# Social Relationships and Health

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*The author discusses 3 variables that assess different aspects of social relationships—social support, social integration, and negative interaction. The author argues that all 3 are associated with health outcomes, that these variables each influence health through different mechanisms, and that associations between these variables and health are not spurious findings attributable to our personalities. This argument suggests a broader view of how to intervene in social networks to improve health. This includes facilitating both social integration and social support by creating and nurturing both close (strong) and peripheral (weak) ties within natural social networks and reducing opportunities for negative social interaction. Finally, the author emphasizes the necessity to understand more about who benefits most and least from social-connectedness interventions.*

There has been much recent emphasis on the role of social relationships in our physical health (e.g., Cohen, Gottlieb, & Underwood, 2000; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). The structure of our social networks (Brissette, Cohen, & Seeman, 2000), the support we receive from others (Cohen et al., 2000), the quality and quantity of our social interactions (Kiecolt-Glaser & Newton, 2001), and our feelings of isolation and loneliness (Cacioppo et al., 2002) have all been identified as predictors of health and well-being. However, the interpretation of this literature is clouded by an approach that often views effects of different social environmental and dispositional variables as if they all are exemplars of the same underlying concept and mechanism(s). Yet there is increasing evidence that different social variables influence health through entirely different and independent mechanisms (Cohen, 1988; Cohen et al., 2000; Lakey & Cohen, 2000). It is only by understanding the dimensions of our social ties that influence health and how they "get under the skin" to do so that psychologists can successfully apply this knowledge to health promoting interventions. In the service of this goal, I address five questions about the association between social ties and health:

- Which characteristics of the social environment are beneficial for health?
- How do these characteristics of our social environment improve our health?
- Can our social environment be destructive to our health?
- Is it the social environment or our personalities that really matter?
- Can our social environments be changed to improve our health?

These are complex questions, and each deserves considerably more space than I am allocated. I provide preliminary answers to each question leaning heavily on research and theory produced in my own laboratory over the last 25 years. For this reason, what I present represents a limited (but hopefully insightful) approach. My discussion includes scattered studies of social relationships and mental health, but my primary focus has been physical health outcomes.

## Which Characteristics of the Social Environment Are Beneficial for Health?

Sociology and social psychology abound with terms that refer to different properties of the social environment, and many of these constructs may have implications for health. However, for both historical and sometimes arbitrary reasons, the literature on social relationship and physical health is relatively restricted and addresses only a select group of social constructs. In this section, I focus on two of these: social integration and social support. They are of special interest here because I believe that each promotes health through different mechanisms.

### *Social Support*

Social support refers to a social network's provision of psychological and material resources *intended to benefit an individual's ability to cope with stress*. It is often differentiated in terms of three types of resources: instrumental, informational, and emotional (e.g., House & Kahn, 1985). *Instrumental support* involves the provision of material aid, for example, financial assistance or help with daily tasks. *Informational support* refers to the provision of relevant information intended to help the individual cope with current difficulties and typically takes the form of advice or

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Editor's Note
*Sheldon Cohen received the Award for Distinguished Scientific Contributions. Award winners are invited to deliver an award address at the APA's annual convention. A version of this award address was delivered at the 112th annual meeting, held July 28–August 1, 2004, in Honolulu, Hawaii. Articles based on award addresses are reviewed, but they differ from unsolicited articles in that they are expressions of the winners' reflections on their work and their views of the field.*

guidance in dealing with one's problems. *Emotional support* involves the expression of empathy, caring, reassurance, and trust and provides opportunities for emotional expression and venting. Such typologies of support provide a basis for determining whether the effectiveness of different kinds of support differs by the nature of stressful events or by the characteristics of persons suffering adversity.

### *Social Integration*

*Social integration* is defined as participation in a broad range of social relationships (Brissette et al., 2000). It is a multidimensional construct thought to include a behavioral component—active engagement in a wide range of social activities or relationships—and a cognitive component—a sense of communality and identification with one's social roles (Brissette et al., 2000). The concept of social integration is rooted in Durkheim's (1897/1951) seminal work on social conditions and suicide. Durkheim proposed that stable social structure and widely held norms are protective and serve to regulate behavior.

## How Do These Characteristics of Our Social Environment Improve Our Health?

Social factors can promote health through two generic mechanisms: stress-buffering and main effects (Cohen, 1988; Cohen & Wills, 1985; House, 1981). Specific processes underlying these mechanisms are presented in the first two rows of Table 1.

### *Stress Buffering*

The primary model considered by psychologists, especially those interested in intervention, has been stress buffering. This model asserts that social connections benefit health by providing psychological and material resources needed to cope with stress. The model predicts that social support is beneficial for those suffering adversity but does not play a role in health for those without highly stressful demands. Statistically, the stress-buffering model is supported by an interaction of stress and social support.

Stress is thought to influence health both by promoting behavioral coping responses detrimental to health (smoking, drinking alcohol, illicit drug use, sleep loss) and by activating physiological systems such as the sympathetic nervous system and the hypothalamic-pituitary-adrenal cortical axis (Cohen, Kessler, & Gordon, 1995). Prolonged or repeated activation of these systems is thought to place persons at risk for the development of a range of physical and psychiatric disorders.

The current literature suggests that the critical factor in social support operating as a stress buffer is the perception that others (even one reliable source) will provide appropriate aid (Cohen, 1988; Cohen & Wills, 1985; Uchino et al., 1996). In this view, the belief that others will provide necessary resources may bolster one's perceived ability to cope with demands, thus changing the appraisal of the situation and lowering its effective stress (Cohen & Wills, 1985; Thoits, 1986; Wethington & Kessler, 1986). Belief that support is at hand may also dampen the emotional and physiological responses to the event or alter maladaptive behavioral responses (e.g., Wills & Cleary, 1996).

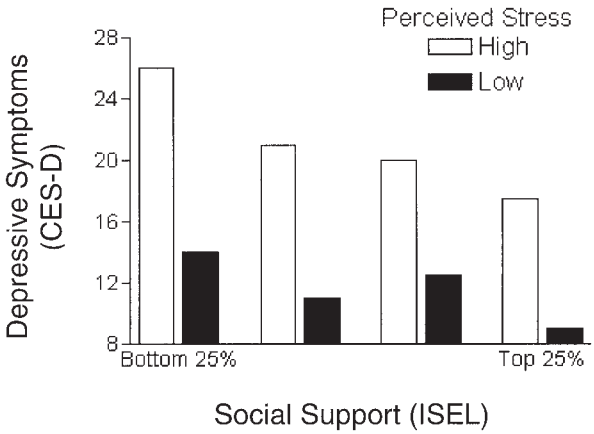
In our early work, we proposed that social support is effective in reducing the effects of stressful events only in so far as the form of assistance matches demands of the event (Cohen & Wills, 1985; also see Cutrona & Russell, 1990). For example, having someone lend you money may be useful in the face of a temporary job loss but useless in the face of the death of a friend.

There is substantial evidence that the perceived availability of social support buffers the effect of stress on psychological distress, depression, and anxiety (reviewed by Cohen & Wills, 1985; Kawachi & Berkman, 2001). For example, we found that both student and adult samples reported more symptoms of depression and of physical ailments under stress but that these associations were attenuated among those who perceived that support was available from their social networks (see Figure 1; Cohen, Mermelstein, Kamarck, & Hoberman, 1985). When types of perceived support were broken down, emotional support

**Table 1**
*Mechanisms Through Which Different Types of Social Constructs Influence Physical Health*

| Social construct | Mechanism | Specific processes |
|---|---|---|
| Social support | Stress buffering | Eliminates or reduces effects of stressful experiences by promoting less threatening interpretations of adverse events and effective coping strategies. |
| Social integration | Main effect (independent of stress) | Promotes positive psychological states (e.g., identity, purpose, self-worth, and positive affect) that induce health-promoting physiological responses. Provides information and is a source of motivation and social pressure to care for oneself. |
| Negative interactions | Relationships as a source of stress | Elicits psychological stress and in turn behavior and physiological concomitants that increase risk for disease. |

**Figure 1**
*Each Increase in Perceived Availability of Social Support Is Associated With a Further Reduction in the Association Between Psychological Stress and Depressive Symptoms in College Students*




*Note.* CES-D = Center for Epidemiologic Study of Depression Scale; ISEL = Interpersonal Support Evaluation List.

worked in the face of a variety of types of stressful events, whereas other types of support (e.g., instrumental, informational) responded to specific needs elicited by an event.

The most striking evidence for stress buffering in the physical health realm is reported in a prospective study of healthy Swedish men aged 50 years and over (Rosengren, Orth-Gomer, Wedel, & Wilhelmsen, 1993). Those with high numbers of stressful life events in the year before the baseline exam were at substantially greater risk for mortality over a seven-year follow-up period. However, this effect was ameliorated among those who perceived that high levels of emotional support were available to them (see Figure 2). In contrast, perceived emotional support made no difference for those with few stressful events. Social integration did not act as a stress buffer.

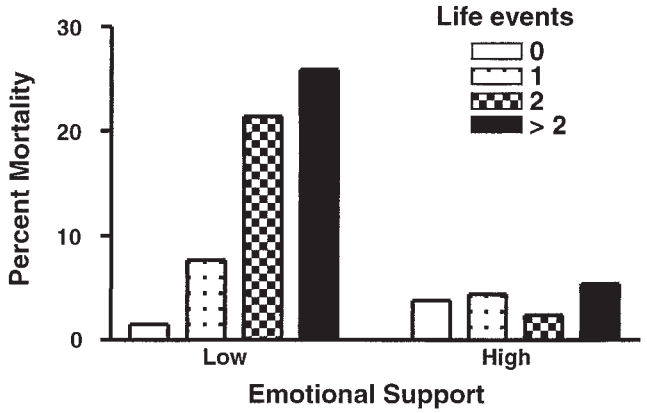
Beyond perceptions, the actual receipt of support could also play a role in stress buffering. Support may alleviate the impact of stress by providing a solution to the problem, by reducing the perceived importance of the problem, or by providing a distraction from the problem. It might also facilitate healthful behaviors such as exercise, personal hygiene, proper nutrition, and rest (cf. Cohen, 1988; House, 1981). My colleagues and I have pursued this issue in an experimental primate model in which we randomly assigned animals to chronically high stress (unstable) or low stress (stable) social environments and coded their naturally occurring affiliative behaviors (Cohen, Kaplan, Cunnick, Manuck, & Rabin, 1992). There, 43 male cynomolgus monkeys were randomly assigned to stable or unstable social conditions for 26 months. In the stable condition, animals remained in a single cage with four other animals. In the unstable condition, the animals were rotated into cages with (at least three of the four) different animals on a monthly basis. The proportion of time spent in affiliative behaviors was assessed by 30-minute observations of each group made twice per week. T-cell immune response was assessed weekly for three weeks immediately following the 26 months of manipulation. That affiliative behavior represented an attempt to cope with social stress was supported by greater affiliation among animals in the unstable compared with the stable condition. Although immune response was suppressed among animals in the unstable social condition, animals in the unstable condition with the highest levels of affiliation were partly protected from this stress-induced suppression (see Figure 3).

### *Main Effect*

The main-effect model argues that social connectedness is beneficial *irrespective of whether one is under stress*. There is reason to believe that social integration operates primarily through main effects. Individuals who participate in a social network are subject to social controls and peer pressures that influence normative health behaviors. For example, their networks might influence whether they exercise, eat low-fat diets, smoke, or take illicit drugs. Integration may also engender feelings of responsibility for others resulting in increased motivation to take care of oneself so that responsibility can be fulfilled.

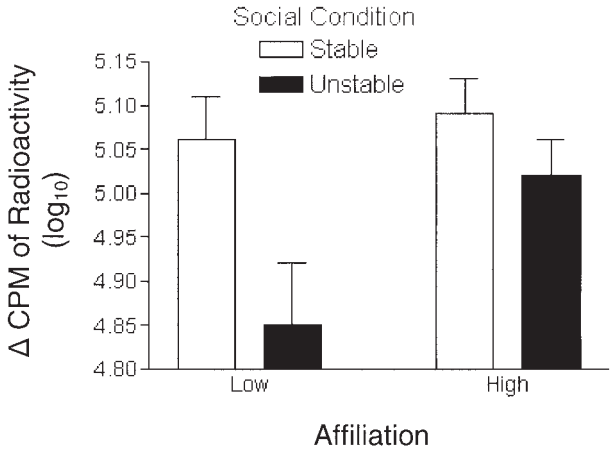
Social integration is also thought to influence one's sense of self and one's emotional tone. Role concepts that are shared among a group of people help to guide social

**Figure 2**
*Perceived Availability of Emotional Support Buffers the Association of the Number of Stressful Life Events and Mortality in Initially Healthy Swedish Men Aged 50 Years and Older*




*Note.* From "Stressful Life Events, Social Support, and Mortality in Men Born in 1933," by A. Rosengren, K. Orth-Gomer, H. Wedel, and L. Wilhelmsen, 1993, *British Medical Journal, 307*, p. 1104. Copyright 1993 by BMJ Publishing Group. Reprinted with permission.

**Figure 3**
*Affiliative Animals Are Protected From the Effects of Chronic Social Stress on Cellular Immune Function*



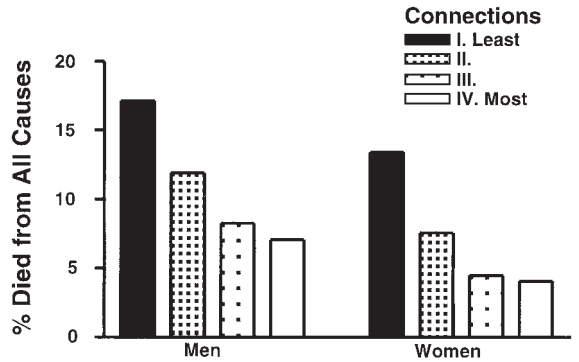

*Note.* CPM = counts per minute. From "Chronic Social Stress, Affiliation, and Cellular Immune Response in Nonhuman Primates," by S. Cohen, J. R. Kaplan, J. E. Cunnick, S. B. Manuck, and B. S. Rabin, 1992, *Psychological Science, 3*, p. 303. Copyright 1992 by Blackwell Publishing, Inc. Adapted with permission.

interaction by providing a common set of expectations about how people should act in different roles. In meeting normative role expectations, individuals gain a sense of identity, predictability and stability; of purpose; and of meaning, belonging, security, and self-worth (Cassel, 1976; Cohen, 1988; Thoits, 1983; Wills, 1985). Interacting with others is also thought to aid in emotional regulation increasing positive affect and helping limit the intensity and duration of negative affective states (Cohen, 1988). These positive cognitions and emotions are presumed to be beneficial because they reduce psychological despair (Thoits, 1983), result in greater motivation to care for oneself (e.g., Cohen, 1988), or result in suppressed neuroendocrine response and enhanced immune function (Cohen, 1988; Uchino et al., 1996). Having a wide range of network ties also provides multiple sources of information that could influence health-relevant behaviors, result in more effective use of available health services, or help one to avoid stressful or other high-risk situations.

Attention was drawn to social integration as a predictor of physical health by a report of a prospective study of residents of Alameda County, California, by Berkman and Syme (1979). They found that healthy adults who were more socially integrated (were married, had close family and friends, belonged to social and religious groups) at study onset were more likely to still be living at the nine-year follow-up than their more isolated counterparts (see Figure 4). The association between social integration and mortality has since been replicated in over a dozen prospective community-based studies (reviewed by Berkman & Glass, 2000), whereas other studies have found that greater integration predicts survival from heart attacks, less risk for cancer recurrence, less depression and anxiety, and less severe cognitive decline with aging (see Cohen et al., 2000). Although both men and women seem to benefit from social integration, there is evidence that men benefit more than women (House, Landis, & Umberson, 1988). This has been attributed to integration having a cost for women that isn't experienced by men—the responsibility that women take for the fate of other network members (Kessler, McLeod, & Wethington, 1985). However, it could also be attributable to women being more sensitive to the quality and content of their relationships than are men (Coriell & Cohen, 1995). Hence men may benefit from lower quality relationships, whereas women do not.

I have been particularly interested in the role of social integration in the body's ability to fight off infectious disease. If social integration confers resistance to infectious illness, this could account for many of the associations discussed earlier because infections may underlie mortality and the risk for asthma, certain cancers, and coronary heart disease. In my studies of the common cold, I assessed psychosocial factors in healthy adults and then experimentally exposed them to an infectious agent that causes the common cold. When exposed to such an agent, only about one third of the subjects developed clinically verifiable disease. Consequently, I can ask whether a particular psychosocial factor (in this case, social integration) predicts who is resistant to illness. To investigate this issue, my colleagues and I (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997) developed a measure of social integration that assessed active (at least once every two weeks) participation in 11 different social roles including being married, a parent, a parent-in-law, a child, another close family member, a close neighbor, a friend, a workmate, a schoolmate, a fel-

**Figure 4**
*Greater Social Integration Is Associated With Lower Rates of Mortality*

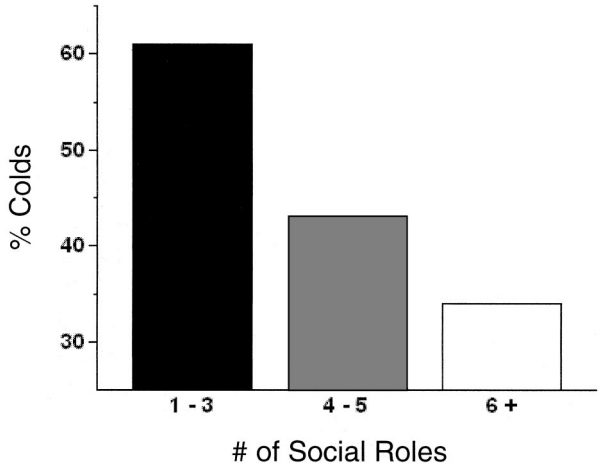



*Note.* From "Social Networks, Host Resistance, and Mortality: A Nine-Year Follow-Up Study of Alameda County Residents," by L. F. Berkman and L. Syme, 1979, *American Journal of Epidemiology, 109*, p. 190. Copyright 1979 by Oxford University Press. Adapted with permission.

low volunteer, or a member of groups with or without religious affiliation. We found that greater social integration as assessed by the numbers of social roles was associated with less susceptibility to clinical illness (Figure 5). This association was confirmed across two viruses and was independent of demographic factors and of immunity to the experimental virus at baseline (viral-specific antibody level).

Although the social integration research I have discussed is impressive in the reliability of associations with morbidity and mortality, it does not directly test whether social integration is operating as a main effect or stress buffer because none of these studies included measures of stress. In contrast, the literature on social integration and psychological well-being indicates that social integration is associated with better psychological well-being but does not interact with stress (review by Cohen & Wills, 1985). A study of stressful life events, social integration, and survival from breast cancer (Funch & Marshall, 1983) found that stressful life events were directly associated with lower rates of survival and social integration was associated with higher rates. As in the psychological literature, there was no stress-buffering interaction. Although not reported in the published work (Cohen et al., 1997), our own research (described earlier) similarly failed to find an interaction (or even a consistent pattern) that would support social integration operating as a buffer. In sum, existing evidence is generally supportive of social integration influencing health independent of whether persons are facing adversity.

**Figure 5**
*Greater Number of Social Roles Is Associated With Decreased Susceptibility to the Common Cold*




*Note.* From "Social Ties and Susceptibility to the Common Cold," by S. Cohen, W. J. Doyle, D. P. Skoner, B. S. Rabin, and J. M. Gwaltney Jr., 1997, *Journal of the American Medical Association, 277*, p. 1943. Copyright 1997 by the American Medical Association. Reprinted with permission.

### Can Our Social Environment Be Destructive to Our Health?

Social networks provide emotional, informational, and material support; regulate behavior; and offer opportunities for social engagement. They also provide modes of contact to spread disease and the opportunity for conflict, exploitation, stress transmission, misguided attempts to help, and feelings of loss and loneliness. These potentially negative aspects of networks can act as psychological stressors resulting in cognitive, affective, and biological responses thought to increase risk for poor health. The processes underlying this mechanism are summarized in the third row of Table 1.

Earlier, I discussed the social integration literature as if being integrated is beneficial and the more integrated one is, the better it is for one's health. This argument is supported by the graded relation between social integration and health found in many studies (see Figures 4 and 5). An alternative argument is that it is *social isolation* that causes disease. In this view, isolation could be a stressor in its own right, increasing negative affect and a sense of alienation, loneliness, and stress while decreasing feelings of control and self-esteem. In turn, these negative psychological states could increase neuroendocrine and cardiovascular responses, suppress immune function, and interfere with performance of health behaviors (Cacioppo et al., 2002; Cohen, 1988; Uchino et al., 1996). The hypothesis that isolation is what is responsible for the reported associations between social integration and health suggests that there is some threshold for social contact below which one is at risk for disease. Interestingly, the social integration literature can also be interpreted as supporting this hypothesis. For example, a close examination of Figures 4 and 5 indicates that the most isolated individuals are at greater risk than one would expect if the relation between social integration and health was linear. Hence the reliable and striking associations between social integration and morbidity and social integration and mortality may be attributable to both the health-promoting mechanisms associated with integration and the disease-promoting mechanism that operates among the most isolated.

In other work on the negative effects of the social environment on health, I have examined the influence of social conflicts on susceptibility to colds. My colleagues and I (Cohen et al., 1998) assessed whether subjects were involved in serious, enduring (one month or longer) social conflicts using an intensive interview technique. We then exposed each subject to a virus that causes the common cold. Those with enduring conflicts were more than twice as likely to develop a cold as persons without any chronic stressors in their lives. The conflicts contributing to this relationship included enduring problems with spouses, close family members, and friends. These associations were

independent of preexposure immunity to the virus (specific antibodies), demographics, and a host of other controls.

In sum, social environments and one's responses to them can have powerful detrimental effects. It is likely that these effects are primarily mediated through one's appraisals of social conditions as stressful and the consequential changes in health behaviors, endocrine, immune, and cardiovascular response.

## Is It the Social Environment or Our Personalities That Really Matter?

Social personality traits such as attachment, extraversion, agreeableness, and hostility are thought to play a key role in molding our social environments. Hence, it is possible that one or more aspects of these traits account for associations between social environments and health that I have discussed earlier. Are social traits responsible (acting as third or spurious factors) for associations that have traditionally been attributed to the social environment?

A number of traits that are thought to influence the degree and quality of one's social relationships have been implicated in health outcomes. For example, hostile people are at greater risk for coronary artery disease and possibly other physical health problems (Smith, 1992), and arguments (but as yet little evidence) have been recently made that those with more secure attachment styles may be partly protected from disease risk. My work has focused on sociability, a disposition that is generally recognized as a determinant of quality and quantity of social interaction. I define sociability as "the quality of seeking others and being agreeable."

My colleagues and I found that sociability was associated with greater resistance to developing colds when persons were experimentally exposed to a cold virus (Cohen, Doyle, Turner, Alper, & Skoner, 2003). That this association was found after entering multiple controls (covariates in the equation) including preexisting immunity (specific antibody), gender, age, education, season of the year, body mass index, and type of virus is notable.

If sociability is responsible for our creating and maintaining of social ties, and sociability is itself directly beneficial to health, then the associations of social ties and health we discussed earlier may just be a reflection of the benefits of sociability and not attributable to our social ties and interactions. This is especially important because it suggests that changing social ties would not influence health outcomes. There is limited evidence in regard to this question. When my colleagues and I controlled for markers of sociability when predicting health from social integration or from social conflicts (Cohen et al., 1997, 1998), the associations between the social environmental variables and disease susceptibility were reduced but remained substantial and significant.

In an earlier study, we were interested in determining whether other dispositional factors might account for perceived social support influences in stress buffering (Cohen, Sherrod, & Clark, 1986). As expected, we found that perceived social support buffered the effects of psychological stress on depression. This association held up even after we controlled for both the main effects and interactions with stress of social competence, social anxiety, and the tendency to disclose intimate feelings to others. Similarly, Rook (1984) found that the association between having ties who were sources of negative interactions and poorer psychological well-being was not altered after controlling for indices of social competence. In sum, social personality traits do play a role in health. However, the few studies that address the overlap of these traits with social integration, perceived social support, and negative interaction suggest that the trait and environmental effects are at least partly independent of one another (also see Uchino et al., 1996).

## Can Our Social Environments Be Changed to Improve Our Health?

The provocative and consistent positive associations of social integration and supports with physical health discussed in this article are based entirely on the measures of relationships within natural social networks. In contrast, published interventions are based almost entirely on support provided by strangers. Moreover, evidence of the effectiveness of social interventions is much weaker than the evidence from correlational studies. There are fewer studies, and overall their results have been disappointing (Cohen et al., 2000).

Social support interventions have often been aimed at improving health outcomes in patients with serious, life-threatening diseases. Patients are approached after an acute event (heart attack, stroke) or in the course of a chronic, debilitating disease (cancer, HIV) and offered an intervention aimed at reducing secondary events and improving function. Most often, patients are offered peer support groups. Early studies, though often small, were sometimes promising (e.g., Fawzy et al., 1993; Frasure-Smith & Prince, 1989); one showed, for instance, that women with metastatic breast cancer who were offered group psychotherapy lived longer (Spiegel, Bloom, & Kraemer, 1989). However, as trials became larger, followed more rigorous protocols, and involved multiple sites and interventionists, the promising results were not replicated. Recently, for example, several clinical trials with postmyocardial infarction patients (e.g., The ENRICHD Investigators, 2003; Frasure-Smith et al., 1997) and metastatic breast cancer patients (e.g., Cunningham et al., 1998; Goodwin et al., 2001) have found no effects of social support interventions on recurrent disease or mortality.

Our own intervention work similarly failed to support the effectiveness of providing seriously ill patients with emotional support provided by a support group of peers. In a clinical trial led by my colleague Vicki Helgeson (Helgeson, Cohen, Schulz, & Yasko, 1999), we found that the provision of information, but not "peer" emotional support, facilitated psychological and physical adjustment to breast cancer. More important, the effectiveness of providing different types of support was dependent on individual differences in the strength and nature of natural support systems (Helgeson, Cohen, Schulz, & Yasko, 2000). For example, peer emotional support groups helped women who lacked support from their partners or physicians but harmed women who had high levels of natural support.

In sum, the existing intervention literature has been disappointing. In general, investigators have approached a complex problem with good intentions but often without deep theoretical analysis or a strong base of prior research. My intent here is not to suggest that social network and support interventions are not potentially effective. On the contrary, it is to encourage the design of interventions that better reflect what is known from existing research on the role of social relationships in health.

The work discussed in this article highlights a number of directions for future interventions. First, it suggests a special emphasis on intervention in natural social networks. Emphasis on natural networks is consistent with the correlational evidence presented in this article but is also more promising than social support groups as a means of making changes in social relationships that one can rely on months and years beyond the period of active intervention (see Gottlieb, 2000, on when to intervene in the natural social network).

Second, it suggests intervening in several different aspects of the social environment. These include (a) increasing the availability of social support within existing social networks by improving individual social skills or by building stronger ties to existing network members, (b) increasing social integration by creating and nurturing close and peripheral ties between an individual and his or her community, and (c) reducing negative interactions.

Finally, it suggests that researchers need to identify the characteristics of those who benefit most and least from social integration and support interventions. For example, variability in the effectiveness of support may be attributable to differences in the participants' social skills, social traits, or network relationships. It is conceivable that only the most socially isolated individuals reap significant benefits from their contact with new sources of support. Or it may be that those who feel the greatest emotional isolation, or experience the most conflict with their existing associates, are the least able to take advantage of new opportunities to strengthen their network. As suggested by our work with breast cancer patients, this may not merely be an issue of identifying who will benefit but also who may be harmed by interventionists' positive intentions.

## Conclusions

In sum, I have argued that three different social relationship variables—social integration, social support, and negative interaction—are all associated with health outcomes, that these variables each influence health through different mechanisms, and that these associations are not spurious findings attributable to personality and hence they are likely subject to intervention. Further, I feel that this literature suggests a broader view of how to intervene that includes creating and strengthening a diverse natural social network, increasing the availability of social support in natural networks, and reducing negative interactions within one's network. Finally, I emphasize the necessity to understand more about who benefits most and least from social connectedness interventions.

Author's Note

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