

Social skill training is an effective intervention for a wide range of problems and populations. It has increased assertive refusal skills, assertive initiation behaviors, skills in giving compliments and providing positive feedback, resistance to peer pressure and drug refusal skills, conversational skills, heterosocial interactions and date initiation behavior, job interview skills, appropriate play behavior, and social problem-solving and conflict management skills. It has also lowered various social anxieties, depression, anger, and aggression. Populations have ranged from socially isolated children, aggressive and delinquent adolescents, college students and adults with a variety of social deficiencies, and chronically mentally ill and retarded individuals. In general, social skill training is an effective intervention, but not significantly more effective than other interventions addressing the same problem.

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SOCIAL SUPPORT. During the last 20 years, hundreds of published articles have addressed how our relationships with others influence our psychological and physical health. Although interpersonal relationships can be detrimental to well-being, most of this literature focuses on beneficial aspects of relationships, such as the supportive functions they may serve. The term *social support*

refers to the process through which help is provided to others. This process is influenced by characteristics of the social environment and individual participants, transactions that occur between participants, the resources that are provided, and participants' perceptions of these transactions and their implications.

Concepts and Measures of Social Support

Attempts to measure social support have focused primarily on the structure of social relationships and the functions they serve. Structural support refers to quantitative aspects of relationships, such as the number and interconnectedness of people in a person's social network. Typical measures include whether people are married, have relationships with relatives and friends, and belong to social or religious groups; these measures are considered objective, reliable, and easy to administer (Brissette, Cohen, & Seeman, in press). The structural support concept that has received the greatest attention is social integration (SI), defined as the extent to which persons participate in multiple types of social relationships. Common measures of SI include the number of social roles that a person occupies and the extent or frequency of social activity that a person is engaged in.

The functional approach emphasizes the resources that other people provide. It has been suggested that social relationships may serve several major functions. First, they may provide emotional support, or reassurance that we are loved and cared for by others. Relationships may also provide instrumental or tangible support, such as assistance with material needs and daily tasks. Finally, we can receive informational support from others, such as the provision of guidance and feedback.

An additional distinction that has been made with respect to the functional aspects of relationships is between perceived and received support. Perceived support measures assess individual evaluations of whether support would be provided by social network members if needed (see Heitzmann & Kaplan, 1988, for a review of measures). There is substantial evidence that these perceptions are important for health, particularly in times of stress (Cohen & Wills, 1985). However, these perceptions may not be entirely accurate. For example, personality characteristics such as self-esteem can distort estimates of the support that is actually available from others. Other researchers view support as an interpersonal process that involves the exchange of resources between social network members; this is known as received support. Measures of received support typically assess how often different types of support were received over a specific period of time or in the context of a specific event (Heitzmann & Kaplan, 1988). This approach addresses the complexity of support provision

and receipt and helps to explain why support exchanges may not always be effective. Both the perceived and received support concepts are viewed as important in understanding the impact of social relationships on health.

Development of the Social Support Construct

The study of social support has its origins in sociological research conducted in the early 1900s that was concerned with the impact of industrialization and urban migration on the maintenance of social ties (Brownell & Shumaker, 1984). This work focused on disruptions of social networks as causes of social and psychological disorder. However, it was not until the 1970s that research began to focus on the relationship of social support to physical health. This came at a time when scientists were proposing that in addition to biological factors, there may also be behavioral, social, and psychological factors involved in the etiology of disease. This work focused primarily on the physiological consequences of stress, although it was recognized that other psychosocial factors such as social support may ameliorate the negative consequences of stress or be directly beneficial for health.

Due to this emphasis on stress and health, one area of social support research focused on the implications of support for individuals who were exposed to stressful environmental conditions. It was proposed that social support may act as a buffer protecting individuals from the harmful effects of stressful conditions. This approach is known as the stress-buffering model of social support. Evidence consistent with this hypothesis has been found when people perceive that social support is available from members of their social network (Cohen & Wills, 1985).

One of the earliest and most influential studies in this area investigated whether "psychosocial assets," a measure of social and psychological resources during pregnancy, protect women from the negative effects of stress on pregnancy complications (Nuckolls, Cassel, & Caplan, 1972). Consistent with the stress-buffering model, women with a combination of high life stress and few psychosocial assets experienced more complications during pregnancy than women with high life stress and greater psychosocial assets. For women with low life stress, there were few complications overall and psychosocial assets were not related to pregnancy complications. Similar evidence has been found in dozens of other studies investigating the stress-buffering effects of social support on psychological outcomes (see Cohen & Wills, 1985, for a review). Thus, the perceived availability of support during times of need appears to be important for physical and psychological well-being.

Research examining different types of stressors suggests that stress-buffering effects may vary with the du-

ration and nature of the stressor. One study found that while perceived support protected persons from the effects of residential crowding on psychological distress in the short term, it was not effective after long-term exposure to the stressor (Lepore, Evans, & Schneider, 1991). Stress-buffering may also depend on the needs elicited by a stressor. This approach is known as the matching hypothesis because the effectiveness of support is thought to depend on a match between the types of support that are needed and the resources that are available (Cohen & Wills, 1985). Cutrona and Russell examined whether specific types of functional support would be effective with certain types of stressors (1990). They found that emotional support was more beneficial in helping individuals cope with uncontrollable stressors, while informational support was more beneficial for those coping with controllable stressors. Even so, it is generally agreed that emotional support is protective across a wide range of stressful events.

Other studies test the stress-buffering model by examining the ability of social support to moderate the physical and psychological impact of illness and health-related events. Experimental studies investigating the effects of having a supportive companion ("doula") during labor found that this intervention reduced the duration of labor, the number of cesarean sections and forceps deliveries, and the receipt of medication to augment labor (e.g., Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991). In a study of coronary bypass patients, married patients with greater support from spouses (measured as hospital visits) recovered more quickly from surgery than those with less hospital support and unmarried individuals after controlling for postoperative health status (Kulik & Mahler, 1989). These studies suggest that the provision of appropriate social support reduces the stress associated with health-related events. However, the evidence for the success of support interventions is inconsistent in the literature (Helgeson & Cohen, 1996).

In addition to the stress-buffering model of social support, it has been suggested that social support may exert direct positive effects on certain physical health outcomes independent of stress (Cohen & Wills, 1985). This hypothesis is known as the main-effect model of social support because it predicts a main effect of social support without a statistical interaction between stress and support. Argument for this model has been obtained when the relationships between structural measures of support (particularly SI) and health are examined (Cohen & Wills, 1985).

A number of studies have found that more socially integrated individuals report greater psychological well-being than their less integrated counterparts (Cohen & Wills, 1985). Numerous studies have documented a relationship between SI and mortality suggesting that SI also has important implications for physical health (see

House, Landis, & Umberson, 1988, for a review). A landmark study found that SI (marital status, having close friends and relatives, and group membership) predicted mortality over the following 9-year period such that those who were more integrated lived longer (see Berkman, 1995, for a review). Although the SI-mortality finding is generally interpreted as evidence for the main-effect model of support, most mortality studies do not test the stress-buffering model since they do not include measures of stress.

There is also evidence that SI is related to slower onset and quicker recovery from disease. This may help to explain why SI is associated with lower mortality. For example, SI is associated with increased survival in individuals following heart attacks (Berkman, 1995). A recent study showed a main effect of SI on susceptibility to infectious illness (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997). Individuals reporting the fewest types of social relationships (one to three) were 4.2 times more likely to become ill when exposed to a common cold virus than those reporting the most types (six or more). Thus, the relationship between SI and mortality may be attributable to more socially integrated individuals being less susceptible to certain diseases and more likely to recover from disease when they are ill.

Although it was originally presumed that social relationships were associated with better health primarily through their ability to buffer stress, evidence for the main-effect model led researchers to explore alternate pathways linking support to health. An emphasis has been placed on behavioral patterns and biological processes involved in the etiology of various diseases (Cohen, 1988). Social support may promote positive health behavior, including abstaining from smoking, limiting alcohol consumption, maintaining a healthy diet, exercising regularly, and getting adequate sleep. Social support may also reduce disease risk through increased medical care seeking and compliance with medical regimens. In terms of biological mechanisms, social support has been related to better cardiovascular regulation, such as lower resting blood pressure levels (see Uchino, Cacioppo, & Kiecolt-Glaser, 1996, for a review). There is also evidence that social support is related to better immune function in physically healthy samples and in those with compromised immune systems, such as cancer patients (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). While potential biological and behavioral mediators of the support-health relationship have been identified, few studies examine these processes based on a theoretical analysis of how the mediator might explain the relationship between a specific type of support and specific illness outcome.

Conclusions

Over the past two decades, substantial empirical evidence has accumulated showing that social relation-

ships are beneficial for health. The stress-buffering model has been supported in studies examining the relationship between perceived support and health, and the main-effect model has been supported in studies of SI and health. Thus, both conceptual approaches are important in linking social relationships to health. However, there is still need for a broader, more integrated theory of support that specifies the psychological, behavioral, and biological mechanisms linking different support concepts to health.

[See also Prosocial Behavior.]

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SOCIETY FOR NEUROSCIENCE. Founded in 1970, the Society for Neuroscience is the world's largest organization of scientists and physicians dedicated to understanding the brain, spinal cord, and peripheral nervous system. Neuroscientists investigate the molecular and cellular levels of the nervous system—the neuronal systems responsible for sensory and motor function and the basis of higher order processes such as cognition and emotion. This research provides the basis for understanding the medical fields concerned with treating nervous system disorders. These medical specialties include neurology, neurosurgery, psychiatry, and ophthalmology.

The society has grown from 500 charter members to more than 28,000 members. Regular members are residents of Canada, Mexico, and the United States, where more than 100 chapters organize local activities. The number of international members, particularly those from Japan and Europe, is increasing.

The purposes of the society are to (a) advance the understanding of the nervous system by bringing together scientists of various backgrounds and by encouraging research in all aspects of neuroscience, (b) promote education in the neurosciences, and (c) inform the public about results and implications of new research.

The exchange of information occurs at an annual

fall meeting that includes more than 12,000 reports of new scientific findings and more than 20,000 participants. This meeting, the largest of its kind in the world, attracts many scientists from the Americas, Europe, and Asia and is the arena for the presentation of new results in neuroscience. A series of courses, workshops, and symposia held at the annual meeting promotes the education of society members.

A major mission of the society is to inform the public about the progress and benefits of neuroscience research. The society provides information about neuroscience to secondary school teachers and encourages its members to speak to young people about the brain and nervous system.

The society provides information to legislators through congressional visits held each spring and through testimony at budget hearings. In 1989, Congress designated the 1990s the "decade of the brain," an event the society strongly supported through a series of public presentations, symposia, and events planned with other scientific organizations.

The *Journal of Neuroscience*, published by the society twice a month, is the premier journal in the field and contains articles spanning the entire range of neuroscience research. Major sections are devoted to behavioral neuroscience, cellular and molecular neuroscience, and developmental neuroscience. The society also produces several publications for lay audiences. *Brain Facts* is a 52-page primer on the brain and nervous system. *Brain Briefings* is a series of 2-page newsletters explaining how basic neuroscience discoveries lead to clinical applications.

Other publications include a membership directory and the bimonthly *Neuroscience Newsletter*, which informs members of society activities and programs.

[See also *Neuropsychology*; and *Neuroscience*]

Bibliography

Society for Neuroscience. Available Web site: <http://www.sfn.org/> Information about the society and articles from the *Journal of Neuroscience*, available on the World Wide Web.

Joseph Carey

SOCIETY FOR PSYCHOTHERAPY RESEARCH. An international multidisciplinary scientific organization, the Society for Psychotherapy Research (SPR) supports development of knowledge in psychotherapy by fostering communication among investigators at its conferences and through its journal. The society welcomes researchers of all professions, levels of training, and