naoki Kondo and Kokoro Shirai

Mutual help is inherent to human beings. Historically, people have participated in many types of collective assistance activities to increase their chances of survival and to better their lives. A rotating savings and credit association (ROSCA) is a basic financial support activity that relies on such cooperation. Before the development of formal banking systems, ROSCAs existed ubiquitously, and they are still prevalent in many developing countries. More recently, microcredit has explosively spread around the globe, offering poor people a more formal financial option. A microcredit is a non-collateral, group-based small loan that is usually provided by a government or by nongovernmental organizations. ROSCAs and microcredit have attracted the attention of researchers and activists as possible “magic bullets” in the effort to alleviate poverty. Although most studies have focused on their financial empowerment functions, these group-based microfinancial instruments may also possess further effects tied to the strong social cohesion of their members (Bouman, 1994). Thus, as forms of social capital, they may impact the lives of persons. Some of these effects may be strongly positive for health and welfare, and others may be rather harmful, given the potential “dark side” of social capital (Kawachi, Subramanian, & Kim, 2008).

How do these formal and informal “microfinance” activities work as community social capital? What is the available empirical evidence on the association between microfinance and health? In this chapter, we review, through a social capital perspective, the theoretical, historical, and empirical evidence on microfinance and

N. Kondo, M.D., Ph.D. (✉)

Department of Health and Social Behavior, School of Public Health,
The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
e-mail: naoki-kondo@umin.ac.jp

K. Shirai, Ph.D.

Department of Human Sciences, School of Law and Letters, University of the Ryukyus,
1 Senbaru, Nishihara-cho, Okinawa 903-0219, Japan
e-mail: cocorosh@gmail.com; kshirai@ll.u-ryukyu.ac.jp

Box 10.1 Variation in the Definitions of Microfinance

The term “microcredit” or “micro-credit” usually refers to a small loan for low-income people or groups that have no access to financial services; the loan is provided by governmental or nongovernmental banking organizations. Some microcredit banks provide other financial services in addition to credit, including savings, insurance, and fund transfers, and those organizations are sometimes categorized as “microfinance” or “micro-finance” rather than microcredit. Hence, microfinance is a broad category of financial services that includes microcredit. Microfinance can also comprise other informal financial activities, such as ROSCAs, since ROSCAs in fact provide financing opportunities that involve small amount of money (i.e., micro-credit).

Alternative economic terms for ROSCAs or their analogs include “rotating credit associations,” accumulating savings and credit associations (ASCAs or ASCRAs), and village saving and loan associations (VSLAs).

health. Although the word microfinance can have various definitions, here it denotes ROSCAs and microcredit, the two typical group-based financing activities that operate throughout the world (See Box 10.1 for the variation in definition of microfinance organizations.).

This chapter is composed of six sections. In the first two, we describe the historical backgrounds, organizational characteristics, and relationships with social capital of ROSCAs and microcredit. In the third section, we discuss these associations’ potential positive and negative impacts on health; the fourth section comprises our systematic review of the empirical evidence on the association between microfinance and health. In the fifth section, we take Japan as an example of a country that has a long history of ROSCAs and provide in-depth, empirical descriptions of the history and culture of ROSCAs in that country. We offer some concluding remarks in the final section.

10.1 ROSCA

10.1.1 ROSCAs and Social Capital

The history of ROSCAs dates back at least to the sixteenth century (Seibel, 2001) in European countries, from the seventh to the tenth centuries in China, and from the thirteenth century in Japan (McKeever, 2009). Nowadays, ROSCAs are very popular in Africa, Asia, and Latin America. They are called *esusu* in Nigeria; *susu* in Trinidad and Ghana; *ekub* in Ethiopia; *tontine* in Congo, Togo, and Cambodia; *niangi or tontine* in Cameroon; *arisan* in Indonesia; *paluwagan* in the Philippines; *ke* in Korea; and *ko (mujinko and tanomoshiko)* and *moai* in Japan (Bascom, 1952;

Bouman, 1994; Dekle & Hamada, 2000; Kondo, Minai, Kazama, Imai, & Yamagata, 2007; Seibel, 2001).

Despite the geographical ubiquity of ROSCAs, their basic scheme is surprisingly similar. In forming one, a group composed of trustworthy members is selected. This group meets periodically (usually once or twice a month) and deposits a fixed amount of money each time. In each meeting, an assigned member takes the aggregate “pot.” This practice continues until each member has taken a pot. The key aspects of this system are that those who take the funds early in the round continue to contribute and that “free riders” who break away in the middle of a session are strictly forbidden. After a round, the ROSCA either is disbanded or begins again.

ROSCAs come in two main forms: *random* and *bidding* ROSCAs (Besley, Coate, & Loury, 1994). In a random ROSCA, the member taking the pot is either preselected or chosen by an on-site discussion or negotiation, whereas in a bidding ROSCA, he or she is selected by bidding. In the latter, the pot taker is the person who bids the most in the form of a pledge of higher future contributions to the ROSCA or who advanced the highest single side payment.¹ The side payment is distributed to other members as interest so that future pot takers can obtain greater total incomes at the end of a ROSCA round. There is no collateral in a ROSCA, or the collateral is the members’ trustworthiness and the sense of reciprocity among them. In other words, they use *social collateral* to prevent defaults by members who take the pot early (Besley & Coate, 1995). Therefore, a typical ROSCA is small and composed of up to 20–30 people with a highly homogeneous socioeconomic status and residential locus (typically in the same community).

While the primary goal of ROSCAs is the financial security of their members, those who belong to them engage in other forms of reciprocal aid. For example, they may exchange labor, hold religious rituals or festivals, give gifts, assist the family of the dead at funerals, and the like. Some ROSCAs operate mainly for social and not financial purposes. Geertz speaks of Indonesian *arisan* and Japanese *ko* as Asian ROSCAs that are “commonly reviewed by [their] members less as . . . economic institution[s] than as . . . broadly social one[s] whose main purpose is the strengthening of community solidarity” (Geertz, 1962; Putnam, 1992).

Social cohesion and homogeneity are the necessary conditions for a successful ROSCA (Besley & Coate, 1995; Bouman, 1994), and they are its social capital investments (Karlan, Mobius, Rosenblat, & Szeidl, 2009; Tanaka & Nguyen, 2009). Some ROSCAs do not directly deal with money but only with commodities, such as labor and agricultural products (Seibel, 2001). For example, in *Shirakawa* District, a heavy snowfall area in Japan, people have ROSCAs called *yui* (meaning “connected” or “united”). In a *yui*, people share labor to maintain their steeply roofed houses (Fig. 10.1). Members have a “contract” to share labor in re-thatching roofs, which is done every 30–40 years. In the Miyagi Prefecture, an area of high rice production, rice stuffed in barrel-shaped equal-size straw bags was contributed to a ROSCA until a few decades ago.²

¹The side payment is also required in some random ROSCAs, and its amount largely varies.

²Personal communication with a local woman in Miyagino-ku, Sendai-shi, of the Miyagi Prefecture, Japan.



Fig. 10.1 Thatching the roof of a *gassho-tsukuri*, a traditional house in a Shirakawa village, Japan (Photo: provided by the Shirakawa village government)

10.1.2 Similar or Equivalent Associations to ROSCAs

Despite the global popularity of the “classic” small ROSCA, these organizations have quite diverse historical forms. A contrast to the classic ROSCA is the commercialized ROSCA that involves hundreds or more members in a group that is managed with sophisticated systems. Such large ROSCAs sometimes serve gambling purposes, just like a lottery, for the sake of extra profit.

Accumulating saving and credit associations (ASCAs) are the popular equivalents of ROSCAs; in these associations, members engage in group saving, under the supervision of a person appointed to manage the pot, any surplus, and all internal loans to members. Like ROSCAs, ASCAs have predetermined durations, typically one year or less (Bouman, 1994). The ASCA system, therefore, is similar to that of present-day credit cooperatives. In fact, in many parts of the world, ROSCAs and ASCAs have gradually integrated into formal financial systems. In many cases, they have assumed legal safeguards to prevent conflicts and crimes among their members (Dekle & Hamada, 2000; Seibel, 2001). In large-group ROSCAs or ASCAs, intimate personal contact is impossible; consequently, the structures of social networks among the members of a large ROSCA are very different from those of traditional small ones. The social cohesion among the members of these large-size ROSCAs tends to be low, and the chance of default and mismanagement is high.

10.1.3 Community Solidarity and the Sustainability of ROSCAs

A significant challenge to ROSCAs is their sustainability (Etang, Fielding, & Knowles, 2008). Because ROSCAs close when all members take the pot, they need to restart to continue the relationships of those who belong to them. The endurance of ROSCAs is also strongly threatened by a fraud or mismanagement; these harms most likely occur when an early pot taker stops contributing and breaks away from the organization.

Despite these challenges, many ROSCAs have very long lives, retaining the same or largely the same membership. In the Yamanashi area of Japan, for example, approximately 80 % of them continue for ten or more years, and some ROSCAs have endured for more than four decades (Kondo et al., 2007). Such long-lasting ROSCAs usually developed after several rounds, during which members who could not harmonize with others are expelled or voluntarily drop out. The reputations of the remaining members for trustworthiness increase over multiple rounds. Every ending point is an opportunity for an individual to drop out from a high-stakes activity that requires a strict fidelity to the group. Members of multiple ROSCAs in a community can be shuffled at this time, making for a more harmonized set of ROSCAs in the community. In this process, the ROSCA group becomes extremely cohesive.

Becoming a long-term, fixed member is encouraged by three incentives. First, it is difficult to find new members who have good reputations. Since a new member with an unknown reputation greatly increases the chances of a failure to perform the payment obligation, the existing members are not eager to invite new persons into the group. Second, it is simply enjoyable to be with like-minded, tranquil acquaintances and friends. In a Japanese survey, 95 % of older ROSCA members reported that meetings are pleasurable or very pleasurable (Kondo et al., 2007). Mutual emotional support is best exchanged among the members of such highly homogeneous groups. Third, in a small community, ROSCAs are sometimes more than financial institutions and play an important role in maintaining the community's autonomy. In such cases, defecting from the community-run ROSCA could be very risky, when resources are very scarce.

10.2 Microcredit

10.2.1 Microcredit and Social Capital

A typical microcredit organization provides very small loans (around 100–400 US dollars) to poor women who are willing to start new, small businesses and break out of poverty. The concept of microcredit originated in 1983 with the Nobel prize-winning Bangladeshi Grameen Bank (Yunus & Jolis, 1999). Since the foundation of the bank, the microcredit scheme has been adopted by numerous organizations and

commercial banks. Currently, over 100 million people have taken out microcredit loans (Microfinance information exchange, 2010). Microcredit has been widely recognized as an important tool in the alleviation of poverty. In 1997, the Microcredit Summit was held in Washington, and the United Nations Economic and Social Council proclaimed 2005 as the International Year of Microcredit, thus giving momentum to the promotion of the microcredit scheme to lessen global poverty.

How does a microcredit work? A typical Grameen-type microcredit is:

not based on any collateral or legally enforceable contracts. It is based on “trust,” not on legal procedures and systems. To obtain loans a borrower must join a group of borrowers. Loans can be received in a continuous sequence. New loan becomes available to a borrower if her previous loan is repaid. All loans are to be paid back in installments (weekly, or bi-weekly). . . . It comes with both obligatory and voluntary savings programs for the borrowers. (Grameen Bank, 2011)

Therefore, microcredit fosters social capital, as the Grameen Bank clearly indicates:

Grameencredit gives high priority to building social capital. . . . It undertakes a process of intensive discussion among the borrowers, and encourages them to take these decisions seriously and implement them. It gives special emphasis to the formation of human capital and concern for protecting the environment. It monitors children's education and provides scholarships and student loans for higher education. For the formation of human capital it makes efforts to bring technology, like mobile phones, solar power, and promote mechanical power, to replace manual power. (Grameen Bank, 2011)

Thus, social capital and financial security may jointly contribute to the improved quality of life of clients. Although group solidarity is required to form a new borrowers group, the interactions among its members further strengthen their social cohesion, leading to greater participation and political empowerment (Bayulgen, 2008) (Fig. 10.2). As a result, the reliability of social collateral increases, which explains the very low, reported default (less than 5 % in Grameen Bank) (Grameen Bank, 2011).

Selecting women as potential borrowers is another strategy to keep fraud low, since women maintain group solidarity better than men do. Women are also likely to be the victims of gender discrimination in Bangladesh and many other countries (Koenig, Ahmed, Hossain, & Mozumder, 2003), so they particularly benefit from microcredit. Moreover, compared to men, the financial empowerment of women would more advance the well-beings of their children and other family members.

Observational evidence suggests that newly developed social capital by microcredit programs may contribute to financial protection and social mobility (Olomola, 2002; Ronchi, 2004). However, conventional observational studies of the association between microcredit and social capital are limited, as they do not distinguish between the impact of existing social capital and new social capital. To overcome this challenge, Feigenberg, Field, and Pande (2010) report on a randomized controlled trial in rural India. Of 100 new female borrowers, they randomly assigned 30 people (in three, ten-person groups) to a regular, weekly repayment schedule (weekly groups) and 70 people to a monthly repayment schedule (monthly groups). The authors hypothesize that the groups with more frequent meetings (i.e., weekly groups) may more effectively foster social capital. At the end of 1 year, they find

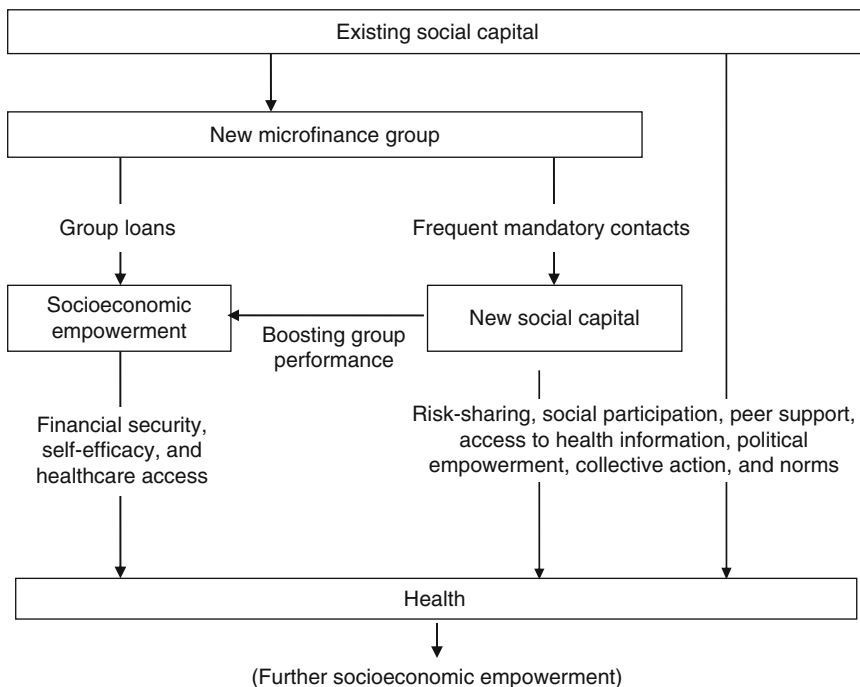


Fig. 10.2 Hypothetical pathways linking microfinance, social capital, and health. Existing social capital helps in creating new microfinance groups. Frequent mandatory contacts through those activities create new social capital. New social capital in turn increases the performance of loan activities and the diversification of financial risks. Long-term microfinance groups gradually become highly cohesive and influence their members’ health

that those in the weekly groups were more likely to have social contact than those in the monthly groups. The weekly groups also showed lower default rates and more in-group risk-sharing and economic cooperation behaviors.

10.2.2 Criticisms

The criticisms of and concerns about microcredit include its high interest rates. The variation of interest rates is large across countries: it is above 80 % in Uzbekistan and around 17 % in Sri Lanka; the overall average rate is 35 % (Kneiding & Rosenberg, 2008). This elevated average interest rate is mainly the result of high operational costs that are attributable to the fact that a microcredit organization is a business that deals with thousands of tiny transactions, requiring large staffs to supervise loan groups.

Such interest rates could result in overindebtedness. Serious incidences of overindebtedness have been reported in Morocco, Nicaragua, Bosnia, Pakistan, and Andhra

Pradesh in India (Schicks & Rosenberg, 2011). The overindebtedness of women could result in tragic events, such as domestic violence and exposure to criminals. For example, there are case reports of women with large, microcredit debts selling their internal organs to illegal organ dealers (Mayoux, 2001; Strangio, 2011).

In recent years, another criticism is that the quality of microcredit programs has deteriorated with their very rapid deployment around the world. Some microcredit organizations cannot afford to properly educate and instruct candidate borrowers. They do not appropriately direct groups during loan sessions. Poorly cared for, poorly organized groups run high risks of debt default and member conflicts, resulting in the complete loss of social cohesion.

In addition, observational and intervention studies of microcredit have pointed to its potential unintended “adverse effects” to borrowers and their families. For example, new microcredit intervention may cause increased domestic violence and reduce the emotional well-being of households, due to the reasons other than overindebtedness (Schuler, Hashemi, Riley, & Akhter, 1996; Ahmed, Chowdhury, & Bhuiya, 2001). We will discuss this issue in more detail below in our systematic reviews.

10.2.3 *Microcredit and the Types of Social Capital*

10.2.3.1 **Bonding or Bridging?**

Bonding social capital posits “strong ties with people in the same community that enable you to ‘get by’” and *bridging* social capital “the links with other communities that enable people to ‘get ahead’” (Harpham, 2008). Given these definitions, a traditional ROSCA involves bonding social capital. Similarly, in microcredit, “closed” interpersonal interactions within a microcredit group also strengthen bonding social capital (Ito, 2003). However, the nature of microcredit is more “open,” that is, group members have regular opportunities to interact with out-group individuals from microcredit institutions. At every meeting, borrowers see institution officers and others who provide educational programs. Therefore, as Ito (2003) suggests, these regular contacts with out-group people offer opportunities to foster bridging social capital, in addition to bonding social capital.³

³Ito uses the terms “horizontal versus vertical” rather than “bonding versus bridging” in her paper. In this chapter, we do not provide a deep discussion of the definitions of these “components” of social capital, as such a discussion is beyond the focus of this chapter. Readers interested in it may refer to Ito (2003).

10.2.3.2 Group Financing and the Radius of Trust

This bonding versus bridging discussion in microfinance settings is related to the concept of the size of the radius of a social network when evaluating social capital. For both a ROSCA and a microcredit organization, group activity may strengthen mutual trust among members, but it does not necessarily reinforce their confidence in others *outside* the group (general trust).

Experimental studies clearly evince this in-group/out-group distinction. For example, Etang et al. (2008) report on a trust game for members and nonmembers of ROSCAs in Cameroon. In the standard trust game, a coordinator gives an equal value in coins to both a sender and a recipient. The sender hands over some or all coins to the recipient. The coins given to the recipient are tripled, and then the recipient decides on the value of coins to return to the sender. The researchers find that trust (measured by the value of money passed by sender to the recipient) and trustworthiness (the value of money from the recipient to the sender) were higher when the pair was composed of two persons in the same ROSCA than in all other pair types. This was supported by the results of their survey, asking whether people in general or those in a certain group could be trusted. Reasonably, trust in fellow ROSCA members was highest among the participants. However, trust in other village members was less than that in ROSCA members. Less trust was placed in people from neighboring villages and least for people in general. Similar results are indicated for church membership in Tanzania; the experimental trust of church members (the sum of money exchanged with each other) was not associated with trust in the general population, but it did have a correlation with their trust in more specific others (Danielson & Holm, 2007).

The messages of these experimental studies may be that ROSCAs or similar group-based microfinance program do foster personalized, in-group trust (or bonding social capital), but they do not necessarily encourage more generalized confidence (or even trust for other members in the same community), since people may have a clear social radius for trusting or for evaluating the trustworthiness of others. Strong in-group solidarity and personalized trust among the members of ROSCAs and microcredit groups can be closely associated with the exclusiveness of these groups, and careless interventions with these microfinance schemes potentially diminish social capital in communities or wider areas.

This discussion is also closely associated with the modifiable areal unit problem (or known as MAUP), when evaluating the contextual effect of microfinance on health. Given our discussion above, it is clear that if the social capital that is mainly fostered by microfinance is evaluated at the wrong level (e.g., at community or higher levels), the assessment does not validly capture the actual level of social capital within each group, and, therefore, the results can be biased.

10.3 Is Microfinance Good or Bad for Health?

10.3.1 *Improving the Material Environment*

The positive impact of microfinance on health is promising. Both ROSCAs and microcredit organizations depend on group activities that rely on social pressures to make scheduled payments. Remarkably, these effective financial opportunities are available even for extremely poor people. Beasley et al.'s seminal work on the economic functions of ROSCAs reveals that these organizations allowed "individuals without access to credit markets to improve their welfare" by financially empowering them to buy durable goods, including those required for the maintenance of health (Besley, Coate, & Loury, 1993). Their economic analyses reveal that the result was typical of bidding ROSCAs, which usually functioned "to help one of a few members who were financially troubled" (Besley et al., 1993). In a random ROSCA, however, most members cannot quickly buy durable goods. However, a random ROSCA functions as a system of risk diversification in the group, stabilizing their financial status for a long time (Besley et al., 1994). More recently, a theory paper by Ambec and Treich (2007) indicates that random ROSCAs can also help people to cope with self-control problems, i.e., promoting individuals to save money rather than use it for purchasing superfluous goods. Given the group-based financing similarity between ROSCA and microcredit, these potential health benefits should also be seen in the latter organizations.

10.3.2 *Microfinancing as a Source of Strong Social Capital: The Bright and Dark Sides*

As we have repeatedly mentioned, studies have only investigated the financial aspects of microfinance; however, membership in socially cohesive groups can be beneficial to individual health and well-being (Kawachi et al., 2008). Nonetheless, social capital could also have its dark side (Portes, 1998). What are the mechanisms at work in the bright and dark sides of social capital in microfinance activities when they influence individual health?

10.3.2.1 **Bright Side**

Following the "network" theory of social capital (Lin, 2001), members of microfinance organizations can expand their chances of obtaining beneficial resources, including the instrumental, emotional, and informational social supports that are embedded within each interpersonal network.⁴ Obviously, members of a microfinance

⁴See Kawachi et al. (2008) for more information on the theoretical backgrounds of social capital.

group are strong “resource generators.” A member can also obtain health resources provided by out-group people through indirect associations with the acquaintances of a fellow member.

On the other hand, based on the group-level definition or the “social cohesion” notion of social capital (Coleman, 1990; Putnam, 1992), members of a cohesive ROSCA or microcredit group obtain health benefits through “the resources of trust, norms, and the exercise of sanctions that . . . [exist] in the social group” (Kawachi et al., 2008). Given that microfinance could strongly foster bonding social capital, these beneficial effects to members’ health could also be strong. A Japanese survey provides evidence that the members of ROSCAs intensively exchange health information (Kondo et al., 2007; Prefectural government of Yamanashi, 2003). In the study, health was the primary conversational topic of regular meetings, followed by daily living, jobs, family, and hobbies. Microfinance groups offer strong emotional support and may provide stress-coping opportunities. Regular meetings are pleasurable for many people, as reported in the Japanese study (Kondo et al., 2007).

10.3.2.2 Dark Side

The dark side of microfinance can be understood as the reverse of its bright-side functions described above. Based on the individual network definition of social capital, members might be influenced by “bad apples” in the group. If a fellow member falls into an unhealthy habit, it is more likely to spread to other members than to those who are outside the group. Applying a network analysis approach to the sample of 12 thousand participants of the Framingham Heart Study, Christakis and Fowler (2007, 2008, 2009) provide evidence that unhealthy statuses and behaviors, such as obesity, depression, drinking, and smoking, may spread through the complex web of an ego-centered social network. The influence was stronger among individuals with shorter social distance.⁵ Among the tightly knit members of a microfinance group, those negative “social contagion” from in-group members might be stronger than those in ordinary social groups (Christakis & Fowler, 2012).

The social cohesion school of social capital may indicate that the adverse impact of microfinance could be serious when a sense of mistrust fills a group. Even though members notice that a particular member is a troublemaker, it is impossible to expel him or her in the middle of the session, since to do so would expose the remaining members to the loss of earnings. They patiently need to be in the same boat, which could cause strong group mental stresses. Moreover, unfavorable social norms and too harsh or misguided sanctions could also impact the health of members. For example, to share the company of others, a new member may be willing to engage in doing unfavorable habits, such as smoking tobacco.

⁵The authors also provide evidence that some positive statuses, such as happiness and a good diet, may also spread in the network.

According to Portes (1998), the potential dark side of social capital includes “exclusion of outsiders, excess claims on group members, restrictions on individual freedoms, and downward leveling norms.” With regard to the first of these negatives, exclusiveness fits right in with microfinance groups. Outsiders are rarely allowed to join in their activities and never in the middle of a financing session. In most cases, it is very difficult for a person who newly moves into a community to join an existing ROSCA run by community residents. For example, in a remote mountaineering area in the Kumamoto Prefecture, Mr. Watanabe, a craft potter who emigrated to the *yoshimuta* community in 1986, became the member of the local ROSCA only after over 20 years of residence, when he was “qualified” as a peer member of the community.⁶ The strongly closed nature of such groups may deprive members of the opportunities to develop wider relationships or the chances of fostering the bridging social capital of the group.

Moreover, when a member feels unhappy about making periodic contributions to the group, the demands to support his or her peers can become excessive and stressful. There are numberless reports of problems related to payment defaults in microfinance groups, including, in the worst case, murder or other serious criminal acts (Dekle & Hamada, 2000; Mayoux, 2001).

10.4 Systematic Review of Empirical Studies

10.4.1 *Methods*

In order to examine the effect of microfinance upon health, we conducted systematic reviews of published journal articles, which evaluated the associations between ROSCAs and microcredit and health-related outcomes, including mortality, the prevalence of diseases, and health behaviors. We used multiple article search engines: Medline via PubMed, ISI Web of Science, Academic Search, Google Scholar, and Microfinance Gateway for the period up to May 2012. We employed the following keywords for this literature search: “health,” “mortality,” “microfinance,” “micro-finance,” “microcredit,” “micro-credit,” “ROSCA(s),” “rotating savings and credit association(s),” “rotating credit association(s),” “ASCA(s),” “rotating and accumulating savings and credit associations,” and “accumulating savings and credit association(s).” The references and all sections of retrieved articles were further examined to determine if they fit our reviewing criteria. Information from organization reports, conference proceedings, personal communications, and expert suggestions were also considered.

⁶According to the authors’ personal communication with Mr. Watanabe.

10.4.2 Results

From more than 200 articles of potential interest, 34 articles were selected to examine the association between microfinance programs and health outcomes. Of them, 18 studies were from Asia, 13 from Africa, and 3 from Latin America. Among them, 30 articles were on microcredit and health but only four on ROSCA and health (Tables 10.1 and 10.2).

10.4.2.1 Microcredit and Health

Many cross-sectional studies support the existence of a positive association between microcredit programs and better health outcomes. For example, in a study of 1,593 microcredit members in Peru, Hamad and Fernald (2012) identify the association of longer participation in the program and higher blood hemoglobin levels and better food security. A study in Ethiopia reveals that participation in a microcredit group strongly reduces the prevalence of malnutrition (Doocy, Teferra, Norell, & Burnham, 2005). Two relatively large surveys in Bangladesh both show the increased health-care access among borrowers (Hadi, 2002; Levin, Rahman, Quayyum, Routh, & Barkat-e-Khuda, 2001; Nanda, 1999).

The cross-sectional association of participation in a microcredit program and the risk of intimate partner violence for women are mixed. Although there is evidence from Bangladesh that indicates a positive link between microcredit membership and less violence (Hadi, 2000, 2005), some studies from the same country have reported no association (Ahmed et al., 2001) or increased chances of it among women in microcredit programs (Ahmed, 2005). Domestic violence is strongly rooted in culture, and it is more frequently observed in countries with traditional patriarchal systems that subordinate women to men. Thus, on the one hand, women's empowerment through microcredit participation may protect them from violence. On the other hand, it could also break traditional, male-dominant social norms, and "increase the tension within the household [,] and precipitate domestic violence" (Ahmed, 2005). Nevertheless, these cross-sectional observational studies suffer from selection bias and reverse causation. For example, the abused women in impoverished households may have more need to participate in microcredit programs. Thus, a more sophisticated approach, such as randomized trials, would be needed to study them.

We located ten intervention, quasi-intervention, or natural experimental studies that were conducted in developing countries. Most support the assertion that microcredit contributes to the health of poor women and their families, especially children. Behaviors aiding health and knowledge of disease prevention and sanitation may also improve for those in microcredit programs or in combined programs that provide "empowerment" interventions, including health education, along with

Table 10.1 Published articles on microcredit and health

First author, year	Study area	Sample	Study design	Intervention	Outcome	Findings	Covariates/methods of adjusting confounding
Ahmed et al. 2001	Bangladesh	3,624 Women, aged 15–55 years	Cross section	BRAC membership	Emotional stress	No association between BRAC membership and emotional stress. Adjusted ORs for having emotional stress (vs. nonmember): 0.97 ($p \geq 0.05$) for BRAC member and 0.79 ($p < 0.05$) for better-off nonmembers. Women perceived that contribution to household income was associated with higher likelihood of having emotional stress (adjusted OR: 1.59, $p < 0.01$)	Age, marital status, self-reported health, illness, perceived contribution to household income, land ownership, household SES, problems with neighbors
Ahmed, 2005	Bangladesh	422 Married BRAC member women, aged 15–49 years and 1,622 women from poor non-BRAC households	Cross section	BRAC membership status: (1) Passive member (savings only) (2) Active member (savings + credit) (3) Skilled member (savings + credit + training)	Domestic violence against women	BRAC memberships did not predict domestic violence. Greater levels of domestic violence were reported during the initial stages of BRAC membership. Adjusted OR (95 % CI) (vs. nonmembers): 1.36 (0.79–2.36) for passive members, 1.47 (0.93–2.33) for active ones, and 0.64 (0.25–1.66) for skilled ones	Age, schooling years, household SES, having children, age of household head

Basargekar, 2010	India	217 Women	Cross section	Length of participation in self-help groups organized by a microfinance institution	Awareness of health care, family planning, and sanitation	Longer participation was associated with more awareness of health care, family planning, and sanitation (also associated with other indicators on household financing, education, and social mobility)	None
Bhuiya, 2002	Bangladesh	9,853 Mothers; 6,887 live births (1988–1992); 6,662 live births (1993–1997)	Quasi-experiment	Mother's BRAC membership	Infant mortality and under-5 mortality	53 % reduction in infant mortality hazard among poor members, 31 % reduction in poor nonmembers, and 41 % reduction in nonpoor nonmembers. Under-5 mortality reduction among members was observed in all groups irrespective of mother's participation	Residence area, mother's age, mother's education, sex of child, and time period
De La Cruz, 2009	Ghana	(1) Malaria education group (N=213)+ diarrhea education group (N=223) + non-client controls (N=268)	A community randomized pretest/posttest (differences at follow-up + within-group changes)	Malaria and diarrhea education for microfinance clients	Knowledge gain and behavior change about malaria	Knowledge gain: malaria education groups, 48.4 % > diarrhea education groups, 39.2 % (P=0.044)> control, 37.7 % (P=0.02). Net own (change within group): malaria education group 39.5 % (0.001)> diarrhea education group 25.7 % (0.001)> control 22.3 % (0.001)	Comparison of absolute percentage only

(continued)

Table 10.1 (continued)

First author, year	Study area	Sample	Study design	Intervention	Outcome	Findings	Covariates/methods of adjusting confounding
DeLoach, 2011	Indonesia	7,224 Households in the first wave in 13 provinces	Natural experiment: panel data (three waves 1993, 1997, 2000) Indonesian Family Life Survey	Existence of microfinance institutions in the area	Children's height-for-age	The presence of microfinance institutions in communities had a large and positive association with changes in children's height-for-age	Baseline underdevelopment and regional environment (urban/rural, healthcare facilities, sewage systems, etc.). Instrumental variable analysis with the first-difference fixed effects
Dohn, 2004	Dominican Republic	81 Households in three communities	Nonrandomized intervention study	(1) Health promotion programs only; (2) microcredit programs only; (3) health promotion + microcredit programs	11 health-related indicators (e.g., under-5 mortality, women's health, breast cancer screening, and cervical cancer screening)	Health indicators improved in all three groups. Health promotion + microcredit program group had the largest changes for 10 of the 11 health indicators	None

Doocy, 2005	Ethiopia	8 19 Households	Cross section (comparison among three groups: established clients, new incoming clients, and community controls)	Participation in the WISDOM microcredit program	(1) Malnutrition (food-insecure) condition and (2) coping children	OR of malnourishment among female community controls; 3.2 (95 % CI: 1.1–9.8) compared to WISDOM clients; ORs of receiving food aid among male clients were 1.94 (95 % CI: 1.05–3.66) and 2.08 (95 % CI: 1.10–4.00) among community controls when compared to female WISDOM clients	None
Fernald, 2008	South Africa	257 (Men and women)	Randomized controlled trial (6–12 months)	Microcredit participation (for those who were previously rejected for a loan)	Depressive symptoms (CES-D and Cohen's perceived stress scale)	Microcredit participation/credit access was associated with reduced risk of depressive symptoms in men but not in women	Gender, age, education, household size, income, and area
Hadi, 2000	Bangladesh	Randomly selected 500 married women aged < 50 years	Cross section	NGO-run microcredit programs	Sexual violence by husband	Microcredit membership was associated with lower odds of violence by husband. Adjusted ORs for mental torture (vs. nonmembers) were 0.79 ($p \geq 0.10$) for members (< 5 years) and 0.65 ($p < 0.10$) for members (5+ years)	Age, education of both spouses, occupation of husband, land ownership

(continued)

Table 10.1 (continued)

First author, year	Study area	Sample	Study design	Intervention	Outcome	Findings	Covariates/methods of adjusting confounding
Hadi, 2002	Bangladesh	2,814 Mothers with under-5 children in 200 randomly selected villages	Cross section	Microcredit-based program for promoting maternal knowledge of acute respiratory infections of children	Maternal knowledge of clinical signs and preventive measures for the infection control	Credit program participants had a higher knowledge of clinical signs of acute respiratory infections (OR = 1.39 [95 % CI: 1.14–1.72]) but not knowledge of preventive measures. Participants of credit program with the health education Program had more knowledge: OR = 2.83, 2.34–3.44 (clinical signs) and 3.06, 2.51–3.73 (preventive measure)	Study area, media exposure, age, education, and land ownership
Hadi, 2005	Bangladesh	Randomly selected 500 married women aged < 50 years	Cross section	NGO-run microcredit programs	Mental torture and physical assault	Microcredit membership was associated with lower odds of violence by husband. Adjusted ORs for mental torture (vs. nonmembers) were 0.56 ($p < 0.10$) for members (< 5 years) and 0.36 ($p < 0.01$) for members (5+ years). No association for physical assaults	Age, schooling years, age at marriage, living standard

Hamad, 2011	Peru	1,855 Adults and 598 children	Randomized controlled trial of microcredit members	Health education	(1) Adult knowledge on child health; (2) child anthropometric measures (hemoglobin, weight, height, BMI); (3) child health status (diarrhea, cough)	Intervention group had more knowledge of child health than controls but no changes observed in anthropometric measures or reported child health	Gender, age, education, household assets, and loan officer
Hamad, 2012	Peru	1,593 Female members of microcredits	Cross section	Length of micro-credit program participation (0–5.5 years)	(1) BMI; (2) hemoglobin level; (3) nutritional status based on US household food security survey module	Longer microcredit participation was associated with (1) higher hemoglobin level; (2) lower food insecurity. BMI was not associated with microcredit after adjustment of sociodemographic covariates	Age, education, marital status, and SES
Hatcher, 2011	South Africa	24 Clients	Qualitative study with coding structure developed in QSR NVivo (mixed method)	IMAGE microcredit program	(1) Consciousness gain; (2) prevention of intimate partner violence; (3) HIV infection	Specific curricular tools can work towards critical consciousness; mobilization efforts in future programs can be strengthened by including individual and collective efforts by participants	Not applicable

(continued)

Table 10.1 (continued)

First author, year	Study area	Sample	Study design	Intervention	Outcome	Findings	Covariates/methods of adjusting confounding
Karlan, 2011	Philippines	1,601 Individuals (1272 treatment, 329 control)	Quasi RCT (random assignment via credit scoring) (11–22 months)	Micro loan program	(1) Risk sharing, being substitute for insurance, business growth; (2) Well-being	Number of business activities and employees in the treatment group decreased relative to controls; subjective well-being declined slightly in treatment group; microloans increased ability to cope with risk, strengthened community ties, and increased access to informal credit	Assignment to treatment, timing of treatment, assignment and survey measurement
Kim, 2007	South Africa	430 Women	Cluster randomized controlled trial 2-year follow-up	IMAGE microcredit program	(1) IPV, (2) Nine indicators of women's empowerment	IPV among all women (physical or sexual) reduced by 55 %; adjusted relative risk = 0.45, 95 % CI: 0.23–0.91. IPV among married women: 0.39, 0.20–0.72. All nine indicators of empowerment improved in intervention groups	Age, sex, and village pair-matched controls
Kim, 2009	South Africa	1,409 (363, control group; 480, microcredit -only group; 387, IMAGE group)	Cross-sectional data derived from three randomly matched clusters	(1) Microcredit program intervention only, (2) microcredit with gender and HIV training program (IMAGE)	(1) Economic well-being, (2) Nine indicators of improvement, (3) IPV, (4) HIV-risk behavior	Microcredit-only group and IMAGE group showed economic improvement relative to control group. Only IMAGE group showed consistent association with all domains, regarding women's empowerment, IPV, and HIV-risk behavior	Village, age group, marital status, education, parity, and sex of household head

Levin, 2001	Bangladesh	2,304 Women	Cross section	(1) Employment (2) membership of credit programs	Use of health service provider/self-help for children	Involvement in credit programs was associated with (1) increased curative care access; (2) decreased episodes of child's illness	Mother and child's ages, gender, illness, education, wealth status, and income
Mohindra, 2008	India	928 Women	Cross section	Participations in microcredit programs (self-help groups)	(1) Subjective physical and mental health; (2) health determinants (exclusion to health care, exposure to health risks, and decision-making agency)	Experience of exclusion to health care: non-group joiner vs. (1) early joiner: OR: 0.58, 95 % CI: 0.41–0.80. late joiners (> 2 years): 0.60, 0.39–0.94. Lower report of stress (0.52, 0.30–0.93), less reporting of low satisfaction: 0.32, 0.14–0.71	Age and household position
Nanda, 1999	Bangladesh	1,798 Households in 87 randomly sampled villages	Cross section	Participation on credit programs (Grameen Bank, BRAC, or BRDB)	Demands for access to formal health care (rather than informal care)	Participation in a credit program showed positive association with demand for formal health care (i.e., attending governmental or private clinics) and the level of health knowledge	Instrumental variable analysis with village-level fixed effects (land ownership used as the instrument)

(continued)

Table 10.1 (continued)

First author, year	Study area	Sample	Study design	Intervention	Outcome	Findings	Covariates/methods of adjusting confounding
Odek, 2009	Kenya	227 Female sex workers	Cohort and cross section	Microenterprise services for HIV prevention interventions for female sex workers	Sex work involvement and sexual behaviors	54.6 % reported exiting from sex work at end-line survey in 2005. Self-reported weekly mean number of (1) all sexual partners changed from 3.26 (SD 2.45) to 1.84 (SD 2.15); (2) regular partners changed from 1.96 (SD 1.86) to 0.73 (SD 0.98); (3) consistent condom use with regular partners increased by 18.5 % and remained above 90 % with casual partners	Age, age at starting sex work, number of dependents, level of education, and marital status
Pronyk, 2006	South Africa	(1) Cohort 1: 4 interventions + 4 control villages; (2) cohort 2: 753 households (14–35 years old, coresidents); (3) cohort 3: 1,063 individuals (14–35 years old)	Cluster randomized trial 2-year follow-up	IMAGE microcredit program	(1) IPV in the past 12 months (cohort 1); (2) unprotected sexual intercourse with a non-spousal partner, past 12 months (cohorts 2 and 3); (3) HIV incidence (cohort 3)	Adjusted RR of intervention groups for IPV (vs. control): 0.45, 95 % CI: 0.23–0.91. No effect on rate of unprotected sexual intercourse with a non-spousal partner (cohort 2: adjusted RR: 1.02, 0.85–1.23), (cohort 3: adjusted RR: 0.89, 0.66–1.19). No effect on HIV incidence (adjusted RR: 1.06, 0.66–1.69)	Age, sex, and village pair, marital status, baseline measures

Pronyk, 2008b	South Africa	1,063 (Aged 14–35 years) men and women, 750 households from eight villages (4 vs. 4)	Cross-sectional data derived from three randomly matched clusters	IMAGE (microcredit program cognitive SC and structural SC were measured)	(1) HIV prevalence and incidence, (2) risk behavior	(1) For males, higher cognitive SC was associated with lower HIV prevalence, more protective patterns of condom use, more open to talk about sex in the home, and perceived themselves to be at lower risk of HIV. OR for HIV prevalence: 0.39, 95 % CI: 0.15–0.99. For female, higher cognitive SC was associated with greater openness and collective action and higher structural SC was associated with consistent condom use but higher HIV prevalence/incidence (OR for HIV prevalence: 1.83, 1.04–3.20)	Age, village pair, SES, marriage, local residence, education, work and study status
Pronyk, 2008a	South Africa	845 Women (426 microcredits and 417 matched comparisons)	Cluster randomized controlled trial 2-year follow-up	IMAGE microcredit program	SC Levels: (1) structural SC = network score; (2) cognitive SC = collective action, solidarity, reciprocity, and community support	Adjusted RR of intervention group (vs. control): 1.85 (95 % CI: 0.95–3.61) for structural SC. 1.11 (0.38–3.24) for belief in community support, 1.65 (0.81–3.37) for community solidarity, and 2.06 (0.92–4.49) for collective action. Qualitative result showed SC can be exogenously strengthened	Age, village pair, marital status, and baseline measures

(continued)

Table 10.1 (continued)

First author, year	Study area	Sample	Study design	Intervention	Outcome	Findings	Covariates/methods of adjusting for confounding
Pronyk, 2008c	South Africa	262 Women aged 14–35 years	Cluster randomized trial 2-year follow-up	IMAGE microcredit program	HIV-risk behavior: (1) HIV-related communication; (2) voluntary counseling and testing for HIV (3) levels of unprotected sex with a non-spousal partner	Adjusted RR: 1.46, 95 % CI: 1.01–2.12 for outcome (1). 1.64, 1.06–2.56 for (2); and 0.76, 0.60–0.96 for (3)	Age, village pair, marital status, and baseline and measures
Schuler, 1994	Bangladesh	1,305 Married women	Cluster nonrandomized controlled trial	(1) Grameen Bank (2) BRAC	(1) Women's contraceptive use (2) Level of empowerment	%contraceptive use: Grameen bank program village vs. no program village (54 % vs. 43 %; $p < 0.01$). Nonmembers in Grameen village vs. non-G village (47 % vs. 43 %; $p < 0.05$). BRAC program: no significant difference. Both Grameen and BRAC positively associated with women's empowerment	Age, relative wealth, and school attended
Schuler, 1996	Bangladesh	1,305 Married women	Cluster nonrandomized controlled trial	(1) Grameen Bank (2) BRAC	Domestic violence against women	Adjusted OR for having been beaten in the past year (vs. control): Grameen member: 0.30, 95 % CI: 0.18–0.51. BRAC member: 0.44, 0.28–0.70. Nonmember living in Grameen program village: 0.66, 0.45–0.96	Age, education, religion, sex of children, region, household economy, and family support

Ssewamala, 2012	Uganda	Children from 15 comparable primary schools ($N = 286$)	Natural experiment: evaluated at baseline, 10 and 20 months after intervention	Comprehensive microcredit intervention with school counseling and school supplies (+ savings accounts, financial management workshops, and mentorship)	Children's depression among AIDS-orphaned youth	Treatment group exhibited a significant decrease in depression (b for intervention slope -0.34 , 95 % CI: -0.61 , -0.06); no change in the control group (-0.13 , -0.50 , 0.24)	Using multilevel growth models with baseline depression and predictors of depression scores
Steele, 2001	Bangladesh	2,889 Women (15–45 years)	Before and after quasi-experimental design (using panel data)	(1) Save the Children USA (SC) program (2) Association for Social Advancement (ASA) program	Women's contraceptive use	Area level: modern contraceptive use increased among SC and SC-ASA intervention areas, but no difference between members and nonmembers. Individual level: OR for modern contraceptive use: 1.57 (95 % CI 1.02, 2.41) in SC-ASA members vs. target nonmembers	Women's age, school attendance, work for cash, mobility score, decision-making, abuse by husband, husband's attendance of school, land ownership, and loan

ASCA accumulating savings and credit associations, *BMI* body mass index, *BRAC* Bangladesh Rural Advancement Committee, *BRDB* Bangladesh Rural Development Board, *CES-D* Center for Epidemiologic Studies Depression Scale, *CI* confidence intervals, *HIV* human immunodeficiency virus, *DSS* demographic surveillance system, *IMAGE* intervention with microfinance for AIDS and gender equity, *IPV* intimate partner violence, *NGO* nongovernmental organizations, *OR* odds ratio, *RR* relative risk, *SC* social capital, *WISDOM* World Vision microfinance counterpart in Ethiopia

Table 10.2 Published articles on ROSCA and health

First author, year	Study area	Sample (study name)	Study design	Exposure	Health outcome	Findings	Covariates/method of the adjustment of confounding factor
Gage, 1995	Togo	3,360 Women aged 15–49 years (1998 Togo DHS)	Cross section	Woman's working for cash; engaging in ROSCA	Spousal communication about family planning	Working for cash, particularly when they participated in ROSCA, was significantly associated with spousal communication about family planning. Adjusted OR of working for cash and investing in ROSCA: 1.47 ($p < 0.01$)	Age, education, urban residence, ethnic group, ethnic homogeneity, non-coresidence of spouses, and number of living children
Kondo, 2007	Japan (Yamanashi)	581 People aged 65+ years (Y-HALE Study)	Cross section	Levels of engagement in ROSCA (<i>mujin</i>)	Functional capacity (TMIG-IC score)	Adjusted OR for high (good) TMIG-IC score: 1.83 (95 % CI: 1.04–3.24) for high <i>mujin</i> engagement with pleasure in participation (vs. nonparticipants)	Age, gender, education, income, lifestyle, and health
Kondo, 2012	Japan (Yamanashi)	581 People aged 65+ years (Y-HALE Study)	Cohort	Intensity and attitude to the participation in <i>mujin</i> ; financing aspect of ROSCA (<i>mujin</i>)	Incident functional disability and mortality	More intense participation in <i>mujin</i> with a positive attitude: disability hazard ratio: 0.88, 95 % CI: 0.72–1.08 (per 1SD unit score increase); <i>mujin</i> with more financing purpose: 1.18, 1.06–1.31	Age, gender, education, income, lifestyle, and health
Shirai, 2012	Japan (Okinawa)	1,183 People aged 65+ years (JAGES-Okinawa)	Cross-section	ROSCA (<i>moai</i>) participation (bonding or bridging types separated)	Self-rated health	OR for bad reported health: 0.43 (95 % CI: 0.21–0.86) for men in bonding <i>moai</i> ; 0.45 (0.28–0.82) for women in bridging <i>moai</i> (vs. nonparticipants)	Age, gender, educational attainment, income, marital status, drinking habits, smoking status, and BMI

DHS demographic health survey, OR odds ratio, Y-HALE Yamanashi Healthy Active Life Expectancy Study, AGES Aichi Gerontological Evaluation Study, TMIG-IC Tokyo Metropolitan Institute of Gerontology Index of Competence, JAGES Japan Gerontological Evaluation Study

financing. The randomized controlled study of De La Cruz, Crookston, Gray, Alder, and Dearden (2009) describes the separation of 704 participants into three groups that were offered microcredit programs with education on either malaria or diarrhea. After the intervention, people in the malaria education group owned mosquito nets at a higher rate than those in the diarrhea education and non-microcredit groups.

Among intervention studies, the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) inquiry is specifically noteworthy (Kim, Pronyk, Barnett, & Watts, 2008; Pronyk et al., 2006; Pronyk, Hargreaves, & Morduch, 2007; Pronyk, Harpham, Busza, et al., 2008; Pronyk, Harpham, Morison, et al., 2008). Based on a cluster randomized trial in South Africa, it evaluates the impacts of microcredit programs on health and health behaviors. This group-based intervention involved a microcredit program with participatory gender equity training, in which education on the prevention of infection by the human immunodeficiency virus (HIV) was provided. The study also evaluates the association between the social capital of microcredit groups and the health outcomes of their members. In IMAGE, a researcher recruited 1,063 poor men and women, aged between 14 and 35 years, in 750 households from eight villages. Two years after IMAGE participation, the incidence of intimate partner violence among women declined by 55 %, regardless of their marital status (Pronyk et al., 2006). However, an observational study within the IMAGE project indicates mixed findings for the association of social capital and HIV infection. The levels of cognitive and structural social capital increased after the IMAGE intervention for both men and women; higher levels of individual cognitive social capital were associated with more protective patterns of condom use, more openness in talking about sex at home, and a lower prevalence of HIV for men. In addition, they led to better collective action and openness by women (Pronyk, Harpham, Busza, et al., 2008).

However, the result does not conform to the IMAGE researchers' initial expectation on morbidity from HIV infection. High structural social capital (more participation in community activities, including economic groups) was associated with a higher HIV incidence among women (the adjusted odds ratio for having HIV was 1.83, with a 95 % confidence interval=1.04–3.20). Speaking of these results, IMAGE researchers indicate that “expanding social networks on their own may serve to increase vulnerability to infection, particularly in the face of competing material needs and in an environment where the exchange of sex for resources is common” (Pronyk, Harpham, Morison, et al., 2008).

It appears that the unguided expansion of interpersonal networks may sometimes make individuals more likely to connect to a dangerous “external” world. This finding may be particularly applicable to isolated communities, whose members are *protected* by conservative exclusionary systems. Microcredit program may have the potential to break these traditional systems. Hence, the mixed findings of the IMAGE study suggest that careful ex ante impact assessments of potential acute changes in existing ordered community systems should be required for microcredit interventions.

10.4.2.2 ROSCA and Health

We found only four articles on ROSCAs from a health perspective. Gage (1995) investigates 3,360 women in Togo and finds that ROSCA participation was associated with good family planning behaviors. The remaining three papers were all from Japan (Kondo et al., 2007; Kondo, Suzuki, Minai, & Yamagata, 2012; Shirai, Todoriki, Shobugawa, Ishikawa, & Kondo, 2013). The primary findings of these are that intensive ROSCA participation is cross-sectionally and longitudinally associated with better health outcomes for older adults, in terms of functional capacity, self-rated health, and onsets of functional disabilities and mortality. However, involvement in ROSCAs with serious financing objects may be rather harmful to health. We will review these Japanese studies in the next section.

10.5 ROSCA and Health: Case Studies in Japan

10.5.1 *The History of ROSCAs in Japan*

As in many developing countries today, ROSCAs were once very popular in certain industrialized countries, including Germany, Ireland, and Japan (Seibel, 2003). In Japanese, a ROSCA is termed *mujin(-ko)* in legal documents. This term is commonly used in referring to it in the eastern area of the country, while it is called *tanomoshi(-ko)* in the western area and *moai* or *mue* in Okinawa. The oldest description of a *mujin* appears on the supplement to the *goseibai shikimoku* (the Legal Code for the Warrior Class) of 1255. It has been suggested that *mujin* was originally to support farmers under and threatened by starvation from famine and earthquakes (Dekle & Hamada, 2000; Yui, 1935).

In the 300-year peace of the Edo period, from the seventeenth to the nineteenth century, the economy boomed, and commercial and gambling *mujins* emerged. After this period, in 1871, formal banking systems were “imported” from the West by the Meiji Restoration government, but ordinary citizens and farmers continued to use *mujin*. In 1915, the national government enacted the Mujin Finance Law and started to regulate commercial *mujins*. After World War II, *mujin* activities were strongly regulated by the officials of the General Headquarters (Supreme Commander of Allied Forces), who believed that participation in *mujins* was equivalent to gambling. However, small-community *mujins* continued to operate, and they assumed important roles in the empowerment of local farmers in the postwar period of economic turmoil. After the high-growth period of the 1950s–1960s, all types of *mujins* rapidly declined, as most people shifted their financial dealings from *mujin* to formal banks and postal savings.⁷

⁷A detailed description and an economic analysis of the premodern history of Japanese *mujin* in English are available in Dekle and Hamada (2000).

Despite nationwide decline, *mujins* are still actively operated in the Yamanashi and Okinawa Prefectures and some other rural areas. However, most recent-day *mujins* do not have a strong financial purpose. In most cases, people join *mujins* for friendship and community building. In Okinawa, only 3.9 % of *mujin* (*moai*) participants indicated a financial purpose as their primary incentive, whereas 33 % cited socializing and 30 % mutual help (Shirai et al., 2013).

The exact reasons for the continuation of *mujin* in these two regions are unknown, but historians and anthropologists believe that geographic and economic conditions have created a unique cultural context that encourage local people to maintain them to foster community ties (NHK: Japan Broadcasting Corporation, 1996; Yamashita, 1983). Yamanashi is landlocked and geographically isolated by high mountains, as is Okinawa, composed of coral islands, by the ocean. The economies of both areas were weak throughout most of their histories for many reasons, including severe diseases (*Schistosoma japonicum* infection in Yamanashi and many tropical diseases in Okinawa) and geopolitical isolation. Okinawa was an independent state, the Ryukyu Kingdom, until 1879, that was located between Japan and China. Naturally, the Okinawan people have developed their own culture, one characterized by strong, community-oriented systems. There are two popular types of traditional mutual-help systems in Okinawa. One is the *moai* (Katada, 2006; Tsujimoto, Kuniyoshi, & Yokuda, 2007), and the other is called *yui*, which is a labor-sharing, ROSCA-type system that is employed in harvest seasons and when constructing houses and family tombs. As such, Okinawa's ROSCAs have taken a central role in community building (Higa, 2002; Sato, Kayo, & Iha, 1992).

10.5.2 Current Conditions of Extant Mujin and Moai

According to the 2003 Yamanashi Healthy Active Life Expectancy (Y-HALE) survey of a random sample of 581 older people without any functional disabilities (65+ years old), 66 % of the population were or had engaged in *mujin* activities in Yamanashi. The participation was 40 % of the entire adult population in 1996 (NHK, 1996). Among the older people, 79 % have continued their *mujin* participation for over 10 years. Most (93 %) *mujins* hold monthly meetings and possess mean deposits of 5,703 Japanese yen and charge a party fee of 2,311 yen. Among men, 67 % belonged to two or more *mujin* groups and among women, 50 %. For most (95 %) participants, a *mujin* was regarded as enjoyable and recognized as an important source of information, essential to daily living and health (Table 10.3) (Kondo et al., 2007).

In Okinawa, the adult participation rate in *moai* was over 60 % in 1972 (Okinawa Development Agency, 1974). The 2006 Okinawa General Social Survey (OGSS) of

Table 10.3 Characteristics of *mujin* participants in Yamanashi, Japan

	Female	Male	<i>p</i> ^a
	No. (%)	No. (%)	
Participate in the <i>mujin</i>			
Current	88 (32)	107 (36)	0.22
Ever	63 (23)	78 (26)	
Never	127 (46)	116 (39)	
Maximum number of <i>mujin</i> group memberships at one time			
1	74 (51)	65 (36)	0.03
2	33 (23)	51 (28)	
3+	39 (27)	65 (36)	
Duration of membership in the main <i>mujin</i>			
0–9	38 (25)	34 (18)	0.39
10–19	42 (27)	47 (25)	
20–29	33 (22)	45 (24)	
30+	40 (26)	59 (32)	
Frequency of participation in the main <i>mujin</i> (meetings per month)			
2+	3 (2)	4 (2)	0.96
1	137 (91)	168 (91)	
<1	11 (7)	12 (7)	
<i>Mujin</i> has (had) been a pleasure	142 (95)	173 (94)	0.61
Size of a main <i>mujin</i> group			
No. of members; mean, SD	12.7, 5.5	10.3, 5.5	<0.0001 ^b
Type of main <i>mujin</i> group			
Neighborhoods	58 (32)	59 (39)	0.001
Workmates	22 (12)	7 (5)	
Professional brethren	16 (9)	4 (3)	
Alumni	35 (19)	15 (10)	
For travel	32 (17)	34 (23)	
Other	21 (11)	32 (21)	
Age difference of members			
0–10 years	111 (65)	98 (69)	0.40
10+ years	61 (35)	44 (31)	
Gender distribution			
All members are same gender	153 (84)	120 (81)	0.40
Have opposite gender members	29 (16)	29 (19)	
Membership fee (contribution); Median [25%, 75%]			
Party fee	1,500 [1,000, 2,500]	2,500 [1,000, 3,000]	<0.0001 ^c
Deposit (for pot)	3,000 [1,000, 5,000]	5,000 [2,000, 10,000]	0.02 ^c
Total	5,000 [3,000, 7,500]	7,000 [4,000, 11,000]	<0.0001 ^c

^aChi-squared test^bt-test^cWilcoxon's rank sum testAll *p* values in the table are two tailed

a random sample of 1,739 Okinawan people, aged 20–64, showed that 41 % belonged to such organizations; 61 % of women in their 60s were members, the highest proportion of any group (Shirai, 2012). Based on the result of JAGES-Okinawa Study, the primary motivation to join a *moai* was to maintain friendships (33 %) rather than for financing (4 %). A qualitative examination by Shirai et al. (2013) reveals that *moai* are recognized by Okinawan people as “one of the important means for regular meetings to exchange emotional support and information with friends and kin.” Participation in multiple *moai* is also commonly reported for participants in the survey.

Despite the differences in their historical backgrounds, *mujin* and *moai* share many characteristics. Both are typically formed with community members, business partners, or school alumni; some people begin such groups with sports club members, hobbyists, and drinking pub partners. Thus, the groups are homogeneous in most cases, but they can be more diverse in terms of generation, gender, occupation, and socioeconomic status.

10.5.3 *Mujin, Moai, and Health*

To date, two cross-sectional studies exist for Yamanashi and Okinawa (Kondo et al., 2007; Shirai, 2012; Shirai et al., 2013), and one eight-year cohort study is available on *mujin* and health (Kondo et al., 2012) (Table 10.2).

Analyzing the Y-HALE baseline data, Kondo et al. (2007) identify a positive association between intensive *mujin* participation and good functional capacity. In the JAGES-Okinawa study, a baseline survey was conducted in 2010–2011 in the northern ($N=1,183$) and southern ($N=4,038$) areas of Okinawa. The results suggest that a bridging type⁸ of *moai* participation showed positive associations with good subjective health among females, whereas a bonding-type *moai* was linked to good health among males (Shirai et al., 2013).

Using the 8-year follow-up data, Kondo et al. (2012) evaluate the impacts of *mujin* on the onset of functional disability and mortality. A factor analysis identified “intensity and attitude” as crucial variables; these were linked to the duration of *mujin* participation, the frequency of *mujin* meetings, the enjoyment of *mujin*, group size, and the cost of meetings (party fees). The “financial aspect” was another factor; it depended on the amount of money deposited for the pot. The result is surprising (Table 10.4). In unadjusted models, more intense participation to *mujin* with a positive attitude was associated with a lower incidence of functional disability. The hazard ratio for incident functional disability per 1 standard

⁸In the Okinawa-AGES study, *moai* was determined as a bridging type if it was a high diversity in terms of socioeconomic and demographic backgrounds of its members.

Table 10.4 Hazard ratio (95 % confidence intervals) for the onset of functional disability by the two factor components of *mujin*: 8-year Y-HALE cohort, Yamanashi, Japan

	Bivariate	Model 1	Model 2
<i>Mujin</i>			
Intensity and attitude ^a	0.82 (0.68–0.99)	0.88 (0.72–1.08)	1.01 (0.81–1.25)
Financing ^a	1.21 (1.07–1.38)	1.18 (1.06–1.31)	1.20 (1.07–1.35)
Age: 75+ (vs. <75)	4.69 (2.93–7.49)	4.26 (2.52–7.22)	4.78 (2.75–8.33)
Male (vs. female)	1.66 (1.16–2.39)	1.80 (1.16–2.77)	1.60 (0.99–2.59)
Having spouse: no (vs. yes)	1.47 (1.02–2.11)	1.64 (0.98–2.75)	1.75 (1.01–3.04)
Household members (base: 3+ people)			
Living alone	0.53 (0.24–1.15)	0.50 (0.17–1.47)	0.49 (0.20–1.20)
2	0.72 (0.49–1.06)	0.96 (0.57–1.60)	1.03 (0.61–1.74)
Physical health (SF-36, PCS score) ^a	0.80 (0.68–0.94)	0.82 (0.68–0.99)	0.83 (0.69–1.01)
Education: high school graduates or higher (vs. less than high school graduate)	0.74 (0.51–1.07)	0.92 (0.57–1.50)	0.92 (0.61–1.39)
Income (log transferred: yen/month)	0.99 (0.92–1.07)	1.03 (0.93–1.15)	1.04 (0.93–1.17)
Social activity (base: not active)			
Normal	0.43 (0.27–0.67)		0.55 (0.32–0.93)
Active	0.32 (0.20–0.53)		0.32 (0.18–0.56)
Very active	0.36 (0.19–0.70)		0.34 (0.16–0.73)

^aHazard ratio is per standard deviation unit increase

deviation unit increase in the “intensity and attitude” score was 0.82. However, the impact of the financing aspect of *mujin* was completely in the opposite direction: the higher the payments, the less likely for members to maintain their functional capacities (hazard ratio, 1.21). These associations are similar, even adjusting for age, sex, marital status, household compositions, physical health, educational attainment, and individual income. Further adjustments for the levels of social activity (measured with a validated scale on the participation in community activities other than *mujin*) nullify the association between *mujin* intensity and the attitude score and incident disability, suggesting that participation in *mujin* may possess similarly strong functions to other community social activities. However, the negative association of the financing aspect score and functional disability remains statistically significant, even adjusting for the social activity score. These results are essentially identical to those of models with mortality as an outcome, while the statistical significance was lower because of fewer deaths (Kondo et al., 2012). Thus, intensive and pleasurable participation in *mujin* may be beneficial to health, whereas conducting a “serious” financing *mujin*, even today, may be rather harmful, regardless of the income of its members. This finding may reflect the dark side of social capital (Portes, 1998).

10.6 Conclusion

Our systematic review found that the microcredit program may have many positive impacts on individual health. As many studies hypothesize, a primary contribution of microcredit may be its role as a promoter of economic empowerment. Microcredit organizations also provided various additional health-promoting opportunities. Clearly, group-based activities and meeting are a valuable resource for health programs.

Nonetheless, studies that formally evaluate the impact of microcredit and ROSCAs on health from the viewpoint of social capital are currently limited. Given both the positive and negative effects of ROSCAs on health reported in a Japanese study (Kondo et al., 2012) and the striking results of the IMAGE intervention [the increased HIV-related outcomes of microcredit program participants (Pronyk, Harpham, Morison, et al., 2008)], it is clear that further analysis of community financing interventions must be conducted in order to design more effective and safe microfinance interventions. For example, a behavioral experimental study of ROSCA members suggests that bonding and bridging components of social capital cannot be fostered by microfinance interventions in the same way (Etang et al., 2008). To avoid unexpected adverse impacts, a good understanding of the existing community structures of target areas and sophisticated strategies to foster social capital at multiple levels are needed. Careless interventions may rather result in community division and expanding health disparities.

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Chapter 11

The Social Capital of Welfare States and Its Significance for Population Health

Mikael Rostila

In this chapter I will start by discussing differences and similarities in the institutional and political characteristics of welfare states using the welfare regime typology introduced by Esping-Andersen (1990). With the presentation of the institutional characteristics of welfare states as a starting point, I will theoretically and empirically scrutinize the relationship between the welfare state and the three components of social capital (networks, social trust, and social resources). Moreover, the chapter will examine whether the levels of social capital in welfare states could matter for the health of their populations. Finally, some conclusions on the relationships between welfare, social capital, and health will be provided, together with a discussion of the empirical limitations in the field.

11.1 Introduction

The Nordic welfare model, characterized by comprehensive welfare programs and generous welfare benefits, is suggested to provide several positive externalities for society and its citizens. Most well known is its ability for combating poverty, social exclusion, and inequality (Lundberg, Åberg Yngwe, Kölegård Stjärne, Björk, & Fritzell, 2008). Many of the features of the universal Nordic welfare state could, however, also be important for the creation and maintenance of social capital. Low income inequality (Wilkinson, 1996) and poverty rates (Franzini, Caughey, Spears, & Fernandez Esquer, 2005; Narayan, 1999), low corruption, and high overall quality of state institutions (Rothstein, 2001) have previously been suggested to positively

M. Rostila, Ph.D. (✉)
Centre for Health Equity Studies (CHESS), Stockholm University/Karolinska Institutet,
Sveavägen 160, SE-106 91 Stockholm, Sweden
e-mail: mikael.rostila@chess.su.se

influence the social capital of society. Some scholars have therefore argued that social capital might vary systematically between groups of welfare states with different institutional characteristics and welfare traditions (Kääriäinen & Lehtonen, 2006; Rostila, 2007; van Oorschot & Arts, 2005). Nevertheless, there are also fears that features of universal welfare states such as generous welfare benefits and great state involvement in the everyday life of citizens deplete people's incentives to create and maintain social contacts and take part in civil society, while a by-product of less comprehensive welfare states could be that citizens' dependency on social networks and their willingness to contribute to social activities are stimulated (Fukuyama, 2000; Wolfe, 1989). Consequently, two conflicting views on the relationship between welfare and social capital have emerged in the literature. Some stress that universal welfare states of the Nordic or social-democratic welfare model chiefly "crowd out" various aspects of social capital (Fukuyama, 2000; Scheepers, Te Grotenhuis, & Gelissen, 2002; Wolfe, 1989), while others claim that universal welfare states promote or "crowd in" social capital (Klausen & Selle, 1995; Torpe, 2003; van Oorschot & Arts, 2005). However, the relationship between welfare and social capital is still rather unambiguous. Hence, a first objective of this chapter is to scrutinize whether there are theoretical and empirical support that favors the "crowding out" hypothesis.

The Nordic or social-democratic welfare state has also often been assumed to promote public health through its generous welfare systems that protect vulnerable segments of the population, while it is supposed that health is poorer in countries with less comprehensive welfare systems (Bambra, 2007; Bambra & Eikemo, 2009; Eikemo, Bambra, Joyce, & Dahl, 2008; Eikemo, Huisman, Bambra, & Kunst, 2008; Lundberg et al., 2008). Although previous studies show that social capital is strongly related to health and well-being (for a review, see Islam, Merlo, Kawachi, Lindström, & Gerdtham, 2006), most previous research in the field of social capital and health has focused on pure associations and ignored the significance of the broader institutional and political context for the creation and maintenance of social capital and its potential health consequences. Another objective of this chapter is to show some empirical evidence concerning whether levels of social capital in countries with different institutional characteristics and welfare policy also promote the overall health of societies.

When studying the relationships between welfare, social capital, and health, however, it is crucial to consider that the links between welfare and social capital as well as the health consequences of social capital might differ depending on the dimension of social capital studied. This chapter will therefore examine the relationship between welfare and three dimensions of social capital—social networks (informal and formal), social trust, and social resources—and further study their impact on health. Social networks and trust are, however, considered within this chapter to be preconditions for the generation of social resources (also see Rostila, 2011a, 2011b, 2013). Accordingly, social resources constitute the core of the concept (for a discussion on different definitions of social capital, see Chap. 1).

11.2 Welfare States and Welfare Regimes

It has been agreed that the welfare state should be understood as the state's involvement in the distribution and redistribution of welfare in a country, taking democracy and the relatively high standard of living as a basis for the welfare state (Aidukaite, 2009; Berg-Schlosser & DeMeur, 1994; Esping-Andersen, 1990; Huber & Stephens, 1996; Korpi, 1983). Social policy is also sometimes used synonymously with the welfare state concept. Skocpol and Amenta (1986), for instance, use the concept when they refer to state activities affecting the social status and life opportunities for families, individuals, and various social groups. These policies have redistributive effects upon the population of a given country through regulated mass education, social insurance, pension programs, and the health-care system. There are, however, significant variations between countries concerning the state's involvement in the distribution and redistribution of welfare and the degree to which state activities affect the social status and life opportunities for families, individuals, and various social groups (Esping-Andersen, 1990, 1999).

In order to comprehend why some welfare states might possess higher levels of social capital than others, it seems essential to elucidate how welfare states differ in some central aspects. The welfare regime typology by Esping-Andersen (1990) can be useful in discussing variations of social capital between welfare states and the significance of welfare state features for levels of social capital. Esping-Andersen (1990, 1999) clarifies differences between various countries concerning welfare policy and its consequences. He argues that welfare states have historically developed into systems with their institutional logic and that the relative importance of the market, family, and state for citizens' welfare varies from one country to another. The welfare regime concept hence stresses the various roles and importance of these institutions in the production of welfare. However, even if there are similarities between countries belonging to the individual regime types, there are also differences; thus, the regime types should merely be regarded as ideal types.

The ideal typical *social-democratic* regime's policy of emancipation addresses both the market and the traditional family. These countries are characterized by the highest levels of social security, with mostly universal social benefits. The principle is not to wait until the family's capacity for aid is exhausted but to preemptively socialize the cost of family-hood. The ideal is not to maximize dependence on the family but rather the capacity for individual independence. The result is a welfare state that, compared with other regimes, largely takes direct responsibility for caring for children, the aged, and the marginalized (Esping-Andersen, 1990, 1999). In other words, this model is characterized by universalism and solidarity. Compared with the other two regime types, levels of inequality and poverty are low (Fritzell, 2001). When citizens are dependent to some extent on the welfare state and at the same time benefit from it, they probably feel more obliged to pay taxes and support state actions. Sweden, Finland, Norway, and Denmark are examples of countries belonging to this regime type.

In the ideal typical market-dominated *liberal* regime, means-tested assistance, modest universal transfers, or modest social insurance plans predominate

(Esping-Andersen, 1990, 1999). The state mainly encourages the market—either passively by guaranteeing only a minimum of benefits or actively by subsidizing private forms of the welfare system. This type of regime entails independence from the state and forces citizens to rely on family and friends for help and aid in situations of personal crisis. The consequences of this type of regime are high levels of income inequality, high levels of poverty, and low levels of de-commodification compared with the social-democratic and conservative/corporatist regimes. This model also creates high levels of class dualism. Examples of countries belonging to this regime type are the UK, the USA, and Ireland.

In the *conservative/corporatist* type, the preservation of status differentials predominates and rights are therefore attached to class and status. The state only interferes when a family's ability to serve its members is exhausted, and it then provides social benefits based on previous earnings and status in society. This regime type is also largely shaped by the church and focuses on the preservation of the traditional family (Esping-Andersen, 1990). Further, the conservative/corporatist regime appears to create average levels of inequality and de-commodification in comparison with other regimes. De-commodification refers to activities and efforts, generally provided by the government, that reduces citizens' reliance on the market (such as unemployment and sickness insurance). France, Germany, the Netherlands, Belgium, and Switzerland are examples of countries belonging to the conservative/corporatist type.

However, as several countries cannot be categorized into any of the three types of welfare regimes described above, two additional regime types have been suggested: Mediterranean and post-socialist. The *Mediterranean* regime aims to produce even more dependence on family and friends. In this type of regime, a less developed system of social security exists instead of an official level of security, accompanied by a very high degree of familialism (Bonoli, 1997; Ferrera, 1996). Spain, Italy, Greece, and Portugal can be regarded as belonging to the Mediterranean regime type.

Finally, the *post-socialist* regime, which consists of some of the countries located in Central and Eastern Europe, is still only moderately theorized and analyzed. Aidukaite (2004, 2009), however, discusses whether the postcommunist Eastern European countries have developed into a distinctive post-socialist model of social policy or whether they fall into one of the models suggested by Esping-Andersen. She suggests that these countries cannot be exactly placed in any model developed to study social policy and that they share similar historical and political experiences. This supports the idea that the Eastern European countries constitute a separate kind of welfare regime. Further, empirical results indicate that the benefits of social security are very low in the Baltic countries, as examples of post-socialist countries, and that this has resulted in high levels of income inequality and poverty (Aidukaite, 2004). Moreover, the post-socialist countries are characterized by high coverage of the social security systems but low benefits, and therefore, citizens still, to a high extent, have to rely on family or the market for support (Aidukaite, 2009). However, it must be added that there are also large variations between the post-socialist countries (Deacon, 1993; Kangas, 1999), and it is therefore questionable whether we should regard them as only one separate welfare regime type. The Czech Republic, Hungary, Romania, and Poland are examples of countries belonging to this regime type.

11.3 Welfare States and Social Capital

The theoretical uncertainties surrounding social capital become evident in discussions about the welfare state and social capital relationship, as many of the explanations linking welfare and social capital seem to use a range of different definitions of the concept. In order to clarify, I will now discuss theories and show empirical evidence of how welfare state features might separately influence the three dimensions of social capital. The discussion below concerns both individual and collective social capital, as individual networks, trust, and social resources could be a reflection of country-level social capital and vice versa.

However, whether the consequences of the welfare state on social capital originate from the institutional characteristics (direct effects) or outcomes of the welfare state (indirect effects) is often unclear. The quality and generosity of welfare state institutions may, for instance, directly influence the levels of social capital among citizens. However, the welfare state might also indirectly influence social capital through its ability to reduce income inequality via the distribution of welfare benefits to disadvantaged groups in society. The discussion below concerns both the “direct” and “indirect” effects of welfare on social capital.

Linked to the discussion on welfare and social capital below, I will show some empirical evidence of the relationship between welfare and social capital. One strategy for empirically examining whether there is empirical support for the “crowding out” hypothesis is simply to compare levels of social capital between clusters of countries with different institutional characteristics and degree of welfare state generosity. Such an analysis could reveal whether there are significant differences in social capital between countries with different welfare systems and welfare policy. Hence, empirical data on levels of social capital in a sample of European welfare states will be presented. However, another strategy for examining the presence of a “crowding out” effect is to study the association between country-level welfare spending and levels of social capital. Such an analysis reveals whether countries that spend more on welfare and welfare benefits positively or negatively influence social capital. Therefore, findings on correlations between spending on social protection and levels of social capital in European countries will also be presented.

11.3.1 *The Welfare State and Informal Social Contacts*

Informal social contacts describe cooperative and trusting relations between members of a network who see themselves as similar in terms of their shared social identity, such as social contacts with family, relatives, and friends. Informal social contacts hence partly overlap with *bonding* and *strong ties* (Granovetter, 1973; Lin, 2001; Putnam, 2000; Uslaner, 2002). There are great differences between welfare state regimes in the extent to which people are dependent on their family and friends or have to rely on collective arrangements. Universal and generous benefits for most citizens from the cradle to the grave in welfare states operating on the

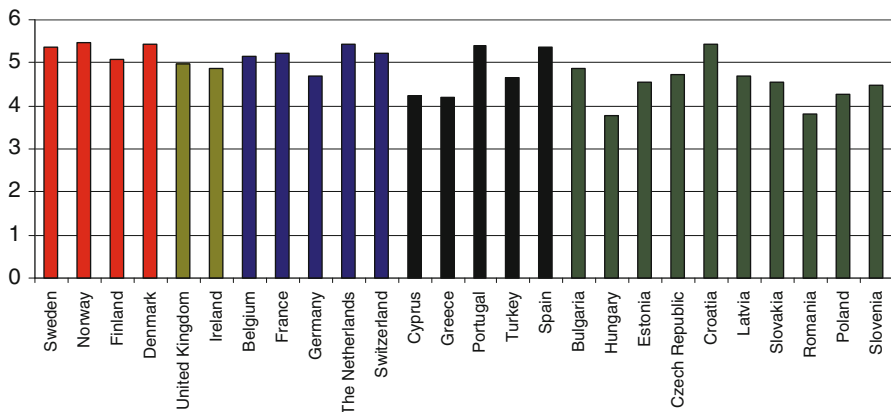
social-democratic model might have negative consequences on informal social contacts with family, relatives, and friends (see, e.g., Scheepers et al., 2002; Wolfe, 1989). As such countries provide their citizens with welfare services as well as necessary financial and practical support, the citizens are no longer dependent on personal social networks for help and aid in situations of personal crisis. Hence, informal social networks might dissolve when the significance of such networks for the welfare of citizens diminishes. Such a development might be further reinforced by the emphasis on individualism in universal welfare states, where people are expected to live an independent life from the cradle to the grave without dependence on their family or friends (Allik & Realo, 2004; LeGrand, 1997; Scheepers et al., 2002). The welfare state actually often supports an individualistic lifestyle through its generous welfare benefits. Yet, a downside of individualism is that it might ruin social relationships, assuming that it promotes self-interested behavior, distrust, and egoism.

Others, however, claim that features of universal welfare states instead have positive implications for informal social ties. Welfare states of the social-democratic model may offer people free time and financial resources to actively develop their informal social ties. For instance, people who have the resources to keep up face-to-face contact with friends and relatives across great geographical distances might have a better opportunity to maintain large social networks. Furthermore, social protection systems and welfare services might release people from the relational strain that may characterize some types of social relationships. When the state provides support in the care and well-being of the young and old, unemployed, sick, or in other ways vulnerable network members through, for instance, eldercare, medical care, and welfare benefits, this may relieve pressure from social networks surrounding a vulnerable individual as well as informal caregivers. This might ultimately increase the quality of informal social ties in countries with such universal welfare systems and increase people's incentives to create and maintain such social contacts. It has especially been suggested that well-developed social protection systems could have a positive impact on social relations between family members of different generations (Fritzell & Lennartsson, 2005; Kohli, 1999).

Figure 11.1^{1,2} shows average levels of informal social contacts in 26 European countries included in the 2008 European Social Survey. The figure suggests that levels of social activity are high in the social-democratic (Sweden, Norway, Finland, and Denmark) and conservative/corporatist countries, while the lowest levels of average social activity can be found in the post-socialist ones. Countries included in

¹Informal social contacts were measured with the question: How often do you meet socially with friends, relatives, or work colleagues? 1="Never," 2="Less than once a month," 3="Once a month," 4="Several times a month," 5="Once a week," 6="Several times a week," 7="Every day." Individual responses were aggregated to the country level. Country-level social contacts represent the mean value of individual responses.

²Countries included in the correlations between spending on social protection and social capital in Figs. 11.2, 11.4, 11.6, and 11.8 are Sweden, Norway, Finland, Denmark, the United Kingdom, Ireland, Belgium, France, Germany, the Netherlands, Switzerland, Cyprus, Greece, Portugal, Spain, Bulgaria, Hungary, Estonia, Czech Republic, Latvia, Slovakia, Romania, Poland, and Slovenia. Some countries (Turkey and Croatia) were omitted due to a lack of indicators on spending on social protection.



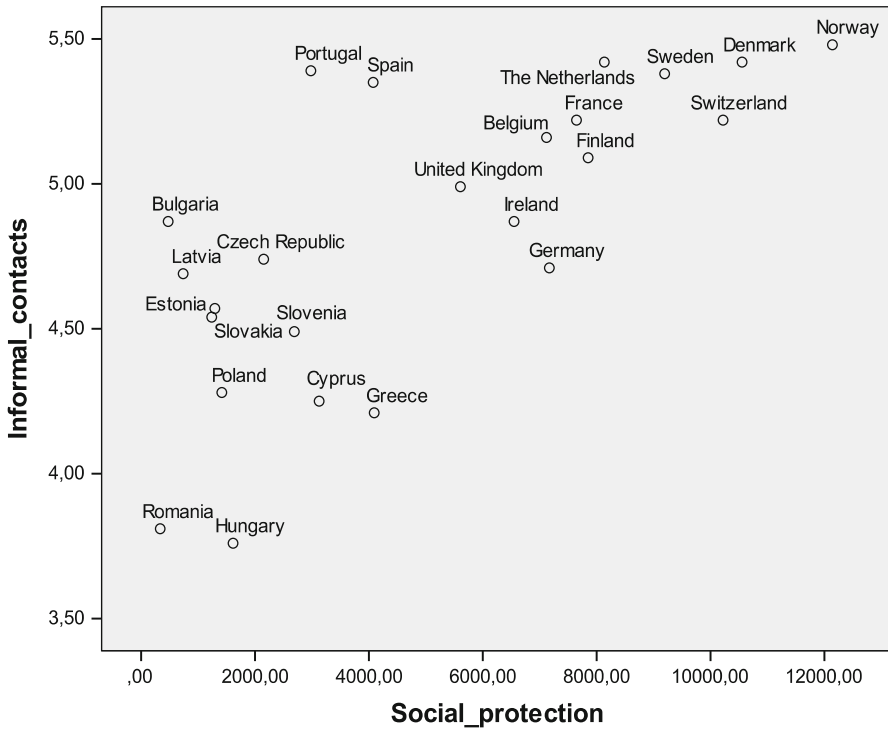
Means:
 Social-democratic regime type=5.34
 Liberal regime type=4.93
 Conservative/Corporatist regime type=5.15
 Mediterranean regime type=4.77
 Post-socialist regime type=4.52

Fig. 11.1 Average levels of informal social contacts in 26 European countries (1–7), European Social Survey (ESS) 2008 (Source: Rostila, 2013). Means: social-democratic regime type=5.34, Sweden, Norway, Finland and Denmark; liberal regime type=4.93, United Kingdom and Ireland; conservative/corporatist regime type=5.15, Belgium, France, Germany, The Netherlands and Switzerland; mediterranean regime type=4.77, Cyprus, Greece, Portugal, Turkey and Spain; post-socialist regime type=4.52, Bulgaria, Hungary, Estonia, Czech Republic, Croatia, Latvia, Slovakia, Romania, Poland, Slovenia

the Mediterranean and liberal regime types seem to have average levels of social activity. Particularly low levels of informal social contacts are found in Hungary and Romania, while high levels are found in Norway, Spain, Portugal, and Croatia.

Another empirical test of whether universal welfare states crowd out social capital is to study the correlation between spending on social protection and levels of social capital in a selection of countries. If countries with higher levels of social spending also have higher levels of social capital, this could indicate that universal welfare states with generous welfare benefits stimulate social capital. A negative correlation would, on the other hand, suggest a “crowding out” effect by social spending. Figure 11.2³ shows the correlation between spending on social protection and informal social contacts in 24 European countries. There is a strong and significant correlation ($r=0.72$) between total spending on social protection and levels of social activity, meaning that countries that spend more on social protection have higher levels of informal social contacts. Norway, Denmark, Sweden, and Switzerland spend much of their budget on social protection and also have high levels of informal social contacts, while Romania and Hungary are characterized by low social spending and low levels of social capital. Total spending on social protection still

³See http://epp.eurostat.ec.europa.eu/portal/page/portal/social_protection/data/database# for more information about measures of social protection benefits.



$r=0.72^{***}$ (unadjusted)
 $r=0.36^*$ (adjusted for GDP)

***Significant on the 1% level
 **Significant on the 5% level
 *Significant on the 10% level

Fig. 11.2 Correlation between total spending on social protection benefits per head of population (in EUR) and informal social contacts in 24 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.72^{***}$ (unadjusted), $r=0.36^*$ (adjusted for GDP), ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

shows a positive correlation with informal social contacts ($r=0.36$) after adjustment for gross domestic product (GDP); however, it becomes weaker and only significant at the 10 % level. Hence, GDP accounts for much of the association between spending on social protection and levels of informal social contacts.

11.3.2 The Welfare State and Formal Social Contacts

Formal social contacts concern social relations created in voluntary associations, working life, and other formal institutions. Such contacts are good links to external

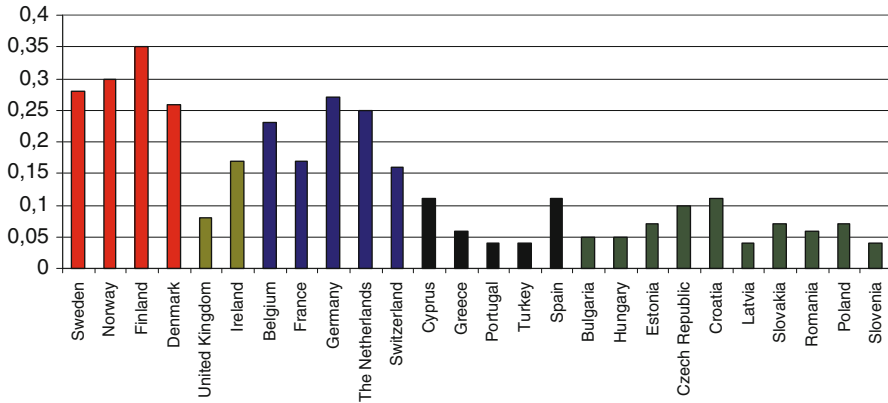
assets and enable information diffusion. Hence, formal social contacts have similarities with *bridging* or *weak ties* (Granovetter, 1973; Putnam, 2000). However, it has been suggested that universal welfare states also negatively influence civic and voluntary participation, that is, various types of formal social contacts (e.g., Wolfe, 1989). It has been argued that the development of welfare states has made voluntary associations either unnecessary or instruments of state politics and that states can have a serious negative impact on the civic activities of their populations when they start to undertake activities that are better left to the private sector or civil society (Fukayama, 2000). Hence, through formalizing voluntary associations and excluding citizens from decision-making processes, the state may have transformed its citizens into passive bystanders in civil society.

Several more specific ways the welfare state might support voluntary associations have been suggested, however (Herrerros, 2004; Torpe, 2003). The state may promote voluntary associations by giving them various types of support such as grants, tax breaks, or access to and use of public premises. State subsidies might be particularly valuable for citizens' incentives to participate when there is a risk of a prisoner's dilemma, that is, when no one will contribute to the public good. Second, the state might also have a positive impact on voluntary participation through the institutionalization of certain types of associations such as labor or employer organizations, as has been the case in many social-democratic countries. Finally, the welfare state can indirectly promote participation through its impact on individual variables such as income and education, as such variables provide individuals with resources that facilitate participation (Herrerros, 2004).

Figure 11.3⁴ clearly suggests that the highest levels of formal social contacts can be found in the social-democratic countries, while levels of formal social contacts are much lower in the Mediterranean and the post-socialist countries. Somewhere between these two extremes, countries belonging to the conservative/corporatist regime and liberal regime are found. With these results as a basis, universal welfare states of the social-democratic model seem to stimulate rather than crowd out formal social contacts, while less comprehensive welfare states might have detrimental effects on this type of social capital.

Figure 11.4 shows that the correlation between total spending on social protection and country-level participation in associations is very high ($r=0.85$). That is, countries that spend more on social protection have higher average levels of participation in associations among their populations. Countries such as Norway, Finland, Sweden, and Denmark spend a great deal on social protection and have higher levels of formal

⁴Participation in associations was measured with the following two questions: There are different ways of trying to improve things in a country or helping prevent things from going wrong. During the past 12 months, have you done any of the following: worked in a political party or action group? 1="Yes," 2="No"; worked in another organization or association? 1="Yes," 0="No". Those who had either worked in a political party or action group or in another organization or association were coded as having good formal social contacts. Country-level participation in associations represents the mean value of individual responses to this question.



Means:

Social-democratic regime type=0.30

Liberal regime type=0.13

Conservative/Corporatist regime type=0.22

Mediterranean regime type=0.07

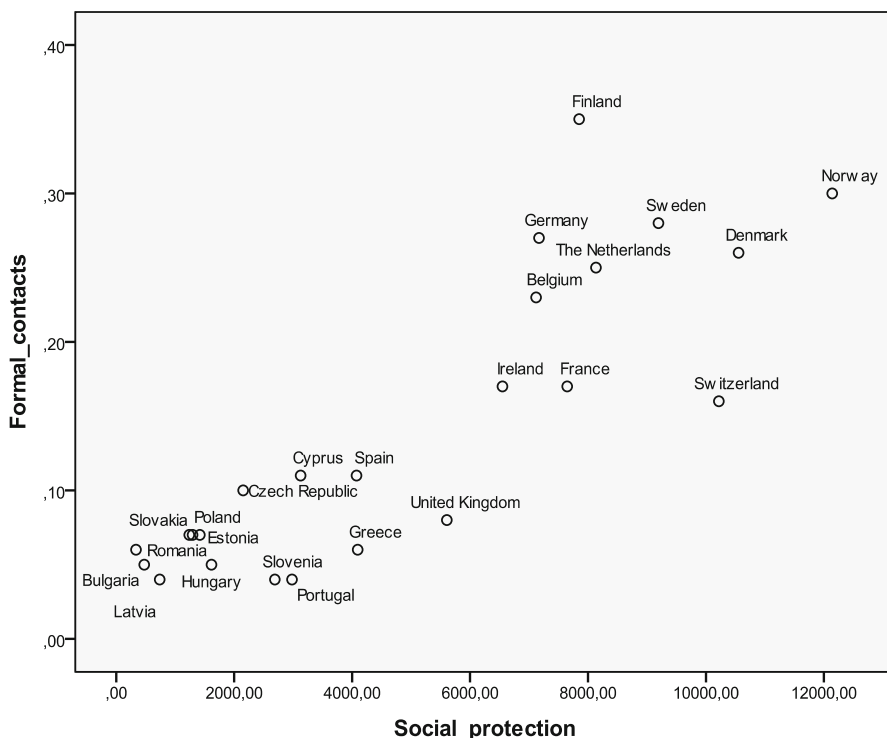
Post-socialist regime type=0.07

Fig. 11.3 Average levels of formal social contacts in 26 European countries (0–1), European Social Survey (ESS) 2008 (*Source*: Rostila, 2013). Means: social-democratic regime type=0.30, Sweden, Norway, Finland and Denmark; liberal regime type=0.13, United Kingdom and Ireland; conservative/corporatist regime type=0.22, Belgium, France, Germany, The Netherlands and Switzerland; mediterranean regime type=0.07, Cyprus, Greece, Portugal, Turkey and Spain; post-socialist regime type=0.07, Bulgaria, Hungary, Estonia, Czech Republic, Croatia, Latvia, Slovakia, Romania, Poland, Slovenia

social contacts, while spending on social protection and levels of formal social contacts are very low in Bulgaria and Latvia. The correlation becomes somewhat weaker after adjustment for GDP but is still significant ($r=0.57$). Accordingly, universal welfare states of the social-democratic model have the highest levels of formal social contacts, while total spending on social protection is positively correlated with formal social contacts. This indicates that there may be a positive rather than negative relationship between welfare and formal social contacts.

11.3.3 *The Welfare State and Social Trust*

Social trust constitutes the cognitive dimension of social capital and relates to the degree of social trust that emerges in social relations. The discussion below concerns thin trust and refers to a general trust in people with whom you are not necessarily acquainted (Putnam, 2000; Uslander, 2002). Several hypotheses about the relation between the welfare state and social trust exist. First, the high degree of individualism in universal countries might be of significance for levels of social trust. Obviously, people might turn into distrusters if they believe that their fellow citizens will behave egoistically and not honor their trust. On the other hand, Durkheim



$r=0.85^{***}$ (unadjusted)
 $r=0.57^{***}$ (adjusted for GDP)

***Significant on the 1% level

**Significant on the 5% level

*Significant on the 10% level

Fig. 11.4 Correlation between total spending on social protection benefits per head of population (in EUR) and levels of formal social contacts in 24 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.85^{***}$ (unadjusted), $r=0.57^{***}$ (adjusted for GDP), ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

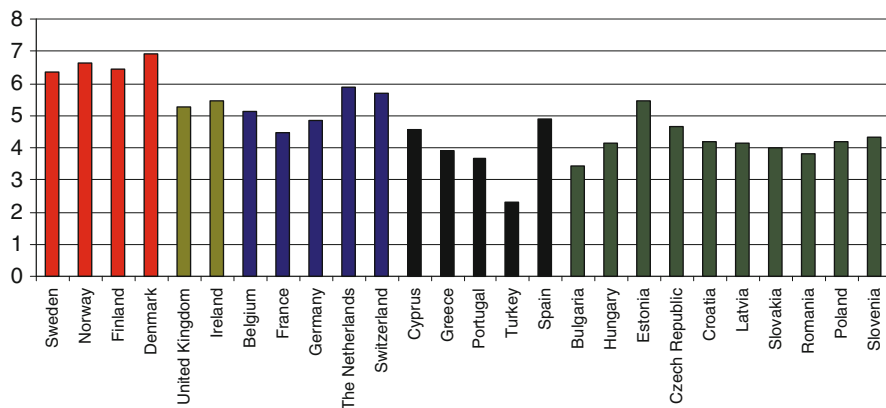
(1893) and others previously claimed that voluntary cooperation, trust, and mutual social relationships are only possible when people have autonomy, self-control, and a mature sense of responsibility, which would suggest no antagonism between individualism and trust.

Moreover, social trust is promoted when citizens feel trust and confidence in political and state institutions because they are characterized by impartial, non-corrupt, and just bureaucracies (Fukuyama, 2000; Rothstein, 2001, 2003). It has been argued that universal welfare institutions increase citizens' trust in both state institutions and other fellow citizens, whereas experiences with needs-testing social programs undermine it. Needs-tested public services may more readily give rise to suspicions concerning arbitrary treatment and poor procedural justice than do universal

agencies, and this may influence citizens' views on the reliability of public professionals and state institutions as well as other fellow citizens. On the contrary, universal programs give rise to a sense of equal treatment and rules in society being based on principles of fairness. The fact that Scandinavians encounter universal welfare agencies and relatively few experience selectively distributed public welfare and service might hence explain higher levels of trust in these countries (Kumlin & Rothstein, 2005).

Furthermore, Herreros (2004) emphasizes the state's role as a third-party enforcer of private agreements. The state can directly influence trust by sanctioning those who do not honor the trust placed on them through, for instance, its capacity to monitor laws, sanction lawbreakers, and provide information and guarantees about those seeking to be trusted (Herreros, 2004; Levi, 1996). Hence, if citizens know that any noncompliance with an agreement will be sanctioned by the state, they will have greater expectations about other people's compliance and hence greater trust in other people. Empirical evidence supports the assertion that the state plays an important role in the creation of social trust (Herreros & Criado, 2008). However, it seems reasonable to assume that universal welfare states that take direct responsibility for the care of their citizens from the cradle to the grave also, to a higher extent, tend to sanction private agreements between their citizens because of their well-functioning legal systems. Nevertheless, some still argue that the presence of the state as a third-party enforcer of agreements through, for instance, legal contracts is negative for the creation of trust between citizens as it, in fact, relieves society of the need for trust (Torsvik, 2000; Ullman-Margalit, 2004).

Welfare regimes also differ considerably regarding economic features such as levels of poverty and inequality, as social-democratic countries have very low levels of poverty and income inequality while liberal, Mediterranean, and post-socialist countries are worse off. However, such features have also been suggested as being decisive for social trust. First and foremost, the level of absolute material deprivation and poverty has been shown to be important for levels of social trust; that is, poverty compromises social trust (Franzini et al., 2005; Narayan, 1999; Putnam, Leonardi, & Nanetti, 1993). High poverty might chiefly lead to distrust in the poorer segments of the population as a consequence of feelings of injustice and marginalization. Moreover, the level of inequality in a country may be of significance for trust as a large gap between rich and poor might lead to declining levels of trust and social cohesion among disadvantaged citizens (Wilkinson, 1996). However, income inequality might also covary with social trust and form a "social trap" in which low levels of social trust are cemented. High levels of inequality may contribute to lower levels of trust, which lessen political and societal support for the state to collect resources launching and implementing universal welfare programs in an uncorrupted and non-discriminatory way. Hence, unequal societies find themselves trapped in a continuous cycle of inequality, low trust between citizens and a government, and policies that do little to reduce the gap between the rich and the poor or to create a sense of equal opportunity (Rothstein & Uslaner, 2005).



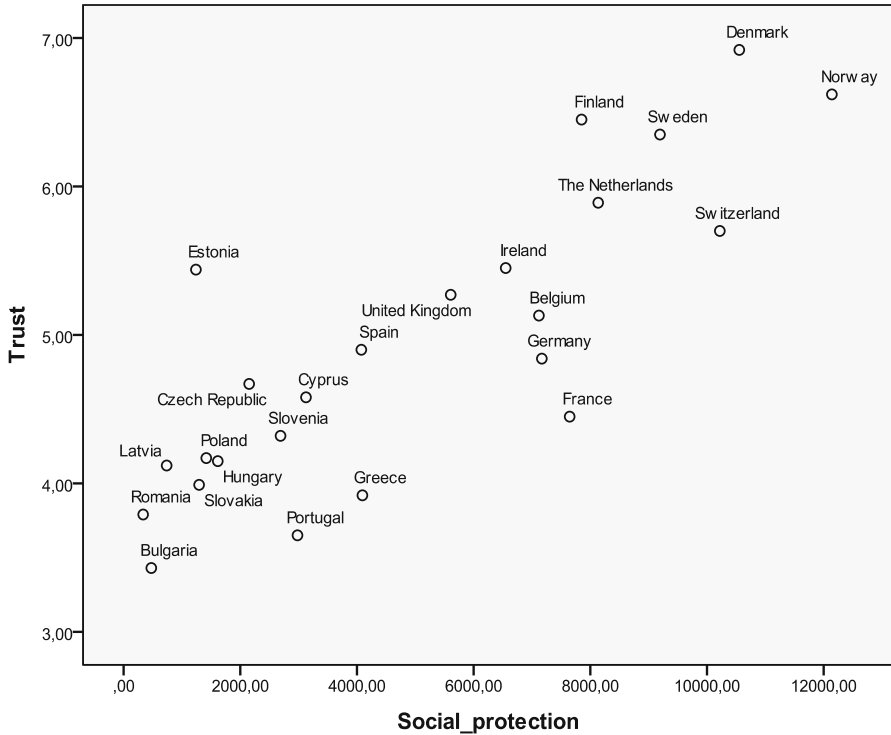
Means:
 Social-democratic regime type=6.59
 Liberal regime type=5.36
 Conservative/Corporatist regime type=5.20
 Mediterranean regime type=3.87
 Post-socialist regime type=4.18

Fig. 11.5 Average levels of social trust in 26 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). Means: social-democratic regime type =6.59, Sweden, Norway, Finland and Denmark; liberal regime type =5.36, United Kingdom and Ireland; conservative/corporatist regime type = 5.20, Belgium, France, Germany, The Netherlands and Switzerland; mediterranean regime type =3.87, Cyprus, Greece, Portugal, Turkey and Spain; post-socialist regime type =4.18, Bulgaria, Hungary, Estonia, Czech Republic, Croatia, Latvia, Slovakia, Romania, Poland, Slovenia

Figure 11.5⁵ suggests very clear welfare regime differences in social trust. In correspondence with previous findings, the social-democratic countries have the highest levels of average trust, while the Mediterranean and post-socialist countries have very low levels. Somewhere in between, we find the liberal and conservative/corporatist countries. The figure, however, suggests a somewhat mixed pattern among the Mediterranean countries. While Spain has moderate levels of trust, levels are very low in Turkey. The levels of trust are also fairly high in Estonia and Czech Republic when compared to other post-socialist countries.

Figure 11.6 suggests very strong correlations between spending on social protection and social trust in the 24 European countries. The correlation between total spending on social protection and social trust is significant and $r=0.83$. Countries such as Denmark, Norway, and Sweden spend a great deal on social protection and have high levels of trust, while spending on social protection and levels of trust are low in Latvia, Estonia, and Romania. The figure suggests that the positive

⁵Social trust was measured with the question: Would you say that most people can be trusted, or that you can't be too careful in dealing with people? The responses varied from 0 ("You can't be too careful") to 10 ("Most people can be trusted"). Individual responses were aggregated to the country level. Country-level social trust represents the mean value of individual responses.



$r=0.83^{***}$ (unadjusted)
 $r=0.40^*$ (adjusted for GDP)

***Significant on the 1% level
 **Significant on the 5% level
 *Significant on the 10% level

Fig. 11.6 Correlation between total spending on social protection benefits per head of population (in EUR) and social trust in 24 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.83^{***}$ (unadjusted), $r=0.40^*$ (adjusted for GDP), ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

correlation between total spending on social protection remains significant after adjustment for GDP, although it becomes weaker ($r=0.40$) and merely significant at the 10 % level.

11.3.4 The Welfare State and Social Resources

Social resources refer to the variety of resources that are embedded in social networks or social structures (also see, Lin, 2001) and have previously been considered the

core of social capital (Rostila, 2011a, 2011b). Possibilities to acquire economic support from network members or job information from acquaintances are examples of social resources. Theories are scarce on whether social resources are influenced by welfare state features. However, it seems plausible that the exchange of resources embedded in social networks might provide an alternate form of welfare in the absence of well-developed and universal welfare systems. When vulnerable segments of the population do not receive support from state institutions, they may have to rely on social resources embedded in their social networks such as money, housing, food, and other valuable goods and services. Hence, interaction patterns and the exchange of social resources in social networks may be strongly related to the generosity of welfare institutions. Given that social resources constitute an alternate form of welfare (Rose, 1995; Völker & Flap, 2001), we might expect a lower exchange of social resources in societies that provide many resources through generous welfare systems. On the other hand, the exchange of social resources in networks might also be stimulated in such contexts, given the higher overall supply of available resources.

Furthermore, citizens' perception of the state's role as an effective third-party enforcer of private agreements (Herreros, 2004) may also play some role in the exchange of social resources. People's incentives to exchange resources with people they do not know and their expectations of reciprocity may be higher in contexts characterized by impartial, non-corrupt, and just state institutions, such as those found in the universal welfare states. Accordingly, the exchange of social resources may be higher in such countries as citizens are more likely to believe that the state is an effective enforcer of private agreements. On the contrary, levels of corruption and suspicions of arbitrary treatment are much higher in less comprehensive welfare states (Fukuyama, 2000; Rothstein, 2001; Rothstein & Uslaner, 2005). Citizens in such countries may therefore be more careful in the exchange of social resources as they are less likely to believe that the state is an effective enforcer of private agreements. They might also be more likely to believe that sharing resources with fellow citizens will not be reciprocated.

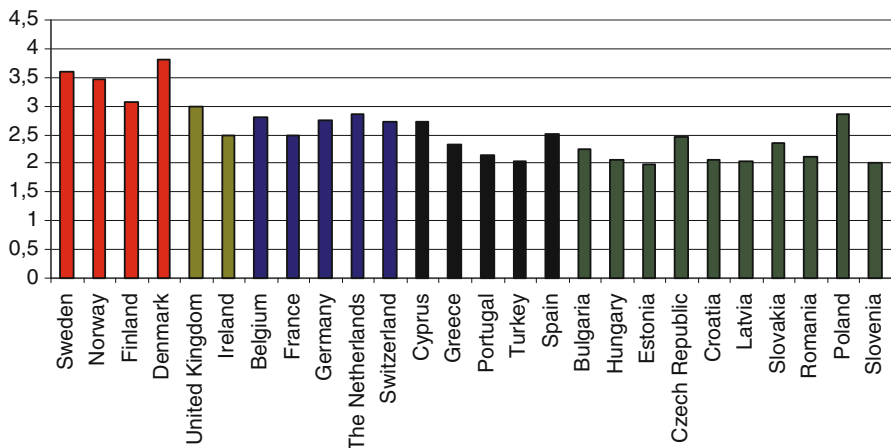
There might also be more specific explanations for the social capital of post-socialist societies that ultimately influence the exchange of social resources. Völker and Flap (2001) examined the degree to which social interaction is influenced by the institutional context before and after the transition in the former communist society of East Germany. They argue that personal networks are a means of solving problems and that citizens therefore invest in different kinds of social relationships according to the social institutional environment. Accordingly, since the people of the former German Democratic Republic (GDR) were aware of the political control and the damage potential of social ties to people they did not know very well (formal social ties), they invested only cautiously in others. They kept their distance from strangers and all others whose trustworthiness was uncertain and interacted only with people they truly trusted. Accordingly, the citizens' trust in people they did not know well (generalized trust) was very low, and they also invested less in such ties because of their damage potential. On the other end of the spectrum, the shortages of the command economy forced people to rely on a small number of weak informal

ties to secure necessary goods and services. These ties were used to compensate for the bottlenecks of the economy of shortages. In the empirical analyses of how the social capital of citizens of the former GDR changed after the transition, it was found that people included more weak ties in their personal networks, although people's networks did not grow in size. Moreover, people still do not trust relative strangers and participate in organizational life to a very low extent. These findings relate to the "hourglass" society described by Rose (1995) in a study of Russia before and after the transition. Such a society is characterized by strong informal networks relying on trust between friends, relatives, and other face-to-face groups that can also extend to friends of friends. Political elites, institutions, etc. compete for power, wealth, and prestige at the top of the hourglass, but there is little communication or trust between the top and base of the hourglass. Rose also suggests that much of everyday life in Russia is organized to insulate people from the negative effects of the state, which is not regarded as benevolent. Citizens' high degree of trust in their immediate social network and a high degree of distrust in the Russian state have resulted in a "constitution without citizens," because most Russians do not see their everyday concerns as integrated with the government. Rose also suggests that the majority of Russians get by because, in addition to the official economy, they rely on multiple unofficial economies, such as exchanging help with friends and relatives or going to friends of friends for favors.

The social capital of the former GDR and Russia could be considered examples of how the institutional, political, and historical context have influenced social capital in many other post-socialist societies as well. There have probably been many changes in the social capital of these countries since the transition. Yet, people's interaction patterns and social capital may still, to some extent, reflect previous experiences from a historical perspective. Hence, it could be that people in the post-socialist societies still today have relatively small social networks, low participation in associations, and low trust in people they do not know very well (generalized trust). Nevertheless, social resources might still play an important role in securing necessary goods and services in the absence of generous welfare systems with high coverage. On the other hand, the low general levels of resources in post-socialist societies may still limit the flow of social resources exchanged in networks, particularly among the poorer segments of the population.

Figure 11.7⁶ shows the extent to which people could borrow money from a network member if they were in serious financial difficulties in the 26 European countries in 2008. The availability of economic support in the network is used as a proxy for social resources, as no cross-national measure that explicitly covers all types of social resources embedded in people's social networks is available in the

⁶Social resources were measured with the question: If for some reason you were in serious financial difficulty and had to borrow money to make ends meet, how difficult or easy would that be? The alternatives were "very difficult" (1), "quite difficult" (2), "neither easy nor difficult" (3), "quite easy" (4), "very easy" (5). Individual responses were aggregated to the country level. Country-level social resources represent the mean value of individual responses.

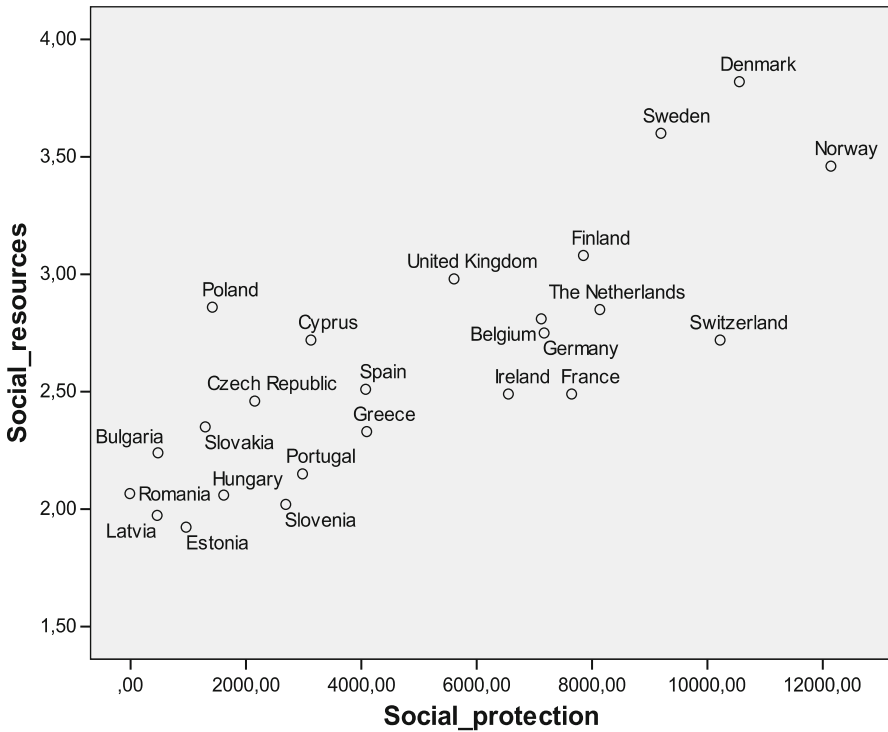


Means:
 Social-democratic regime type=3.49
 Liberal regime type=2.74
 Conservative/Corporatist regime type=2.72
 Mediterranean regime type=2.35
 Post-socialist regime type=2.22

Fig. 11.7 Average levels of social resources in 26 European countries (1–5), European Social Survey (ESS) 2008 (Source: Rostila, 2013). Means: social-democratic regime type = 3.49, Sweden, Norway, Finland and Denmark; liberal regime type = 2.74, United Kingdom and Ireland; conservative/corporatist regime type = 2.72, Belgium, France, Germany, The Netherlands and Switzerland; mediterranean regime type = 2.35, Cyprus, Greece, Portugal, Turkey and Spain; post-socialist regime type = 2.22; Bulgaria, Hungary, Estonia, Czech Republic, Croatia, Latvia, Slovakia, Romania, Poland, Slovenia

European Social Survey. The figure suggests very high levels of social resources in the social-democratic countries, while levels are lower in the post-socialist and Mediterranean countries. Somewhere between these extremes, we find the conservative/corporatist and liberal countries. Some countries, however, diverge from the rest of those included in the same welfare regime. Much higher levels of social resources are found in Poland than other countries included in the post-socialist regime and in Cyprus compared to other Mediterranean countries. However, due to the very crude measurement of social resources, these results must be interpreted with caution.

Figure 11.8 shows the correlation between spending on social protection benefits and social resources in European countries and suggests a very strong and significant correlation between total spending on social protection benefits and levels of social resources ($r=0.82$). Accordingly, countries that spend more of their budget on social protection per head of population have a higher exchange of social resources. For instance, Norway, Sweden, and Denmark spend a great deal on social protection and have a high exchange of social resources, while social spending and levels of social resources are lower in Latvia and Estonia. The correlation remains rather strong and significant at 10 % level after adjustment for GDP ($r=0.59$).



$r=0.82^{***}$ (*unadjusted*)

$r=0.59^*$ (*adjusted for GDP*)

***Significant on the 1% level

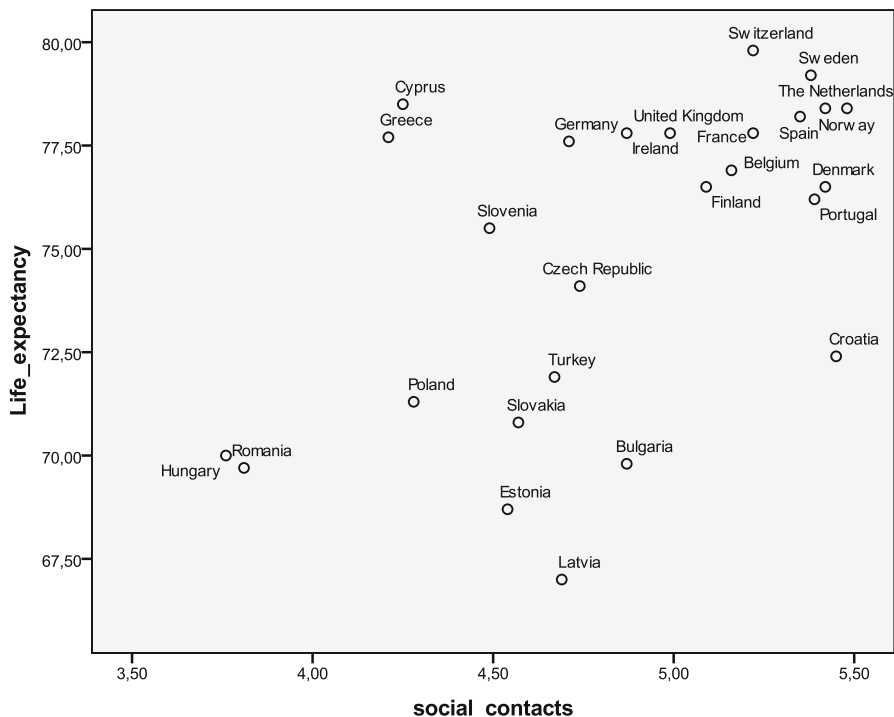
**Significant on the 5% level

*Significant on the 10% level

Fig. 11.8 Correlation between spending on social protection benefits per head of population (in EUR) and social resources in 24 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.82^{***}$ (*unadjusted*), $r=0.59^*$ (*adjusted for GDP*), ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

11.4 Welfare States, Social Capital, and Health

Previous chapters of this volume have suggested a relationship between social capital and health, and several mechanisms explaining this relationship have been proposed. Given the profound variations in levels of social capital between welfare states, there could also be a welfare state pattern in the relationship between social capital and health; that is, there could be clusters of countries with low social capital and poor health according to welfare regime type. The final analyses within this chapter will show whether there is a relationship between social capital and health in

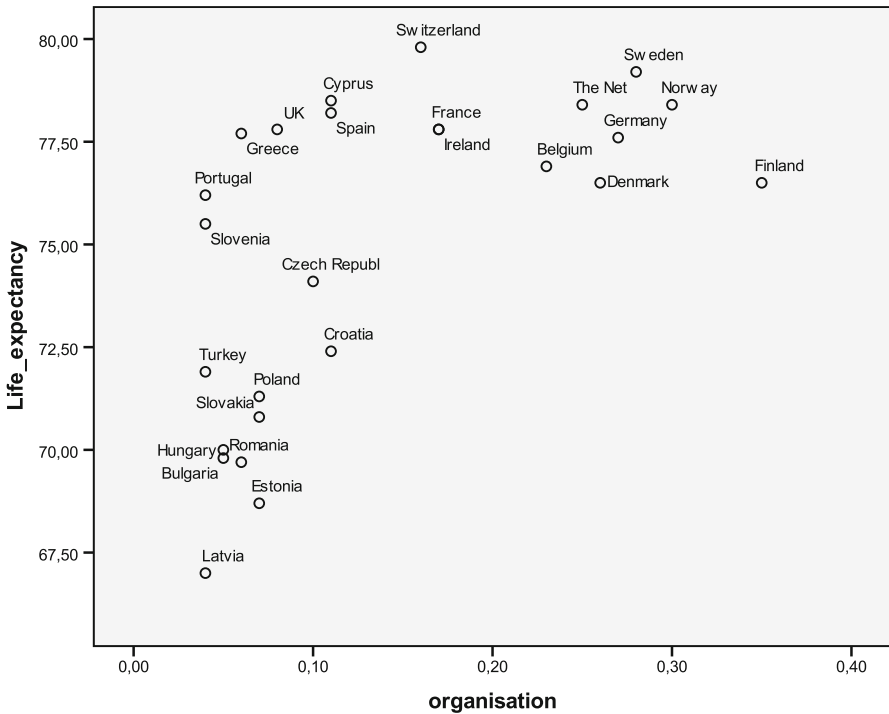


$r=0.53^{***}$
 ***=significant on the 1% level
 **=significant on the 5% level
 *=significant on the 10% level

Fig. 11.9 The correlation between country-level informal social contacts and life expectancy in 26 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.53^{***}$, ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

European countries. However, the results also indicate whether countries belonging to some European welfare regimes cluster on both low social capital and poor health. The figures are based on correlation analysis of 26 countries included in the 2008 European Social Survey.

Figure 11.9 shows the association between informal social contacts and life expectancy at the country level and suggests a significant correlation between informal social contacts and life expectancy ($r=0.53$). Countries with high average levels of social activity have a higher life expectancy. The figure suggests that post-socialist countries such as Hungary, Romania, and Poland have particularly low levels of informal social contacts and low life expectancy, while the social-democratic countries of Sweden, Norway, and Denmark have good informal social contacts and high life expectancy. Nevertheless, some other countries belonging to the Mediterranean



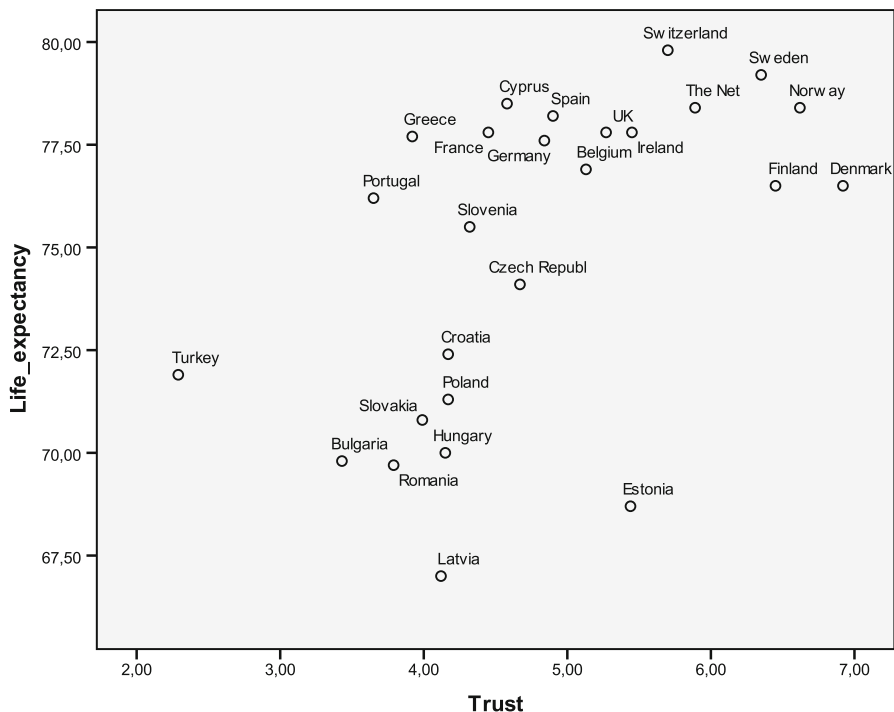
$r=0.60^{***}$
 *** =significant on the 1% level
 ** =significant on the 5% level
 * =significant on the 10% level

Fig. 11.10 The correlation between country-level formal social contacts and life expectancy in 26 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.60^{***}$, *** significant on the 1 % level, ** significant on the 5 % level, * significant on the 10 % level

(e.g., Spain) and conservative/corporatist (e.g., the Netherlands and Switzerland) regimes also have relatively good social contacts and high life expectancy.

Figure 11.10 shows the correlation between formal social contacts and life expectancy in European countries. There is a rather strong and significant correlation ($r=0.60$) between these two variables as well; that is, countries with higher participation in associations have a higher life expectancy. Social-democratic countries such as Sweden, Norway, and Finland have high levels of participation in associations and high life expectancy, while post-socialist countries such as Latvia, Estonia, Bulgaria, Hungary, and Romania have very low levels of formal social contacts and very low life expectancy. Somewhere between these two extremes, we find many of the liberal, conservative/corporatist, and Mediterranean countries.

Figure 11.11 shows the correlation between average social trust and life expectancy in the 26 European countries and suggests that countries with high average

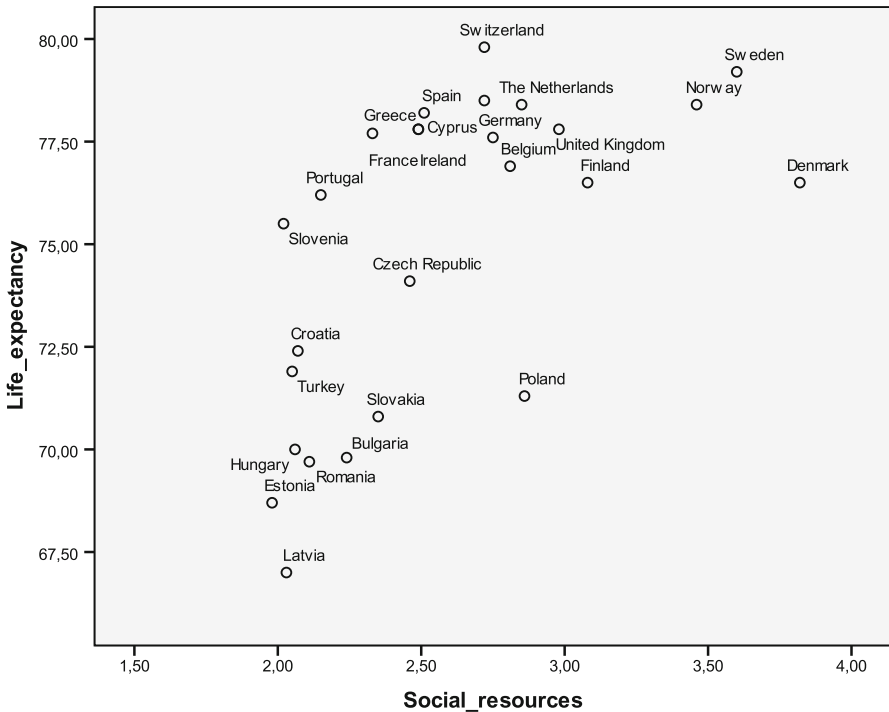


$r=0.55^{***}$
 ***=significant on the 1% level
 **=significant on the 5% level
 *=significant on the 10% level

Fig. 11.11 The correlation between country level of social trust and life expectancy health in 26 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.55^{***}$, ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

trust also have high life expectancy ($r=0.55$). The social-democratic countries of Sweden, Norway, Finland, and Denmark have relatively high levels of social trust and high life expectancy. However, the pattern seems somewhat more mixed regarding the other countries.

Finally, Figure 11.12 shows the correlation between average levels of social resources and average life expectancy in European countries. There is a strong association between these two variables ($r=0.61$), which suggests that people in countries with a high exchange of social resources, on average, live longer. In line with many of the previous findings, Sweden, Norway, and Denmark all have high levels of social resources and high life expectancy, while post-socialist countries such as Latvia, Estonia, and Romania are worse off. Somewhere in between we find countries belonging to the liberal and conservative/corporatist regimes, with average levels of social resources and life expectancy.



$r=0.61$ ***
 ***=significant on the 1% level
 **=significant on the 5% level
 *=significant on the 10% level

Fig. 11.12 The correlation between country level of social resources and life expectancy in 26 European countries, European Social Survey (ESS) 2008 (Source: Rostila, 2013). $r=0.61$ ***, ***significant on the 1 % level, **significant on the 5 % level, *significant on the 10 % level

11.5 Conclusions

Universal and comprehensive welfare states are well known for their ability to fight poverty and inequality. Nevertheless, the relationship between welfare and social capital is still not well understood, and scholars disagree about the possible consequences of generous welfare systems on levels of social capital. This chapter presented theoretical arguments for two opposing notions concerning the relationship between welfare and social capital. The “crowding out” hypothesis suggests that universal welfare states of the social-democratic model have negative consequences on social capital, while the other school of thought argues that comprehensive welfare systems rather support the creation and maintenance of social capital. Given the profound variations in social capital between welfare states, it was also suggested that social capital could have implications for the overall health of different

societies. The chapter hence also examined the relationship between country-level social capital and health and suggested whether a welfare regime pattern in the social capital–health relationship could be discerned, that is, that countries belonging to different welfare systems cluster on low social capital and poor health.

The empirical data presented in the chapter chiefly showed that comprehensive welfare states do not seem to crowd out social capital. Analyses of 26 European countries in 2008 suggested that informal social contacts, formal social contacts, social trust, and social resources were at very high levels in the universal social-democratic countries, while much lower levels were found in countries with less comprehensive welfare systems such as the Mediterranean and post-socialist countries. Somewhere between these extremes, liberal and conservative/corporatist countries with average levels of welfare were found. Consequently, comprehensive welfare states may stimulate rather than crowd out the creation and maintenance of different dimensions of social capital.

Furthermore, additional support for the absence of a crowding out effect of universal welfare states was found in the positive correlations between total spending on social protection and informal social contacts, formal social contacts, social trust, and social resources, respectively. If universal welfare states crowd out social capital, we would expect negative correlations between spending on social protection and social capital. On the contrary, countries that spend more on social protection generally show higher levels of social capital. Nevertheless, some of the correlations between spending on social protection and social capital turned weaker and nonsignificant after adjustment for GDP. These results suggest that GDP could also be important for the creation of social capital in countries and may occasionally influence both spending on social protection and social capital. The contribution of GDP to the relationship between spending on social protection and social capital is, however, not surprising, considering that richer countries most likely have greater financial opportunities to also spend more on social protection. Although the findings presented in this chapter showed a positive relationship between welfare and social capital, more research is needed in order to definitely conclude that there is a positive relationship between welfare and social capital.

Some explanations for the overall positive effect of welfare on the dimensions of social capital were discussed in the chapter. The positive relationship between universal welfare states and informal social contacts might be explained by the fact that the state, through universal programs and benefits, provides support for the care of the young and old, as well as the sick or otherwise disabled and vulnerable. This might relieve pressure from informal caregivers and increase the quality of informal social ties. Universal welfare states of the social-democratic model may also offer people the financial resources and free time needed to actively develop their informal social ties. In line with the findings presented here, some empirical studies have found that social networks and social support are at high levels in social-democratic countries (Pichler & Wallace, 2007; van Oorschot & Arts, 2005; van Oorschot, Arts, & Gelissen, 2006).

Furthermore, some explanations for the high levels of formal social contacts in universal welfare states were also presented. For instance, universal welfare states may have promoted voluntary associations by giving them various types of support

such as grants, tax breaks, or access to and use of public premises. Moreover, the welfare state might also have had a positive impact on voluntary participation through the institutionalization of certain types of associations such as labor or employer organizations, as has been the case in many social-democratic countries. Social-democratic welfare states could also have indirectly promoted participation through their positive impact on individual variables such as income and education. Such variables provide individuals with resources that facilitate participation. Some previous cross-national analyses support the notion that universal welfare states of the social-democratic model have positive implications for formal social ties, such as participation in voluntary associations (Kääriäinen & Lehtonen, 2006; Pichler & Wallace, 2007; van Oorschot et al., 2006; van Oorschot & Arts, 2005).

Moreover, there are also reasonable explanations for the high levels of trust in universal welfare states and the positive relationship between spending on social protection benefits and social trust. It has been argued that contacts with universal welfare state institutions tend to increase the cognitive aspect of social capital, social trust, as such institutions might give rise to a sense of equal treatment and that rules in society are based on principles of fairness. Universal welfare systems may also more effectively sanction those citizens who do not honor the trust placed in them through their capacity to monitor laws, sanction lawbreakers, distribute welfare benefits, and provide information and guarantees about those seeking to be trusted which, in turn, increases levels of trust and trustworthiness. Additionally, the low levels of poverty and income inequality may also explain the high levels of social trust within universal welfare states. Accordingly, empirical studies on cross-national differences in social trust support the notion that universal welfare states of the social-democratic model have positive implications for levels of social trust, whereas countries with less universal welfare systems have the lowest levels of trust (Kääriäinen & Lehtonen, 2006; Pichler & Wallace, 2007; Rothstein, 2001; van Oorschot et al., 2006; van Oorschot & Arts, 2005).

Finally, the high levels of social resources in the social-democratic regime could be explained by the fact that these countries are also characterized by extensive informal and formal social networks characterized by high levels of trust. Social networks and social trust are suggested to be important preconditions for the exchange of social resources. Nevertheless, the greater availability of resources in these countries, due to better material circumstances and higher welfare state generosity, may also play an important role in the number of resources exchanged in social networks. Finally, citizens' view of the state's role as an effective third-party enforcer of private agreements might also be of importance for the exchange of social resources in universal countries. People's incentives to exchange resources with people they do not know and their expectations of reciprocity may be higher in countries characterized by impartial, non-corrupt, and just state institutions such as the social-democratic ones. On the contrary, levels of corruption and suspicions of arbitrary treatment are much higher in less comprehensive welfare states with needs-testing social programs. Citizens in such countries may therefore be more careful in the exchange of social resources, as they are less likely to believe that the state is an effective enforcer of private agreements.

However, some arguments for particularly low levels of formal social contacts and social trust in the post-socialist countries were also suggested. It was argued that there might be historical and political reasons for the scarcity of some types of social capital in these countries. People in post-socialist countries might have invested in certain specific types of social capital because of the history of political control and the damage potential of social ties to people they did not know very well (formal social ties). Hence, people in post-socialist countries have traditionally invested cautiously in formal social ties and only trusted family and close friends. After the transition, they might have kept their distance from strangers and all others whose trustworthiness is uncertain and chiefly interact only with people who they truly trust. These cautious interaction patterns could explain the low levels of formal social contacts and low trust in both state institutions and fellow citizens in the post-socialist countries. Accordingly, it is plausible that many of the post-socialist countries could be considered “hourglass societies” (Rose, 1995).

Furthermore, some final empirical findings in the chapter suggested that dimensions of social capital were associated with life expectancy at country level. Hence, countries with higher levels of informal social contacts, formal social contacts, social trust, and social resources seem to have better population health. The analyses further suggested that countries included in the post-socialist regime type generally had low levels of social capital and low life expectancy, while social-democratic countries had very high levels of all four types of social capital and high life expectancy. Somewhere between these two extremes, liberal, conservative/corporatist, and Mediterranean countries were found. These findings suggest that welfare regime characteristics might be one important factor underlying associations between social capital and health. Consequently, social capital could be an explanation for the poorer health in less comprehensive welfare states, although more sophisticated analyses are needed in order to draw any definite conclusions.

There are some possible explanations for the fact that universal welfare states promote both social capital and better health. The high levels of social capital in universal welfare states may produce more egalitarian patterns of political participation that result in the passage of policies that assure the security and health of all their residents. Social capital in such regimes might also ensure that budget cuts do not affect local and public services, which could protect the health of vulnerable segments of the population. Moreover, universal welfare regimes through high levels of social capital might also be supportive of low income inequalities and might provide better conditions and settings for the uptake and diffusion of health interventions and norms. However, different types of voluntary associations may also play an important role in implementing welfare state policies among the general population. Hence, high levels of social capital may be considered a way for universal states to implement welfare policies among the general public and thereby realize welfare interventions with support from their citizens, which, in turn, is beneficial to their health. On the contrary, the scarcity of social capital in less universal welfare states, such as the post-socialist type, might contribute to poorer welfare systems and poorer health within these countries. The countries may find themselves trapped in a continuous and unhealthy cycle of inequality, low trust between citizens and

government, no cooperation between the state and voluntary associations, and policies that do little to reduce the gap between the rich and the poor.

Even though these findings provide some support for an association between social capital and health as well as a welfare regime pattern in this association, we also have to be careful when drawing conclusions from the results presented in the chapter as they are based on a limited number of countries and do not adjust for other country-level variables that may have influenced the findings. More cross-national research on the relationship between social capital and health in a welfare state perspective is hence suggested. Furthermore, the primary limitation of research on the relationship between welfare and social capital concerns the cross-sectional nature of the cross-national data used. Hence, the causal priorities between the institutional characteristics of the welfare state and social capital are highly unclear, as countries with high levels of social capital may be considered both a consequence and a cause of the development of universalism. The relationship may also be reciprocal; that is, universalism promotes social capital, which fosters additional support for such welfare systems and so on. The theoretical and empirical arguments presented in this chapter could hence suffer from reversed causality and should therefore be interpreted cautiously. Consequently, there is an urgent need for analyses of the development of social capital in different welfare state contexts during longer-term perspectives.

Another uncertainty is whether the effects of welfare on social capital are due to direct or indirect consequences of the welfare state. There seem to be primarily direct effects of the welfare state on informal and formal social contacts. For instance, it was suggested that the welfare state could negatively influence informal social contacts by providing its citizens with necessary financial and practical support, which reduces the “need” for informal networks. Social protection systems and welfare services might, however, also release people from the relational strain that characterizes some types of relationships. Moreover, it was argued that the welfare state can also stimulate and sometimes deplete voluntary associations by giving them various types of support. Nevertheless, the effects of the welfare state on social trust seem to have a more indirect character. It was suggested that the low degrees of corruption, income inequality, and poverty in comprehensive welfare states influence levels of social trust. Accordingly, social trust is influenced by the outcomes of the welfare state rather than directly by its institutional characteristics. Future research in the field should, to a higher extent, scrutinize the relative importance of indirect and direct effects of welfare on levels of social capital.

One of the most serious concerns in the analyses of social capital and health presented in this chapter is the possibility of reversed causality due to the use of cross-sectional data (for a more thorough discussion on causal inference in social capital research, see Chap. 4). Although the analyses suggested an association between social capital and health, it could be that poor health status influences the social capital of a society rather than vice versa. Moreover, there could also be a reciprocal relationship between social capital and health whereby poor health leads to lower social capital which, in turn, leads to even poorer health. Finally, it is also possible that both social capital and health are influenced by an unobserved third variable that is confounding

the social capital–health relationship. For instance, it is possible that the economic resources in a society influence both people’s social capital and their health status. An inability to correctly adjust for a society’s total economic assets may hence result in a spurious association between social capital and health.

To summarize, the empirical analyses presented in this chapter did not show support for a “crowding out” effect of welfare on social capital. The empirical data rather suggested relatively high levels of social capital in comprehensive welfare states. Comprehensive welfare states could have both direct (e.g., high-quality state institutions) and indirect (e.g., lower income inequality) consequences on levels of social capital. Social capital could further be considered a health-promoting feature of welfare states; that is, welfare stimulates social capital that, in turn, promotes a healthier society. However, more research is needed on the specific aspects of the welfare state that promote social capital and how social capital, in turn, promotes health. Future research on the relationships between welfare, social capital, and health also needs to use cross-national data that cover longer time periods in order to examine whether the development of social capital is causally related to the generosity and development of welfare systems and whether it has consequences on the health and well-being of countries.

The study of social capital and health from a welfare state perspective is important, considering that many interventions that potentially stimulate social capital and health as well as reduce health inequalities take place at the state level. Global organizations, such as the OECD and the World Bank, have emphasized social capital as a potential strategy for improving the health of nations and communities (OECD, 2001; The World Bank, 1998). By studying the significance of the welfare state for the social capital–health relationship, policy-makers could learn a great deal about how investments in equality and social goods (e.g., welfare) could influence social capital and its potential health consequences.

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Chapter 12

Social Capital, Social Policy, and Health Disparities: A Legacy of Political Advocacy in African-American Communities

Keon Gilbert and Lorraine Dean

This chapter will examine the ways in which social capital has been used for political advocacy and civic engagement in health, focusing on the African-American experience. Further, it will give context to how African-Americans have wielded collective efficacy to combat racism, discrimination, and its harmful by-products on health and access to health services. We will highlight important historical and current developments within many African-American communities to build and sustain social capital. Many of these efforts are endemic to African-American communities across the USA, and others required multiracial cooperation to build partnerships or vertical relationships (linking social capital) to influence policy change. This chapter also focuses on the African-American experience because of the unique history of African-Americans in the USA and the ways in which these shared experiences have shaped African-American health. A history of inequality has left imprints on African-American health, and African-Americans have used the mechanisms of social capital to deal with that inequality. Social capital movements have driven the state of African-American health in the post-slavery era, yet when examining social capital and health race/ethnicity has been left out of the conversation.

K. Gilbert, P.H., M.A., M.P.A. (✉)
Behavioral Science and Health Education, St. Louis University,
3545 Lafayette Avenue, Suite 316, St. Louis, MO 63104, USA
e-mail: kgilber9@slu.edu

L. Dean, Sc.D.
University of Pennsylvania, 2237 Jackson Street, Philadelphia, PA 19145, USA
e-mail: lori.dean@gmail.com

12.1 A Social Capital and Health Framework

Social capital, or the concept that social relationships can create a form of capital, has been foundational to successful strategies for bettering communities all across the world. In fact, Robert Putnam, a leading authority in social capital research, has found that “much evidence suggests that where levels of capital are higher, children grow up healthier, safer and better educated, people live longer, happier lives, and democracy and the economy work better” (Putnam, 2000).

Social capital may be considered the ecological analog to individually based social support and is considered a social determinant of health and health behaviors. Social capital may be built based on geographical location of group members or based on the shared function of group members. Unlike social support, which is interpersonal and operates at the individual level, social capital is about resources embedded within groups, meaning it is a collective-level construct that applies to social and physical resources available to groups, organizations, and communities. In essence, it is the product of social networks and relationships at a meso- and macro-level and not the actual networks or relationships themselves. Consequently, social capital indicators typically capture social participation and social engagement, collective efficacy, and perception of community-level structures or characteristics, such as trust, reciprocity, and social cohesion (Putnam, 2007).

Public health researchers have offered the following suggested mechanisms by which social capital may be related to health outcomes or health policy-making: (a) diffusion of information about health-promoting behaviors; (b) maintenance of health behavioral norms or deterrence of risky behaviors through informal social control; (c) promotions of access to services; (d) affective support or other psychosocial pathways that act directly or indirectly; and (e) empowerment to engage political policies that impact community health (Berkman & Kawachi, 2000; Kawachi and Berkman, 2001; Kawachi, Subramanian, & Kim, 2007).

Of particular relevance to political advocacy, collective efficacy is one such tool by which to examine a group's collective competence and capacity to aggregate and use their resources to respond to current and future demands (Lochner, Kawachi, Brennan, & Buka, 2003). However, collective efficacy may be undermined by the concentration of economic disadvantage, racial segregation, family disruption, and residential instability (Sampson, Morenoff, & Earls, 1999; Sampson, Raudenbush, & Earls, 1997) that has negative social, physical, and health effects. When the path between collective efficacy and political advocacy is stymied by these deleterious elements, access to health information and health-promoting resources may also be blocked.

12.2 Social Capital in the Context of Embodying Inequality

One of the reasons the interplay of race and social capital has not been well studied is because Putnam surmises that differences in social capital by race should only occur in areas where Whites leave newly integrated communities. Areas where this

“white flight” occurs may result in major differences in the degree of social capital among racial subgroups within the community, but otherwise Putnam believes that race is not salient in most cases (Putnam, 1995). However, in later work, Putnam recognized that an increase in immigration and ethnic diversity in many communities has led to lower levels of social capital. This suggests that race and ethnicity can make a difference. We have yet to see many comprehensive studies examining the relationship between race ethnicity, social capital, and health. In some countries, these lower levels of social capital have been overcome through various institutions, including religious institutions (Putnam, 2007).

However, emerging research suggests that looking at differences in social capital and health for African-Americans is particularly important because of differing associations between social capital and health based on race; further, the indicators that measure social capital may need to be culturally tailored (Dean & Gilbert, 2010).

Race and ethnicity are social constructs and are not reflective of genetic differences between people groups. In the USA especially, differences in the health of African-Americans and Whites reflect social differences in the ways African-American communities interact and are treated (Krieger, 2000). Institutional, structural, and individual racial discrimination toward African-American Americans as a vestige of US slavery has been foundational to the social and economic inequalities in work, wealth, income, education, housing, and overall standard of living which underlie disparities in health (Jones, 2000; Krieger, 2000). Thus, it is essential to consider the ways in which African-American Americans have embodied these social and economic inequalities and to think through what implications that has for social capital research (Krieger, 2005, p. 159–162). Viewing social capital research on health in the lens of embodiment requires examining how current and past events influence African-American health dynamically, how macro-level (society, community), meso-level (organizations), and microlevel (individuals) factors operate as part of the process that explains how social elements “get under the skin” (Krieger, 2005). A clear example of embodying inequality can be seen with institutional racism in the form of residential racial segregation. Segregation has led to impoverished communities and increased risk for acute and chronic disease. Residents of these neighborhoods are more likely to experience violence, chronic stress, and the lack of community infrastructures to promote healthy behaviors such as physical activity which lead to negative outcomes such as cardiovascular disease, depression, cancer, and sexually transmitted diseases (National Medical Association, 2007).

Specifically examining social capital in the Black population is important because neighborhood factors such as social capital and residential segregation may operate on Blacks differently than other racial/ethnic groups due to the institutionalized and persistent forms of oppression that Blacks faced for centuries in the USA (Gee, 2008; LeClere, Rogers, & Peters, 1997). For example, in the general population, increased cognitive measures of social capital (beliefs about the social environment one holds) are consistently associated with being mentally healthy (Bain & Hicks, 1998; Lochner et al., 2003; Poortinga, 2006). But forms of institutionalized racism, like residential segregation, assuredly influence mental health for those who are the targets of racism (Almedon & Glandon, 2007; Jones, 2000; Schulz et al., 2000;

Williams & Collins, 2001; Williams, Neighbors, & Jackson, 2008). In segregated neighborhoods, high levels of community disorder and poverty, among others, are exposures that adversely affect mental health and may counter any protective influences of racial enclaves on mental health outcomes (Aneshensel et al., 2007; Cutrona, Russell, Hessling, Brown, & Murry, 2000; Halpern, 1993; Leventhal & Brooks-Gunn, 2003; Massey & Denton, 1993; Silver, Mulvey, & Swanson, 2002; Williams & Collins, 2001). Even in the face of these adverse exposures, LaVeist posits that Black political empowerment that arises in highly clustered segregated areas might counter segregation's negative effects of segregation on health outcomes by helping to draw attention to the needs of these communities (Kramer & Hogue, 2009; LaVeist, 1992, 1993).

Furthermore, segregation may not have the same type of influence across racial/ethnic minority groups. Work by Gee suggests that among Blacks, segregation may lead to poor mental health through poverty and other stressors, but for Chinese Americans, segregation may be beneficial to health by providing a network of resources (Gee, 2008). Gee's findings may highlight that it may not be segregation of itself that matters to racial/ethnic minorities' mental health but the factors that co-occur with segregation. For the Black population, good health in the face of segregation may be an indicator of the resilience that Blacks have developed in response to their circumstances; good or poor health may be an embodiment of the years of unequal treatment and social exclusion Blacks have faced over generations of US history (Krieger, 2005).

The important element of embodying inequality may help explain how African-American's need for political advocacy has been framed by historical and contemporary elements that are unique to the African-American community. It is likely that the embodiment of inequality influences the way that African-Americans build resources that are available to members of a group who are similar to each other with respect to social position and identity (bonding social capital) (Kim, Subramanian, & Kawachi, 2006), build relationships of respect and mutuality between people who are unlike in terms of sociodemographic (bridging social capital), and establish norms of respect and networks of trusting relationships between people who are interacting across power or authority gradients in society (linking social capital) (Szreter & Woolcock, 2004), all of which are important to health and health advocacy. But embodiment of inequality has been unaccounted for in social capital measures and analytical frameworks.

12.3 Race, Health, and Social Capital

The absence of the embodying inequality framework may be a clue for the discrepant findings about social capital's association with health on African-American communities and populations (Table 12.1). Findings reveal that social capital is a successful strategy for influencing African-American health in many cases, but its influence looks different from other racial/ethnic groups, particularly White Americans.

Table 12.1 Selected studies on social capital and health of African-Americans

Authors	Social capital element measured	Target group	Embodied inequality element measured	Health outcome	Findings
Kawachi, Kennedy, Lochner, and Prothrow-Stith (1997)	Social mistrust	African-American and White adults	Poverty	All-cause mortality	Social capital's protective effects were smaller for African-Americans compared to Whites
Mitchell and LaGory (2002)	Individual community participation, trust and bridging ties	African-American adults	Residential segregation	Mental distress	Higher bonding social capital leads to greater mental distress, while bridging social capital is protective
Hutchinson et al. (2009)	Neighborhood livability, trust, neighborliness, feelings of belonging	African-American and White adults	Residential isolation	All-cause mortality	African-Americans living in mostly African-American, low social capital neighborhoods have lower mortality than African-Americans living in White, low social capital neighborhoods
Hammond, Gilbert, Cole-Lewis and Yen (2009)	Neighborhood social cohesion	African-American adult men	Racial discrimination	Depressive symptoms	Social cohesion buffers negative mental health effects of discrimination

For example, the positive association between bonding social capital (Kawachi, Kennedy, & Glass, 1999) and self-rated health (Kim et al., 2006) is weaker for African-American women than those of other races. Another study showed that social mistrust was significantly linked to higher mortality rates for Whites and for African-Americans, but when comparing African-Americans and Whites at equal levels of poverty, the effect for African-Americans was attenuated (Kawachi et al., 1997). These findings may be an indicator that something is lacking in our understanding of social capital for African-Americans.

In other cases, it seems that increased social capital among African-Americans actually leads to poorer health outcomes. Hart found higher mortality rates among African-Americans who had more contact with other African-Americans at school, childhood and current neighborhood, and church; however, this study did not control for sociodemographic differences among study participants (Hart, 1997, p. 225; also personal communication with author) which may mean that the effects of income or intergenerational and current poverty may be driving this finding. Also, this result may miss the daily experiences of racial discrimination that African-Americans experience in multiple areas that may lead to both acute and chronic health conditions (Feagin, 1991).

Research by Mitchell and LaGory has shown that among African-American women living in impoverished areas with high residential segregation, mental distress increases with higher bonding social capital, whereas the presence of bridging social capital (bonds between persons which cut across social class and racial lines) was protective against mental distress (Mitchell & LaGory, 2002). Another study, by Hutchinson et al., found that African-Americans living in predominantly African-American neighborhoods with low social capital had lower mortality than African-Americans living in predominantly White neighborhoods with low social capital (Hutchinson et al., 2009). These studies demonstrate how important accounting for the products of inequality, like residential segregation and social exclusion, is to understanding the relationship between social capital and health.

What may explain these findings that are seemingly contrary to social capital's generally positive associations with health is the material deprivation African-Americans continue to face due to a history of unequal rights and access to resources. This type of deprivation and inequality over time may create a dependence on dense social capital networks for survival. Social exclusion from mainstream society, over time, may have led to excessive demands on group members and reinforced deleterious behaviors where those behaviors define group membership (Hawe & Shiell, 2000; Portes, 1998). Or, it may be that the highest levels of social participation are in areas where Blacks so heavily rely on one another to compensate for the lack of material resources, that their health is compromised due to the high level of social obligations. In resource-scarce areas, having high bonding social capital may be taxing when residents are forced to overly rely on social connections to compensate for having few physical resources. In low-resource areas with Blacks, social capital may be detrimental to health, which is an important fact to recognize, so as not to overstate social capital's benefits (Baum, 1999; Hang, 2006; Kawachi, Subramanian, & Kim, 2008).

At the same time, social capital has also been used to overcome the effects of embodied discrimination. Among the few research studies that are available to help us understand the relationship between social capital and health, one in particular gets at the heart of embodying inequality and how social capital may be used to combat the effects of inequality. Recent work by Hammond et al. (2009) showed that when neighborhood cohesion is high for African-American men, racial discrimination has no effect on depressive symptoms. But when cohesion is low, experiences of racial discrimination are associated with increased depressive symptoms. The findings suggest that neighborhood social cohesion acts as a buffer from the negative mental health effects that are an embodied form of racial discrimination for African-American men.

Additionally, African-Americans have a long history of utilizing social capital as a means for building political advocacy to directly reduce discrimination and increase access to social and health resources.

12.4 A History of Advocacy

Social capital and policy action around health has historical roots for the African-American community. Social capital in the African-American community has been leveraged to address health disparities directly while building political advocacy around activism on the social causes of health disparities like racial residential segregation. A quick examination of African-American history highlights the value of social capital as a tool for community empowerment to build the capacity to combat inequality, which has implications for health. For example, in the early twentieth century, African-American political reformers equated the struggle to secure health care with the struggle to securing political rights (Judson, 1999). Activism in the early twentieth century sought to establish African-American communities culturally, economically, politically, and socially. Such activism is an example of collective efficacy African-Americans wielded to gain access to resources toward a path to social and economic equality. Cohesion and solidarity of the broader African-American community itself stood as a form of resistance to discrimination and led to various methods to affirm a sense of African-American humanity. African-American activism has led to legislative achievements, like the Voting Rights Act of 1965, which gave African-Americans the right to be counted as a voting member of society, thereby extending an opportunity for African-Americans to have access to both bridging and linking social capital. The formation of mutual benefit associations, fraternities, sororities, African-American women's clubs, community-based organizations, churches, mosques, schools, and businesses serves as a form of formal community and collective efficacy building to overcome institutional racism (Fairclough, 2001; Jalata, 2002), which is linked to health. Responding to institutional racism by means of collective efficacy had a direct effect on medical care and health for African-American communities, as African-Americans had to build their own resources for accessing health care.

12.5 Post-slavery Efforts: The Rise of Parallel Health-Care Institutions

The end of slavery marked another “peculiar” period in American history. The Thirteenth Amendment’s official ending of slavery in 1865, 2 years after the Emancipation Proclamation, placed the health of many citizens in a precarious position. Health during this period is characterized by the rudimentary development of a national healthcare system to address the medical needs of Americans. The nation sought to rebuild itself socially, economically, and politically, while finding new methods to further exclude Blacks from the political economy and health services. With laws prohibiting certain forms of interpersonal racism, Blacks were marginalized through institutional or structural forms of racism. During slavery and up through the end of the Civil War, the health needs of Blacks were being met in various ways by the physicians of the slave owners or by the slave owners themselves to continue the labor demands in the fields and homes of their owners. Their health needs were addressed to prevent the spread of disease to the larger White society (Rice & Jones, 1990; Smith, 1995).

Freeing the enslaved Blacks released White landowners from the responsibility of providing health care for their former slaves. After the Civil War, the US government established the Freedmen’s Bureau, which was charged with assisting former slaves with education, housing, and medical needs, including establishing hospitals, dispensaries, and home-visitation programs (Byrd & Clayton, 2000; Raphael, 1972; Smith, 1995). The medical arm of the Freedmen’s Bureau was charged with meeting the medical concerns of the South and to some degree the nation. The Freedmen’s Bureau’s ability to adequately meet the health demands of Blacks had the potential to provide equitable healthcare access to African-Americans on a more equal playing field. Improved health would not have immediately ameliorated the destitute conditions of Blacks but would have improved and maintained their physical and mental capacity. As the health of Blacks improved, so did their ability to find work, afford health services, and financially provide for their families.

Attention to health care combined with economic opportunity and increased political representation would have improved former slaves’ quality of life. However, the multipronged approach to exclude Blacks from political and economic activities minimized Blacks’ chances to form healthy, effective communities that could combat segregation, domination, exploitation, and discrimination. Such exclusion made it necessary that Blacks create their own separate institutions for access to health and resources. The political and economic exclusion that Blacks faced gave rise to a movement of activism and Black unity, characterized by strong collective efficacy and social cohesion. The parallel development of Black medical institutions (organizations, hospitals, schools) embodies both a spirit of resistance and a sensibility of growth and prosperity to overcome dominance.

12.6 The Rise of Black Medical Schools, Professional Organizations, and Hospitals

The period of 1880–1950 represents a time of Black activism, in the sense of creating awareness within Black communities about their health needs, education, increased political involvement, and attaining economic independence. Postwar life preceding 1880 was a period when families attempted to reunite and dissolve the makeshift marriages created during slavery. The effort to unify and reunite Black families and communities provided motivation for Blacks to seek educational opportunities in health.

By 1900, nearly a dozen medical schools, such as Howard Medical and Leonard Medical, were created to meet the needs and concerns of the recently freed people (Byrd & Clayton, 2000). During this time, evidence supports the use of Blacks as medical apprentices, nurses for both White and Black sick, and midwives who aided in the delivery of both Black and White children. The catalyst for Black physicians, nurses, dentists, hospitals, medical schools, and organizations came from a growing need nationally for medical personnel and professionalization. In addition, the rise in medical schools and personnel was intended to combat the anti-Black sentiments carried by many White medical personnel (Byrd & Clayton, 2000).

Discrimination in predominantly White medical schools and the lack of resources in predominantly Black medical schools prohibited a proportional increase in the number of Black physicians as Black communities expanded. For example, in *Black Americans and the Medical Profession, 1930–1970*, Sorensen (1972) attributes the decline in Black physicians to high dropout rates, the opening of more professions to Blacks, a lack of scholarships and other fellowships to medical schools as compared to other graduate educations, Black student involvement in social activism, and fear of rejection by potential Black medical students based on their Medical College Admission Test (MCAT) scores. The social atmosphere impacted the rate at which change occurred within the medical establishment to accommodate Blacks' desires to address the medical and health-care demands of the Black community. However, Blacks' demands were not being met fast enough, leading to the formation of social capital structures that could directly address their health needs. The reigning sentiments of “separate, but equal” herded Blacks together, but in turn Black communities used their togetherness to build collective power to improve their access to health.

The political economic sphere of Black public health enhances our understanding of the intersections of race, class, and gender and highlights the lack of attention paid to the concerns of African Americans. The formation of Black or Negro medical associations as early as the Medico-Chirurgical Society of the District of Columbia in 1884 was key in placing the health concerns of Black Americans on the political agendas of American government (Cobb, 1939). These medical associations and the movements that followed are markers of the ways in which Black Americans organized themselves for the greatest collective efficacy. The society was originally a biracial society but became predominantly Black by 1895 when the

White members died and were never replaced. Medical associations, especially the historically White American Medical Association (AMA), are very influential lobbying groups and serve as an important credential for attracting patients (Morais, 1969). In the late 1800s, when Black and some White radical physicians initially challenged the AMA to include Blacks, Morais (1969) notes that some Black physicians lost patients to White physicians because they were not affiliated with a professional organization, such as the AMA.

Black public hospitals and wards in White hospitals addressed the needs and concerns for Blacks in a period when Blacks did not have access to majority hospitals and did not have the philanthropic support necessary to build adequate facilities (Rice & Jones, 1994). The Black Hospital Movement beginning at the end of the nineteenth century developed with three objectives in mind according to Rice and Jones:

First, Black medical professionals needed Black hospitals and training clinics as a place to treat patients and as a professional gathering place to improve their skills through workshops, lectures, and training sessions. Second, Black community activists, educators, and social scientists, as well as physicians and concerned Whites, stressed that the lack of Black hospitals contributed to the poor health status of the Black community. Third, Black physicians saw Black hospitals as a larger part of a general movement to improve the social standing of Black people. (p. 15)

About 40 Black hospital facilities were in existence by 1900, mainly in the South, with several in the North as well. It is significant to note that most of the Black medical training facilities were also located in the South, in addition to the population of Black medical professionals during this time. The number of Black hospitals in the 1920s rose to more than two hundred (Rice & Jones, 1994).

The first national movement to address health promotion and disease prevention for Blacks in America began with the National Negro Health Movement in 1914, with Booker T. Washington, Monroe Work, and Robert Moton (Quinn & Thomas, 2001; Smith, 1995). Washington obtained the idea to begin the National Negro Health Movement (NNHM) from a successful Black health program that began in Virginia by former Hampton Institute graduates who formed the Negro Organization Society of Virginia. Their mission was to improve the status of African-Americans by improving farms, education, and health. The Negro Organization Society of Virginia represented over 250 Black religious and secular organizations, indicating widespread community support, and is evidence of how bonding social capital helped build political advocacy for health. Their first program initiated a cleanup day throughout the state and later expanded to a health week project (Smith, 1995). Monroe N. Work in 1908 launched a national health campaign, which emerged from the Virginia model of local community organizations and coalitions, which also included federal assistance (Quinn & Thomas, 2001; Smith, 1995). Washington secured publicity funds from the Anson Phelps Stokes Fund and officially made a call for a National Negro Health Week (NNHW) observance in 1915. He placed the National Negro Business League in charge of the effort, asserting, according to Smith (1995), that “racial advancement and economic prosperity required both good health and black unity (p. 38).” The reference to “Black unity” points to the essential need for both collective efficacy and access to health in order to overcome

inequalities. Embodiment of a history of inequality and the need to address these inequalities through collective efficacy and political advocacy are still relevant for African-Americans in today's society.

12.7 Why Social Capital Matters for Eliminating Health Disparities in the Twenty-First Century

Building from the foundation of the civil rights movements, there are several ways in which African-Americans continue to build their collective efficacy and political advocacy for health. Specifically, participation in civic organizations that focus on alleviating disparities and rooting out discrimination is one important venue. The African-American church is another key venue where social capital and political advocacy blossom.

While being a part of a collective like a church of itself may be health promoting, the Black Church has been a cornerstone for political advocacy around health throughout the civil rights movements and into the twenty-first century. Historically, the Black Church has been a safe haven and social center for African-Americans since slavery times, during which church gatherings were the only venue in which slave owners permitted African-Americans to peacefully gather (DuBois, 1903). Today, Black churches continue to be central to social capital for Black communities, as the only Black-controlled institution bringing together African-Americans with a history of oppression (Putnam, 1995). For Blacks especially, churches provide an opportunity to be civically engaged (Putnam, 1995) with a protective covering of unity and support.

Groveland United Church of Christ, located in the predominantly Black Southside of Chicago, exemplifies the critical role that Black churches play in improving the health of Black communities through political advocacy and social organization. In response to high violent crime and drug use in Groveland, church members sponsored a series of community meetings to make specific demands of their local police force and city leaders. As a result of their political advocacy, the city and their local police force closed two of the three drug houses down and immediately deployed police to monitor high-crime areas (Patillo-McCoy, 1999).

Public health researchers have already recognized the vital role that the church continues to play in African-American health and have formed successful health-promoting interventions in church settings (Husaini et al., 2002).

12.8 Emerging Measures of Social Capital for African-Americans

Though in decline, social capital is present in the US populations (Putnam, 1993, 1995, 2007). The measures used in the current literature suggest that African-American American communities have lower social capital than those of other

racial groups, particularly White Americans, but it is unclear why. Further, social capital's links to health policy are largely anecdotal and undocumented in research. Given the history of racism and socioeconomic deprivation of African-Americans, the measures used to capture social capital need to be culturally tailored in order for researchers to have a full picture of how social capital is tied to health for African-Americans (Dean & Gilbert, 2010).

For example, increased voter registration rates, which is considered a demonstration of linking social capital, have been associated with low social capital in Black, low-SEP communities, but linked to higher social capital in White communities (Hero, 2004). Voter turnout, on the other hand, has shown a positive significant association with increased social capital for Blacks in recent years (Hero, 2004), but the effect is still considerably weaker than that for Whites. In another study, only Black church participation, and not socioeconomic position, was associated with increased voting participation (Baodong, Wright-Austin, & Orey, 2009). The upshot to these findings is that using voting as an indicator for social capital in Black communities may not be a reliable measure, especially for a population that has historically been marginalized from civic participation. In that sense, other indicators that may be more relevant to African-Americans, and that are based on preceding social capital movements, should be explored. There still may be untapped indicators of social capital that are specifically relevant to Black communities. Many of these indicators are embedded within the fabric of African-American life, such as the National Association for the Advancement of Colored People (NAACP), the Urban League, and collegiate, Greek-lettered fraternities and sororities. These rich resources have been key figures within African-American communities.

Considering other social capital indicators, like participation in community meetings, are higher in poor Black communities than affluent Black communities (Jennings, 2007), it is possible that community gatherings or block parties are more salient indicators of social capital for Black communities that have the heaviest burden of embodied inequality. As Oliver and Myers define them, "block parties are generally understood... to be consensual events that convey a sense of sociability and community to residents of a particular area" (Oliver & Meyer, 1999) who feel a sense of collective belonging and solidarity. By their definition, block parties may be relevant to forms of bonding social capital. Block parties may be a context in which the mechanisms between social capital and health are at work. For instance, block parties may be a space where neighbors exchange information about how to keep healthy or knowing that neighbors might disapprove of risky behaviors might discourage unhealthy actions through informal social control.

In an unpublished study by Dean et al. that explored the relationship of block parties to social capital comparing Whites and Blacks, block parties were shown to have a significant association with social capital for Blacks in the study, but not for Whites. The findings from this study may be a hint that there need to be culturally tailored indicators of social capital that reflect the unique African-American experience.

12.9 Conclusion

An Institute of Medicine report described how the social hierarchy that exists in the USA plays an important role in explaining differences in the quality of care provided to people of color (Smedley, Stith, Nelson, & Institute of Medicine U.S., 2003). These differences occur in the context of historical and contemporary social inequities, and they are impacted by a variety of sources, including conscious or unconscious stereotyping, and are not explained by racial and ethnic differences in treatment refusal rates (Smedley et al., 2003). Social institutions and forces can shape and alter the promulgation of conscious and unconscious stereotyping. As a result of a race-based society, many organizations, associations, mutual benefit societies, and other aggregations of African-Americans have formed and developed to provide a community-based response to buffer against the negative social and health consequences. These entities are the primary sources of linking social capital to challenge multiple systems that reify inequitable treatment in health, housing, education, and employment. Without them, virtually all African-American communities would be void of social capital.

Our goal for this chapter was to highlight the relevance of social capital within African-American communities as an example of race-based differences in social capital's development resulting from race being a fundamental organizing principle in the USA. The future of public health research related to understanding how social capital may be leveraged to eliminate health disparities utilizing existing social structures, which can not only help combat health inequalities but daily experiences of racial discrimination. It is also critical for public health researchers to encourage and influence a range of health-care organizations who may be natural partners to help shape societal forces through funding streams, government mandates, and the practices within these institutions to develop strategies that support and foster social capital development within African-American communities.

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Chapter 13

What's Wrong with Social Capital? Critiques from Social Science

Yoji Inaba

Few would deny the fact that social capital has been one of the most frequently utilized terminologies in academic journals over the past 20 years. According to Woolcock (2010), the term “social capital” was cited as frequently as “political parties” in 2008. The list of citations covers most major academic fields including economics, political science, sociology, social psychology, business administration, education, and, the theme of this volume, social epidemiology. Two books with the same title, “Handbook of Social Capital,” one by Castiglione and another by Svendsen, were published in 2008 and in 2009, respectively. The concept of social capital has drawn the attention of policy makers as well. Robert Putnam, author of “Making Democracy Work” and “Bowling Alone,” bestsellers in the field of social capital research, was invited to France in 2008 by Nicolas Sarkozy, the then French president, as a member of the commission on the measurement of economic performance and social progress. The commission, which was organized by Sarkozy and co-chaired by Joseph Stiglitz, Amartya Sen, and Jean-Paul Fitoussi, published a report titled “Mis-measuring Our Lives” in 2010. The report referred to social connections or social capital as an essential element of quality of life.¹

However, not all of the citations have been positive. Quite to the contrary, some of them amount to a total denial of social capital: “I beg to differ, and insist not only that social capital should be critically addressed, but that it should be discarded as a result” (Fine, 2010, p. 207). This chapter is an attempt to provide some perspectives to negative critiques of the concept of social capital. The chapter begins with analyses of the criticisms of social capital, followed by the author’s understanding of the value added by the concept of social capital.

¹The report describes “These social connections are sometimes described as ‘social capital’ to highlight the benefits (direct and indirect) that they bring” (Stiglitz, Sen, & Fitoussi, 2010, p. 80).

Y. Inaba (✉)
Nihon University, Tokyo, Japan
e-mail: yoinaba@law.nihon-u.ac.jp

13.1 Criticisms of Social Capital

Criticisms of social capital are centered on five ambiguities: (a) ambiguity of the definition, (b) ambiguity about the added value by the introduction of a concept like social capital, (c) ambiguity concerning measurement, (d) ambiguity surrounding causality, and (e) ambiguity as a policy tool.² Some of these criticisms concern specific works, in particular the work of Robert Putnam.³ On the other hand, other criticisms, particularly those related to measurement, are applicable more broadly to the field as a whole. In this section, I will deal with the most basic and, therefore, most fundamental questions related to social capital.

13.1.1 *Ambiguity of the Definition*⁴

There are many definitions of social capital provided by various scholars in various fields, from John Dewey to Lydia Hanifan, Jane Jacobs to Pierre Bourdieu, James Coleman to Ronald Burt, Robert Putnam to Francis Fukuyama, and Gary Becker to Elinor Ostrom to NanLin.⁵ Although there are differences in what they emphasize, most of them define social capital as resources composed of or derived from trust, and/or norms (especially reciprocity), and/or networks, which facilitate collective actions. For instance, the OECD (2001) defines social capital as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups.”

Some scholars only deal with trust, while others deal only with networks. The definitions encompass a range of constructs from private goods (personal networks or connections) to club goods (trust and connections among certain groups) to public goods (trust towards society as a whole) as summarized in Fig. 13.1. The horizontal axis in Fig. 13.1 illustrates the nature of social capital (cognitive or structural), while the vertical axis shows the level (micro, meso, or macro) at which social capital is hypothesized to operate. Figure 13.2 shows the position of each proponent of social capital according to the classification framework provided in Fig. 13.1. Clearly, the term “social capital” covers an extraordinarily wide terrain. The researcher needs to specify which part of social capital he/she is talking about before starting to talk about social capital; else, the likely result is confusion.

The most basic question about social capital is about the legitimacy of the concept. Is it really a form of capital? Is it appropriate to use terminology that

²Fine (2001, 2010) provide most comprehensive analyses on flaws of social capital. This chapter owes a great deal to the insights shown in these two books.

³There are many papers and books which question the contents of “Making Democracy Work” and “Bowling Alone” by Robert Putnam. See Hero (2007) and Arneil (2006) as the examples of critiques directed to Putnam.

⁴Chapter 8 also deals with some issues related to the definition of social capital.

⁵Dewey and Jacobs just used the term. They did not give any definitions of social capital.

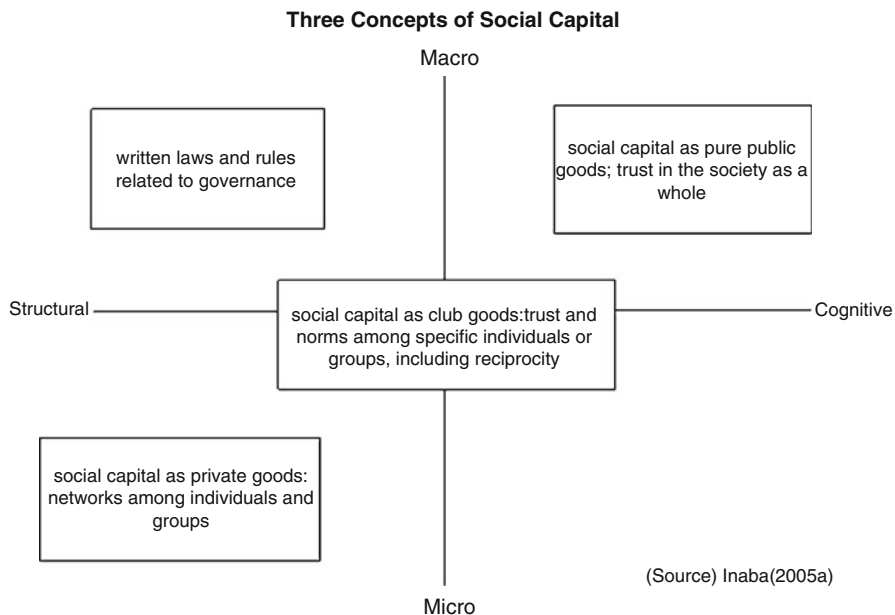


Fig. 13.1 Three concepts of social capital

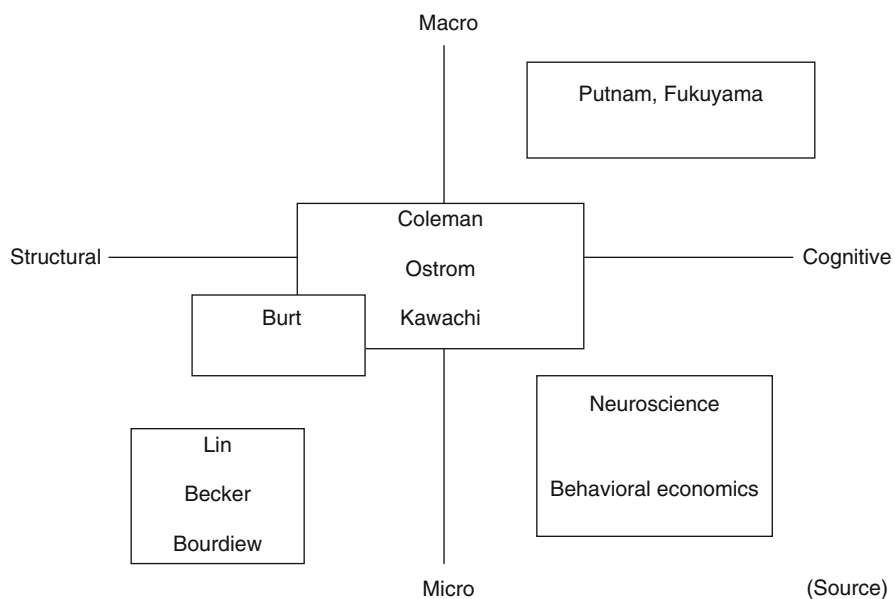


Fig. 13.2 Basic position of major advocators of social capital

combines “capital” with “social”? Solow (1999) asks, “Why social *capital*?” He says, “Generally, ‘capital’ stands for a stock of produced or natural factors of production that can be expected to yield productive services for some time” (Solow, 2000, p. 6). Following this strictly economic definition, Solow has difficulty in perceiving social capital as a stock. In line with Solow’s view, Arrow (1999) asserts that the term “social capital” does not meet the basic criteria of capital. That is, capital should refer to “deliberate sacrifice in the present for future benefit.” In other words, people accumulate capital intentionally in anticipation of economic return in the future. However, this would not appear to apply in the case of social capital. “The essence of social networks is that they are built for reasons other than their economic value to the participants” (Arrow, 2000, p. 4). Both economists have advocated for abandoning the term “social capital.” Solow recommends “behavior patterns” as a substitute for “social capital.” Along similar lines, Bowles and Gintis (2002) recommend use of the term “community governance” instead of social capital.

Moreover, according to Fine (2001), “capital is an economic category and, in reality, is itself ‘social’, thereby creating an oxymoron for the mirror image of social capital, the notion that some other type of capital is not social” (Fine, 2001, p. 15). In other words, “Capital is embroiled in social relations, social structures, in social reproduction involving social power and conflict, and is attached to definite economic and social tendencies” (Fine, 2001, p. 33).

13.1.2 *Ambiguity About Value Added*

The second ambiguity concerns the value added by social capital. Each of the basic components of social capital such as trust, norms of reciprocity, and social network represents a well-established construct with huge accumulations of academic works in the past. Was it necessary to coin a new concept like social capital in their place? Fine (2010) calls social capital “hack academia”⁶:

With all social theory reinterpreted through its prism, a common feature of a typical social capital article can be its adoption of the form social capital plus X, or vice versa. Whatever I, or even somebody else, published before, I can publish again as if a new contribution. (Fine, 2010, p. 32)

Although few other scholars label social capital as “hack academia” or plagiarism (which means asserting the originality of your own contribution by appropriating content from other disciplines), Fine has a legitimate point. If phenomena or puzzles can be analyzed without introducing a new concept, then there is no need of that concept. It is true that there are many who think the world can be analyzed properly without social capital. For example, Glaeser, David, and Bruce (2002) show, at least under their definition, that social capital can be treated within the framework of

⁶Fine (2010) also says, “social capital is the McDonaldisation of social science; do not consume it if you value your intellectual health or you will be consumed by it” (p. 19).

standard microeconomics. What they imply is that there is no need for establishing a new academic field specializing in social capital.

In addition, some critiques denounce social capital as an already established concept disguised as something else. As Fine (2001) claims, "Coleman has turned simple social exchange theory into social capital theory by the primitive appropriation of economics." Caulkins (2009) points out that the concept of bridging and bonding social capital resembles grid-group theory established by Mary Douglas. He made the following remarks:

"The group dimension is theoretically similar if not identical to 'bonding' social capital as defined by a variety of social capital theorists" (p. 58). "In one recent statement of grid/group theory, Douglas and Ney (1998:100–102) describe these two dimensions as 'structure' (grid) and 'incorporation' (group). This terminology helps to illuminate another important insight: grid is also a measure of 'bridging' social capital." (p. 60)

Although Caulkins (2009) incorporates both bonding and bridging social capital into the framework of grid-group theory, there seems to be a clear resemblance between them.

It is also true that arguments provided by Robert Putnam are similar to those of communitarians. In fact, Delanty (2003) classifies Putnam as one of the civic communitarians. However, there is scarcely any mention of communitarianism in his book "Bowling Alone".⁷ According to Hero (2007), Putnam's social capital index can be replaced by ethnic diversity. Arneil (2006) points out that, contrary to the findings of Putnam (2000), there has been no decline in social capital once minorities are properly taken into account. There seems to be a tendency among social capital researchers of paying insufficient heed to preceding works, which, in turn, may bring about the downgrading of other social theories.⁸ At least, by ignoring past contributions of social theory, the value added by social capital is likely to be quite limited.

13.1.3 Ambiguity Concerning Measurement

The measurement of social capital depends on its definition or what the researcher means by social capital. Figure 13.3 summarizes the methods to measure social capital in accordance with the definitions of social capital. The ways that have been used to measure social capital range from (a) the use of existing statistics such as voting rate and participation rates of certain activities to (b) social surveys in the form of mail, Web, or interviews to (c) ethnography with detailed observation of activities taking place in communities to (d) experiments on the behavior of individuals in which the subjects are put in a various situations.

⁷To the best of my knowledge, Putnam (2000) refers to "communitarian" just three times in Chap. 23 and once in Chap. 24.

⁸See Fine (2001, 2010). Main theme of these two books is dedicated to this subject.

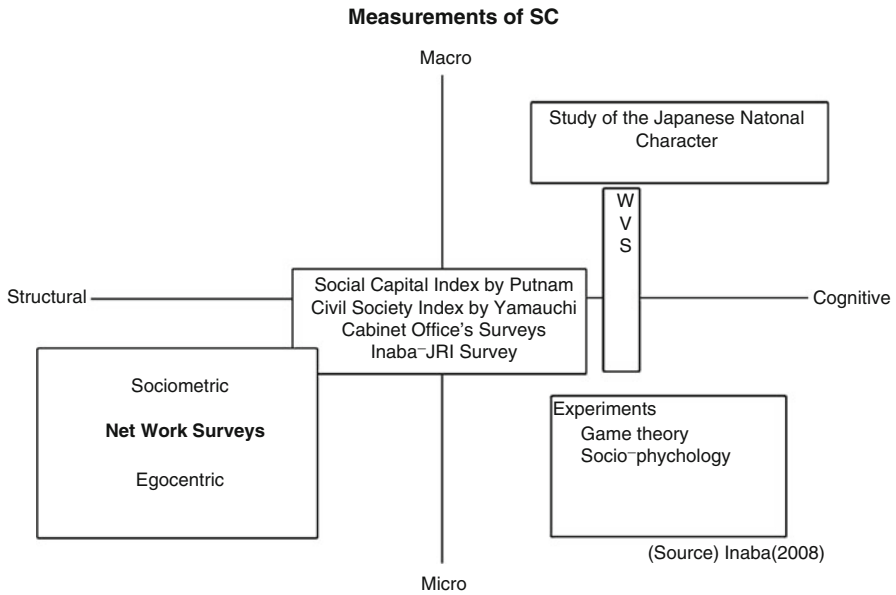


Fig. 13.3 Measurements of social capital

The use of existing survey data remains one of the most common approaches to measurement, exemplified by Robert Putnam. Putnam (1993) created a civic community index for Italy, reflecting his definition of social capital, based on four existing statistics: preference voting, referendum turnout, newspaper readership, and density of sports and cultural associations. All of them are objective numbers. Putnam (2000) expanded the scope of his index to 14 items (also culled from exiting surveys) to estimate his social capital index for the USA. Out of the 14 items, 11 are made up of objective statistics such as turnout in presidential elections, density of nonprofit organizations (NPOs), civic and social organizations per 1,000 population, and so forth.⁹

Original social surveys can collect data on people’s perception of trust, reciprocity, and participation in various activities and organizations. The merit of such an approach resides in the availability of data on individuals. Data are provided on both individual members of the community and the community as a whole (via aggregation of individual responses). However, these social surveys are subject to the criticism that they lack objectivity. This can be of importance when comparisons

⁹Although 11 items are shown in numbers and therefore can be treated as being objective. Eight out of the 11 items such as the frequencies of participation in various activities and time spent on these activities are based on the results of social surveys directly obtained from individuals. Although they are asked facts, the way they answer may differ depending upon their perceptions. In that sense, the results are subjective as well.

among communities are made. For example, there may be cultural differences in the manner in which people respond to a question about perceived trust of strangers. Besides general social surveys, there are surveys that specifically inquire about networks of a specific group (sociograph) or the network surrounding an individual (egocentric survey). Contrary to general social surveys, network surveys have the advantage of mapping the structure of networks from which specific properties of the group can be derived (see Chap. 8). Social surveys can be conducted through mail, Web, or interviews.

The ethnographic approach has yielded several important insights, including important critiques of social capital, as summarized by Whitley (2008) in the earlier volume of this book. The ethnographers' critiques include the point: (a) that Putnam's definition of social capital fails to capture important dimensions of local community life; (b) that subgroups within the same neighborhood may experience social capital differently—race, age, and gender are important dimensions in this regard; and (c) that social capital is determined by complex historical and economic factors and that naïve calls to improve social capital (e.g., calling for people to be nicer to each other) may fail.

Lastly in the field of social psychology and behavioral economics, researchers have utilized experiments to examine behaviors such as trust, cooperation, and other forms of strategic interaction.

As described above, there is no single approach that can comprehensively capture every aspect or dimension of social capital. Stated another way, the selection of the measure cannot sidestep a certain degree of arbitrariness. Even if a researcher could create an index composed of many elements, difficulties would be presented by weighting each element from different individuals whose preferences may differ. Again, the choice of the weights would be arbitrary. This is especially true if the index is composed of elements that are a function of individuals' perceptions, such as generalized trust. It may be possible to infer the ranking of individual preferences but not possible to compare the levels of preference between individuals. In short, there is no measure of social capital which can be completely objective or free from the value judgment on the part of researchers. This leaves the researcher open to the criticism that they manipulated their measure of social capital to suit their own conclusions.

13.1.4 Ambiguity over Causality

Even if it were possible to construct a perfect measure of social capital, one would still need to grapple with the challenge of establishing causality. Chapter 4 in this book describes these challenges in detail. Here I will go over some issues from a theoretical perspective. First, for some researchers, establishing whether social capital causes X, Y, or Z is of secondary importance. Castiglione, Van Deth, and Wolleb (2008) cites "normative connotations" as one of the sources of dispute about the concept of social capital. That is, for some researchers who hold a normative

understanding of social capital, it is something desirable or of value for its own sake. For those who emphasize the normative value of social capital, descriptive comparisons between groups, or over time, are sufficient. From their perspective, there is no need to correlate social capital with something else and to agonize over whether the relationship is causal.

Secondly, challenge of establishing causality is linked to the scope of the definition of social capital. The more abstract the definition, the more challenging it is to establish causality. Conversely, the more precise and narrow the definition of social capital, the easier it is to set up the ideal experiment or study to test causation. In other words, causal inference involves refining the problem *until we can ask the right question*—but the answer may not be what we were originally interested in. For instance, the effect of support groups on quality of life among cancer patients will be more straightforward to demonstrate than the impact of generalized trust on the population.

Third, in many cases, dimensions of social capital such as trust and norms of reciprocity tend to develop over an extended period of time. Networks can be formed in a comparatively shorter period of time. But, just as in the case of trust and reciprocity, it takes a long time for networks to have collective effects or externalities. Putnam (1993) examined the history of Italy going back as much as 800 years between the twelfth and twentieth centuries in order to explain the origins of social capital in the 1970s and the 1980s in that country. Putnam (2000) also used long-term time series data to examine trends in social capital in America during the twentieth century. Such time series data are used in tests of Granger causality,¹⁰ but the length of time lags for such tests may also be quite long. Fourth, there is an additional problem caused by the adoption of long-term data. Arneil (2006) vividly illustrates that the use of data series available over a long period of time could omit other newly emerging forms of social capital. She questions “whether Putnam’s survey questions that remain constant over time adequately measure newer forms of civic activity” (Arneil, 2006, p. 205). By examining the eleven female associations out of the 32 associations that Putnam (2000) utilized, she came to the following conclusion:

“The decline of women’s involvement in civic associations may not be a general pattern at all but simply a reflection of an evolving society in which those organizations keeping up with the changes continue to attract members while those that do not fall behind.” “Beyond these eleven organizations, this chapter has also provided evidence that there are many new kinds of civic activity that women are engaged in that Putnam, in his choice of organizations, simply has not measured.” (Arneil, 2006, p. 90)

Fifth, path dependency makes causal inference more complicated. Path dependency is particularly relevant for social capital. The social capital of a group or a community always has a history of its own, which renders each situation unique. This makes analyses more complicated in spite of the fact that “social capital is

¹⁰ The Grange causality test, invented by Clive Granger, is often utilized to see if there is any causality between two variables in economics. Time series data is required to find out the causality between two variables.

essentially seeking common patterns of behavior across social and economic variables” (Fine, 2001, p. 185). Researchers naturally want to generalize their conclusions. However, they have to pay attention to the unique characteristics of groups or communities. Many readers of Putnam (1993) thought that his argument could apply only to Italy since he devoted a quarter of his book to explaining the historical development of Italian culture. Subsequently when he applied his theory to the USA, people started to realize that he was driving at a more universal theory. However, even after Putnam published “Bowling Alone” which described his theory in detail, there remain scholars who point out that the situation of social capital is heavily constrained or is distorted by other uniquely American characteristics such as racial diversity.¹¹

13.1.5 *Ambiguity as a Policy Tool*

The four ambiguities mentioned above result in another ambiguity: ambiguity of social capital as a policy tool. In this section, I would like to address just two critiques about this ambiguity.

In the first place, some policies suggested by some advocates of social capital seem too narrow for the vast scope of the issues raised by their theory. Putnam’s (2000) book is subtitled “The Collapse and Revival of American Community.” Putnam and Feldstein’s (2003) book is subtitled “Restoring the American Community.” The level of expectations that they raise (“fixing the American community”) is correspondingly high. However, when we turn to the content of their policy prescriptions—such as detailed in the last chapter of Putnam’s “Bowling Alone”—they are far from convincing. Although Putnam is careful to assert that both individual change and institutional change are required,¹² his recommendations are distinctly skewed towards the former: “We need to fortify our resolve as individuals to reconnect” (Putnam, 2000, p. 403). As far as policies suggested by Putnam are concerned, important issues related to social capital such as economic inequality, gender and class—for which the role of government is of vital importance—are left behind.

Another difficulty in using social capital as a policy tool is derived from its cognitive dimension. Some part of the externalities of social capital is perceived by individuals. That is, externalities such as “trustworthiness of the environment” are created in the minds of the actors. Petersen, Roepstorff, and Søren (2009) state: “the neuro-scientific evidence strongly suggests that cooperative behavior is a real phenomenon motivated by the elicitation of context-sensitive emotional systems that primarily operate in situations of a moral character” (p. 75). This means policy tools aimed at enhancing

¹¹ For instance, Hero (2007) puts an emphasis on racial diversity which is uniquely American reflecting the history of the United States.

¹² Putnam (2000) p. 413.

social capital may have aspects of manipulating human minds and come to be viewed as a form of social engineering. For example, calls to enhance social capital by mobilizing religious movements are always a touchy issue, especially in the context of the politicization of religion by past US administrations.¹³

13.2 Second Thoughts on Social Capital

13.2.1 *Definition of Social Capital*

In this section, I will attempt to respond to the criticisms of social capital elaborated on in the previous section. I will proceed first by introducing my definition of social capital to clarify my position. Inaba (2005) defines social capital as trust, norms of reciprocity, and networks that are associated with externality effects which operate through perceptions and cognitions or in the minds of the actors. Trust, norms of reciprocity, and networks are always accompanied by externalities or impacts on a third party who is not directly involved with that particular transaction.¹⁴ An externality with desirable impact on the third party is called an external economy, while one with undesirable impact is called an external diseconomy. For instance, those who suffer from, say, water pollution have an external diseconomy. On the other hand, education has external economies. Education not only benefits the individual who receives the education but also has spillover effects over the other members of the community to which he or she belongs. In other words, an increase in the number of the educated facilitates the socioeconomic activities within the community as a whole.

Externalities can be internalized into the market either by creating a market for the externality or by creating institutions such as tax or compensation schemes. A piece of real estate beside a beautiful park enjoys external economy from the park, and the property is priced higher reflecting the externality through the property market. Pollution can be internalized by imposing a tax on the polluter.

As shown in Fig. 13.1, Inaba (2005) classifies social capital into three goods: public goods, club goods, and private goods. In addition, Table 13.1 provides an economic classification of goods and services based on rivalry and excludability. Private goods are those traded in markets. They have two characteristics: excludability and rivalry. If you purchase a ticket to a popular concert, the number of seats available will be reduced. Those who do not have tickets will be excluded from the concert. Personal networks of

¹³ This point was inspired by remarks of Arneil (2006, pp. 185–197) on USA Freedom Corps and faith-based initiatives advocated by George W. Bush’s Administration in 2002.

¹⁴ According to Meade (1973), “An external economy (diseconomy) is an event which confers an appreciable benefit (inflicts an appreciable damage) on some person or persons who were not fully consenting parties in reaching the decision or decisions which led directly or indirectly to the event in question.”

Table 13.1 Economic classification of goods and services

		Rivalry	
		Yes	No
Excludability	Yes	Private goods	Club goods
	No	Commons	Public goods

an individual are private goods. On the other hand, public goods lack both excludability and rivalry. For instance, it is very difficult to exclude people from watching fireworks displays. In addition, the level of utility available for other viewers will not be reduced even if you watch the fireworks (nonrival consumption). The same characteristics can be applied to national defense services. These goods are called public goods. Generalized trust or trust towards the society as a whole is a public good. In addition, there is a good which is excludable but has no characteristics of rivalry, such as toll roads without traffic congestion. They are called club goods. Particularized trust and norms of reciprocity among members of a group constitute club goods.

13.2.2 Nature of Externalities of Social Capital

According to Inaba (2008), externalities of social capital have the following five distinct characteristics which tangible externalities such as pollution do not bear:

1. The externalities function through perceptions and cognitions or in the minds of the actors.
2. The externalities exist in a social context.
3. The nature of social capital reflects one's position in the network.
4. If internalized, the value of social capital can be diminished.
5. Spillover effects can be large.

The first point has been included in my definition of social capital. Being different from the ordinary externalities such as pollution which can be objectively detected, the externalities of social capital are latent. The externalities of social capital result from individual perceptions and cognitions. Therefore, they are always subjective. It comes as no surprise that research on social capital is beginning to have move into behavioral economics and neuro-economics.

Second, the externalities of social capital exist in a social context. Pollution can affect separate individuals who have no contact with each other. The external diseconomy caused by the pollution does not require any human relations among those who suffer from the pollution. However, the externalities of social capital do require the existence of human relations. Networks are human relations. Norms are derived from human relations. Trust depends upon human relations. Therefore, the externalities of social capital are based on human relations.

Third, the nature of the externalities stemming from one's social capital depends upon his or her position in the social context. This point has already been elaborated by network theories. Coleman (1988) pointed out the merit of network closure in the application of sanctions to group members. According to Burt

(1992), bridging between groups creates a positive externality for the actor who bridges the groups. The individual who forms intergroup ties can enjoy diverse information because he or she is connected to different groups. However, if the scope of your networks is limited to the members of your group, it is difficult to obtain new information. That said, intragroup ties may enhance the norms of reciprocity. Thus, the nature of externalities derived from networks is different depending upon your position in networks.

Fourth, many of the externalities of social capital cannot be adequately internalized into the market. An elderly person who is offered a seat from a young man in a crowded commuting train does not pay money to the young man as a token of his gratitude. If you receive a favor from your colleague in a firm, you will not pay money to the colleague in return for the favor. Instead, you would return the favor to him, not in the form of money but in the form of a favor of perceived comparable value sometime in the future. That is the norm of reciprocity. Tacit knowledge accumulated within a firm reflects the norm of reciprocity and trust among peers. Once you begin to calculate tacit knowledge in monetary terms, it can evaporate. Monetizing a social transaction can ruin social capital—that is, we would not view it as an instance of social capital if an elderly subway rider offered money in exchange for trading places with a seated young man.

Normally, externalities can be internalized into the market by creating a new market, such as one for carbon dioxide emission rights trading, or by creating institutions, such as imposing taxes on polluters. However, in many instances of the externalities associated with social capital, they should be left as they are. They should be accommodated in the transaction of the communities, including firms, from which they are derived.

Fifth, the externalities of social capital can have spillover effects that are larger than those caused by tangible externalities like pollution. Tangible externalities incur real economic costs both to produce and to mitigate them. By contrast, the intangible externalities associated with social capital (e.g., perceptions of trust) are not associated with costs in the same sense.

13.2.3 Value Added

Of the five ambiguities mentioned in the previous section, the most serious challenge is whether the concept of social capital provides any value added or not. There are two answers to that question. The first is that the term “social capital” has enriched the scope of each element—trust, reciprocity, and networks—which constitutes the whole. For instance, network theories have been in existence long before the term social capital became popular. However, the discussion of the nature and effects of networks has been enriched by introducing the concept of social capital. The effects of network closure by Coleman, structural holes by Burt, and the theory of social structure by Lin have each been refined—become more elaborated—as the result of being discussed in the context of social capital. The whole is more than the sum of its parts. Networks, per se, simply represent structures. However, in daily lives,

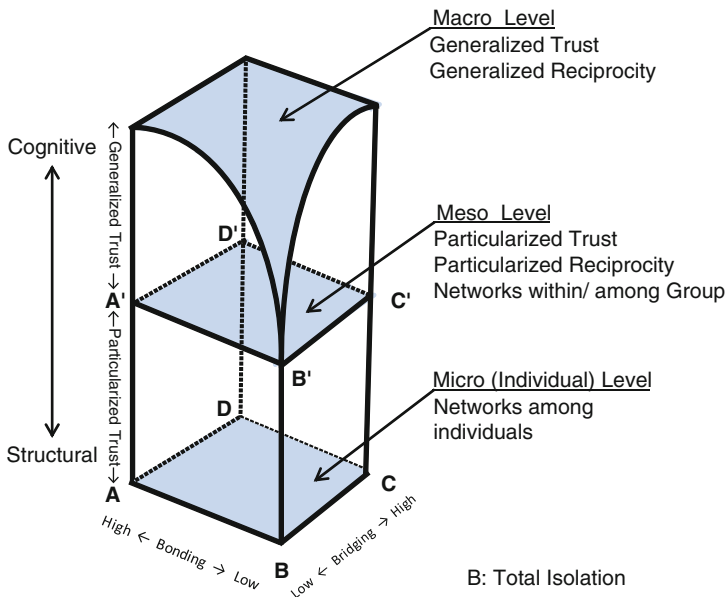


Fig. 13.4 A conceptual framework of a community structure based on social capital

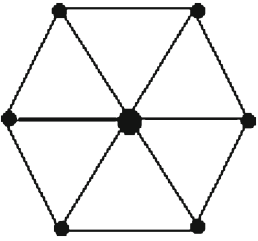

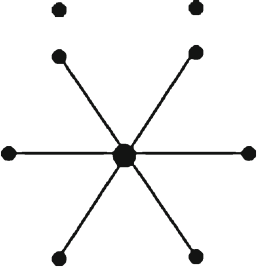
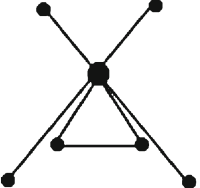
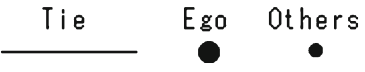
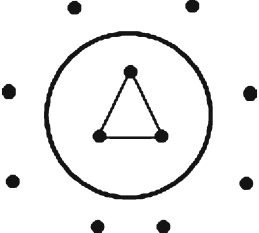
networks do have functions beyond the scope of markets or they frequently generate externalities. The concept of social capital fits in very well to fill the gap between networks and its externalities. To that extent, as critics point out, social capital has been used to explain residuals. However, the term also seemed appropriate from the viewpoint of sociologists who tend to juxtapose society with markets. It reflects exactly what they intend to express, namely, “resources embedded in a social structure”.¹⁵

However, I recommend a second approach. That is, social capital in its broad definition—which includes trust, reciprocity, and networks (in some cases institutions, as Ostrom (1999) and Ostrom and Ahn (2009) suggests)—is capable of providing a comprehensive view of a community as illustrated by Fig. 13.4. Information on networks shows the basic structure of the community. Norms of reciprocity and trust among members of the community show cognitive values shared among them. Trust towards the society as a whole or generalized trust indicates the level of tolerance towards heterogeneity. In other words, it shows the level of capability of individuals to accept something new to them (Table 13.2).

Thus, social capital in the broad definition shows four things: the relation among individual members of the community, the situation of the community, the relations between individuals and the community, and the level of tolerance within the

¹⁵ Lin (2001) p. 19.

Table 13.2 Supplementary remarks on Fig. 13.4

			Network structures		
			Bridging	Bonding	Network structure
Micro					
A	Low	High			
B	Low	Low			
C	High	Low			
D	High	High			
					
Meso					
A'	Low	High			

(continued)

Table 13.2 (continued)

			Network structures		
			Bridging	Bonding	Network structure
B'	Low	Low			
C'	High	Low			
D'	High	High			

community. Since all of these are closely related to how the community is governed, as Bowles and Gintis (2002) advocated, the term “community governance” could be used in place of social capital. Whichever you may prefer, the concept does have value added as a terminology which provides a comprehensive picture of a group or a community.¹⁶

In addition, there is another important contribution of social capital. It opened a new field of inquiry in social epidemiology, which lies at the intersection of the social sciences with medicine and concerns itself with the social determinants of health and well-being.¹⁷ Social capital is a term easily accepted and understood not only by specialists but also by the general public as an important factor in the social

¹⁶As for the usage of both “social” and “capital” in a row which could be uncomfortable for many economists, I believe that it is not entirely impossible for them to accept the term social capital. Originally, capital usually changes forms and it can be sustained or owned by a group or a community as a whole.

¹⁷Refer to Kawachi, Subramanian, and Kim (2008) on the development of social epidemiology.

determinants of health. Social capital has provided a common terminology which can be shared by both doctors and patients.

13.2.4 Definitions and Measurement

With regard to definitions and measurement, I believe that earlier confusions have subsided considerably. Every serious paper dealing with social capital specifies their definition of social capital these days. There was originally less diversity of measurement than of definitions. Basic measurement issues including the best way to capture the cognitive aspects of human activities are still unsolved. It remains true that the approach to measurement itself is a reflection of the values harbored by researchers. However, the challenges of measurement are not unique to the field of social capital, but are shared by many other academic disciplines such as political science and social psychology. The challenges of measurement can be partly overcome by using consistent measures over time. But in the long run, people's perceptions and understandings of the terminologies used in surveys may change. The questions in the same survey may have connotations quite different from their original use as time passes. Using the same questionnaire over a long period of time fails to capture changes to the society. In sum, any social surveys which deal with cognitive aspects cannot escape measurement problems. The best advice is that researchers need to be modest about the claims of empirical research in the field of social theories, including social capital. Above all, investigators need to specify what they mean by social capital beforehand.

13.2.5 Causality and Policy Recommendations

As mentioned above, normally a Granger test that covers a long period of time is required in order to identify causality. For research on social capital and health, cohort data are also required. In addition to the difficulties of obtaining such long-term time series cohort data, there are credibility issues with regard to the use of such long-term data. That is especially the case if path dependency is taken into account. However, the examples introduced in Chap. 4 point to some ways forward to strengthen causal inference. One approach is to conduct an intervention study such as the Taketoyo Intervention Study, "which sought to address the issue of reverse causation between social participation and health through the use of a longitudinal design combined with instrumental variable estimation."¹⁸ Another approach is to adopt a fixed effects approach such as the twin studies by Fujiwara and Kawachi (2008). Since details of these approaches are already elaborated in Chap. 4, I will not discuss the contents of the

¹⁸Chapter 4, p. 88.

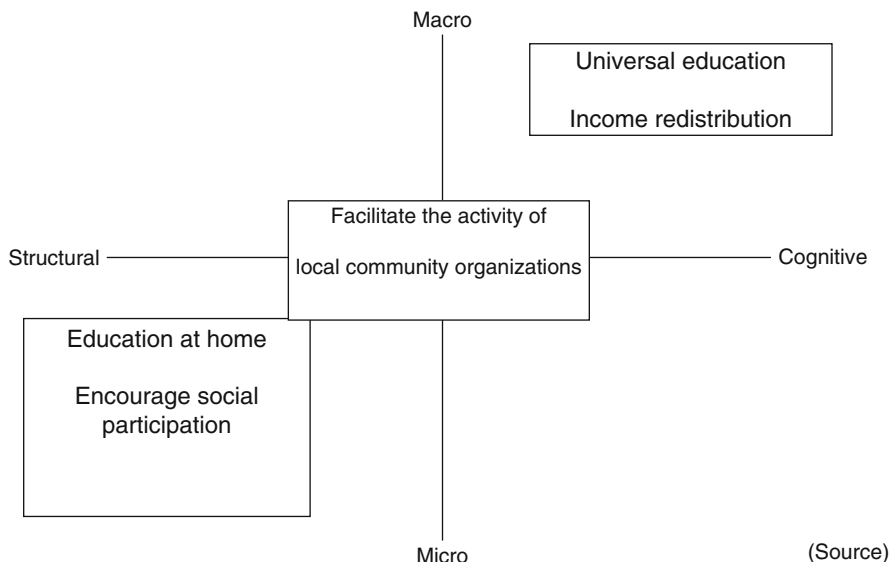


Fig. 13.5 Policies derived from social capital

studies here. What is important is that there are ways to strengthen causal inference between social capital and other variables as illustrated by the attempts in the field of social epidemiology, with reduced dependency on long-term time series data.

Policy recommendations are as challenging as causality. Everybody understands the value of trust, norms of reciprocity, and networks. However, they are in the realm of individuals except for generalized trust, namely, trust towards the society as a whole. They are all personal matters from which governments should stay away. That means the scope of policy recommendations derived from social capital research works should be limited to areas in which market mechanisms do not function. There are two broad cases where markets do not function: the case of intra-group relations and the case of market failures. The former includes social capital operating within a group including firms. The latter includes (a) the case for public goods such as education, health, emergency preparedness, and welfare of the elderly and (b) the issues derived from external diseconomies caused by market mechanisms such as economic inequality. As discussed in Chap. 11 (on the relation between markets, the welfare state, and social capital), economic inequality seems to be robustly associated with the unequal distribution of social capital. The externalities of social capital are not all positive—sometimes they include undesirable external diseconomies as well, such as those created by gangs.

According to the broad definition, social capital is classified into three categories: public goods, club goods, and private goods. Market failures take place in the case of public goods, and so, measures related to social capital should be the primary target of government policies. As shown in Fig. 13.5, policies related to social capital differ in accordance with the particular element of social capital. In the realm of public goods, the

impact of economic inequality is often mentioned by researchers of social capital. For instance, according to Uslaner (2008), there is an inequality trap which arises between the income gap and trust among people. Inequality erodes generalized trust, while it enhances particularized trust or intragroup trust. This causes corruption and, in turn, exacerbates the inequality. In short, inequality hurts social capital, which, in turn, causes corruption within society. He recommends universal education as a remedy for inequality. However, if his interpretation of society is accurate, income redistribution through changes in tax regimes could be another option.

At the community level with social capital as club goods, policy makers could promote policies which facilitate the activities of various local community groups. Governments, for example, should play the role of catalyst for the formation of nonprofit organizations (NPOs). At the same time, however, policy makers should pay due attention to those who are excluded from such activities. Since forming a club implies an exclusion of others from that group, encouragement of group activities may produce individuals who are excluded from society. Therefore, at the microlevel, government should promote social participation programs for those who would otherwise be socially excluded.

13.3 Concluding Remarks

Michael Woolcock made the following remarks in his contribution titled “The Rise and Routinization of Social Capital” to the year 2010 issue of *Annual Review of Political Science*:

While ongoing debate is to be welcomed and rigor from individual scholars required, social capital must continue to do double duty: providing for *diverse* audience a simple and intuitively appealing way of highlighting the intrinsic and instrumental importance of social relationships, while also yielding at the appropriate time to more precise terms appropriate for *particular* specialist audiences. Social capital is another “essentially contested concept” (Gallie, 1956) whose utility to social science (and beyond) rests less on its capacity to forge an inherently elusive scholarly or policy consensus on complex issues than its capacity to facilitate constructive dialogue about agreements and disagreements between groups who would otherwise rarely (if ever) interact. (p. 469)

Social capital does have dual aspects. It has an aspect of a social movement to enhance the often neglected potential power of social ties embedded in the community. In the Great Eastern Japan Earthquake which occurred on March 11, 2011, the central government functioned poorly, and many of the local governments were hit so severely that they lost their ability to cope with the disaster. However, local communities as a whole coped with the situation somehow through ties within their communities as well as between communities. Practically no looting took place. Merchants did not take advantage of the situation. Price levels for consumer goods in the areas directly hit by the tsunami and Fukushima No. 1 Power Station incident stayed at the same level as the rest of Japan. They solved the lack of daily necessities through rationing rather than through market mechanisms. These are only possible in a society with high levels of both generalized and particularized trust, combined with norms of reciprocity.

In light of the experience like those on March 11, 2011, many people agree with the assertion that a society with healthy social capital is a policy goal. In that sense, social capital embodies a social movement for a better society.

Another duty imposed on social capital is to make academic contributions for the enhancement of our well-being. The research on social capital calls for a comprehensive analysis of community capability. In turn, any community is based on the network of individual members. The network generates externalities which in turn create particularized trust and norms within that community. These processes form a valuable subject for academic research. Moreover, although the field has many challenges to surmount, a more comprehensive understanding of how social capital works in communities can potentially bring about solutions for many of the problems confronted by society today. The research endeavors in the field of social capital and health represent a step in that direction. I do believe this is a legitimate academic agenda.

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