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Social Relationships and Health Behavior Across Life Course

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Abstract

Sociological theory and research point to the importance of social relationships in affecting health behavior. This work tends to focus on specific stages of the life course, with a division between research on childhood/adolescent and adult populations. Yet recent advances demonstrate that early life course experiences shape health outcomes well into adulthood. We synthesize disparate bodies of research on social ties and health behavior throughout the life course, with attention to explaining how various social ties influence health behaviors at different life stages and how these processes accumulate and reverberate throughout the life course.

Keywords

social integration; social support; social control; stress; social networks

[S]ocial relationships, or the relative lack thereof, constitute a major risk factor for health.... Indeed, the theory and evidence on social relationships and health increasingly approximate that available at the time of the U.S. Surgeon General's 1964 report on smoking and health, with similar implications for future research and public policy.

House et al. (1988, p. 541)

Since House et al. (1988) made this claim, the link between social ties and health has become a veritable social fact, with an explosion of research and theory aimed at identifying the underlying mechanisms. Across disciplines, health behavior occupies a pivotal position in theoretical models that seek to explain when and how social ties affect health (e.g., House et al. 1988, Repetti et al. 2002, Uchino 2004). Yet health behavior remains something of a black box in these models, a black box that now needs to be thoroughly unpacked. Indeed, the importance of understanding how social ties affect health behavior is highlighted in *Healthy People 2010*, the U.S. government's planning statement for improving the health of Americans (U.S. Dep. Health Human Serv. 2009).

In the broadest terms, health behavior refers to a range of personal actions that influence health, disability, and mortality. Some behaviors, such as exercise, eating well, and adherence to medical regimens, tend to promote health and prevent illness, whereas others, such as smoking, excessive weight gain, and substance abuse, can undermine health. The importance of health behavior for overall health is undisputed, as health behavior explains almost half of the deaths in the United States annually (McGinnis et al. 2002). In focusing

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on social foundations of health behavior, we adhere to classic traditions in sociology dating back to Durkheim's (1897) work linking higher levels of social integration to lower suicide rates.

Over the past three decades, many studies have provided evidence that social ties influence health behavior across the life course (Berkman & Breslow 1983, Resnick et al. 1997). Although the basic assumption of this research is that social ties promote healthy behavior and deter risky behavior, ample evidence shows that social ties can also lead to risky health behavior (Christakis & Fowler 2007, Taylor & Repetti 1997). Such counterbalancing of positive and negative effects has likely resulted in an underestimation of the overall impact of social ties on health behavior. Thus, a review of the health behavioral implications of social ties, broadly defined beyond the benefits of social integration, is needed. In providing such a review, we attempt (a) to develop a conceptual model integrating disparate literatures into one coherent framework; (b) to identify psychosocial processes through which social ties affect health behavior, for better and for worse; and (c) to suggest directions for future research in this theoretically important and policy-relevant area of sociology.

A CONCEPTUAL FRAME FOR RESEARCH ON SOCIAL TIES AND HEALTH BEHAVIOR

Evidence on social ties and health habits comes from across disciplines and study populations, yet a number of common themes emerge from this work. We use a life course perspective to integrate these themes. A central image of this perspective is of developmental trajectories (e.g., health) and social convoys (e.g., relationships) intertwining over long periods to make up the individual life course (Elder et al. 2003). In this spirit, our review suggests that social ties and health behavior unfold in tandem over the entire life course. Understanding this unfolding process is an essential step toward explaining how social ties ultimately influence health.

Health does not inevitably and irrevocably decline with age. Many people advance to old age in good health, while others experience substantial disability and morbidity in early middle age or younger (House et al. 1994). Furthermore, individuals can recover from health problems and experience improved health at any age (Taylor et al. 2002). Health behaviors over the life course explain a great deal of the health heterogeneity and change that we see at any given age (Kaplan 1991). A life course framework, therefore, can suggest why, when, and how particular social ties affect health behaviors similarly and differently across and within stages of life. Moreover, given the emphasis of the life course perspective on how individual lives are embedded in larger contexts, such a framework is useful for thinking about how the link between social ties and health behavior contributes to demographic disparities in health, although that particular topic is beyond the scope of this review.

Broadly speaking, social ties are typically considered in terms of structure and content. Structural aspects are reflected in measures of social integration and social networks, whereas positive and negative content is reflected in measures of social support and stress. Social integration refers to the existence and quantity of particular ties and, sometimes, to frequency of contact with those ties (House et al. 1988). Social isolation, the relative absence of social integration, may be a particularly important predictor of adverse health outcomes (Bearman & Moody 2004, Brummett et al. 2001, Seeman et al. 2002). Social networks are characterized by structural linkages between a focal individual and others in his/her network (Bearman & Moody 2004, Smith & Christakis 2008). Social support refers to the emotionally sustaining qualities of relationships, whereas stress refers to the challenges and difficulties that may inhere in relationships (House et al. 1988, Thoits 1995).

The long-term perspective of life course models is important for understanding the health implications of these different dimensions of social ties for two general reasons. First, health behaviors change over time. Some habits (e.g., diet, exercise) take form in childhood, but others (e.g., smoking, drinking) are usually initiated in adolescence and early adulthood. Thus, relationships can mean different things for health depending on the stage of life considered, and their effects can filter across stages even as the relationships themselves change or fade (Repetti et al. 2002). For example, parents shape diet and exercise habits that contribute to childhood obesity, which, in turn, is associated with increased risk for cardiovascular disease and premature mortality in adulthood (Ferraro et al. 2003). As another example, peer relations often foster smoking and heavy alcohol consumption in adolescence and early adulthood, where they peak and then diminish thereafter, often because of new romantic partnerships (Bachman et al. 2002). Second, influential social ties change in both structure and content throughout life, with implications for health. For example, the most important relationship for health behavior in childhood (e.g., parents) is unlikely to be the most important in adulthood (e.g., romantic partners), and, furthermore, the reasons that a given relationship may matter often evolve as individuals transition from stage to stage.

Evidence Linking Social Ties to Health Behavior

Two largely separate literatures consider how social ties influence health habits, one focusing on childhood and adolescence and the other on adulthood. From a life course perspective, this division is artificial and counterproductive. Mounting evidence points to the “long arm of childhood,” in that early life course experiences launch social and health trajectories into motion and have health effects lasting into adulthood (Haas 2008, Palloni 2006). Consequently, we try to bridge the childhood, adolescence, and adulthood literatures in this review, suggesting that health habits help to explain how social ties influence health cumulatively across life.

The early stages of the life course are characterized by a rapid expansion of social networks and by the gradual transfer of control over health from parents to self. These trends are related. Not only are many health behaviors, such as eating well, directly organized by parents when children are young, others (e.g., drinking) are strongly prohibited for children. Adolescents, however, have greater say in their own behavior, and many risky health behaviors become more normative during this stage. The mechanisms by which social ties influence health behavior then multiply at the same time that social ties increase in number (Crockett & Petersen 1993, Ennett et al. 2006). For these reasons, the study of social ties and early health behavior has largely focused on adolescents.

Substantial evidence shows that peers are the single biggest social factor in predicting adolescent health behavior. Indeed, the positions of young people in their social networks and the norms and values of their friends and romantic partners are strong predictors of whether they engage in healthy or unhealthy behaviors (Bearman & Bruckner 2001, Gaughan 2006). Parents maintain substantial influence over young people, but the health significance of parent-child relations is intricately tied up with the peer world once children become more independent (e.g., going to school, driving) (see review by Steinberg & Morris 2000). Parent and peer influences both contradict and reinforce each other, although peers tend to have stronger influence on more immediate behavioral decisions (e.g., whether to drink at a party) (Knoester et al. 2006, Marshal & Chassin 2000, Steinberg & Morris 2000). The relative strength of different social influences varies, but the constellation of social ties, not any single social tie, matters most for health habits in adolescence and sets the stage for social ties and health habits in adulthood.

As young people transition to adulthood, their constellation of social ties evolves. Although some studies on health behavior consider overall levels of social connection in adulthood, most focus on specific social ties, especially the marital relationship. Lower mortality rates among the married are often attributed, in part, to better health habits (Rogers 1995, Waite & Gallagher 2000). Indeed, the transition into marriage is associated with a reduction in risky health behaviors, including problem drinking, drug use, and smoking (Bachman et al. 2002, Chilcoat & Breslau 1996), and studies show that the married engage in less risky health behavior generally, compared with the unmarried. At the same time, however, the married weigh more and exercise less than the unmarried (Grzywacz & Marks 1999, Jeffery & Rick 2002, Umberson 1992). In fact, Smith & Christakis (2008) find that having an obese spouse increases one's own obesity risk by 37%. Some studies suggest that the benefits of cohabitation for health habits are similar to those of marital ties (Wu et al. 2003). Duncan and colleagues (2006) find that, among young adults, the transition to cohabitation or marriage is associated with a decrease in substance use, and Bachman et al. (2002) report similar findings for cohabiting couples planning to marry. Yet the transition into marriage or cohabitation increases obesity risk (The & Gordon-Larsen 2009).

The transition to parenthood and living with young children are also associated with lower rates of adult substance use (Chilcoat & Breslau 1996). Yet, again, the effects of parenthood are not unequivocally positive because parents tend to exercise less and weigh more than nonparents (Bellows-Riecken & Rhodes 2008, Nomaguchi & Bianchi 2004). In fact, obesity risk for men and women increases with each child they have (Weng et al. 2004). This pattern of weight gain is similar to that found with other adult relationships. According to Christakis & Fowler (2007), having an obese friend increases one's own risk of becoming obese by 57%, and having one obese sibling increases obesity risk by 40%.

Overall levels of involvement with formal social ties have also been associated with healthy habits in prospective studies (Berkman & Breslow 1983). In particular, religious ties have been linked to health habits (Strawbridge et al. 2001), with evidence linking religious participation to lower levels of tobacco and alcohol use in adults (see a review in Krause 2008). Religious participation has also been linked to greater physical activity and exercise (Idler & Kasl 1997). Ties to schools show similar patterns. The more bonded young people are to schools, the less they engage in substance use (Crosnoe 2006). Community ties continue to be important in adulthood when participation in volunteer work and community organizations is associated with healthier lifestyles (Musick & Wilson 2007). Different social ties may serve as functional equivalents for one another in affecting health habits (House 2001), but, as in adolescence, the constellation of social connections rather than any particular connection likely drives adults' health lifestyles.

In sum, substantial evidence, much of it drawn from population-level, longitudinal studies, suggests that social ties influence healthy and unhealthy habits. With these general patterns established, we turn to an overview of the mechanisms that provide a window into the black box of influence.

MECHANISMS OF INFLUENCE

The major constructs presented in Figure 1 appear to be the most relevant to explaining the link between social ties and health behavior, despite variation in the interrelations among mechanisms across social groups and stages of life. Extensive literatures on each construct cannot be reviewed in detail here, but we can define these mechanisms and, as depicted in Figure 1, elucidate how they fit into unfolding social tie/health behavior processes over the life course. Our aim is to think of these multiple mechanisms as part of a single, holistic phenomenon. Of course, many of these linkages are likely reciprocal (e.g., stressful

relationships may lead to heavy drinking that, in turn, further stresses relationships), although reciprocal effects are not shown in the figure. Thus, we encourage future research that captures the full set of complex linkages among these constructs (House et al. 1994) and clarifies linkages as trajectories that unfold over time.

Casting a broad net over related literatures yields a clear image of the double-edged nature of social ties—as a source of support and sustenance and as a source of stress and worry. Social support and stress are then key mechanisms through which social ties affect health behavior.

Social Support

Social support includes instrumental (e.g., help with tasks), informational (e.g., advice), and emotional (e.g., a sense that one is loved, cared for, and listened to) support, with most studies focusing on emotional support. Social support has long been highlighted in research on the health benefits of social ties (see review by Taylor & Repetti 1997). As Figure 1 suggests, social support may have indirect effects on health habits through enhanced mental health (Uchino 2004), by reducing the impact of stress (Cohen et al. 2004), or by fostering symbolic meanings (Call & Mortimer 2001, Crosnoe 2006). Supportive social ties can also trigger beneficial physiological sequelae (e.g., reduced blood pressure, heart rate, and stress hormones) (Uchino 2004), thus minimizing unpleasant arousal that might be conducive to risky behavior. Yet the most important sources of social support, the amount of support in any particular relationship, and the impact of support on health habits vary over the life course.

Attempts to identify elements of support as mediating social tie effects on youth behavior have generally focused on parents. Closeness with parents is a consistent predictor of healthy behavior among adolescents (Ackard et al. 2006, Resnick et al. 1997). Whereas parents are key sources of social support for adolescents, the transition to adulthood is accompanied by an increasing reliance on close ties with intimate partners for support. In fact, for those who marry, especially men, a spouse is one's most likely source of emotional support (Waite & Gallagher 2000). Spousal support is associated with a reduction in overall health risk behavior for men (Waite & Gallagher 2000). Beyond specific relationships, support from one's global social network has been associated with better health outcomes, in part through health behavior (Berkman et al. 2000, Cohen et al. 2004). Recent work particularly emphasizes the importance of social support for health habits in elderly and widowed populations (Wilcox et al. 2003).

Social support works in tandem with other psychosocial mechanisms. For example, social support has indirect effects on health habits by fostering psychological well-being and reducing physiological arousal (Uchino 2004). This may be beneficial for health habits because adolescents and adults often engage in unhealthy behaviors such as smoking and drinking as a way of self-medicating to reduce tension and anxiety (Baker et al. 2004, Kassel et al. 2003, Thoits 1995). Social support also buffers individuals from the negative effects of stress (Cohen et al. 2004). For example, parents influence adolescent health behavior in part because close ties to parents act as a buffer against negative peer influences and stress (Meadows 2007). Social support may also operate indirectly through enhanced personal control (Berkman et al. 2000), as shown in studies of smoking cessation (Gulliver et al. 1995).

Despite these benefits, social support can also contribute to unhealthy behavior (Eyler et al. 2003). In adolescence, for example, parental shows of support may contribute to substance use if boys view such efforts as attempts to undermine their autonomy (Marshal & Chassin 2000). In adulthood, contact with convivial and supportive social ties may involve the

sharing of potentially unhealthy habits such as overeating or heavy drinking (Berg & Seeman 1994, Uchino 2006). Thus, although various dimensions of support may be generally positive for health behavior, these effects can be blunted or reversed as a function of the kinds of people who are giving support, the support setting, and the ways in which people perceive support.

Stress

Stress is a central dimension of the negative side of social ties (Cohen et al. 2004). Stress refers to life disruptions (e.g., discrete events such as divorce) and chronic strains (e.g., ongoing conflict in relationships) that challenge individuals' coping capacities (Pearlin et al. 2005). Relationships with others—often thought of in terms of support and gratification—are often experienced by adults and young people alike as stressful (Repetti et al. 2002, Walen & Lachman 2000). Importantly, many studies document that stress, in turn, contributes to poor health habits in childhood, adolescence (Kassel et al. 2003, Stunkard et al. 2003), and adulthood (Kassel et al. 2003, Umberson et al. 2008).

Figure 1 suggests how stress may work in concert with other mechanisms to affect health habits. For example, stress may contribute to psychological distress and physiological arousal (e.g., increased heart rate) (Kassel et al. 2003), and individuals may use certain behaviors (e.g., drinking, overeating) to cope with stress and reduce unpleasant arousal (Ensel & Lin 2004, Kassel et al. 2003). Children experience family stress and learn coping strategies from families, including eating, drinking, and smoking (Repetti et al. 2002, Taylor & Repetti 1997). Although social support may help to buffer individuals from the impact of stress (Uchino 2004), stress may also undermine social ties that are ordinarily supportive. For example, the divorce of parents may force an adolescent to leave old friends behind and transfer to a new school, and unemployment may add to marital stress among adults. Pearlin and associates' (2005) concept of "stress proliferation" refers to this tendency of stressors to amplify one another. Although Figure 1 emphasizes that stress undermines health habits, some habits—for example, heavy drinking and significant weight gain—also stress social ties (Carr & Friedman 2006, Kiecolt-Glaser & Newton 2001).

Life course work on stress, allostatic load, and the aging process explains how social factors coalesce to produce cumulative health advantages or disadvantages throughout life (Berkman et al. 2000, Seeman et al. 2002). Allostatic load refers to "a cumulative measure of physiologic dysregulation across multiple systems" (e.g., increased blood pressure), proposed to have "considerable impact on future health risks" (Karlamañgla et al. 2002, p. 696). Stress increases allostatic load, and, in turn, the "weathering" of systems diminishes health (Geronimus et al. 2006, McEwen & Stellar 1993). Unhealthy behaviors add significantly to allostatic load (McEwen & Stellar 1993). Social ties may foster healthy or unhealthy habits throughout life, either alleviating or contributing to allostatic load and the biological weathering that results. Social ties and health habits may then work together to affect the pace of aging and premature mortality. This process begins early with potentially cascading effects throughout life. For example, cigarette use—often viewed as a stress relief tool—is more common among teenagers experiencing social stress, such as those experiencing problems with parents or at school (Johnson & Hoffman 2000, Kirby 2001). Most adults who smoke began smoking as teenagers, and smoking is a difficult habit to break at any age. Adolescent smoking in response to stress, therefore, has long-term implications for health.

In adulthood, relationship stress centers around family ties, particularly marriage. A great deal of evidence points to the link between marital stress and poor health (Kiecolt-Glaser & Newton 2001), and health behavior is a likely mediator of this link. Longitudinal studies suggest that marital conflict leads to increased probability of smoking and heavy drinking

(Cohen et al. 1991, Horwitz & White 1991). Young children also impose strains on parents. The time constraints of parenting interfere with parents' ability to exercise (Nomaguchi & Bianchi 2004), and parenting stress may explain why divorced fathers exhibit high levels of health risk behavior (Hetherington & Kelly 2002). Similarly, in midlife, the stress of providing care for elderly parents interferes with caregivers' ability to maintain healthy habits, resulting in more sedentary behavior, alcohol consumption, and smoking (Pinquart & Sorensen 2007, Vitaliano et al. 2003).

A major relationship-based stressor, at all ages, is the loss of key social ties through death and divorce. Parental death or divorce has a broad range of effects on children, including change in health risk behaviors (Biblarz & Gottainer 2000, Cherlin 2009). Adults who divorce increase their alcohol consumption, smoke more, and experience significant weight loss (Eng et al. 2005, Waite & Gallagher 2000). Widowhood is associated with substantial weight loss (Eng et al. 2005, Umberson et al. 2009), more smoking, and a more sedentary lifestyle (Wilcox et al. 2003). Recent research also suggests that marital status differences in health may result more from the stress associated with marital dissolution than from the absence of a partner, per se (Williams & Umberson 2004). Moreover, the propensity to enact health behaviors in response to stress may vary over the life course. For example, stress is more strongly associated with alcohol consumption in early adulthood and with accelerated weight gain in middle-aged adults, as stress exacerbates health habits that are most salient at different ages (Umberson et al. 2008). For example, stress may accelerate the general tendency to gain more weight in middle age and to experiment with smoking and alcohol in adolescence. Thus, stress may trigger behavioral vulnerabilities, with different expressions, across the life course. This process should be viewed cumulatively: People who experienced higher levels of childhood family stress are more likely to experience high levels of stress in adulthood, and childhood family stress is associated with more unhealthy behavior in adulthood (Umberson et al. 2008).

Social and Personal Control

Control has long been an underlying theme in theoretical discussions of health. Social ties may provide direct control by regulating and facilitating healthier behaviors or indirect control by instilling norms (e.g., responsibility) conducive to healthier behavior (Umberson 1992). Through this process, social ties may also promote personal control, which refers to an individual's belief that he/she can control personal outcomes through his/her own actions (Mirowsky & Ross 2003). Those who are higher on personal control have more knowledge about health and are more likely to engage in preventive behaviors (e.g., start exercising) and to reduce risky behaviors (e.g., heavy alcohol consumption). Importantly, social ties may affect personal control for better (perhaps through social support) or for worse (perhaps through stress) (Mirowsky & Ross 2003).

The control perspective is common in research on adolescents. The idea is that young people, left to their natural tendencies, will engage in risky behavior. The key mechanism of social control is thought to be a sense of self-control that young people develop through socialization. Social control is typically conceptualized as attempts by parents to limit children's opportunities to engage in risky activities. For example, parents' monitoring of their adolescents' activities (e.g., keeping tabs on where they go) is associated with reduced risky behavior (Barnes et al. 2000, Borawski et al. 2003). Yet parental monitoring and related discipline may backfire, leading to an escalation of risky health behaviors (Chuang et al. 2005, Ennett et al. 2001). Questions have also been raised about what conventional measures of parental monitoring capture. Basically, observed links between parents' knowledge about their adolescents' out-of-home behavior and adolescents' lower rates of health risk behavior seem to be driven by better behaved youth wanting to have more involved relationships with parents rather than anything proactive on the part of parents

(Stattin & Kerr 2000). This does not mean that parental monitoring does not matter. Indeed, once the effects of adolescent disclosure are controlled, parents' attempts to supervise adolescents are associated with adolescents' avoidance of problem behavior (Fletcher et al. 2004, Soenens et al. 2006).

Parents may also curtail adolescents' risky behavior through more indirect channels: specifically, when they instill values in their children and cultivate a sense of personal control in children. Parents then do not have to actively control adolescents if they have helped adolescents learn how to control themselves (Repetti et al. 2002). Personal control has not been studied as much as social control, but it does have empirical support. For example, a three-generational study of families found that substance use is transmitted across generations in part because it leads to problematic parenting behaviors that then disrupt the development of inhibitory control in young people (Pears et al. 2007). Importantly, personal control provides a conceptual lens through which many empirical patterns discussed thus far—such as the link between parental support and adolescents' healthier behavior—can be interpreted. It also points to long-term life course implications in that early parenting may affect later health behavior by shaping personality and social orientations.

Turning to adult research, social control is widely considered to be central to the link between social ties and health behavior. Control from network members has been associated with fewer unhealthy behaviors and more healthy behaviors (Berkman et al. 2000, Tucker 2002). Umberson (1992) finds that the most likely agent of social control changes over adulthood, from parent to partner to adult child. Marital partners, and other family members to a lesser extent, are the most frequent source of social control and have received the most research attention. Marital partners are especially likely to tell, remind, and threaten each other in an effort to influence health habits (Umberson 1992). For example, a spouse may threaten to divorce a partner who continues to drink heavily. Using a less heavy-handed approach, a spouse may point out symptoms that require medical attention, repeatedly urge the partner to see a doctor, make the medical appointment, and drive the partner to the appointment.

Marriage and parenthood also facilitate health habits because they tend to introduce regularity and routine (e.g., sharing scheduled meals) and foster a sense of responsibility and obligation (e.g., one must stay sober and healthy to take care of family members). The internalization of norms around responsibility for family ties may also foster a stronger sense of personal control, which, in turn, is associated with healthier behavior (Mirowsky & Ross 2003).

Of particular importance are the experiences of aging adults, who receive less social control as they age (Tucker et al. 2004). This occurs, in part, because of loss (i.e., death) and change in social ties at older ages (Williams 2004). Widowhood results in a loss of social control from one's spouse, but recent work shows that the decline in health that typically follows widowhood does not occur when other social ties step up to provide social control that influences health habits of the widowed (Williams 2004).

As noted throughout this section, the linkages between social control and other psychosocial mechanisms are complex. For example, Lewis & Butterfield (2005) find that the effectiveness of social control efforts may depend on the quality of the relationship with the agent of control as well as the type of control utilized. Positive tactics (e.g., helping, rewarding) are more effective than negative ones (e.g., reprimanding, demanding) (Fekete et al. 2008, Lewis & Butterfield 2005). Social control efforts that are perceived as critical may create stress in social ties and have unintended effects. In fact, negative tactics have been

associated with increased health-compromising behaviors (Helgeson et al. 2004, Tucker et al. 2006). This pattern with adults may parallel how parental efforts to control adolescent behavior can back-fire (Marshal & Chassin 2000). One possibility is that individuals who engage in more unhealthy behaviors are the most likely recipients of control efforts that, in turn, reflect interpersonal problems arising from certain habits. Bilateral attempts between spouses to control health behavior may have more positive effects (Lewis & Butterfield 2007). For example, Franks and associates (2002) found that smoking cessation was more successful when both spouses tried to quit. Given this evidence, theorists have begun to conceptualize social control as a communal and multidirectional process between members of social groups rather than a one-way process (Lewis et al. 2004).

Symbolic Meaning

Echoing Durkheim (1897), the symbolic meaning of social ties and health habits helps to explain why they are linked. For example, studies on adolescents often point to the meaning attached to peer groups (e.g., what's cool) when explaining the influence of peers on substance use (Bachman et al. 2002). Similarly, advertisers try to shape norms and meanings of health habits, such as smoking, to sell products (Williams & Collins 1995).

Adolescents, and children to a lesser extent, are status conscious (Steinberg & Morris 2000). Thus, the status assigned to a behavior in some contexts can influence young people to engage in that behavior. Peers are central to this process. According to a classic study by Coleman (1961), youth cultures can emphasize athletics over academics and glorify antisocial behaviors as a way of opposing adult society. This phenomenon is critical for understanding adolescent health behavior today. For example, in many schools, drinking is associated with popularity (Crosnoe 2006, Crosnoe et al. 2004). In such schools, the benefits of abstaining from drinking (e.g., better grades) seen in the general adolescent population are either reduced or reversed. Basically, the risks to social integration posed by not drinking in these schools counter the risks of drinking. Social risks on the school level can also amplify negative influences and blunt positive influences in the friendship group (Cleveland & Wiebe 2003, Crosnoe et al. 2004). Work by Allen and associates (2005) adds another twist to this pattern, suggesting that, in many schools, popular adolescents must engage in some degree of risky behavior as a way of maintaining status. Thus, health behavior affects social position, which affects health behavior. Furthermore, associations between athletic participation, one of the strongest pathways to popularity in American schools, and both healthy behavior (e.g., exercise) and status-related unhealthy behavior (e.g., drinking) reveal the health trade-offs of peer dynamics (Hoffman 2006, Miller et al. 2003, Peck et al. 2008).

The status associated with health habits probably becomes less important in adulthood, but it does not disappear. For example, fit body norms may motivate adults to stay trim (Ross & Wu 1995), and the symbolic meanings of sociability and celebration attached to alcohol consumption make it difficult to avoid drinking even for those who wish to do so (Paton-Simpson 2001). A focus on meaning may be especially relevant in explaining apparent health behavior contagion across social networks, such as the spread of obesity within social networks (Smith & Christakis 2008). For example, as the social meanings attached to smoking or overweight status change, they may influence network members' propensity to engage in certain behaviors—for better or worse.

A common theoretical argument is that marriage and parenthood promote a sense of purpose, commitment, and responsibility that leads individuals to protect their health in order to care for others (Nock 1998, Waite & Gallagher 2000). Waite & Gallagher (2000) argue that cohabitation does not benefit health habits as much as marriage, in part because it lacks the symbolic meanings of marriage. Umberson's (2003) mixed-methods approach sheds light on how the symbolic meaning of relationships with parents might influence

adults' health habits. Analysis of national, longitudinal data showed that a short-term effect of a parent's death (up to three years following the death) was an increase in adults' alcohol consumption; in the longer run (up to nine years later), however, those adults who lost a parent actually consumed less alcohol than their nonbereaved counterparts. Additional qualitative work suggested that many adults used alcohol to cope with insomnia and distress following a parent's death, but, over time, bereaved adults focused more on their own eventual mortality (triggered by experiencing their parent's death), which often led to more healthful behavior. Thus, initial distress may have undermined health habits, but symbolic meanings of mortality ultimately served to improve health habits.

The symbolic meanings of specific behaviors within social contexts influence health habits in other ways. For example, heavy alcohol consumption or overeating may be highly normative within some contexts and represent (perhaps valued and desired or required) ways of connecting to others. Family relationships often center around shared meals, which can symbolize family connections, a shared culture, and even love (Sobal & Nelson 2003). Religious ties may be especially likely to operate through symbolic meanings. Some religious groups (e.g., Mormons, Baptists) encourage healthy behavior through doctrine (e.g., alcohol is sinful). Religious attendance may affect behavior because it exposes people to messages about proper behavior and reinforces these messages through informal networks (Strawbridge et al. 2001).

On a related note, cultural differences in meaning may produce social variation in health habits. Schnittker & McLeod (2005) argue that racial/ethnic identity may be linked to the meanings of food and alcohol consumption in ways that influence engagement in these practices. Meaning is also central to stress models in that an appraisal of a stressor shapes the extent to which it causes distress (Thoits 1995). Variation in views about appropriate stress responses may also shape health habits. For example, Courtenay (2000) argues that cultural images of masculinity make men more likely than women to respond to stress with heavy drinking and other risky behaviors.

Mental Health

Psychological well-being, psychological distress, and clinical depression are manifestations of mental health studied in relation to social ties and health behavior. Following past research (Gorman & Read 2006, Uchino 2004), we made mental health a central component of our conceptual model. In Figure 1, mental health is a mediator of mediators—it is viewed as a channel through which other focal mediators of the social ties/health habits link operate. For example, social ties provide support that enhances psychological well-being as well as stress that contributes to psychological distress, which, in turn, is associated with increased physiological arousal (e.g., heart rate, stress hormones) that elicits behavioral coping responses and with greater propensities for unhealthy behavior in general (Kiecolt-Glaser & Glaser 2002). Importantly, mental health is likely a key source of bidirectionality in our model (not depicted in Figure 1) (Kassel et al. 2003). After all, mental health shapes the formation and quality of social ties throughout life (Repetti et al. 2002). Given the interplay of mental health with other explanatory mechanisms, we have already discussed mental health extensively in laying out the other pieces of the conceptual model. As such, we do not recap that research here.

Summary of Mechanisms

The mechanisms described in this section work individually, collectively, and interactively to link social ties to health habits. Even though prior research has been highly compartmentalized in terms of which social tie, which health behavior, and which stage of the life course is considered, we stress that this is an intrinsically life course process in that

social ties, psychosocial mechanisms, and health behaviors unfold relative to one another within and across life stages.

FUTURE RESEARCH

Cumulative Life Course Processes

Social ties influence health habits from early childhood through late life, but most research focuses on either adolescence or adulthood. A life course framework highlights continuity and change in social ties and health habits over the long term. Future research should assess how social tie/health habit linkages unfold over time, identify turning points in social ties that trigger changes in health habit trajectories, and seek to understand further how early social connections influence later social ties and health habits. In particular, sociologists should seek to clarify the linkages between psychosocial mechanisms that connect social ties to health behavior.

Such work must reconcile the positive and negative consequences of social ties for health habits and establish who is most likely to experience these consequences (that is, variation by age and other demographic attributes). Recent sociological work has been path-breaking in connecting early life experiences to health outcomes later in life (Haas 2008, Hayward & Gorman 2004, Palloni 2006). New research on the unfolding role of social ties and health habits across the life course will contribute to our theoretical and empirical understanding of the impact of social circumstances on cumulative health processes.

Social Conditions

Race and gender also shape exposure to social constraints and opportunities throughout life in ways that influence social ties, health habits, and the psychosocial mechanisms that link the two, and they need to be studied more explicitly (Williams 2002, 2003). Such differences are apparent in many key health habits but not in consistent ways across health habits. For example, at all ages, men are more likely than women to drink heavily, whereas women are more likely to be overweight. Compared with whites, African Americans are less likely to smoke (particularly women) but more likely to be overweight. Gender and race differences are also apparent in social ties and in mechanisms linking social ties to health habits. As one example, social involvement has stronger effects on the health/mortality of men than of women, partly because social ties, especially marital ties, are stronger deterrents of risky behavior for men (Waite & Gallagher 2000). Notably, socioeconomic status (SES) is associated with health habits. Gender and race are conflated with SES, but SES does not fully account for race and gender variation in health habits (Winkleby & Cubbin 2004). Future research should clarify how different social locations give rise to variation in social ties and health habits across the life course, particularly in ways that may contribute to social disparities in health.

Personal Dispositions

Sociologists rarely study personality, but psychological research stresses the role of personality in shaping health habits. First, some personality characteristics are associated with health behavior. For example, individuals who are low on conscientiousness (“prudent, planful, persistent, dependable,” Friedman 2000, p. 1099) or high on hostility engage in more risky health behavior (Smith & Gallo 2001, Williams 2001). Second, personality may be associated with health behavior in several ways related to social ties. Personality may directly influence the formation, duration, and quality of social ties that, in turn, influence behavior. For example, low neuroticism and high extraversion are positively associated with quantity and quality of social ties (Smith & Gallo 2001), and conscientious individuals have more stable relationships over time (Friedman et al. 1995). Third, social ties may have a

stronger effect on health behavior for those with certain personality characteristics. For example, more conscientious people may do more to protect their own health so that they can care for others. This last example suggests another interrelationship between mechanisms. That is, social control could operate more strongly for those who are higher on conscientiousness. Conversely, individuals with some characteristics (e.g., high hostility) may be more resistant to social control efforts. A life course perspective can draw attention to the interface of personality with social contexts in driving health behavior trajectories (Friedman 2000). Future sociological research should consider how personality, in interaction with social contexts, may shape social tie/health behavior connections.

Causality, Biology, and Genetics

In general, research on the effects of social ties on health behavior is vulnerable to mis-attributed causality (Duncan et al. 2004). A person's behavior may elicit responses from significant others or change the tone of relationships in subtle or overt ways. Moreover, other factors not directly assessed may contribute to social ties and health behaviors in ways that produce observed links between the two, real or not. Steady progress is being made toward addressing these problems, primarily through the increased availability of longitudinal data that allow for tests of bidirectionality among constructs and the application of more rigorous tests of omitted variable bias (Jaccard et al. 2005, Jeffery & Rick 2002, Sobal et al. 2003). The development of a general class of sophisticated techniques for dealing with unobserved confounds, such as fixed-effects modeling, propensity scores, robustness indices, and instrumental variables, should be used more extensively in the future for dealing with endogeneity of social tie effects (Lundborg 2006, McCaffrey et al. 2008).

Importantly, social scientists have begun to consider omitted variable bias associated with genetic traits. In some cases, genetically informed designs using large-scale twin data have suggested that long-standing conclusions about the strength of social influences on health behavior may be premature. For example, Harden and associates' (2008) analysis of Add Health's sibling subsample (see Harris et al. 2006) revealed no link between peer behavior and adolescent substance use once the genetic heritability of both was controlled. Yet the story is likely more complicated, with social and genetic influences interacting in complex ways. For example, Boardman and associates (2008) also analyzed the Add Health data and found that the genetic heritability of smoking was strongest in schools where smokers were popular. Similarly, Guo and associates (2008) analyzed non-twin data and found that genes related to risky behavior can be turned off in the early life course by positive parenting. Thus, the comparison of social and genetic influences in adolescent behavior is something of a false dichotomy. Gene/environment interactions are apparent throughout life. For example, individuals vary in genetic propensity for nicotine addiction and obesity, and these genetic propensities may interact with exposure to social factors (e.g., marriage, parenting) in ways that trigger or accelerate these propensities at any point in the life course and especially in critical periods (Hernandez & Blazer 2006). Given the heritability of many personality traits and the impact of personality on social ties and health habits, one potentially fruitful line of research concerns gene/environment interactions involving personality traits.

Data and Methods

Analysis of life course processes requires longitudinal data and methodological strategies that can assess trajectories of change in social ties and health habits over long periods. A number of high-quality longitudinal data sets have produced much of the evidence reviewed here. For example, many of the outstanding studies on adolescent health habits rely on the Add Health data (e.g., Crosnoe 2006). Studies on adult health habits rely on several excellent data sets, including the Health and Retirement Survey (e.g., Hayward et al. 2000) and the Americans' Changing Lives Survey (e.g., Umberson et al. 2008). Although the data

on adult populations often include retrospective reports of childhood experiences, future population research that follows young people throughout the life course is likely to yield unique insights into the cascading and cumulative effects of social ties on health habits and, ultimately, on health outcomes throughout life. The growing availability of biomarker data attached to survey data at the population level (e.g., the National Social Life Health and Aging Project, Waite et al. 2008) provides new opportunities for assessing the interplay of physiological, psychological, and social factors with health behavior in shaping health outcomes over the life course. Quantitative insights will be further enhanced by qualitative research that examines the processes, symbolic meanings, and relationship dynamics underlying population patterns (Pearlin et al. 2005).

Policy Considerations

The link between social ties and health behavior is now emphasized in efforts to promote population health (e.g., Healthy People 2010), and sociological work must inform such policy action. Given the potential for social ties to have both positive and negative effects on health habits, sociologists must clarify the complex patterns of social ties (e.g., which ties, which aspects of those ties), health habits, the mechanisms that link social ties and health habits, and how those patterns vary across social groups and over the life course. In doing so, we should also be aware that policy efforts to alter social ties in ways that promote health for one group may undermine health for others. For example, policies that urge adults to play a key role in altering the health habits of family members (e.g., an adolescent with alcohol problems, a spouse with heart disease, or an elderly parent with diabetes) may place stress on caregivers that ultimately undermines the caregiver's own healthy lifestyle as well as the caregiver's ability to participate in and maintain their social ties.

CONCLUSION

Humans are wired for social connection. Without social ties, distress emerges and health fails. In this sense, social connection seems to be a biological imperative. Social ties influence health in part through health behavior, and this influence plays out across the life course. Social ties and their impact on health habits, at any particular life stage, cascade into the future by shaping trajectories of change and turning points in social ties and health habits over time. Indeed, social tie/health habit linkages represent intrinsically sociological terrain in that these social processes unfold over time in ways that influence population health and mortality.

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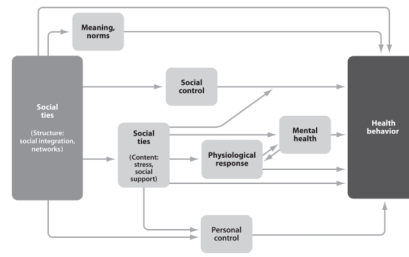


Figure 1.
Conceptual model for mechanisms linking social ties to health behavior.