Social Relationships and Health:
Theory, Evidence and Implications for
Public Health Policy*

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The present paper draws heavily on two prior publications by the author with Karl Landis and Debra Umberson (House et al., 1988a and b). (Portions of the text are identical to portions of House et al., 1988a.)
The major issues confronting the health sciences and health policy have changed greatly over the last century, especially in the developed societies. Human life expectancy has grown dramatically, approaching the apparent biological limits of human life span. Chronic diseases have increasingly replaced acute infectious diseases as the major sources of morbidity, disability and mortality. These diseases are chronic or prolonged in both their etiology and their course, and psychosocial factors are increasingly recognized as major determinants of the etiology and course of chronic disease morbidity, disability and mortality.

Among these psychosocial factors, what have come to be called life style or health behavior factors -- smoking, diet, alcohol consumption, and exercise -- have received the most attention over the last several decades (Berkman and Breslow, 1983). The U.S. Surgeon General's (1964) report on smoking and health established cigarette smoking as a definite risk factor for serious morbidity and mortality, and has resulted over the past quarter century in a major public health effort to reduce or eliminate cigarette smoking in the United States and many other countries. Through a wide range of interventions, this has resulted in major declines in smoking behavior which are presumed to have contributed to significant declines over the last two decades in morbidity and mortality from multiple causes, but especially coronary heart disease and stroke. Although the evidence is not as extensive and strong, deleterious patterns of diet, exercise, and alcohol consumption have increasingly been linked to morbidity and mortality, and changes in these behaviors in more healthful directions also appear to have contributed to
recent reductions in morbidity and mortality (U.S. Department of Health and Human Services, 1986).

A variety of other psychosocial factors -- including personality and behavior patterns, chronic and acute stress, and social relationships and supports also have been linked to morbidity and mortality. Drawing heavily on papers I have published with Karl Landis and Debra Umberson in the last year in Science (House et al., 1988a) and the Annual Review of Sociology (House et al., 1988b), I would like to argue that among these other psychosocial variables, social relationships and supports now have the strongest body of theory and evidence indicating that they are major risk factors for health, and this theory and evidence increasingly approximates that available for smoking and health at the time of the landmark 1964 U.S. Surgeon General's report (1964), with similar implications for future research and public policy.

Social Relationships, Social Support, and Health: Theory and Evidence

Scientists have observed associations between social relationships and health for over a century, with more socially isolated or less socially integrated individuals being less healthy, psychologically and physically, and more likely to die (Durkheim, 1951(1897); Kraus and Lilienfeld, 1959; Carter and Glick, 1970; Kitigawa and Hauser, 1973; Holmes, 1956; Tillman and Hobbs, 1979; Kohn and Clausen, 1955). The causal interpretation of these associations has, however, been less clear. Does a lower quantity or quality of social relationships cause people to become ill or die? Or are unhealthy
people less able to form and maintain an adequate quantity or quality of relationships? Or does some third factor, such as a misanthropic personality, predispose people to both poor health and a lower quantity or quality of relationships?

Such questions remained unanswerable until recently due to a lack of adequate causal theory and empirical evidence. Three developments over the last decade have provided the necessary theory and evidence to begin to answer these questions and hence to establish the quantity and quality of social relationships as a major risk factor for health: (1) the emergence of psychosocial and biological theories explaining a causal impact of social relationships on health; (2) cumulation of prospective epidemiologic evidence that social relationships are consequential predictors of human mortality; and (3) increasing experimental and quasi-experimental evidence for the causal impact of social relationships on psychological and physiological functioning of both animals and humans.

"Social Support" Theory and Research

The emergence in the middle 1970s of a seemingly new field of scientific research on "social support" revitalized the study of social relationships and health. First used in the mental health literature (Caplan, 1974; President’s Commission on Mental Health, 1978), the concept of "social support" was central in separate articles published in 1976 by physician-epidemiologists John Cassel (1976) and Sidney Cobb (1976), which together reviewed more than 30 studies that found social relationships protective of health in humans and animals. Cassel and Cobb implicitly provided a general, albeit simple, causal theory, made more explicit in Figure 1, of how and why social relationships or
supports should causally affect health. The term "social support" reflected their emphasis on the role of social relationships in sustaining or supporting an organism in the face of stress or other health hazards by promoting adaptive behavioral or neuroendocrine responses which moderate or buffer the deleterious health effects of stress or other hazards. They also recognized, however, that social relationships or supports might also directly promote health or reduce exposure to stress or other health hazards.

As shown in Figure 2, prior to 1976 publications on "social support" were virtually nonexistent, but increased almost geometrically from 1976 to 1981, and have continued to grow more linearly since then. By the later 1970s, however, critics began to question the quality of the evidence cited by Cassel and Cobb and generated in subsequent research, which remained largely cross-sectional or retrospective in nature. In particular they questioned whether the evidence indicated (1) a strong and causal impact of social relationships or supports on health, and (2) a greater theoretical importance of their buffering as opposed to direct effects. These questions or concerns have been largely answered by cumulations of (1) a new series of prospective mortality studies in human populations, and (2) a broadening base of laboratory and experimental studies of animals and humans.
Prospective Mortality Studies

Just as concern was growing about the causal direction and strength of the association between social relationships and health, a striking series of reports appeared of analyses from long-term prospective studies, all showing that social relationships are a major risk factor for all-cause mortality. I and others were struck in 1979 by Berkman and Syme's (1979) report of their prospective analyses of a probability sample of 4775 adults in Alameda County, California (Oakland and environs) who were aged 30-69 when they first completed a survey in 1965 that assessed the presence or extent of four types of social relationships -- marriage, contact with extended family and friends, church membership, and membership in other informal groups. Each type of relationship significantly predicted mortality over the succeeding nine years. A combined "social network" index remained a significant predictor of mortality (with a relative risk ratio for mortality of about 2.0, indicating that persons low on the index were twice as likely to die as persons high on the index) in multivariate analyses that controlled for self-reports in 1965 of physical health, race, socioeconomic status, smoking, alcohol consumption, physical activity, obesity, life satisfaction, and use of preventive health services.

Having access only to self-reported data on health at the beginning of their study constituted a major limitation of the Berkman and Syme research. Thus I and colleagues (House et al., 1982) sought to replicate and extend the Alameda County results in a study of 2754 adults aged 35 to 69 who were interviewed and medically examined between 1967 and 1969 as part of the
Tecumseh (Michigan) Community Health Study. Composite indices of social relationships and activities (as well as a number of their individual components) were inversely associated with mortality during the succeeding 10-12 year follow-up period, with relative risks of 2.0 to 3.0 for men and 1.5 to 2.0 for women, after adjustment for a wide range of not only self-reported but also biomedically assessed risk factors of mortality (including blood pressure, cholesterol, respiratory function and electrocardiograms).

Schoenbach et al. (1986) provided a further replication and extension in the Evans County Cardiovascular Epidemiologic Study in rural Georgia. They found that a social network index similar to that of Berkman and Syme predicted mortality during an 11- to 13-year follow-up period, again after adjustment for age and biomedical as well as self-reported risk factors of mortality. The Evans County results were somewhat weaker than those in Tecumseh and Alameda County, and as in Tecumseh, were stronger for males than females.

Studies in Sweden and Finland have found very similar results. Tibblin, Welin and associates (Tibblin et al., 1986; Welin, et al., 1985) studied two cohorts of men born in 1913 and 1923, respectively, and living in 1973 in Gothenberg, Sweden's second largest city. After adjustments for age, baseline levels of systolic blood pressure, serum cholesterol, smoking habits, and perceived health status, mortality in both cohorts through 1982 was inversely related to the number of persons in the household and the men's level of social and outside home activities in 1973. Orth-Gomer and Johnson (1987) analyzed the mortality experience through 1981 of a random sample of 17,433 Swedish adults aged 29-74 at the time of their 1976 or 1977 baseline interviews. Frequency of contact with family, friends, neighbors, and
coworkers in 1976-77 was predictive of mortality through 1981, after adjustment for a variety of other self-reported risk factors. The effects were stronger among males than among females, and were somewhat nonlinear, with the greatest increase in mortality risk occurring in the most socially isolated third of the sample. In a prospective study of 13,301 adults in predominantly rural eastern Finland, Kaplan et al. (1988) found a measure of "social connections" similar to those used in Alameda County, Tecumseh, and Evans County to be a significant predictor of male mortality from all causes over five years, again after adjustments for other biomedical and self-reported risk factors. Female mortality showed similar, but weaker and nonsignificant, effects.

These studies manifest a very consistent pattern of results, as shown in Figures 3A and 3B which plot age-adjusted mortality rates for the five prospective studies from which we could extract parallel data. The report of the sixth study (Orth-Gomer and Johnson, 1987) is consistent with these trends. (The relative risks in Figures 3A and 3B are higher than those reported above because they are only adjusted for age.) The levels of mortality in Figures 3A and 3B vary greatly across studies depending on the follow-up period and composition of the population by age, race and ethnicity, and geographic locale. The patterns of prospective association between social integration (i.e., the number and frequency of social relationships and contacts) and mortality are, however, remarkably similar, except for some tendencies, which we have discussed in more detail elsewhere, for results to be stronger among men and in urban areas than among women and in more rural areas, and for the trends among men to be somewhat nonlinear in the more rural areas (see House et al., 1988a and b).
Additional prospective studies have shown social relationships to be similarly predictive of all-cause and cardiovascular mortality in studies of people who are elderly (Blazer, 1982; Zuckerman et al., 1984; Seeman et al., 1987) or have serious chronic diseases (Ruberman et al., 1984; Orth-Gomer et al., 1986). To my knowledge, there have as yet been no reports of prospective mortality analyses which fail to confirm the basic pattern of results in Figures 3A and 3B.

Studies of Changes in Social Relationships

These prospective studies are congruent with clinical and epidemiologic evidence that the disruption of major social relationships, such as marriage or employment, is deleterious to physical and mental health, and may even increase mortality, while the restoration of these relationships tends to reverse these deleterious effects unless, of course, they are, like mortality, irreversible (Hansson, Stroebe and Stroebe, 1988; Dooley and Catalano, 1988). These patterns have been evident in our own recent research on the impact of unemployment on self-reported indicators of mental and physical health (Kessler, Turner, and House, 1988).

Loss of a major relationship such as marriage or employment tends to be exacerbated among those who are already less socially integrated. Or conversely, the presence of other significant relationships can moderate or
buffer the impact of the experience of widowhood or unemployment. Again, in
our own work on unemployment, we find that married persons are much less
affected than the unmarried, and among the unmarried those who interact
regularly with family and friends are much less affected than those who have
such regular interactions. Thus the effect of job loss is especially acute
for those who are both unmarried and otherwise relatively socially isolated
(House, Williams and Kessler, 1989).

Experimental and Quasi-Experimental Research

Both the prospective mortality data and the studies of changes in social
relationships are made more compelling by their congruence with growing
evidence from experimental and clinical research on animals and humans that
variations in exposure to social contacts produce psychological or
physiological effects, which could, if prolonged, lead to serious morbidity
and even mortality. Cassel (1976) reviewed evidence that the presence of a
familiar member of the same species could buffer the impact of experimentally
induced stress on ulcers, hypertension, and neurosis in rats, mice, and goats,
respectively; and the presence of familiar others has also been shown to
reduce anxiety and physiological arousal (specifically secretion of free fatty
acids) in humans in potentially stressful laboratory situations (Wrightsman,
1960; Back and Bogdonoff, 1967). Clinical and laboratory data indicate that
the presence of or physical contact with another person can modulate human
cardiovascular activity and reactivity in general, and in stressful contexts
such as intensive care units (Lynch, 1979:Ch. 5).

Such processes also operate across species. Affectionate petting by
humans, or even their mere presence, can reduce the cardiovascular sequelae of
stressful situations among dogs, cats, horses, and rabbits (Lynch, 1979:Ch.6). Nerem et al. (1980) found that human handling also reduced the arteriosclerotic impact of a high fat diet in rabbits. Recent interest in the potential health benefits of pets for humans, especially the isolated aged, is based on similar notions, though the evidence for such effects is only suggestive at this point (Goldmeier, 1986).

Biological theories also suggest how and why social relationships and contacts may promote health and prevent disease. Social relationships and contacts appear to stimulate release of human growth hormone and inhibit secretion of ACTH, cortisol, catecholamines, and associated sympathetic autonomic activity. These effects are consistent with the impact of social relationships on mortality from a wide range of causes, and with studies of the adverse effects of lack of adequate social relationships on the development of human and animal infants (Bowlby, 1973). Due to the survival benefit of social relationships and collective activity, sociobiological processes may also promote genetic selection of organisms who find social contact and relatedness rewarding and the lack of such contact and relatedness aversive (Mendoza, 1984).

Social Relationships as a Risk Factor for Health: Conclusion

The theory and data reviewed above meet reasonable criteria for considering social relationships a cause or risk factor of mortality, and probably morbidity, from a wide range of diseases (U.S. Surgeon General's Advisory Committee on Smoking and Health, 1964; Broadhead et al., 1983; Lilienfeld and Lilienfeld, 1980:Ch.12). These criteria include strength and consistency of statistical associations across a wide range of studies,
temporal ordering or prediction from cause to effect, a gradient of response, experimental data on animals and humans consistent with nonexperimental human data, and a plausible theory (e.g., Bovard, 1985) of biopsychosocial mechanisms explaining the observed associations. The evidence regarding social relationships and health increasingly approximates the evidence in the 1964 Surgeon General's report (U.S. Surgeon General’s Advisory Committee on Smoking and Health, 1964) that established cigarette smoking as a cause or risk factor of mortality and morbidity from a range of diseases. The age-adjusted relative risk ratios shown in Figures 3A and 3B are stronger than the relative risks for all-cause mortality reported for cigarette smoking (U.S. Surgeon General’s Advisory Committee on Smoking and Health, 1964).

Public Health Implications

One reaction to all of this theory and evidence, however, is that it is all very interesting, but it is of little applied value because social relationships are, after all, a matter of individuals' mutual choices and hence are not amenable to clinical or public health interventions. Much the same argument can be, and has been, previously made against the applied value of research on smoking or other health behaviors. The argument has proved misguided in those cases, and is similarly misguided, I believe, in the case of social relationships and health.

It is true that we do not now fully understand how and why social relationships affect health. It is also true that research to this point has focused on how social relationships as independent or moderating variables
affect stress or health or the relations between them. Thus, we lack focused research on the determinants of social relationships and the aspects of them most relevant to health -- research which is ultimately a necessary foundation for effective intervention. These are critical areas for future research on social relationships and health.

Again, however, much the same could have been said regarding smoking and health 25 years ago. We did not understand at that time how and why smoking affected health or what factors determined smoking behavior, and our knowledge in this regard remains imperfect today. Nevertheless, we can and have done something to apply the available knowledge to reduce smoking and improve health, while simultaneously continuing to expand our research base. The same could be true regarding social relationships.

What About Sound Relationships Promotes Health, and Why?

Over the last decade, we have already improved our understanding as to what about social relationships promotes health, and why. One thing we have learned is that social support is part of the story, but not all of it. The prospective mortality studies and the experimental research reviewed here suggest that the mere existence or frequency of social relationships and contacts seems to promote health, and these effects are not just a product of social support and do not occur only when organisms are under stress. As Durkheim (1951(1897)) suggested almost a century ago in his study of suicide, social relationships can regulate human thought, feeling and behavior in ways that promote a sense of meaning and coherence conducive to health (Antonovsky, 1979) or that facilitate healthy behaviors or lifestyles (more healthful patterns of smoking, eating, drinking, sleeping, and exercising), adherence to
medical regimens, or seeking appropriate preventive or therapeutic medical care (Umberson, 1987). Psychological and sociobiological theories also suggest that the mere presence of, or sense of relatedness with, another organism may somehow rather directly modulate aspects of emotional and physiological functioning in ways that are protective of health but operate relatively independently of cognitive appraisal, social support, or behavioral coping (Bowlby, 1973; Lynch, 1979:87-180; Mendoza, 1984; Zajonc, 1965). We have also come to recognize that almost all social relationships can simultaneously embody negative as well as positive or supportive components (Rook, 1984; House and Landis, in preparation).

Thus, research and practice must attend both to the existence and quantity of social relationships, as well as to their functional content and quality. The greatest health risks seem to inhere in social isolation or a very low frequency and quantity of relationships. Marriage, work, informal contacts with friends and relatives, and ties to voluntary organizations appear to be the key elements of social integration. No person necessarily needs all of these, but the maintenance of at least one and probably a couple of these bases of social integration appears crucial to health and well-being. Those who have little or no such integration are clearly at higher risk of mortality and other health hazards.

Assuming minimal bases of social integration are met, then enhancing the supportive or positive aspects of relationships and reducing negative or conflictive aspects can contribute further toward reducing stress, promoting health and buffering the impact of stress on health, as has been found especially in research on employed populations (House, 1981; Cohen and Wills, 1985). The characteristics and behaviors which are perceived as supportive or
positive by others are generally those found to characterize more positive and healthy relationships in work places, marriages, or elsewhere -- empathy, willingness to listen, caring, and concern for the welfare of the others as more than an extension of oneself (cf. House, 1981:Ch. 5).

In sum, our current state of knowledge suggests that, all other things being equal, we should seek to ensure first that individuals are not isolated from all or most of the relationships critical to social integration, i.e., marriage, work, informal contacts with friends and relatives, and formal ties to voluntary associations. Second, we should seek to enhance the positive and supportive aspects of such relationships and to minimize their negative or destructive aspects. Can we do this, and do so without unduly infringing on other individual and social values such as freedom of action and association? The answer, I believe, is yes. As with efforts to modify smoking or drinking or diet or exercise, any new actions we take will modify the current options and preferences of people. But we must remember that we are never in a state of perfect virtue, freedom or justice, but rather must weight the pros and cons of the status quo against those of any alternative future. I will speak here more concretely in terms of the U.S., but believe the general principles apply to Germany and other nations.

Avenues for Public Health Action

How can we reduce social isolation, improve social integration, and increase the positive or health promotive qualities of relationships while decreasing their negative or health damaging aspects? Again, in much the same way that we seek to modify smoking or other health behaviors -- through a combination of (1) broad social, legal, political and economic policies with
(2) efforts at change in the structure or process of major organizations (especially work organizations and schools) and (3) processes of communication, education and socialization directed at individuals and smaller groups. It may seem odd, undesirable or unfeasible to formulate governmental and organizational policies or programs of communication, education, and socialization regarding the quantity and quality of social relationships. But it seemed equally odd, undesirable, or unfeasible a quarter century ago to do the same regarding smoking, or many aspects of drinking, diet, or exercise. Yet we have increasingly done just that, with some measurable success (U.S. Department of Health and Human Services, 1980; 1986). And, I believe it is the broad combination of governmental and organizational policy with educational initiatives directed at individuals that has succeeded, where any one or two programs might have had little impact.

Whether people are employed, married, attend church, belong to organizations, or have frequent contact with friends and relatives, and the nature and quality of these relationships are a function of broader social forces. In the United States these forces have operated over the past several decades to reduce the quantity and frequency of many social relationships. Thus, in comparison with the 1950s, adults in the United States in the 1970s were less likely to be married, more likely to live alone, and less likely to belong to voluntary organizations or visit informally with others (Veroff, Douvan and Kulka, 1981). Economic policies have increased unemployment and increased the rate of two-earner households. Those economic forces have also contributed to increasing marital dissolution, as have changes in laws governing divorce (Weitzman, 1985). High rates of remarriage, however, indicate strong individual desires to maintain major social relationships, if
the social and economic conditions are favorable. Increased attention must be paid to creating policies which maximize opportunities to work, marry, raise a family, and maintain ties with friends, relatives and organizations. Just as we have come increasingly to analyze the economic and environmental impact of political and economic policies, we need also to focus on their impact on health and social relationships.

Although our nation, and its major organizations of work and schooling, invest heavily in education and training to develop cognitive and mechanical skills and abilities, little comparable attention has been paid until recently to social and interpersonal skills and abilities. Traditionally, we presumably learned informally at home and work how to form marital and friendship relationships, how to work with and supervise others, and how to participate in voluntary organizations. Increasingly, however, both schools and work organizations are recognizing deficiencies in social and interpersonal skills and have begun to train more explicitly for them. Just as we have had increasingly to teach about desirable patterns of substance use, diet and exercise, so we are having increasingly to teach people how to work and learn with others, and how to parent and maintain marital and other relationships. As we move toward a society in which children must increasingly care for aging parents, with the population of the latter growing faster than the former, we are also recognizing the need to teach people how to assume this caretaking role.

In sum, we can and must self-consciously consider the implications of social and organizational policy and educational practice for the quantity and quality of social relationships in society. We are increasingly beginning to do so for reasons other than health, such as improving educational and
organizational performance and reducing crime. Changes in health behaviors such as smoking, drinking, diet and exercise are still producing overall improvement in health and longevity, but these improvements could be even greater if the quantity and quality of social relationships were also improving.
Footnotes

1. It should be noted that the evidence linking social relationships to morbidity in humans is limited and not fully consistent. For example, although laboratory studies show short-term effects of social relationships on cardiovascular functioning that would, over time, produce cardiovascular disease, and prospective studies show impacts of social relationships on mortality from cardiovascular disease, the link between social relationships and the incidence of cardiovascular morbidity has yet to be firmly demonstrated (Cohen, 1988; Reed et al., 1983).
References


Stress or Other Health Hazards

Social Relationships or Support

- 

Stress or Other Health Hazards

- 

Health

Note: The vertical arrow indicates that social relationships may moderate or buffer or reduce the deleterious impact of stress or other health hazards on health.
Number of Articles with "Social Support" in their Titles
(Social Science Citation Index, 1972-1986)
Figure 3A

Level of Social Integration and Age-Adjusted Mortality for MALES in Five Prospective Studies

(RR=Relative Risk Ratio of Mortality at Lowest versus Highest Level of Social Integration)
Figure 3B

Level of Social Integration and Age-Adjusted Mortality for FEMALES in Five Prospective Studies

(RR=Relative Risk Ratio of Mortality at Lowest versus Highest Level of Social Integration)