10
Social Capital and Health-Related Behaviors

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10.1. Health-Related Behaviors in a Social Context

10.1.1. Environmental Conditions and Health-Related Behaviors

Behaviors such as tobacco smoking, alcohol consumption, physical activity (or a sedentary lifestyle) and diet are major determinants of health because of their causal effects on cardiovascular diseases, cancers, and many other chronic diseases (The World Health Report, 2002). Some other health-related behaviors such as the abuse of narcotic drugs (which lead to premature death for a variety of reasons) and sexual behaviors (which lead to sexually transmitted diseases/infections) are mainly causally linked to health for other reasons.

Causal linkages between environmental factors and health-related behaviors have been recognized for decades in social and behavioral science theories (Bandura, 1986; McLeroy, Bibeau, Steckler, & Glantz, 1988) and are supported by empirical findings. Factors in the physical environment have been thoroughly investigated (MacIntyre, MacIver, & Sooman, 1993). The social environment also affects health. Cassel hypothesized in 1976 that aspects of the social environment may have an effect on health (Cassel, 1976), and the association between social circumstances and health-related behaviors is now widely accepted as a major health determinant (Emmons, 2000). The social environment affects individual health-related behavior through a number of causal mechanisms by shaping norms, enforcing social control, enabling or not enabling people to participate in particular behaviours, reducing or producing stress, and constraining individual choice (Institute of Medicine, 2003). A comprehensive list of social environmental factors which influence behavior has recently been given by McNeill, Kreuter, and Subramanian (2006), and this list is shown in Table 10.1. Social support and social networks, listed at the top of Table 10.1, may enable or constrain the adoption of health-promoting behaviors, provide access to resources and material goods, provide individual and community-coping resources, buffer negative health outcomes, and restrict contact to infectious diseases. Low socioeconomic position (as typically measured by education, income and/or occupation) may increase biological

Table 10.1. Social environment dimensions, descriptions and key elements, and mechanisms by which they influence behavior.

Dimension	Description/key elements	Mechanism
Social support and social networks	The presence and nature of interpersonal relationships and interactions; extent to which one is interconnected and embedded in a community; interpersonal level characteristic	Enables or constrains the adoption of health-promoting behaviors; provides access to resources and material goods; provides individual and community coping responses; buffers negative health outcomes; and restricts contact to infectious diseases
Socioeconomic position (SEP) and Income Inequality (II)	*SEP:* Reflects one's social standing in society; commonly measured using educational attainment, occupation, and individual income *II:* Reflects the unequal distribution of income; signifies the gap between the rich and poor	*SEP:* Increases biological stress and thereby adversely affects health; reduces accumulation of and access to material resources that can protect against stress. *II:* Creates less socially cohesive communities through disinvestments in social capital; reduces social spending on programs and services; and increases psychosocial conditions (e.g., frustration, social comparison)
Racial discrimination	Interpersonal or institutional bias that results in psychological harm; limits opportunities for advancement	Produces economic and social deprivation; increases exposure to harmful substances; and creates psychological trauma. Inadequate health care and targeting of harmful substances to marginalized groups is also a byproduct of racial discrimination
Neighborhood factors	Also described as neighborhood deprivation; represents independent environmental factors of "place" rather than the aggregation of individuals living in an area	Exposure to harmful elements of the physical environment (e.g., water quality), availability of health, social and community support services, community reputaton and other historical and cultural features
Social cohesion and social capital	Extent of connectedness and solidarity among groups; shared resources that allow people to act together; area or community-level characteristic	Ability to enforce and/or reinforce group or social norms for positive health behaviors; provision of tangible support (e.g., transportation)

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stress and reduce access to material resources. Income inequality may create less cohesive communities through disinvestments in social capital, reduced social spending on programs and services, and increased frustration originating in social comparisons. Racial discrimination produces economic and social deprivation, increases exposure to harmful substances, and creates psychological trauma. Neighborhood factors such as neighborhood deprivation may result in exposure to harmful elements of the physical environment (e.g., water quality, air pollution, housing), or may be related to the availability of health, social, and community support services, and a community's reputation. Social cohesion and social capital may increase the ability to enforce/reinforce social norms for positive health behaviors. This list gives a picture of the variety of plausible social influences on health behaviors, although it is not complete. For instance, social capital may also affect health-related behaviours by a direct psychosocial stress mechanism (Kawachi, Kennedy, & Glass, 1999). Social capital is the most recently conceptualised and investigated of the social items listed in Table 10.1 which influences health-related behaviors.

10.1.2. Social Capital and Health-Related Behaviors

Social capital is a very recent concept in the public health literature. The progress in public health studies analyzing social capital as a health determinant has been exponential in recent years. Whereas Macinko and Starfield (2001) only found 10 articles on social capital within the public health literature in 2001, Kawachi, Kim, Coutts, and Subramanian (2004) found 50 papers published on this subject in 2002, just a year later. Social capital is defined as those features of social structures - such as levels of interpersonal trust and norms of reciprocity and mutual aid - which constitute resources for individuals and facilitate collective action (Coleman, 1990; Kawachi & Berkman, 2000; Putnam, 1993, 2000). Social capital forms a subset of the notion of social cohesion. Social cohesion refers to two broader, intertwined features of society, which may be described as the absence of latent social conflict (in the form of income inequality, racial/ethnic conflict dimensions, disparities in political participation or other forms of polarization), and the presence of strong social bonds (as measured by levels of trust and norms of reciprocity, i.e., social capital, the abundance of associations that bridge social divisions and create "civil society", and the presence of institutions of conflict management, e.g., a responsive democracy, an independent judiciary, and so forth) (Kawachi & Berkman, 2000). Social capital is always a contextual phenomenon in the sense that it is a characteristic of the relations and interactions *between* individuals, groups of individuals, organizations and institutions rather than a characteristic of the individuals, groups, organizations and institutions *themselves*. The concept of social capital can thus be clearly distinguished from the concept of human capital, which denotes the formal education and experience of the individual person (Coleman, 1990). The concept of social capital should also be distinguished from the concept of social support in the narrow sense of the social embeddedness in the closest social network of the individual

(Lochner, Kawachi, & Kennedy, 1999). This distinction is also important because the social support and also the social network (in connection with social support) concepts are derived from the psychosocial stress theory and have been analyzed within the public health literature for decades (see for e.g., Berkman & Syme, 1979; House, Landis, & Umberson, 1988), although the line between social support and social capital may not always be easy to draw. The three concepts of bonding, bridging, and linking social capital have also been introduced. Bonding social capital refers to "trusting and cooperative relations between members who see themselves as being similar in terms of their shared social identity", bridging social capital to "relations of respect and mutuality between people who know they are not alike in some sociodemographic (or social identity) sense (differing by age, ethnic group, social class, etc.)", and linking social capital to "norms of respect and networks of trusting relationships between people who are interacting across explicit, formal or institutionalised power or authority gradients in society" (Szreter & Woolcock 2004). It seems possible that the "bonding" social capital concept would also border the social network and social support concepts derived from the psychosocial stress theory.

Social capital has been suggested to have beneficial effects on health by several different causal mechanisms which include: 1) the norms and attitudes which affect health-related behaviors; 2) psychosocial mechanisms which both serve to enhance self-esteem, confidence, and control, and may have biological effects (for instance, by activating the hypothalamic-pituitary-adrenocortical axis); 3) social networks, which tend to increase access to health care and amenities; and 4) by having a lowering effect on crime rates (Kawachi, Kennedy & Glass, 1999; Kawachi & Berkman, 2000).

Although social capital is a clearly contextual concept, both the nature (definition/operationalization) and level of analysis differ in the literature concerning social capital and health. First, social capital has been defined and analyzed as civic engagement, social networks/social participation, generalized trust in other people (horizontal trust), trust in the institutions of society (vertical trust), and reciprocity (expectation of helpfulness from other people) (Putnam 1993, 2000). While some theorists construe social capital as "ties" and norms binding individuals within constituent elements of large organizations or linking them across a variety of institutional and formal and informal associational realms (Granovetter, 1973), others regard social capital as a "moral resource" such as trust (Fukuyama, 1995, 1999). The debate concerning the "essence of social capital", i.e., norms and values in social participation/networks or trust, is still unresolved. As Woolcock has noted, "This leaves unresolved whether social capital is the infrastructure or the content of social relations, the 'medium' as it were, or the 'message'" (Woolcock, 1998). Second, Macinko and Starfield (2001) have defined and identified at least four different levels at which the analysis of social capital and health have been conducted. These include the macro (countries, regions, municipalities), meso (neighbourhoods, city quarters), micro (social networks and social participation of individuals), and individual psychological (trust) levels. Some authors study social capital at the macro and meso levels (Putnam, 2000;

Woolcock, 2001). In contrast, others study how relations between individuals and social networks are organized in local environments (Coleman, 1990). These differing definitions and levels of analysis must be taken into consideration in the following sections on social capital and health-related behaviors of this chapter. The contextual characteristic of social capital must also be related to the growing literature on individual and community interventions targeting health-related behaviors.

10.1.3. Individual and Community Interventions Targeting Health-Related Behaviors

In recent decades a large volume of intervention research has been conducted targeting health-related behaviors. Individual-targeted interventions, e.g., in the primary health care setting, have been most commonly used. These interventions, although being intensive in impact at the individual level, mostly run the risk of reaching only an extremely limited proportion of the population. Individual-level interventions have also used tailored telephone counselling or tailored print communications. However, such individual-level interventions do not take into account the fact that socially and economically deprived groups with a concentration of risk behaviors to a lesser extent have access to a telephone (Resnicow et al., 1996) and to a considerably higher extent have low literacy skills (Williams et al., 1995). The population-based intervention approach is considered by many as superior to those interventions only targeting the individual level, because a much larger population is targeted. Some community-based studies have found no intervention effects on risk factors (Glasgow, Terborg, Hollis, Severson, & Boles, 1995), while others have found intervention effects only on some risk factors (Sorensen, Emmons, Hunt, & Johnston, 1998). Intervention studies on health-related behaviors thus entail a paradox. Intervention studies targeted at individuals are often effective in achieving health behavior change at the individual participant level, but are less effective in achieving measurable health behavior change at the population level. In contrast, intervention studies targeted at the population level often include a large proportion of the population, but are less effective at the individual level compared to individual level interventions. However, small changes in health-related behaviors at the population level can lead to large overall effects on disease burden (Rose, 1992). Evaluations of health behavior interventions must thus be conducted both in terms of their benefits in producing individual changes, and in terms of their reach or penetration within the population (Abrams et al., 1996). Although there is a tendency towards recommending community interventions, very little work has so far been conducted directly using social capital to improve health-related behaviors.

Studies on the association between social capital and health in general as well as between social capital and health-related behaviors in particular have mostly been conducted in industrialised countries. Hence, the relations between socioeconomic

gradients, social capital, health behaviours and health are mainly discussed in relation to these social and economic contexts.

10.2. The Influence of Social Capital on Specific Health-Related Behaviors

10.2.1. Alcohol and Narcotic Drugs

The links between social deprivation and health behaviors are very strong in the case of both legal and illegal drug use. In a significant number of cases, the latter result in suicide, homicide, violent crime, and accidents. Alcohol is associated as a misk factor with more than 60 diagnoses, but there is also an inverse association between alcohol and adverse health effects in the case of ischemic heart disease, stroke, and type II diabetes (Murray & Lopez, 1996). Alcohol abuse has an important impact on death rates. Alcohol has recently been estimated to contribute to 3.2% of the total mortality in the world and to 4.0% of the total disease burden, and these proportions reach above 10% in western countries (Rehm, Room, & Moneiro, 2004). There are also many illegal drugs (in most countries), cannabis being the most important in many countries in terms of prevalence, primarily among young people (Gilvarry, 2000; Smart & Ogborne, 2000). Drug users are mostly recruited from groups with disturbed family backgrounds, low self-esteem, and impaired psychological functioning. Apart from its own health-detrimental effects, cannabis use is an important precursor to the use of other drugs (Dupre, Miller, Gold, & Rospenda, 1995).

Adolescence and early adulthood are the periods when in most persons health-related behaviors such as alcohol consumption, other drug use, and smoking are founded. Low levels of parental monitoring have been shown to be associated with children's initiation of substance use (alcohol, smoking and other drugs) at earlier ages (Chilcoat & Anthony, 1996). The social context in peer groups as well as in schools has also been shown to be important for the risk of initiating drug abuse (Dupre, Miller, Gold and Rospenda, 1995). The extent to which school is a functional community with supportive social relationships, social participation in school activities, and shared norms, goals, and values, may also moderate individual risk of initiating adverse health behaviors such as high alcohol consumption and drug use (McMillan & Chavis, 1986). Multilevel analyses, which take both individual-level composition of individuals and contextual-level characteristics into account, have shown some contextual effects of the family (adolescents living with both parents or not) (Bjarnason et al., 2003), school (Maes & Lievens, 2003), and university (Kairouz, Gliksman, Demers, & Adlaf, 2002) in different Western countries. However, only a few theoretical models of contextual effects of alcohol and narcotic drugs have been suggested. Coleman has proposed that the socialization of children is facilitated by normative consensus among community members, plausibly through both increased clarity concerning appropriate and inappropriate behaviors and increased monitoring and enforcement of community norms (Coleman & Hoffer, 1987; Coleman, 1988). The results of a few multilevel studies in the

US have indicated that low social cohesion in neighborhoods is significantly associated with neighborhood youth and alcohol arrests (Duncan, Duncan, & Strycker, 2002), that college social capital (measured as college mean aggregate reports of student voluntarism) is significantly associated with alcohol abuse and harm (Weitzman & Chen, 2005), and that college social capital (measured as the individual's daily time volunteering in the past 30 days, aggregated to the college campus-level) has protective effects on binge drinking, i.e., the consumption of large amounts of alcohol on one occasion (Weitzman & Kawachi, 2000). In southern Sweden one individual- level social capital study has shown that social capital, indicated by measures of social participation and trust, was inversely correlated with the probability of tobacco smoking and illicit drug use, but that social capital showed no statistically significant correlation with the probability of binge drinking among adolescents aged 12–18 years (Lundborg, 2005). Another multilevel analysis conducted across 34 different countries demonstrated a significant positive association between income inequality and alcohol use and the frequency of drunkenness among adolescents (aged 11, 13 and 15 years) (Elgar, Roberts, Parry-Langdon, & Boyce, 2005).

In adult populations, high (in terms of health-threatening) alcohol consumption, currently defined as 168 grams/week or more for men and 108 grams/week or more for women (British Medical Association, 1995), mostly has a positive association with high socioeconomic status (Blaxter, 1990; Lindström, 2005a; Pollack, Cubbin, Ahn, & Winkleby, 2005). This pattern clearly differs from other health behaviors such as smoking, physical activity, and diet, for which the adverse health effects are concentrated in lower socioeconomic strata. The socioeconomic patterns for high alcohol consumption also seem to be reflected in the association between aspects of social capital and alcohol consumption. Individual-level cross-sectional studies in southern Sweden have indicated a significant association between social capital and high alcohol consumption (see above) among adults 18–80 years (Lindström, 2005a), consumption of illegal alcohol (home made and smuggled) among adults 18–80 years (Lindström, 2005b), and experience of cannabis use among young adults aged 18–34 years (Lindström, 2004), respectively. However, the patterns differ for social participation (measured as participation in 13 different social activities at some occasion during the past year) compared to generalized trust in other people. Social participation was only associated with consumption of illegal alcohol during the past year, i.e., high social participation was significantly associated with higher odds of consumption of illegal alcohol. There were no significant associations between social participation and high alcohol consumption and experience of cannabis use. In contrast, low generalized trust in other people was significantly associated with all three behavioral outcomes. The associations between the combination of high social participation and low trust, and all three behavioural outcomes were also significant. First, these findings imply that the psychological aspect of social capital (trust in other people) may be important in connection with drug (both alcohol and cannabis) use/abuse, a finding which supports the notion that psychological factors and the psychosocial conditions during childhood and adolescence

are crucial as predictors of drug use/abuse (see above). Second, the findings also imply that the "miniaturization of community", i.e., high or average levels of social participation combined with low levels of trust (Fukuyama, 1999), may be associated with drug use/abuse. It seems that people in high or average socioeconomic positions with high or average social participation but consistently low trust have the highest odds of high alcohol consumption, consumption of illegal alcohol, and previous experience of cannabis use. In contrast, a recent American study found no significant individual-level association between trust in one's community, social participation, and binge drinking (Greiner, Chaoyang, Kawachi, Hunt, & Ahluwalia, 2004).

Many multilevel analyses which include effects of both individual-level and contextual-level characteristics on alcohol consumption or binge drinking in the general adult population in different countries have been conducted at contextual levels such as the state level in India concerning effects of prohibition policy (Subramanian, Nandy, Irving, Gordon, & Smith, 2005), regional-level effects of per capita income in Japan (Fukuda, Nakamura, & Takamo, 2005), neighbourhood-level effects of deprivation in the US (Pollack, Cubbin, Ahn & Winkleby 2005), regional-level effects of the proportion of manual workers, unemployment, median household income, the Gini coefficient (income distribution), family cohesion, voting turnout, level of urbanisation, and proportion of Swedish-speaking persons in Finland (Blomgren, Martikainen, Makela, & Valkonen, 2004), and household-level effects in England (Rice, Carr-Hill, Dixon, & Sutton, 1998), mostly finding significant contextual-level associations with harmful levels of alcohol consumption or alcohol-related mortality. However, it seems that specific multilevel analyses on the effects of contextual-level social capital on alcohol consumption in adult populations are yet to come.

In conclusion, the main finding so far seems to be that some studies indicate an influence of social capital on alcohol and other drug use during childhood and adolescence as well as during adulthood. Both the theoretical social capital literature and empirical evidence suggest that norms, values, and beliefs (such as generalized trust in other people) are founded and formed by psychosocial conditions (intact families, parental monitoring, conditions in school, etc.) during childhood and adolescence, and that they affect alcohol and other drug use both during adolescence and adulthood. Results in adult populations suggest that trust, i.e., the psychological aspect of social capital, which has been suggested to be created during childhood and adolescence and to remain rather stable during the life course (Putnam, 2000), is protective against alcohol consumption above recommended levels, the consumption of illegal alcohol, and cannabis use.

10.2.2. Cigarette Smoking

Unlike alcohol consumption and narcotic drug use, cigarette smoking is not a behavior with potentially acute effects in terms of accidents, crime and suicide, but it still imposes the greatest costs of all health-related behaviors in terms of

premature death globally. Cigarette smoking is an individual behavior, but the underlying causal determinants of cigarette smoking are predominantly social. Socially- and economically-deprived people in lower socioeconomic positions are heavily overrepresented among daily smokers. In many western countries the prevalence of smoking has been declining for decades, which has somewhat paradoxically led to increasing socioeconomic differences in smoking (Jarvis & Wardle, 2006).

Most smokers become smokers during adolescence, some during early adulthood and very few later than that. Smoking prevention is thus a matter of two principally different strategies: to stop young people (adolescents and young adults) from initiating tobacco smoking, and to make adults of all ages stop smoking. Both smoking initiation and smoking cessation depend on social and psychosocial factors. Smoking initiation during adolescence has been shown to be a phenomenon with a clear socioeconomic gradient with higher risk of initiation in socially- and economically-deprived socioeconomic groups and neighborhoods. Children who grow up in social environments with many adult smokers are more likely to become smokers themselves due to parental, family, and social behavioral role modelling. In addition, there is evidence that smoking is a measure of smoking trajectory, with prevalence being even more closely related to people's social destination than their original social circumstances during childhood (Glendinning, Shucksmith, & Hendry, 1994). Smoking cessation is a dynamic process which begins with a decision to stop smoking and ends with abstinence maintained over a long period of time. Smoking cessation is thus not a single event, but rather a process influenced by social, psychosocial, psychological, and biological factors (Gulliver, Hughes, Solomon, & Dey, 1995; Hajek, West, & Wilson, 1995; Pomerleau & Pomerleau, 1991). Occasions with negative events and perceived stress are associated with smoking and urges to smoke (Todd, 2004).

The results of two studies in Malmö in southern Sweden suggest that social participation in formal and informal associations but also participation in cultural activities are important determinants of smoking cessation. In contrast, social anchorage in the closer proximity of the individual, i.e., the feeling of "social embeddedness" with friends and neighbors, as well as the two other psychosocial factors of emotional and instrumental support, were not significantly associated with smoking cessation (Lindström & Isacsson, 2002; Lindström, Isacsson, & Elmståhl, 2003). Social participation can be interpreted either as a distinct social science concept measuring the diffusion of innovations (Rogers, 1983) and measuring the norms, rules, values, and control within formal and informal social networks and organisations (Putnam, 1993), or as a protective buffer against psychosocial stress. The lack of significant associations with all of the other three psychosocial variables seems to support the social context/social capital interpretation. Another individual-level study from southern Sweden showed that both low social participation and lack of generalised trust in other people were significantly associated with daily smoking, a result which seems to

further support the norms and values interpretation of the relationship between social participation and smoking cessation (Lindström, 2003).

Studies at the contextual, mainly school or area, level often demonstrate that smoking prevalence varies with social contexts and may be affected by social, economic and psychosocial traits of these varying administrative or geographic contexts. A group randomised controlled trial in 26 Dutch schools which provided junior secondary education demonstrated that promotion of certain norms and peer pressure could be a promising strategy in terms of preventing smoking among adolescents (Crone et al., 2003). A cross-sectional multilevel study of 55 secondary schools in the United Kingdom which also analysed school-level and pupil-level data also demonstrated an association between policy strength, policy enforcement, and the prevalence of smoking among pupils, after adjustments for pupil-level characteristics (Moore, Roberts, & Tudor-Smith, 2001). A multilevel discrete-choice models study concerning young adolescents attending 30 secondary schools in Spain demonstrated that a substantial part of individual differences in smoking may be explained by factors at the school level (Pinilla, Gonzalez, Barber, & Santana, 2002). Multilevel studies on adult populations show that tobacco smoking is associated with local neighborhood characteristics such as deprivation in the United Kingdom (Duncan, Jones, & Moon, 1999), level of neighborhood unemployment in Sweden (Öhlander, Vikström, Lindström, & Sundquist, 2006), Gross Domestic Product (GDP) at the area level in France (Chaix, Guilbert, & Chauvin, 2004), and state-level income inequality in the US (Kaplan, Pamuk, Lynch, Cohen, & Balfour, 1996). However, contextual and area differences or variance do not always remain after adjustment for relevant individual factors in multilevel models. Some multilevel studies have reported no remaining district variation in adult smoking in the United Kingdom (Hart, Ecob, & Smith, 1997), no remaining differences in smoking in deprived compared to affluent urban areas in Amsterdam (22 areas) and the Netherlands (Reijneveld, 1998), and no remaining neighbourhood variance in daily smoking in Malmö (74 neighbourhoods) in southern Sweden (Lindström, Moghaddassi, Bolin, Lindgren, & Merlo, 2003) after adjustments for individual compositional factors. In the latter study, the lack of neighborhood variance after adjustment for individual characteristics meant that there was no point in including neighbourhood-level social capital in the analyses. Compared to the rather high number of multilevel studies on the influence of area-level economic conditions on smoking, only a few multilevel studies have investigated the relationship between community-level social capital and smoking. These few studies mostly concern adolescents in school settings (see above). A contextual econometric analysis on 39,369 adults in the US modeling community-level fixed effects, tobacco price (including excise taxes), family income, a tobacco smuggling indicator, non-smoking regulations, education, marital status, sex, age, and race/ethnicity indicated that the proportion of community social capital attributable to religious groups was inversely and strongly related to the number of cigarettes that smokers consumed, but it was not, in

contrast, attributable to the overall prevalence of smoking (Brown, Scheffler, Seo, & Reed, 2006).

Although much more research is needed, the results still imply that preventive measures against tobacco smoking should be designed to improve aspects of social capital and social cohesion (Lomas, 1998).

10.2.3. Leisure-Time Physical Activity

Physical activity is an important determinant of health and benefits many aspects of health. It has for a long time been recommended that physical activity should be performed regularly for at least 30 minutes on five or more days of the week. The intensity of this physical activity should be moderate such as brisk walking (US Department of Health and Human Services, 1990). The major part of the health benefits occur when adults with a sedentary lifestyle become moderately active (Haapanen, Miilunpalo, Vuori, Oja, & Pasanen, 1996).

Changing work contexts (i.e., a much lower proportion of the population in developed countries performing physically strenuous work tasks, and an increasing proportion of many adult western populations being unemployed for various reasons) have made leisure-time physical activity the crucial component of physical activity. Leisure-time physical activity is a socially patterned health-related behavior with a socioeconomic gradient according to occupation, education, or income with a higher risk of sedentary physical activity status among groups with lower socioeconomic position such as blue collar workers and those unemployed in many developed countries (see e.g., Blaxter, 1990; Burton, Turrell, & Oldenburg, 2003; Lindström, 2000). One individual-level causal mechanism explaining this socioeconomic gradient may be a corresponding socioeconomic gradient in access to transportation to facilities for physical activity and access to material resources to be able to afford to pay for leisure-time activities and sports (Chinn, White, Harland, Drinkwater, & Raybould, 1999). Another causal mechanism may be that low socioeconomic position increases psychosocial stress, which leads to less physical activity and subsequently adverse health effects (McNeill et al., 2006). Individual-level studies in southern Sweden have consistently shown a strong positive association between social capital measured as participation in different social activities and leisure-time physical activity (Ali & Lindström, 2006; Lindström, Hanson, & Östergren, 2001; Lindström, Moghaddassi, & Merlo, 2003). These findings may be interpreted as either a consequence of the "healthy" norms and values in Swedish society being transmitted through formal and informal organizations and social networks, or as a result of the lower levels of psychosocial stress among participants in social networks resulting in higher levels of physical activity.

Contextual factors are also important for both the motivation and possibility to perform physical activity. Physical environment factors such as beautiful scenery, access to pavements, access to trails, and green surroundings have consistently been shown to be positively associated with physical activity (Humpel,

Owen, & Leslie, 2002; Leyden, 2003; van Lenthe, Brug, & Mackenbach, 2005; Wilson, Kirtland, Ainsworth, & Addy, 2004). A Dutch study has also demonstrated that the higher risk of almost never participating in sports activities in the most disadvantaged neighbourhoods of Eindhoven was partly mediated by larger amounts of required police attention (van Lenthe, Brug & Mackenbach 2005). This finding suggests an indirect effect of crime rates in the neighborhood on physical activity, the crime rates in the previous step in a chain of causality plausibly being an effect of low social capital (Sampson, Raudenbush, & Earls, 1997). Neighborhood-level social capital may also affect physical activity through mechanisms which include the norms and values, trust, and generalised reciprocity, or the social cohesion prevailing in the neighborhood. A multilevel analysis concerning self-reported physical activity among older adults in 56 neighbourhoods in Portland in the US found that social cohesion was associated with higher levels of physical activity, with a significant second-level variance with an intra-class correlation (ICC) of 4% remaining after adjustments for individual-level factors in the model (Fisher, Li, Michael, & Cleveland, 2004). Another American hierarchical study, analyzing urban-rural communities/the geographic areas of Kansas, found significant individual-level associations between trust in one's community, social participation, and physical activity (Greiner et al., 2004). A likely mechanism by which generalized trust in other people could affect physical activity is through feelings of security or lack of security in the community connected with trust. A third multilevel study in the US with a second county level and a third state level of analysis demonstrated significant inverse contextual-level associations between social capital indices, including indicators of trust, different aspects of social participation, mean number of non-profit organizations per 1,000 inhabitants, mean number of civic and social organizations per 1,000 inhabitants, times worked on community project and percentage turnout in presidential elections, and physical inactivity (Kim, Subramanian, Gortmaker, & Kawachi, 2006). In contrast, a multilevel analysis of the adult population in the city of Malmö, southern Sweden, residing in 77 neighbourhoods, showed no remaining variance (intra-class correlation, ICC = 0%) after adjustments for individual factors. In contrast, individual-level social participation was significantly associated with leisure-time physical activity (Lindström, Moghaddassi & Merlo 2003). The different results of the American studies as opposed to the Swedish study may reflect differences between the US and Sweden in neighborhood social capital and other neighborhood characteristics, and their effects on physical activity.

In conclusion, the literature presents strong evidence for contextual effects on physical activity through several different and distinct causal mechanisms. The social capital approach to contextual-level differences in physical activity find strong support in the US but not to the same extent in Europe. The single study in Europe shows absence of significant contextual-level associations. There are significant micro-level (social participation/social network of the individual) associations between social capital and physical activity in Europe, but more studies are required, especially in Europe.

10.2.4. Diet

A large proportion (41%) of total disability-adjusted life-years (DALYs) lost in Europe result from cardiovascular diseases (CVD), type II diabetes, and cancers. These three groups of diseases all have nutrition as a major determinant. An additional 38% of DALYs lost is explained by lowered resistance to infection, oral diseases, and congenital abnormalities for which nutrition plays an important role. Of the seven major risk factors for CVD, six are related to diet and physical activity: 1) high blood pressure is directly related to salt intake and obesity, 2) serum cholesterol is directly linked to high intakes of saturated fats, 3) tobacco (the only CVD risk factor not directly related to diet), 4) overweight and obesity are strongly linked to CVD, type II diabetes, and some cancers, 5) low fruit and vegetable intakes are closely related to CVD and some cancers, 6) low physical activity, and 7) high intakes of alcohol (Robertson, Brunner, & Sheiham, 2006). In most European countries and some other industrialised countries, low-income families tend to spend less on food such as fruit and vegetables which are rich in micro-nutrients but comparatively low in energy, and more on foods rich in sugar and fat which are high in energy but low in micro-nutrients (De Irala-Estevez et al., 2000). The nutritional security of individuals and family members depends on a variety of factors such as macroeconomics, local accessibility and affordability, social and cultural influences on food choice, and individual preferences. Although initiatives to help low-income groups by religious, voluntary, and neighborhood organizations may be useful at the local level in some settings, comprehensive national food and nutrition policies must be developed (Robertson et al., 2006; World Health Organization, 2000).

We have already noted that more research is needed on the relationship between social capital and health behaviors such as tobacco smoking, alcohol consumption, drug abuse, and physical activity. The need for studies on the association between social capital and nutrition seems to be even more urgent. An individual-level study in southern Sweden found a statistically significant association between social participation, measured as participation in 13 different social activities outside of the family, and low vegetable consumption among both men and women (Lindström, Hanson, Wirfält, & Östergren, 2001). Area-level factors mediating the association between socioeconomic deprivation and poor nutrition include lower prevalences of supermarkets, higher prevalences of fast-food restaurants (Morland, Wing, & Diez Roux, 2002), and higher relative costs of healthy compared to unhealthy food in deprived neighbourhoods (Sooman, MacIntyre, & Anderson, 1993). The extent to which social capital may mediate the association between neighbourhood deprivation and diet largely remains to be investigated and empirically tested. Locher et al. (2005) have suggested a number of causal mechanisms by which social capital/lack of social capital may influence dietary behaviors and nutrition. First, socially-cohesive neighbourhoods may be an important source of social capital for many older adults. A major part of the care that community-dwelling older adults receive is provided for by relatives, friends, and neighbors (Rabin & Barry, 1995). However, this mechanism may not hold for all, because

neighborhood stability seems to be associated with reduced distress in affluent communities, but not in those that are poor (Ross, Reynolds, & Geis, 2000). Second, various forms of religion, which may be seen as both a source of norms and values and as a source of network/social participation, have been shown to have significant positive effects on health. Religious commitment has been reported to be associated with better dietary behavior and dietary adequacy (McIntosh & Schifflett, 1984). Third, the generalised trust in other people of the individual as well as neighborhood-level trust in other people may affect the inclination to perform leisure-time physical activity (Madriz, 1997; see also Sampson et al., 1997), which may affect the balance between energy intake and energy expenditure. This may, in the next step, lead to increased body mass index. The lack of generalised trust in other people in the neighborhood my also result in the reluctance of older people to even go to the store to buy food.

10.2.5. Sexual Behavior

The study of sexual health has increased dramatically in recent decades following the HIV/AIDS epidemic. The risk of acquiring sexually transmitted diseases (STDs) is related to a number of factors such as the number of partners and sexual orientation, with people with higher numbers of partners and homosexual individuals being at higher risk. The highest rates of partner change are seen among the young and unmarried (Johnson, Wadsworth, & Wellings Field, 1994). The rates of partner change do not vary greatly by social class but tend to be higher in higher social classes (Johnson, Mercer, & Cassell, 2006). Recent evidence from the UK suggests variation by ethnicity, with less risk behaviors among those from the Indian sub-continent and more risk behaviors and poorer sexual outcomes among African and Afro-Caribbean communities (Fenton et al., 2005).

Some cross-sectional studies using social capital indicators such as community organizational life, civic engagement, informal sociability and trust (comprising one social capital index) to analyse the impact of social capital on adolescent sexual risk and protective behaviors in 28 US states (Crosby, Holtgrave, DiClemente, Wingood, & Gayle, 2003) and case rates of gonorrhoea, syphilis, Chlamydia and AIDS in 48 US states (Holtgrave & Crosby, 2003), show the social capital index to be inversely associated with sexual risk behaviors, positively associated with protective sexual behaviours, and inversely associated with gonorrhoea, syphilis, Chlamydia and AIDS case rates. In the southeastern US the black community has 30 times higher rates of sexually transmitted bacterial infections such as syphilis and gonorrhoea compared to other racial groups, and most of these higher rates cannot be explained by traditional measures of socioeconomic differences. Key factors explaining these differences include chronic joblessness, drug and alcohol marketing, social disorganization (or lack of social capital), and male incarceration (Farley, 2006). Another US study concludes that these racial disparities in the US can still only be explained by the underlying social context, which means that prevention targeted at certain individuals and groups according to race but ignoring underlying social and economic conditions

are fruitless (Adimora & Schoenbach, 2005). However, as already mentioned, the impact of some aspects of social capital are not always protective against sexually transmitted diseases. High social participation within adolescent and young adult peer groups with norms and values that increase the risk of acquiring a sexually transmitted infection is a substantial public health problem. A qualitative study of heterosexual Asian Indian immigrant men residing in New York City demonstrated that not only lack of knowledge concerning sexually transmitted infection and HIV transmission but also peer solidarity and adherence to negative peer norms (e.g., alcohol use with sex) was significantly associated with elevated risks for HIV (Bhattacharya, 2005).

10.3. Conclusions and Implications for Prevention and Research

Social capital affects health-related behaviors according to the results of a great number of studies. The causal mechanisms by which social capital may influence health-related behaviors plausibly include both norms and values, channels of communication and information, and psychosocial stress mechanisms. However, the academic debate concerning social capital still revolves around basic issues such as its definition and the most adequate level of analysis. Social capital is basically a contextual concept. At the contextual area level previous studies also confirm that the influence of geographic area on health-related behaviors varies according to the behavior and the way it is measured, and that the influence of area deprivation, which is the measure of contextual characteristics mostly studied, can vary by age and household deprivation (Ecob & MacIntyre, 2000). The influence of social capital on health-related behaviors also seems to vary by not only demographic and social factors such as age group and household deprivation, but also by social, cultural, and historical setting, as illustrated by for instance the presence of significant contextual effects of social capital on physical activity in several US studies, but not in the Swedish study (see above).

The social capital debate not only concerns the definition and level of analysis of social capital. It also has policy implications which some perceive as an ideological dimension. The so-called neo-materialists have suggested that the research on social capital and public health only obscures the underlying ideological, political, administrative, and economic determinants of health inequalities and other public health issues. The neo-materialists emphasize politics, governments, welfare programs, and good material conditions as crucially important for public health instead of social capital and civil society. They also claim that the social capital authors within the public health literature are “blaming the victim”, which would imply that the source of many health problems in deprived socioeconomic groups and among people in deprived neighbourhoods is the lack of initiative in forming and participating in social networks, or building other forms of social capital (Navarro & Shi, 2001; Pearce & Davey Smith, 2003). The social capital position is also questioned for creating an artificial dichotomy between civil

society and the political system (Navarro, 2004), for introducing a dichotomy between material and psychosocial factors, which by the neo-materialists are suggested to be determined by the same underlying socioeconomic conditions, for reintroducing the psychosocial stress theory which has already proven to accumulate scientific knowledge poorly, and for ignoring the importance of politics in general and welfare politics in particular for health (Muntaner, 2004). Although the impact of welfare policies on health-related behaviors may be hard to discern and the expected outcomes not obvious, dependent on factors such as culture (norms and values), religion, and level of economic development, other political decisions and public policies may have direct impacts on health-related behaviors. Since the 1998 Master settlement (MSA) between states and the tobacco industry in the US, states have unprecedented resources for programs to reduce tobacco use. Econometric analyses of the impact of tobacco control expenditures on aggregate tobacco use in all states and in selected states with comprehensive programs for the period from 1981 through 2000 have suggested that increases in funding for state tobacco control programs have reduced cigarette sales (Farrelly, Pechacek, & Chaloupka, 2003). The experience from Denmark during the inter-war and early post-war periods suggest that heavy price restrictions on alcohol severely limit availability and, thus, per capita consumption levels. During the 1920–1960 period when such heavy price restrictions were imposed in Denmark, alcohol consumption was only half to two-thirds compared to the consumption levels in Sweden, despite the fact that the amount of alcohol each Swedish citizen had access to was limited to a very restricted amount. In contrast, during both the pre-1920 and 1975–1995 periods, when there were no price restrictions imposed by the Danish state, alcohol consumption per capita was almost twice as high as in Sweden (Lindström, 2005c). A fruitful strategy to resolve the debate concerning social capital as opposed to material (neo-materialist) factors would be to analyse social capital and material contextual factors in the same empirical analyses, not only concerning access to health care and amenities (Lindström et al., 2006) but also concerning health-related behaviors.

Very little is known about how to build social capital in a society, although we know that high levels of social capital require social stability. The current basis for prevention must consequently be to use the social capital already available. This could be done both from a top-down and a bottom-up perspective. From a top-down perspective, government as well as the private sector may financially support local associations which foster social capital. From a bottom-up perspective, existing associations could encourage voluntarism and other acts entailing social capital (Kawachi & Berkman, 2000). The social capital approach, thus, does not exclude the possibility of state interference.

One strategy may also be the utilization of other channels of communication than traditional channels. In many western countries, membership in labor unions, political parties, and other traditional organisations is declining. In contrast, other new forms of social networks and trust creating social structures are evolving rapidly. One example is the internet, which may foster new identities and extend social networks, and thus create new social capital. The internet is a

low-cost way to reach and educate large numbers of people (Putnam, 2000). An e-mail intervention for the promotion of physical activity and nutrition behaviour in the workplace context in Alberta, Canada, has recently demonstrated that e-mail is a promising mode of delivery for promoting physical activity and nutrition in the workplace (Plotnikoff, McCargar, Wilson, & Loucaides, 2005). The knowledge concerning the effects of the internet on health behaviors is very rudimentary and a challenge for future research.

The idea that all social networks and all forms of social participation do not enhance and strengthen trust in other people and/or trust in the institutions of society has already been referred to as "the miniaturization of community" following Fukuyama (1999). Several examples of the effects of this decreased radius of trust in some social contexts have been given in this chapter. A cross-sectional multilevel study on preschool children's behavioral problems in African-American families living in 39 neighbourhoods in Baltimore city with social capital conceptualised as the attachment to community also demonstrated that in wealthy neighbourhoods, low community attachment was associated with higher levels of behavioral and mental problems. In contrast, in poor neighborhoods, low community attachment was associated with lower rates of such problems (Caughy, O'Campo, & Muntaner, 2003). The "miniaturization of community" notion can be applied to yet other behaviors, and it highlights the fact that phenomena such as social networks, participation, attachment, and trust do not always enhance healthy behaviors.

Much more research is needed on how institutional (vertical) trust in institutions, for example, trust in physicians, primary health care, and the health care system in general, affects the effectiveness of information concerning health-related behaviors. A recent study from New Zealand found that the most trusted source of physical activity information was the general practitioner (Schofield, Croteau, & McLean, 2005). Another study showed that one third of the students at Lund University in southern Sweden lacked trust in the HIV health authorities and the mass media, and that an equal proportion felt that national campaigns lacked personal relevance (Svenson & Hanson, 1996). Much more research on institutional trust and its effects on health-related behaviors is needed. More research is also needed concerning the relationship between social capital and behaviors such as compliance with prescribed medications (Johnell, Lindström, Sundquist, Eriksson, & Merlo, 2006).

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