

# Chapter 7

## Cross-Sectional Studies of Social Capital and Health

### Studies on Social Capital and Public Health

A systematic literature review of research on the association between social capital and physical health (Kim et al. 2008) and interdisciplinary reviews of research concerning the association between social capital and mental health (Almedom 2005, DeSilva et al. 2005, Almedom and Glandon 2008) have been published recently, so in this chapter I will only shortly comment the earlier comprehensive reviews. Current interest in the role of social capital in terms of population health is global, for example, Latin-American studies have quite recently been reviewed by Kripper and Sapag (2009).

In their review, Kim and coworkers (2008) state that much of the public health literature has focused on the health effects of social cohesion, in other words, a communitarian (ecological) view of social capital has been used in examining the association between group cohesion and health outcomes at different scales (nations, states and neighborhoods) and at multiple levels (multilevel studies). A number of individual-level studies have also been published in which relationships between individual perceptions of social cohesion and health have been examined. In contrast to the more or less communitarian-type theoretical background of the earlier studies, the framework of the network theory has been utilized only recently. Only seven (7) out of the 65 reviewed studies of social capital and physical health have applied a prospective longitudinal study design (Kim et al. 2008). In the review of Almedom and Grandon (2008), three out of 16 studies had used a prospective longitudinal setting.

As to physical health, most of the studies reviewed by Kim and coworkers (2008) showed consistent associations between social trust and good physical health. Social trust is measured as an index for the cultural (or cognitive or psychological) dimension of social capital. The evidence for social trust was stronger for individual-level social trust than for area-level (nations, states) or community-level (neighborhoods) social trust. However, the evidence for social trust was weaker for the objectively measured health outcomes (morbidity, mortality and diagnosed diseases) than for self-rated health. At the individual level, the associational membership and social participation, which are used as indices for the structural dimension of social

capital, showed quite strong associations with self-rated health, but not so strong linkage to objectively measured health.

In the multilevel studies in which individual and area-level (or community) social capitals have been separated in the multilevel statistical models and the former was adjusted for, the area or community level social capital usually showed no significant relation to population health. Furthermore, only two of the reviewed 32 studies on social capital and self-rated health were longitudinal. In several multilevel studies (nine of these studies examined the individual and community (or area) levels simultaneously), the odds ratios of social capital indicators attenuated towards 1.0 when adjusted for individual-level social capital measures. One of the two prospective surveys of social capital and self-rated health found an association (whereas the other one did not) (Kim et al. 2008).

Several limitations in the existing literature on social capital and population health were lifted up in the review and commented by the authors (Kim et al. 2008). Most of the obvious limitations originate from the poor conceptualization of social capital, lack of adequate theoretical framework, difficulties in the operationalization of social capital measures or other similar reasons or obstacles that hopefully will be overcome in future studies. Another limitation that without doubt will be defeated in the future is the paucity of confounders that must be controlled for in epidemiological studies. In the majority of the previous studies, relatively few health-related factors have been controlled for in general, and when the epidemiological studies have been carried out at the community or area level, individual-level health-related factors have only been controlled for insufficiently.

Many earlier epidemiological surveys rely on secondary data sources. Not until the beginning of the past decade have social capital measures been derived from the social capital *per se*, but on the other hand, even such measures can be irrelevant indicators of social capital. For example, Harpham (2008) has listed things that are actually not to be regarded as social capital, but rather its consequences. Her list includes sense of belonging, enjoyment of area, its desirability for moving/staying, neighborhood attractiveness, and security/crime, all of which have been used by many social capital researchers as relevant indicators of social capital. Among the limitations of earlier studies, the scarcity of longitudinal (prospective) studies is the most serious and most difficult to recompense. Without longitudinal studies, we cannot rule out the possibility of reverse causation, meaning that social capital is a consequence of good population health and not *vice versa*. It is quite possible – at least in theory – that having a good control over life or being in good mental and physical health increases social and reciprocal trust and thereby leads to activities in social and cultural associations. Fortunately, those few and, from the epidemiological point of view, insufficient surveys do not seem to prove reverse causation.

Previous reports point to a consistently observed difference in the associations between social capital and population health that seems to depend on the degree of egalitarianism in the countries involved (Islam et al. 2006, Kim et al. 2008). In their review of Latin-American studies, the authors concluded that, despite the limitations inherent to the social capital concept and the 15 studies reviewed, scientific evidence exists lending support to the association between social capital and health

(Kripper and Sapag 2009). They also noticed that the relationship between social capital and health varied according to the social capital subtype and the relevant socio-economic context and culture. In countries with a low degree of economic and social inequality an association was either not found or it was much weaker than in the countries with a high socio-economic inequality. It is also known that the variation in population health between regions is much lower in the more egalitarian countries, such as Canada, Australia and the Nordic countries, than in the more unequal countries, such as the United States, Russia and developing countries. The proposed explanation to the inequity-related differences in the findings concerning associations between social capital and population health is based on assumption that the equally distributed social and public health services may make social capital, consisting of voluntary civic activities and trustful bonding and bridging networks, a less essential factor in terms of population health (Islam et al. 2006, Kim et al. 2008).

As a resident of an egalitarian country, Finland, I am willing to accept the explanation based on the egalitarian vs. non-egalitarian social context. However, as a researcher who has empirically examined both social capital and population health in Finland and also reviewed similar surveys in other Nordic countries, I will be able to show in the following that there are significant associations between various measures of social capital and population health in the Nordic countries.

## Accumulating Research in the Field

Since 2006, reports about the association between social capital and health have appeared at an accelerating pace. It would take too much space here to comment all publications concerning social capital and its relation to population health. Shortly, we can state that the latest reports give support to the opinion that there exists a strong link between various measures of social capital and population health outcomes. In the following, I will bring up some of the most recent publications dealing with individual social capital (e.g., Petrou and Kupek 2008, Schultz et al. 2008, Beaudoin 2009), contextual or community social capital (e.g., Folland 2007, Engström et al. 2008, von Hooijdonk et al. 2008, Scheffler et al. 2008, Hutchinson et al. 2009), linking social capital (e.g., Sundquist and Yang 2007) and network social capital (e.g., Song and Lin 2009) in relation to population health.

In an interesting report aiming to approach the causation from social capital to health as much as it is possible in a cross-sectional study setting, Folland (2007) used multivariate tests and an economic statistical technique (instrumental variables) to examine the possibility that the social capital estimates are confounded by the omitted variables. Putnam's (1993, 2000) communitarian approach to social capital was the starting point of the study, which consisted of samples drawn from 48 contiguous US states at 4-year intervals between 1978 and 1998. Seven health indicators were treated as dependent variables, and the social capital was operationalized according to the communitarian framework and the measures followed Putnam's style (2000).

In each 4-year period, social capital (i.e., the sum of the mean values of the six social capital indicators) was found to be significantly associated with the total age-adjusted mortality rate and the infant mortality rate, which are most commonly used as health outcomes in surveys concerning social capital and population health. The finding gives support to the social capital and population health hypothesis and shows that it sustains over a quarter of a century. In the following steps of the study, the author tested the assumption that the effects of social capital may be different for different mortality categories. Contrary to general presumptions and in contrast to the statistical behavior of other health outcomes, social capital showed no association with the mortality rate for myocardial infarction in the studied US states (Folland 2007).

In another US study, data from the 2006 Social Capital Community Survey in Duluth, Minnesota, and Superior, Wisconsin, were used to investigate associations between individual social capital measures (attitudes to social trust, formal group involvement, informal socializing, organized group interaction, social support, and volunteer activity) and self-rated health (Schulz et al. 2008). The subjects with higher individual-level social capital measures perceived themselves to be healthier compared to those with lower levels of these measures. For example, a 1% increase in the social trust index increased the probability of excellent/very good health by 1%, and a 1% increase in the associational involvement and informal socializing index increased the probability by 3.3% and 2.3%, respectively. Together, all social capital measures resulted in a 10% increase in the probability of being healthy when each index increased by 1%. However, it is difficult to generalize or draw conclusions about causality on the basis of these results since the study was based on a relatively small community sample and a cross-sectional study design was used.

In the study by Folland (2007), the effect of social capital was also modified by area-specific effects, resulting in noticeable erosion in the social capital effect for the rates of some diseases. In order to test whether the observed coefficients in the social capital and health models identify the true coefficients or whether they are confounded by other factors, the following three instruments were examined: employment per capita, geographic latitude (North vs. South), and state government contribution to colleges per capita. These instruments and some exogenous confounders (income per capita, unemployment rate, poverty rate, baccalaureate rate, and health expenditure rate per capita) explained one half of the variation in social capital. Thus, social capital showed a strong overall association with the population health outcomes. Since the social capital and health hypothesis resisted multiple empirical challenges, there are several reasons to be confident about the view that social capital affects population health. Finally, as the author put it, “these issues raise deeper statistical questions of what the effects we observe mean and ultimately whether the social capital and health hypothesis is causal” (Folland 2007).

Quite recently, the relationship between neighborhood racial composition, community (ecological) social capital, and black all-cause mortality in 68 Philadelphia neighborhoods was investigated using data from the U.S. Census, the 2004 Southern Pennsylvania Community Health Survey issued by the Philadelphia Health Management Corporation, and city vital statistics (Hutchinson et al. 2009). The

results suggested a significant interaction between racial composition and community social capital. The black living in predominantly white neighborhoods had significantly higher mortality than the black living in neighborhoods with a higher percentage of black residents, and the benefit was confined to neighborhoods with high social capital. The results emphasize the complex nature of the relationship between neighborhood racial/ethnic composition and minority health and prove the significance of social connections in terms of neighborhood social capital.

A recent cross-sectional survey in Sweden (in a population of 31,182 randomly selected citizens, 18–84 years old, residing in Stockholm County) examined the association between lack of contextual social capital and poor self-rated health (Engström et al. 2008). Horizontal (civic trust and participation), vertical (political trust and participation), cognitive (civic and political trust), and structural (civic and political participation) social capitals were assessed separately. Individual-level social capital, individual socio-demographic variables, and the material context were controlled for in the multilevel statistical models. The results showed a twofold risk for poor self-rated health in areas with very low contextual social capital, as compared with areas with very high contextual social capital. When individual-level factors were included in the multilevel analyses, the excess of risk was much attenuated. The authors suggested that individual-level social capital acts as a mediator of the effect of contextual social capital. Both structural and cognitive dimensions, as well as, both horizontal and vertical directions of social capital contributed to the association between contextual social capital and population health, and the magnitude of association was similar in men and women, as well as in different age and socio-economic groups (Engström et al. 2008).

In the Netherlands, the diversity in associations between community (neighborhood or ecologic or contextual) social capital and health outcomes was evaluated in a neighborhood-level cross-sectional study, representing Dutch population aged 18 years and older (van Hooijdonk et al. 2008). The response rate was 51%. Social capital was assessed using a single component index, originally containing 13 items that represented various dimensions that could be linked to Putnam's (1993, 2000) definition of social capital. The results confirmed that great diversity prevails in the associations between community social capital and health, when different diseases, population groups, and locations are taken into consideration, with relative risks ranging from 0.92 to 1.09 for different causes of death. Community social capital was not related to all-cause mortality although, in the socially strong neighborhoods, lower mortality risks for cancer and suicide were found than in the socially weak neighborhoods. The weak beneficial health effect of living in a neighborhood with abundant social capital applied particularly to men, married persons, and urban residents (van Hooijdonk et al. 2008). Some earlier studies have reported no association between community social capital and mortality, whereas some others have reported a lower mortality risk in communities or neighborhoods rich in stock of social capital (Kim et al. 2008). For instance, in a study conducted in the Helsinki metropolitan area in Finland, neighborhood characteristics (social cohesion) showed modest independent effects on male mortality as compared with individual characteristics (Martikainen et al. 2003).

The bonding-bridging dichotomy of social capital is interesting from the health sciences point of view: “bonding” social capital represents strong social ties such as family relations or friendships, whereas “bridging” social capital facilitates weak social ties that link people to broader social networks and related health benefits in heterogeneous groups (Granovetter 1973). The proponents of the communitarian theory of social capital favor the latter dimension of social capital by arguing that bridging social capital enables people to “get ahead” (Putnam 2000). In order to examine the relative roles of bonding and bridging dimensions in predicting health outcomes, Beaudoin (2009) measured individual-level social capital. Neighborliness was chosen as the operational definition of social capital, in spite of the risk that neighborhood quality may represent a consequence rather than being a measure of social capital *per se* (Harpham 2008). Data were obtained by means of a national telephone survey in a sample of 700 US adults, with the response rate of 38%. Among the common socio-demographic variables, ethnicity was checked particularly carefully since ethnic-specific indices of neighborliness were used for the purpose of creating an index of bonding neighborliness and constructing an index of bridging neighborliness. The results showed that both bonding and bridging neighborliness (as the measures of individual-level social capital) were linked to self-rated health, whereas bonding neighborliness alone was associated with stress (measured by Depression Anxiety Stress Scales, DASS). Thus, protective effects of bonding neighborliness for self-rated health and stress were observed in the study (Beaudoin 2009). The author listed seven limitations of in the study, of which the low response rate, cross-sectional data, and lack of empirically proven and potential confounding variables are the most serious ones.

Another recent survey on individual-level social capital and population health overcomes the problem of low response rate and poor representativeness, which are typical to the majority of American epidemiological studies in the field. Similar to the previously published survey of Pevalin and Rose (2003), also the present survey was based on the nationally representative sample of 13,753 adults participating in the 2003 Health Survey for England, where data were collected through home interviews and a nurse visit with high response rate (93%) (Petrou and Kupek 2008). The measures items measuring individual-level social capital included three measures of trust and reciprocity (from the US General Social Survey), a measure of perceived social support, and a measure of civic participation. Health outcomes were assessed with the self-rated health status and the generic health-related quality of life instrument. The survey demonstrated that a low stock of individual-level social capital, measured as social trust and reciprocity, social support, and civic participation, is significantly associated with poor health status. Even this extensive survey has its limitations, of which the cross-sectional setting and the lack of contextual social capital measures are the most obvious (Petrou and Kupek 2008).

The interaction effects between poverty and lack of individual-level social capital were investigated in a sample consisting of 1,605 participants in urban China (Sun et al. 2009). The lack of neighborhood cohesion and reciprocity and social support

was a good predictor of poor self-rated health. Of the other social capital indicators used in the study, social participation, interpersonal relationship network, and perception of trust and safety were not statistically associated with a lower probability of poor self-rated health. However, for the non-poor sub-sample, no social capital indicator was a statistically significant predictor. Despite several limitations listed by the authors, the study shows that the relationships between poverty, social capital and health are complex and culture-related.

In Sweden, a large, nationally representative, cross-sectional survey on individual-level social capital and population health approached causality, but did not quite reach it (Rostila 2008). The survey was based on data originating from the national Level-of-Living Surveys (21,014 participants, aged 18–75 years; response rate 80%) during the period 1968–2000, and it aimed at investigating general changes in the levels of social capital and the association between individual social capital and health. Informal and formal social contacts as preconditions for social capital were asked about and used as independent factors to predict two health outcomes: psychological stress and self-rated health. It was found that both informal and formal social contacts were significantly associated with self-rated health, and informal social ties seemed to show a much stronger effect on health than formal social ties. Deteriorating informal and formal social contacts and poor ties throughout the decade 1991–2000 had the strongest effect on poor population health. The author suggests that these results may indicate something about causality from social capital towards health (and not *vice versa*) (Rostila 2008). However, the cross-sectional nature of the survey cautions us not to draw definite conclusions concerning causality.

Network social capital (resource-related approach) has only recently been used in studying links between social capital and population health. Carpiano (2006) conceptualized social capital in accordance with Bourdieu's theory and examined its relation to health. His findings were somewhat contrary to public health ideas about the importance of social capital for health. The access to resources seemed to moderate the relationship between various forms of social capital and health outcomes. For people with moderate level of neighborhood attachment, informal social control was associated with a health advantage, whereas neighborhood organization participation was related to a health disadvantage (Carpiano 2007). In another recent study, two instruments of network social capital, namely the position generator and the name generator, which have been presented previously in this book, were found to have effects on health outcomes. The results demonstrated that social capital contributes to health beyond and distinct from the contribution of social support, although the latter was a stronger predictor than social capital. The authors of the survey, which was based on data originating from the Taiwan Social Change Survey, concluded that social capital and social support are two independent relationship-based causes of diseases (Song and Nan 2009).

Linking or institutional social capital links people across vertical and often hierarchical authority gradients and may create trust (or confidence) in formal

institutions (Szreter and Woolcock 2004, Rothstein and Stolle 2008). In contrast to bonding and bridging social capital, linking social capital has very seldom been related to population health. Since voting is an important component of people's social trust in formal political institutions, it is a relevant measure of linking social capital. Swedish epidemiologists studied the association between neighborhood linking social capital and self-rated health in a nationwide representative sample of 11,175 adults aged 25–64 years (Sundquist et al. 2007). Instead of larger geographic units (such as voting at the US state level (Blakely et al. 2001)), the authors used voting in national elections but within small area neighborhood units, which is an advantage from the theory point of view: Social capital emerges in the social interactions between individuals who act in informal and formal social networks. Large state-level units do not capture the most important social networks in the community, which are the core of social capital.

The Swedish survey was based on nationwide face-to-face interviews with a high response rate (80%) and additional data were collected from several independent nationwide databases. Both individual and neighborhood variables were assessed. The main interest, the neighborhood linking social capital, was defined as the proportion of people that had voted in the neighborhood and categorized as low, middle, and high. Multilevel statistical analyses with several demographic and socio-economic confounders were carried out and presented in additional models. The main finding was that people residing in neighborhoods with the lowest levels of linking social capital had a significantly higher risk of poor self-rated health than people residing in neighborhoods with the highest levels of linking social capital. Controlling for the neighborhood and individual variables, the between-neighborhood variance showed significant differences in self-rated health between neighborhoods with low vs. high levels of linking social capital. However, individual variables explained the differences in poor self-rated health in neighborhoods showing mid-level linking social capital (Sundquist et al. 2007).

Of the several strengths of the survey, some are of special interest from the point of view that is in focus in this book. The survey is representative for the whole nation (Sweden), based on face-to-face interviews (not on telephone calls) with established reliability, and controlled for important confounders. It showed that there is an association between neighborhood linking social capital and population health even in a highly egalitarian society (Sundquist et al. 2007). In spite of this novel information, the cross-sectional design does not allow us to draw conclusions as regards causality.

As stated many times in this book, cross-sectional surveys and studies cannot establish the direction of the causal link between social capital and population health. Prospective longitudinal studies with repeated measurements of both social capital and population health outcomes are urgently needed to solve the fundamental problem of the direction of causality. Such long-term surveys, however, are very costly and technically demanding, and what is the most important issue from the epidemiological perspective, they require huge data sources and opportunities (and rights) for researchers to link personal data obtained from several different information sources.



## Social Capital and Psychological Well-Being

In several reviews about social capital and health, physical health and mental health are separately handled (e.g., Kawachi et al. 2008a). However, from the holistic perspective and even in practice, psychological well-being or mental health is difficult to distinguish from self-rated general health. Plenty of philosophical, especially neurophilosophical literature has been published concerning the various definitions of health. Being a neuroscientist and clinical neurologist myself, I am in favor of holistic approaches to the conceptualization of health. Shortly, a healthy person must have the somatic, mental and social dimensions in balance with the intention and goals of his/her life. I have denoted this definition of health as an “ecological definition of health” in some of my textbooks, such as, *Ruumiinkieli* (Body language) 1986, *Tunteet ja oireet* (Emotions and symptoms) 1997, and *Aivot ahtaalla* (Stressed brains) 2001. According to the holistic definition, a great part of health is subjective and therefore it is artificial to separate psychological well-being from self-rated (or objective measures) health. Furthermore, it is contrary to my ideology to distinguish descriptions of the possible associations between social capital and various aspects of health and to place them in separate chapters.

Three systematic reviews about social capital and mental health are available for interested readers (Almedom 2005, De Silva et al. 2005, Almedom and Glandon 2008). Both social capital and mental health (or psychological well-being) are difficult to define, operationalize and measure; this is a trouble encountered in all social capital and mental health studies. It is very difficult to uncover if it is the social networks and resources that affect mental health, or, if good mental health helps to establish social contacts which again increases social capital in a community. The above-mentioned literature reviews were unable to give a unanimous picture of the relationships between social capital and mental health (or psychological well-being), and the evidence supporting the significance of social capital in determining mental health (or psychological well-being) is inconclusive. It seems that the majority of studies at the individual level and dealing especially with the cognitive dimension of social capital (consisting of social trust and reciprocity), have found a positive effect on mental health in adult persons. In children, such association was even more difficult to establish in the reviewed reports. Both positive and negative findings have been published (Almedom 2005, De Silva et al. 2005, Almedom and Grandon 2008).

Recent reports on the possible effects of social capital on population mental health (or psychological well-being) are no more conclusive than the previous ones. However, some of the latest surveys are worth of reviewing to find out if any progress has taken place in this challenging field. Structural and cultural (cognitive/psychological) social capital was measured in a rural Chinese population to examine the relationships of social capital with health and psychological well-being. The final sample consisted of 839 households and 2,401 household members aged 16–80 years, with an extremely high response rate of 98%. One half of the final sample were participated in the interviews. Multilevel statistical analyses were applied in order to separate individual and contextual social capital. The results provided

evidence that both dimensions of social capital are positively associated with self-rated health, psychological health (measured with the General Health Questionnaire (GHQ 12)), and subjective well-being. Social trust as a proxy of cultural (cognitive/psychological) social capital exhibited the most consistent positive association with subjective health (Yip et al. 2007).

A Swedish survey on individual social capital and mental health was published by the National Institute for Health (Carlson 2007). It was based on the nationally representative health survey data from the years 2004–2005, covering a sample of 73,330 adults (aged over 16 years). Social capital was assessed by three questions about emotional support, instrumental support, and social/civic participation during the past 12 months. Similar to the Chinese survey, psychological well-being was assessed with the GHQ 12. Social capital was statistically significantly and positively linked to psychological well-being in all studied subgroups: men and women, young and old, poor and rich, native Swedes and immigrants. If people showed low or no social capital, their risk for poor mental health seemed to be markedly increased. The results were independent of family structure and education, but again, since a cross-sectional design was used in this survey, the causality direction remains unconfirmed. In the previously discussed Swedish survey of Rostila (2008), poor informal social contacts were related to psychological distress, whereas formal social contacts did not predict psychological well-being.

An Australian individual-level study examining the role of various dimensions of social capital for positive mental health applied data derived from a serial cross-sectional telephone survey, the New South Wales Population Health Survey of Australian adults ( $N = 13,008$ , aged 16 years and older) with a response rate of 68% (Phongsavan et al. 2006). Social capital was assessed by a modification of the Onyx-Bullen instrument (2000). Confirmatory factor analysis was performed using LISREL for the purpose of separating and modeling social capital dimensions. Mental health was assessed with the 10-item Kessler psychological distress scale. Individual social capital comprised three constructs: feelings of trust and safety, community participation, and neighborhood connections and reciprocity. Having trust in people, feeling safe in the community, and having social reciprocity were associated with a lower risk of mental health distress, after adjusting for socio-demographic, socio-economic and several health-related confounding factors. Community participation showed no association, and neighborhood connections/reciprocity a moderate association with psychological distress, after adjusting for confounders.

In this survey, the structural and cultural (cognitive/psychological) dimensions of social capital (Putnam 2000, Stone 2001, Szreter and Woolcock 2004, van Deth 2008) appeared to be slightly mixed: trust and reciprocity were by factor analysis categorized in different dimensions. This may be due to the nature of the interview items regarding trust and reciprocity. Trust is covered by responses to statements “I feel safe walking down my street after dark”, “Most people can be trusted”, and “My area has a reputation for being a safe place”, while reciprocity is drawn from three items covering neighborhood qualities (Onyx and Bullen 2000). In general, the

survey results prove that the dimensions of social capital are significantly associated with different levels of psychological well-being (Phongsavan et al. 2006).

Recently, very similar results of the association of social capital and psychological well-being were drawn from a large population survey in Finland. The survey aimed to examine if the structural and cultural (cognitive/psychological) dimensions of individual-level social capital are separately related to psychological well-being assessed with the GHQ 12. Cross-sectional data from the national health examination survey, Health 2000, was applied, and the final sample of the 8,028 participants represented all Finnish adults aged 30 years or over. For Health 2000, data were collected by means of an interview, two self-administered questionnaires, and a comprehensive health examination; the final response rate was 77%. Although the survey was primarily a health survey, the data include 36 variables used in previous literature for measuring various aspects of social capital. Three slightly correlated dimensions of social capital were distinguished by means of factor analyses: social support (belief in getting emotional support and practical help when needed), social participation and networks (including variables of social activities and meeting friends), and trust and reciprocity (trusting people, feeling of reciprocity, feeling safe in the neighborhood) (Nieminen et al. 2008). Social participation and networks represented the structural dimension of social capital and trust and reciprocity the cultural (cognitive/psychological) dimension of social capital (Chapter 3).

In our study mentioned in Chapter 3, logistic regression analysis was used to reveal and quantify the possible associations between the three dimensions of social capital, adjusting for confounding and mediating factors (age, gender, education, living arrangements, income, type of region, functional capacity, and long-standing diagnosed illnesses). Self-rated health was positively associated with all three dimensions of social capital. Good self-rated health was associated to a significant degree with high levels of structural and cultural (cognitive/psychological) social capital, even after adjustment for all the other variables. In contrast, the dimension of social support was not statistically significantly associated with self-reported health. There was a positive association observed between social support and psychological well-being, but it was explained by the structural and cultural (cognitive/psychological) dimensions of social capital. Cultural (cognitive/psychological) social capital showed the strongest positive association with psychological well-being and resisted the other dimensions of social capital and all confounders. Thus, our report could not disprove the idea that both the structural and cultural (cognitive/psychological) dimensions of social capital contribute to self-rated health and psychological well-being. More like, our study shows that high levels of structural and cultural (cognitive/psychological) dimensions of social capital are greater contributors to good health and psychological well-being than social support, even when the individual in question has limited functional capacity and health problems (Nieminen et al. 2010).

Network or resource-related social capital and its association with common mental health were studied in the United Kingdom, using a postal questionnaire and with a very low response rate of 34%. The aim of the study was to establish the validity and reliability of resource-related social capital instruments but, simultaneously,

it also explored if access to social resources varies according to the presence of a common mental disorder (mental distress) (Webber and Huxley 2006). Resource generators were used to measure individuals' access to social resources within their social networks (Lin 2001, van der Gaag 2005, van der Gaag and Webber 2008), and psychological distress was measured by the GHQ 12. The preliminary results showed that both the resource generator and position generator scales of social capital showed weak negative correlations with psychological well-being. Thus, having probable mental distress seems to be independently associated with having access to fewer resources (indicating a low level of individual social capital) (Webber and Huxley 2006).

Apart from several associational studies concerning the relationships between social capital and psychological well-being, social capital has also been investigated in relation to psychopathology. For instance, neighborhood social capital has been linked to the incidence of schizophrenia in a cross-sectional study of the adult population in 33 neighborhoods in South London ( $N=16,459$ ) (Kirkbride et al. 2008). The study showed that the dimension of social capital may be associated with the incidence of schizophrenia since, in comparison with neighborhoods with intermediate levels of social cohesion and trust, the incidence rates of schizophrenia were significantly higher in neighborhoods with either low or high levels of social cohesion and trust, independently of socio-demographic and socio-economic confounders. So, neighborhood-level risk factors appeared to be associated with the incidence of schizophrenia beyond what can be attributed to individual-level characteristics or socio-economic deprivation. In another recent study from the Netherlands, the authors examined the possible effect modification by neighborhood social capital in the association between the bullying and adverse life events in childhood and subsequent psychopathology in adolescence. The study was based on health examinations at a 2-year interval, performed by the local community pediatric health services. It included adolescents ( $N=749$ ) who at the time of the baseline examination were attending the second grade of secondary school. Neighborhood social capital was measured with two scales: informal social control, and social cohesion and trust. Bullying and adverse life experiences were predictive of psychopathology, but the effect was not modified by neighborhood social capital (Gunther et al. 2007).

Cognitive capacity has been reported to associate with social and cultural participation. Most studies have been conducted among elderly people and will be shortly reviewed in Chapter 11.