

Journal of Social and Personal Relationships

<http://spr.sagepub.com>

Social Support and Health: A Theoretical and Empirical Overview

Ralf Schwarzer and Anja Leppin

Journal of Social and Personal Relationships 1991; 8; 99

DOI: 10.1177/0265407591081005

The online version of this article can be found at:

<http://spr.sagepub.com/cgi/content/abstract/8/1/99>

Published by:



<http://www.sagepublications.com>

On behalf of:

[International Association for Relationship Research](#)

Additional services and information for *Journal of Social and Personal Relationships* can be found at:

Email Alerts: <http://spr.sagepub.com/cgi/alerts>

Subscriptions: <http://spr.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.co.uk/journalsPermissions.nav>

Citations <http://spr.sagepub.com/cgi/content/refs/8/1/99>

SOCIAL SUPPORT AND HEALTH: A THEORETICAL AND EMPIRICAL OVERVIEW

Ralf Schwarzer & Anja Leppin

Freie Universität Berlin

It is generally assumed that social support has a favorable impact on the maintenance of health and on coping with illness. However, results are inconsistent and even conflicting. This is partly due to conceptual and methodological shortcomings. In order to overcome these problems and to guide further research, we present a taxonomy of social relationships and a causal process model. Social integration, cognitive social support and behavioral social support are distinguished and related to personality, stress, coping and the pathogenic process. In the causal model we propose that social support is depicted both as mediating the effects of stress on illness as well as directly affecting illness. A meta-analysis was conducted that related social support and social integration to morbidity and mortality based on eighty empirical studies, including more than 60,000 subjects. Data subsets revealed disparate patterns of results that give rise to intriguing theoretical questions. Evidently, social support operates in complex ways. Several causal models are specified which represent alternative pathways of social support processes. Where social support was associated with less illness, a direct effect model was proposed. In cases where more support was seemingly paradoxically associated with illness it is assumed that a mobilization of support has taken place. In conclusion, some recent research examples that help illustrate future directions untangling the social support–illness relationship are presented.

Researchers have explored the impact of life stress on health outcomes and have found a trend towards a positive relation between stress and illness. However, the amount of explained outcome variance remained very limited. This resulted in a study of resistance and resource factors that either may serve as buffers in the coping process or may directly improve well-being (Cohen & Wills,

The authors appreciate the helpful comments on earlier drafts of this paper made by Chris Dunkel-Schetter, Stevan E. Hobfoll and Richard S. Lazarus. Address correspondence to: Prof. Ralf Schwarzer, Institut für Psychologie (WE 7), Freie Universität Berlin, Habelschwerdter Allee 45, D-1000 Berlin 33, Germany.

Journal of Social and Personal Relationships (SAGE, London, Newbury Park and New Delhi), Vol. 8 (1991), 99–127

1985; Hobfoll, 1988). Among such potentially protective factors, social network variables and social support have received a great deal of attention. The buffer argument suggests that stress does affect some individuals severely, but that others who possess social support or other coping resources are relatively resistant to the deleterious effects of stressful events. Direct effects of social support occur where health is improved or maintained, independent of respective stress levels.

According to recent reviews of empirical evidence which has been compiled within the last two decades, it seems, however, as if social relationships have rather inconsistent effects on physical health — if any effects at all (Cohen, 1988; Ganster & Victor, 1988; House et al., 1988; Schwarzer & Leppin, 1989a, b). Two main reasons for such inconsistent findings might be (1) the considerable heterogeneity of existing theoretical formulations and a lack of conceptual specificity and (2) deficits in measurement. Regarding this latter point, instruments which are psychometrically unsound or which have evolved from different concepts of social support produce diverse results.

We propose a reconceptualization of social support by establishing a causal model that treats the major areas of social relationships in terms of their possible impact on the stress and illness process. This theoretical perspective may help to explain the inconsistency of empirical findings and to overcome shortcomings in future investigations. First, a taxonomy of social relationships is outlined. Second, the conceptual associations between social relationships and the pathogenic process are explored, taking temporal factors into consideration. Finally, we report empirical findings in order to give an impression of the strength or weakness of social factors in predicting illness.

A taxonomy of social relationships

In a recent review, House et al. (1988) argue for a theoretical subdivision of social relationships into social integration, social networks and relational content. Social integration refers to the mere existence of a quantity of social relationships, and it comprises the size of a network, such as number of relatives and friends and the frequency of contact with these people. The number of active social ties determines one's degree of embeddedness, with social

isolation being one extreme endpoint. Social integration has also been conceptualized as the number of important roles a person holds, such as being a friend or a boss, or being married (Thoits, 1983).

Social network structure has been defined as a set of relational properties such as density, reciprocity, sex composition, durability or homogeneity of one's network. The presence of women in one's network, for instance, might facilitate coping with stress because, on average, women are regarded as being more supportive than men, 'Women appear to give and to receive more support, with benefits to others and costs as well as benefits to themselves' (House et al., 1988: 304). Small-sized networks, strong ties, high density, high homogeneity and low dispersion are advantageous for maintaining identity and, indirectly, for well-being and health. If a change in identity appears to be necessary (e.g. during or after a divorce), a larger network with weaker ties, a lower density and greater social and cultural heterogeneity may be more beneficial.

Relational content comprises social support as well as social regulation and control and social demands and conflicts. Relational content thus refers to the function and nature of social relationships with various sources, such as spouse, boss, friends or relatives. House et al. (1988) reserve the term support itself for the 'positive, potentially health-promoting or stress-buffering, aspects of relationships' (p. 302). Social regulation or control, on the other hand, may either promote or impair health, depending on the circumstances. Relational demands and conflicts represent negative qualities of relationships and may contribute to poor health or lack of well-being. This distinction can be considered as being useful for breaking down inconsistent results or for counterbalancing positive and negative relational content to determine the net effect of specific aspects of relationships. Attention has to be paid to the processes of support, conflict and regulation that may take place in response to stressful life events or daily routines. Deleterious effects due to negative content or lack of support may be greater than beneficial effects caused by helpful actions.

House et al.'s (1988) distinctions represent a more sociological view, whereas the psychological perspective mainly deals with positive relational content (i.e. the function and quality of beneficial social relationships). One can make a further subdivision of function and quality into categories such as emotional support, instrumental support, informational support, tangible support, esteem

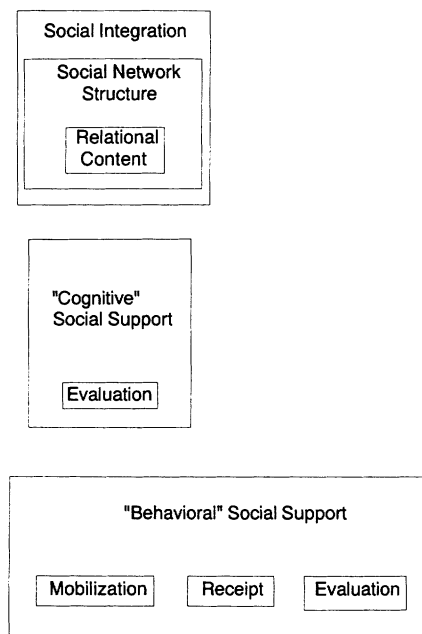
support and appraisal support, among others. Many of the more recent social support measures reflect this distinction (for an overview, see Heitzmann & Kaplan, 1988; Tardy, 1985).

From this functional viewpoint the subjective interpretation of expected or enacted support plays a crucial role. Cobb (1976), for instance, emphasized the latter aspect by describing support as information that makes the person believe that he or she is cared for and loved, is esteemed and valued, and belongs to a network of communication and mutual obligation. Health and well-being are dependent on what the person sees and believes, be it accurate or not.

However, within a functional perspective, perceived availability of support has yet to be distinguished from the activation of support when needed. In fact, both concepts seem to refer to orthogonal dimensions. It has been convincingly demonstrated that perceived available and actually received support are almost uncorrelated in studies where both concepts have been measured (Dunkel-Schetter, 1984; Dunkel-Schetter & Bennett, 1990; Dunkel-Schetter et al., 1987b). Discriminant validity was particularly high for tangible and informational, less so for emotional, support. Further verification for this contention is offered by McCormick et al. (1987), who applied confirmatory factor analysis to two scales, one for received and one for perceived support. Five factors emerged, three of which included only items of received support, whereas the remaining two were established by items pertaining exclusively to perceived support. Newcomb (1990) has reanalyzed data by confirmatory factor analyses and found an unbiased correlation of .35 between perceived and received support.

Perceived and received support differ in terms of the point in time when they become important. Perceived support may be most important under normal, everyday circumstances where people can usually cope on their own or have to rely only to a limited degree on others' help. The general sense that one is loved and cared for by others and that these others would help once they are really needed should contribute to psychological and physical well-being. Also, during the initial encounter of a stressful event the perceived availability of support might help to reduce stress appraisal in so far as the balance between threat and coping assets may be more favorable. However, once support actually has to be mobilized, discrepancies can occur. At this point, support receipt may differ from support expected prior to the event, either because the network

FIGURE 1
Social integration and social support: a taxonomy



does not respond in an appropriate manner, or because the available support has actually been underestimated.

The first box in Figure 1 displays a hierarchy where relational content is based on social network structure, and the latter, in turn, is based on social integration or network size. A second box is drawn for perceived or cognitive social support availability, which denotes the amount of support that is expected to be available in case of need. A sample item could be: 'If I were in a bind, I could rely on my (spouse, friend, etc.)'. A subset of this is the evaluative component or satisfaction with anticipated support. A typical item is: 'If X helped you to solve the problem Y, how would you feel?' Responses range from 'feel worst possible' to 'feel best possible'.

It has been questioned whether measures of perceived social support truly reflect the actual availability of support in one's social environment. A cognitive bias might lead to over- or underestimation of one's social resources. Several studies have attempted to determine the validity of the perceived support measures by using indicators of social interaction frequency as a criterion for validity.

According to Cohen (1989), Cutrona (1986, 1989), as well as Vinokur et al. (1987), there is evidence that self-reports are rather accurate. However, the extent of overlap between self- and other reports of support nevertheless leaves a sizeable component of support unaccounted for, which may be attributed to some extent to self-bias.

The third box in Figure 1 refers to behavioral social support in times of stress, which includes critical life events as well as daily hassles. This behavioral support refers to the actual receipt of helpful transactions, which can be of the emotional, instrumental or material variety, and the evaluation of the appropriateness and comfort of the support provided. Mobilizing social support can be considered a coping strategy. The Ways of Coping Scale (Folkman & Lazarus, 1989), for example, contains the subscale 'seek social support' with 6 items, such as, 'I talked to someone to find out more about the situation'.

Received support itself is usually measured by asking people what kind of supportive transactions they have received from others during a specific time in the past, either in general or as a response to specifically defined stressful situations (Dunkel-Schetter et al., 1987a). Although objective social behavior is not observed here, the term 'behavioral social support' is preferred in this case for two reasons. First, it is the difference in time perspective that is emphasized. While cognitive support is purely anticipatory, behavioral support is retrospective after behavior has been initiated. Second, while the subjective view of the recipient is of primary concern in both cases, perceived support reflects general expectations only, while received support is based on more concrete experience in specific situations.

Although the evaluation of support is considered a subset of cognitive support on the one hand and behavioral support on the other, and is often measured as part of the respective construct, it has to be kept in mind that it refers to a dimension of its own. In fact, the descriptive and the evaluative components are only moderately interrelated: B.R. Sarason et al. (1990b), for instance, report correlations between .30 and .40.

The three boxes in Figure 1, representing social integration, cognitive social support and behavioral social support, have very low intercorrelations. For example, marital status, available emotional support, and received aid are almost unconnected with each other. Seeman & Berkman (1988) have shown that measures

of network size and measures of available support are only weakly associated, and Dunkel-Schetter & Bennett (1990) as well as McCormick et al. (1987) and Newcomb (1990) have pointed to the fact that perceived and received support are empirically distinct. In contrast, measures within the boxes share a considerable amount of variance. Researchers who focus on cognitive support, for example, have discovered that the corresponding measures are highly inter-correlated and are associated with personality characteristics (B.R. Sarason et al., 1987). They conclude that perceived social support can be conceived of as a stable individual difference variable which is based on a sense of acceptance by others:

perceived support is a measure of a person's belief that he or she is valued not for superficial characteristics or performance, but as someone independently worthy of this status without contingency. This is then best defined as the sense of acceptance, an inherent stable personality characteristic that contributes to the perception of social support separately from what the environment actually offers at any particular point in time. (B.R. Sarason et al., 1990a)

Cohen et al. (1988: 230) state that 'at least part of the variance in perceived support measures is probably explained by stable individual differences', but in the same context they also maintain that 'support is primarily a reflection of the social environment'. This raises a theoretical question: to what degree can social support be either a personality characteristic or an environmental variable ('resources provided by others')? The clue to the answer lies in the above classification: cognitive social support can be strongly influenced by personality predispositions and, thus, can acquire the status of an individual difference variable, but social integration as well as 'behavioral support' would remain either truly social or transactional variables determined by the specific patterns of social exchange.

It has been found that cognitive social support is often related differently to third variables than behavioral social support. In a study with ninety-seven Israeli mothers of ill children, for example, Hobfoll & Lerman (1988) have found that those mothers who experienced greater emotional distress received greater social support at the time of crisis; this association turned out to be independent of cognitive social support, which was negatively related to distress. Dunkel-Schetter & Bennett (1990) have reported the empirical evidence for discriminant validity and have given four alternative theoretical explanations for the discrepancies between cognitive and behavioral support:

1. One obvious reason for discrepancies would be simply the over- or underreporting of help received owing to inaccurate perception or memory failure.

2. Exaggerated expectations of support coming forward might be another problem. In a study by Peters-Golden (1982), for instance, enacted support experienced by breast cancer patients was compared to support expected by a group of healthy individuals in case they should be confronted with a cancer diagnosis. The latter reported a great deal of available support, but the actual patients seemed to experience lack of support or inept support attempts. There appears to be an optimistic bias in the normal population, resulting in disappointment when life events strike. In fact, potential helpers might have their specific problems with the crisis situation, too. Thus, network members may fail to extend appropriate support because (a) they feel threatened themselves or do not know what kind of help is likely to be effective, (b) they have misconceptions about the coping process, or (c) they blame the victim for his or her misfortune (Wortman & Lehman, 1985; Wortman & Dunkel-Schetter, 1987).

3. Another reason for discrepancies between cognitive and behavioral social support may lie in over-modest expectations. Particularly in the case of positive life changes, such as having a baby, the network may provide an unexpected abundance of assistance.

4. Finally, initial support may dissipate over a longer timespan of crisis because network members might feel unable to cope with a long-term burden. They are frustrated, for instance, when a chronic illness progresses in spite of their skillful support, or feel burned out by physical exertion, lack of reciprocal affection or, maybe, missing signs of gratitude (there is also evidence that those who experience greater discomfort receive less support; see Hobfoll & Lerman, 1989).

The discrepancy between cognitive and behavioral support could also be a product of misperceptions of relational qualities that people expect to derive from certain social network structures. A large network with low density could be perceived as a potential for available support, but in times of stress each network member might assume that someone else is available and therefore would not feel obliged to deliver services (diffusion of responsibility). A small, dense network, on the other hand, might not be able to fulfill all the needs a person can develop during times of crisis.

Social support and the pathogenic process: a causal model

The previous section has dealt with three aspects of social relationships (social integration, cognitive social support and behavioral social support), which were themselves subdivided into further categories. The following section deals with the possible mechanisms through which social relationships may influence the development of health and health behavior. Prior attempts to deal with the complex causality problem in this field have not been very convincing because of conceptual deficits in the support construct itself: support has been used mainly as a single predictor instead of as a set of rather orthogonal factors (see Barrera, 1986; Cohen & Wills, 1985; Schwarzer, 1985). Cohen (1988), who has modelled the possible influence of social support on the etiology of disease, has distinguished generic, stress-centered and psychosocial process models. This distinction may be helpful in emphasizing the actual differences between various support processes. Generic models simply refer to the assumption that the beneficial effect of support is mediated either by behavior, or by biological responses, or by both. Stress-centered models pertain to the buffer type of effect that social support is assumed to have. Support may have either a positive effect on health in the normal population, thus appearing as a statistical main effect, or it may alleviate stress and its consequences. In the stress-buffering model, support may be influential at two points in time: first, when stressful demands are cognitively appraised, and second by dampening health-damaging physiological processes. The stress-centered models are refined in the psychosocial process models. For both the main effect and the buffer effect hypotheses, Cohen (1988: 280) postulates separate types of content-specific models. Thus, the information-based model refers to the fact that wide networks might provide a wider range of information pertaining to health-relevant behaviors, which ease the access to medical services or help avoid exposure to infectious agents. Identity and self-esteem models, on the other hand, refer to the general self-worth improving effect of social support which is supposed to contribute to less psychological despair, a greater motivation for self-care or — more directly health related — to suppressed neuroendocrine response. Social influence models again maintain that social integration entails controls and pressures by close others that might either promote or discourage certain

health-relevant behaviors. Tangible resource models, finally, focus on the beneficial effects of aid and material resources provided by others that help to provide a healthier environment for the individual.

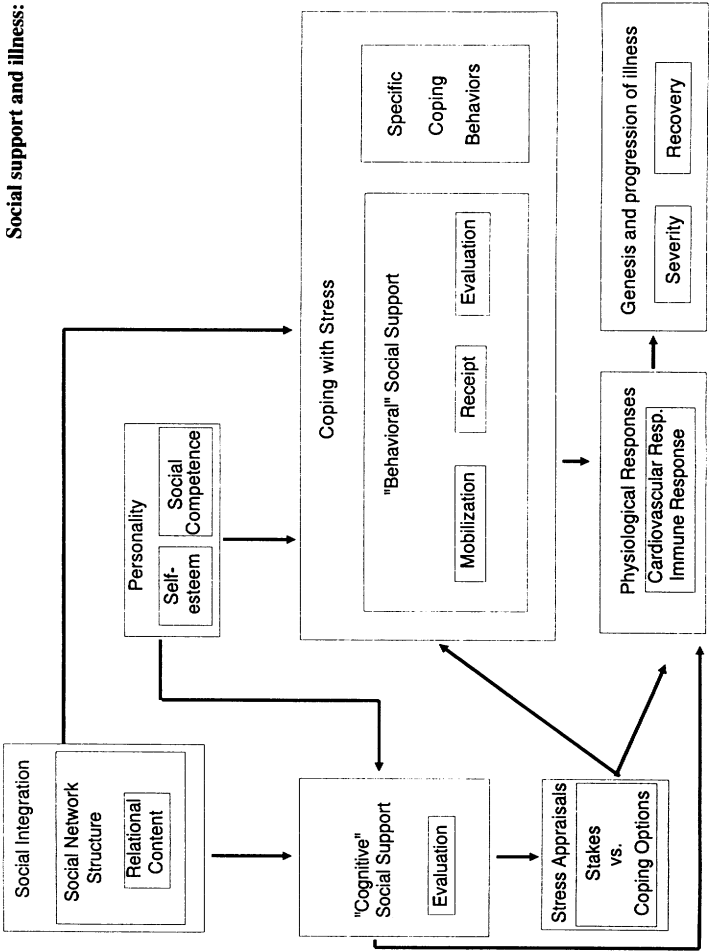
Linking personality, stress appraisals and coping to social support

Social relationship processes are presented here as a composition of hierarchies and pathways (Figure 2) with the essential feature of separating three previously elucidated aspects of social relationships and relating these to personality, stress and health.

Individual differences in personality would contribute to the observed discrepancy between cognitive and behavioral support. For example, persons high in self-esteem might be prone to expect more available support than would actually materialize later in cases of stress. On the other hand, persons with high self-esteem, if they also cope more efficiently on their own, might actually need less support. Social competence, the propensity to seek help by communicating skillfully with network members, in turn, would be a prerequisite for support mobilization. Poor social competence, on the other hand, reduces the likelihood of network activation. The willingness to accept help without feeling inferior or feeling obliged to reciprocate could also differ among recipients. Shyness again represents an additional example of a barrier that might prevent people from seeking help. Figure 2 depicts such a causal influence of a personality disposition on both cognitive and behavioral support.

How might social support be related to *stress appraisals*? Lazarus & Folkman (1984) distinguish between primary and secondary appraisals, which deal with different sources of information and have different functions. During primary appraisal, the person perceives the demand characteristics of a stressful event and decides what and how much is at stake. Primary appraisal can be of four types: harm/loss, threat, challenge or benefit (Lazarus & Folkman, 1987). Secondary appraisals are evaluative judgments about one's coping options. Both kinds of appraisals are intertwined, occur simultaneously and influence each other. Stakes and coping options are considered as transactional variables because they depend on the environment and on the personality, as well. Coping options are based on two kinds of antecedent variables: environmental resources and a person's hierarchy of goals, beliefs and commitments. With respect to appraisal, personal resources such as competence, coping styles, hardiness, skills, self-efficacy expectancy or

FIGURE 2
Social support and illness: a structural model



self-esteem may operate as influential factors on secondary appraisals and on coping. However, Cohen & Edwards (1989), in reviewing the literature, came to the conclusion that 'research on personality factors as buffers of stress-induced pathology has not been very successful' (p. 275). Such personal resources in most cases do not operate as buffers on symptomatology, only generalized expectancies of control could be tentatively assigned a stress-buffering role.

In the present context (Figure 2), cognitive appraisals of stressful encounters are dependent on cognitive social support (i.e. one's perception of social embeddedness). If someone feels in control of a difficult situation owing to the availability of help by close network members, then the appraisal process is likely to result in a lower level of stress intensity. The perceived availability of a responsive social network also represents a coping option and therefore would make appraisals of harm/loss, threat or challenge less severe or even non-existent. On the other hand, perceived social isolation would imply the lack of one coping option, namely seeking help, with the person having to rely exclusively on other, non-social options. While this cognitive type of social support exerts a direct influence on stress appraisal, objective social network integration is an antecedent variable which can merely have an indirect influence. Cognitive social support serves as a mediator between social integration and appraisals.

Based on the arguments detailed above, social support can be considered a stress-protective factor. In the context of stress appraisal, individuals assess available support along with a number of coping competencies and skills that they possess to mobilize support. According to the present approach, social integration would be a 'social resource', and so would be cognitive social support — when it is considered a stable set of expectancies. Behavioral support, however, is not a resource per se, and thus does not enter the appraisal process as a relevant factor, but is part of the actual coping process which on the social dimension includes mobilization, receipt and evaluation of help. Behavioral support is reported after it has been provided, whereas stress appraisals, by definition, take place before coping activities are performed. Therefore, appraisals can rely only on anticipated (cognitive) support, not on behavioral support.

Coping behaviors depend on stress appraisals and, therefore, may be indirectly influenced by cognitive social support. A specific kind of coping behavior is the mobilization of social support and its

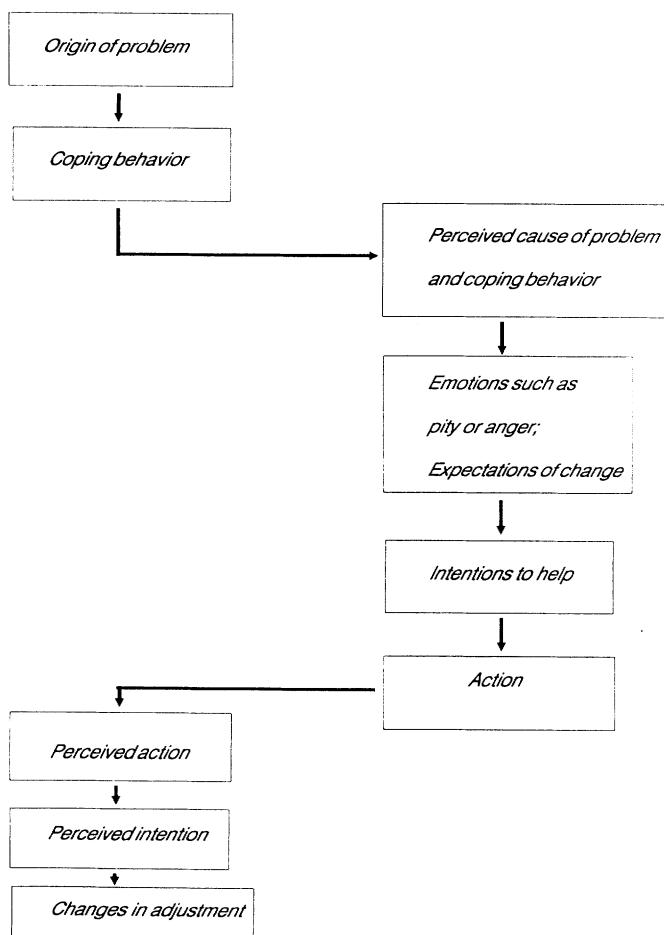
acceptance when provided. Some researchers have conceptualized social support particularly in this light. Thoits (1985), for instance, has specifically defined social support as 'coping assistance'. However, while the seeking of support has seemingly found a place among coping researchers' attempts at conceiving of, and operationalizing, coping strategies and behaviors (see, for instance, the Ways of Coping Scale by Folkman & Lazarus, 1989), little research has been done in the area of how seeking help is related to individual coping strategies, such as problem-focused as compared to emotion-focused coping, and how such individual coping strategies and coping assistance by others might jointly affect well-being. The discussion so far has dealt with the specific role of social resources in the stress and coping process. It is taken for granted that social resources are not the 'golden bullet' for understanding this complex process, but merely a straw. There are other resources such as health, energy, time or wealth that may account for more variance in a particular stress situation. Hobfoll (1988, 1989) has proposed an intriguing ecological approach where social resources are considered to buffer stress simultaneously with other resources in an interactive manner.

An interesting question in this context is how active coping with illness may be related to the likelihood of receiving support from others. This changes the perspective from the recipient to the provider. Social support research has dealt mainly with the recipient's perspective, but in order to get the full picture we should consider both the recipient and the provider, and their interaction. Does it make a difference to the network member's willingness to extend help if the patient is actively coping or not? This question leads to an analysis of the *transactional process* which involves the support provider as well as the recipient (see Figure 3).

In order to exemplify the connections between coping behavior and support mobilization, an experimental simulation study will be briefly presented (Schwarzer & Weiner, 1991), which investigated the effects of an individual's coping on others' willingness to extend support. Participants responded to a number of vignettes in which eight diseases were varied with respect to onset cause and coping behavior of the patient. The patient was either responsible for the onset of a problem or was a victim of an externally caused misfortune. For example, someone may have developed cancer because he or she did not comply with wearing regulation-prescribed clothing while working with cancer-producing chemicals.

FIGURE 3**A transactional model of the dyadic support relationship**

Problem Carrier/ Support Recipient Network Member / Support Provider



This person would be responsible for the onset of the disease. But another person who was living unknowingly in an area which was once a toxic waste dump of cancer-producing chemicals would not be responsible.

A network member's emotions and reactions towards the victim

should strongly depend on his or her attributions made for the crisis. If the victim is not held personally responsible, then feelings of pity and compassion should result, which are likely to go along with an intention to help. Vice versa, if the victim is held responsible, then anger or indifference might occur, and people might be prone to withhold help. Naturally, such tendencies will be moderated by the closeness of the relationship and the severity of the condition.

Patients, on the other hand, when they become support recipients, will probably perceive the supportive action and may also correctly interpret the underlying intention. If no undesired side-effects of help emerge, recipients should experience positive changes in adjustment and improvement of functioning.

Independent of this distinction on the causality dimension, people could either cope with the disease in an instrumental or in a rather emotional manner, for instance by denial. They could undergo chemotherapy and radiotherapy and take all possible efforts to regain health, including changes in diet and life-style; on the other hand, they could deny the severity of the disease, not wanting to learn about it and not showing up for appointments scheduled for further diagnosis or treatment.

An important question to be answered by this experiment, therefore, was which would be the stronger predictor of the network member's intentions to give support: perceived onset cause or perceived coping? It turned out that coping made the major impact: patients who coped well on their own turned out to be more likely to obtain additional help from their social environment (Schwarzer & Weiner, 1991). Meanwhile, this study, based on an American population, has been replicated with a German sample (Schwarzer & Weiner, 1990). In a field study, Dunkel-Schetter et al. (1987b) also found that problem-focused coping in particular was related to the receipt of help, which underscores the notion that one's instrumental actions may be major determinants of support receipt. The bottom line is: persons in problem situations are more likely to obtain social support when presenting themselves in a way that triggers effort attributions in potential support providers.

The transactional model, involving both the support recipient and the support provider, however, has to be extended to a broader time frame. Continued transactions tend to alter subsequent resources and perceptions. Some resources may be depletable, others may grow when called upon, and their appropriateness may change. Provider burnout or loss of control or self-esteem, induced

in the recipient by assistance, may decrease the amount of further interactions. It is also possible that different sources of help might compete with each other, either in terms of quantity or specific quality, matching the actual needs at a certain stage of coping, and the subject may turn to the one who provides the highest benefit in relation to costs.

Linking physical health to social support: a meta-analysis

When exposed to prolonged stress, additional lack of support might lead to a chronically elevated neuroendocrine response and to an immune suppression, which in the long run would impair bodily resistance towards illness. Social support, on the other hand, is expected to suppress neuroendocrine reactivity and to enhance immune functioning (Cohen, 1988). Combined with the impairment of health behaviors, the genesis and progression of illness would be affected negatively by lack of support. These processes represent a 'missing link' in social support research, in that so far few empirical studies have tried to investigate these theoretical assumptions. While these mediating processes are underresearched, there is, on the other hand, an abundance of theoretical and empirical literature on the mere relationship between social support and physical health outcomes (cf. Badura, 1981; Berkman, 1985, 1986; Cohen, 1988; Cohen & Syme, 1985). Some of the empirical studies have dealt with the question of how social integration and social support relate to disease onset (Berkman & Syme, 1979; House et al., 1982; Reed et al., 1983; Siegrist, 1986). Others have studied the role of social support in coping with chronic illnesses such as cancer (cf. Dunkel-Schetter, 1984; Filipp et al., 1986) or coronary heart disease (Badura et al., 1987; Ruberman et al., 1984). Many studies have reported a significant impact of social support on health-related variables, although more empirical evidence exists for mental than for physical health changes. There is no agreement, however, on the actual effect size in the population as correlations differ in degree and even in direction.

In a recent review on this topic, Ganster & Victor (1988: 33) concluded:

At this time the literature still has not resolved several fundamental questions of the relationship between social support and health. Perhaps foremost is the ambiguity regarding the impact of social support on physical well-being. Until large-scale prospective studies on a general population sample are conducted, the literature will have to continue to assume that either physical morbidity is unaffected by social support, or that the current research is systematically flawed.

A meta-analysis on morbidity/mortality and social relationships was conducted (Schwarzer & Leppin, 1989a, b) and recently updated, based on the literature from 1976 to 1988. A meta-analysis combines many research findings by use of appropriate statistical procedures which allow a quantitative synthesis and which provide parameters such as a population effect size and an index of homogeneity (Schwarzer, 1989). The present meta-analysis is based on eighty studies with 60,936 subjects. If the authors did not report any correlations, then either other statistical values were transformed into effect sizes, or else the available material was reanalyzed, whenever possible. For instance, many studies dealing with the given topic published risk ratios or exact probabilities instead of effect sizes. An often cited study by Berkman & Syme (1979), for example, states that the mortality risk for weakly integrated persons is about twice as high as that of socially well integrated men and women. We have estimated an effect size of 'only' $r = -.07$ for this ratio, based on the entire sample instead of on extreme groups (a more extensive elaboration on this point can be found in Schwarzer & Leppin, 1989a: 209–13). This transformation reveals two aspects: (1) effect sizes are less 'spectacular' than some other statistics, at least when large samples or extreme groups are involved, and (2) small effect sizes can nevertheless be important if serious consequences are at stake.

The 110 correlations varied from $r = -.43$ to $r = +.17$, and the majority of coefficients were located near 0 (see Figure 4). All 110 effect sizes have been combined to obtain a first estimate to be used later as a yardstick for comparison. The population effect size (weighted average) was $r = -.07$.

For the purpose of the present discussion, only some aspects are of importance, and we therefore turn to the subanalyses in which specific kinds of social relationships have been related to physical symptoms, thereby excluding results on mortality, illness incidence, blood pressure, time of recovery from illness and other illness indicators. The majority of studies used symptoms such as headache, fever and stomach pains as a cumulative index. It turned out that social integration was only slightly associated with the report of physical symptoms (.07), while functional support was more closely connected, especially in the case of instrumental support (–.18). Table 1 summarizes these results.

The highest correlation was obtained for the evaluative component (i.e. satisfaction with support (–.25)). This points to the fact

FIGURE 4
Stem-and-leaf display for 110 correlations

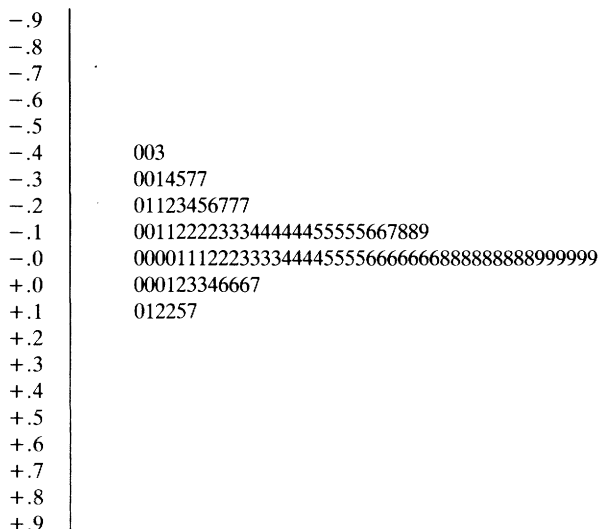


TABLE 1
Relationships between social support/social integration and physical symptoms

Variable	<i>k</i>	<i>n</i>	<i>r_w</i>	Homogeneity (percent)
Social integration	15	1643	-.07	100
Emotional support	8	5578	-.11	100
Instrumental support	8	6092	-.18	34
Satisfaction with support	9	730	-.25	40

that the way support is subjectively experienced is most crucial for physical symptoms — at least as far as self-reports of such symptoms are concerned.

Another question that we tried to answer with this meta-analysis was whether cognitive and behavioral support would relate to symptom reporting to a similar degree or whether there would be large differences. It turned out that perceived availability of support was correlated with physical symptoms in the expected way ($-.11$). However, surprisingly, received support had a positive correlation with symptoms ($+.12$). A striking result such as this one was found

nowhere else in the entire data set. It is based on 7 studies with 451 subjects and can be considered reliable because the observed effect size variance was almost completely explained by sampling error (97 percent). Table 2 summarizes these results.

TABLE 2
Relationships between cognitive/behavioral support and physical symptoms

Variable	<i>k</i>	<i>n</i>	<i>r_w</i>	Homogeneity (percent)
Cognitive support	31	15,295	-.11	33
Behavioral support	7	451	+.12	97

Why should more symptom complaints be associated with more support? There may be different reasons, but one point seems particularly salient. Behavioral social support refers to seeking, receiving and evaluating tangible aid, care and emotional attachment. In times of prolonged stress, physical symptoms may develop, and simultaneously one's social network may be activated for assistance. A positive correlation between poor health and social support can thus be due to such a mobilization effect, with the prior stress episode being the eliciting cause of both support and complaints. It is these types of effects that we shall scrutinize more closely next.

Support mobilization effects

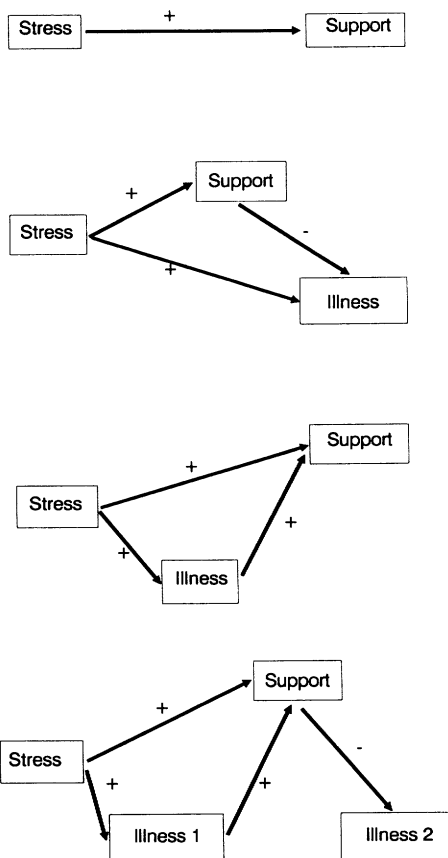
This basic three-variable problem can be studied systematically by specifying at least four causal models. All of them imply a positive correlation between stress and support, and half of them also imply a positive correlation between support and illness (Figure 5).

In the first model, the stress situation motivates people to seek support. If support is granted, no detrimental health consequences occur at all (in this case, the mobilized support is sufficient for preventing the onset of illness).

In the second model, stress exerts three effects, two direct ones on support and illness, and an indirect one via support on illness. Here it is assumed that support reduces the severity of illness.

In the third model, a delayed mobilization is hypothesized. Stress alone does not suffice to activate one's network; the onset of illness, and maybe the urgent presentation of symptoms towards significant others, is necessary to obtain the help needed. Sometimes a network overlooks the first signs of a crisis and only later realizes

FIGURE 5
Different causal models implying different signs of correlations



that there is a sufferer who is in need of attachment; sometimes the patients themselves hesitate to call on others at an early stage of distress, either because of shyness or because of anticipated feelings of obligation.

The fourth model extends the third one by adding a time perspective to the illness dimension. Stress and illness combined may mobilize support, which in turn helps to facilitate recovery from illness. At the first point in time, support and illness are positively correlated, at the second point in time they are negatively correlated. How does this phenomenon occur? Support in this case is dependent on disease onset, whereas recovery is dependent on the

ensuing support. Different signs of correlations may just reflect the time point at which the investigator has collected the data.

This example demonstrates that in social support research all kinds of correlations can be meaningful, and that the specific circumstances determine how the size, as well as the direction, of influence turn out. Therefore, possibly most empirical findings on the support–health relationship are underestimated.

Another unresolved issue in the support–disease relationship lies in the temporal pattern of influence. Chronic illness develops slowly during the lifespan and may be due partly to chronic or recurrent stress episodes or to an unhealthy life-style. Social support, in order to be acknowledged as influential in this process, must be a stable characteristic. Stability, however, is attributed more to social integration, whereas support is regarded as a short-term variable by most authors (Cohen, 1988, 1989). According to Cohen et al. (1989), the genesis and progression of illness, therefore, may be linked to social integration, whereas acute manifestations of disease may be more likely associated with functional social support. In reviewing the literature on coronary heart disease and psychosocial factors, they distinguish between sudden and non-sudden cardiac death and speculate that perceived support might be an important predictor of arrhythmia and sudden cardiac death. Social integration, on the other hand, might rather have an effect on the development of coronary artery disease by protecting individuals from a number of pathogenic effects over the lifecourse.

This distinction between functions of perceived social support vs social integration is derived from assumptions outlined earlier that refer to the stress-buffering role of perceived support compared to the main effect role of social integration (Cohen & Wills, 1985). However, the stability status of social support itself is ambiguous in so far as some authors maintain that if considered over the whole lifespan, perceived social support indeed is a fairly stable asset (I.G. Sarason et al., 1986; B.R. Sarason et al., 1987). In any case, stability might not be the crucial point in this context; instead, we propose to focus on the causal status of different social relationship variables. Although social integration is often treated as a proxy for social support, the latter should have a higher causal impact because psychological variables should be considerably closer to a psychological process than sociological background variables. Marital status, for instance, can serve only as a social indicator, but not as a causal agent in the disease process. In contrast, the perception of

one's spouse's availability, behaviors and intentions, and the nature of the social interactions can be seen as potential causal determinants of affect, coping and symptomatology.

Recent research examples

As demonstrated, social support operates in complex ways and has to be studied accordingly. As a brief illustration for some aspects of this complexity, we refer to two recent research examples. Kulik & Mahler (1989) have studied the effect of natural social support on recovery from surgery. They measured time spent in a surgical intensive care unit as well as time spent in the hospital for fifty-six married male coronary by-pass patients, half of them with low support and half of them with high support. Behavioral support was assessed unobtrusively by observing the actual number of spouse visits in the hospital. In addition, sixteen unmarried fellow patients were studied. Highly supported married males were released 1.26 days sooner on the average than their low supported counterparts. The effect size is $r = -.31$ (converted by us from $F(1,52) = 5.44$). The unmarried men fell in between. Unmarried patients who are used to coping with everyday life in the absence of a significant other are apt to be more self-reliant. Married patients, however, are accustomed to someone being around and usually expect their spouse to be supportive in times of crisis. Therefore, they might be worse off when expectations are not met. The authors discuss several causal pathways which may have produced gains in recovery. First, it is possible that spouse support improved the emotional states of patients (e.g. by holding their hands, cheering them up, being understanding and compassionate). Second, spouses may have directly encouraged recommended recovery behaviors such as deep-breathing exercises, ambulation, eating the right diet or getting sufficient rest, combined with an expression of confidence in the patient's skill to recover. This excellent study is noteworthy in particular (a) because it assessed behavioral support in terms of observed actions (visits), and (b) because it used an objective outcome measure (recovery time), thus going beyond most other studies where predictor and outcome variables tend to be more or less confounded.

Looking exclusively at the beneficial effects of social support limits our understanding of health-related social processes. Both positive and negative aspects of relationships should be considered, if we are to elucidate fully social support impact. Lack of support

and social conflict can be most detrimental to the physical status of patients. Marital disruption, for instance, can deter people from exercising appropriate coping strategies and facilitate maladjustment. Manne & Zautra (1989) conducted a study with 103 female rheumatoid arthritis patients and their husbands. Self-reported behavioral spouse support was measured by a 10-item scale which tapped instrumental and appraisal support. In addition to this positive support inventory, a negative aspect of marital interaction was observed by interviewing the husbands and counting the number of critical remarks they made on their wife's illness and coping behavior. These two facets of social relationships were related to two coping strategies, wishful thinking and information seeking/cognitive restructuring, and to psychological adjustment to the chronic illness. The two coping dimensions were derived from a factor analysis of 16 items. Poor psychological adjustment was measured by a 37-item mental health inventory. All data were reported by the patient, except the husbands' critical remarks which were recorded during the spouse interview. The authors were able to fit a causal model with two major pathways: (1) husband support caused information seeking/cognitive restructuring (.426), and the latter was related to a higher degree of psychological adjustment (.285); (2) critical remarks led to wishful thinking (.237), and this resulted in poor psychological adjustment (.553). In addition, it was found that actual critical remarks were unrelated to reported spouse support ($-.09$), but related to the patient's activity limitation (.34), suggesting that husbands feel bothered by the inconvenience caused by their wife's disability. A shortcoming of this study is its cross-sectional nature, rendering all causal statements somewhat speculative. The message of this study is two-fold: (1) negative relationship aspects can be important predictors of maladjustment to chronic illness, and (2) both facets of social support bear indirect effects of adjustment via coping. Social support makes its impact on patients by influencing them to choose an appropriate or effective strategy, and, more than that, by improving the chronic stress appraisal balance and by enhancing a sense of mastery and coping efficacy. The direction of causality, however, remains an unresolved issue. Some researchers have proposed the opposite direction: instrumental coping is followed by more support from network members (Dunkel-Schetter et al., 1987b; Schwarzer & Weiner, 1991). It has to be determined under which specific conditions and for which specific populations one way or the other turns out to be the

predominant causal pathway. Transactional processes will have to be studied with highly sophisticated designs for the fabric of the social support process to be understood more fully.

Discussion

We have established a taxonomy of social relationships that separates *social integration*, with its subcomponents social network structure and relational content, from *cognitive social support*, including its evaluation, and from *behavioral social support*, with its subdimensions mobilization, receipt and evaluation. These constructs became part of a causal model in which they were related to personality, stress appraisals, coping and health. We have presented some findings from a recent series of meta-analyses, but the data provided by the original studies were far from being sufficient to confirm the entire pattern of associations. There was evidence, however, that social integration is indeed a more remote factor which is mediated by social support to become effective. Also, cognitive social support was differently related to health compared with behavioral social support.

There is good reason to believe that the social support and health relationship might be empirically underestimated. First, negative and positive correlations are counterbalanced when averaged. Although in the majority of cases more support is associated with less illness, there may be substantial positive correlations under specific conditions. More illness may be associated with more support, for example when accidents or sudden diseases occur, resulting in the mobilization of one's network. At a later point in time, this spurious correlation may disappear. Unfortunately, most studies do not control for changes over time. It may be that the onset of an illness initially mobilizes a network until caregiver burnout or other factors once more reduce the amount of support. If all positive correlations were due to such a 'mobilization effect', then they would represent a category of their own and should not be collapsed with negative correlations from studies where different causal mechanisms are at work. Second, the relationship between support and health is underestimated in studies which fail to specify an appropriate causal model or where health behaviors are held constant. Social support operates partly through other variables and exerts indirect effects on health that may even exceed the

straightforward direct effect. Social support can prompt health behavior, such as adherence to medical regimens. The same applies when the effect of social isolation on illness is determined after separating out all other risk factors such as smoking, lack of exercise and substance abuse. The latter risk factors should be mediators, thus contributing to the total effect of social isolation on illness. Separating out risk factors may at least obscure the causal relationship between social resource factors and health outcomes.

One limitation of the present meta-analysis is that *buffer effects* were not included because the corresponding database was too small for a quantitative synthesis of a number of identical buffer effects. On the other hand, the effect sizes would not be higher with buffer effects combined because the interaction terms in those studies reviewed almost never explained more than 1 percent of the criterion variance. The prior distinction between main effects and buffer effects may be seen as simplistic and obsolete when compared to more complex causal models which allow the inclusion of more than three variables, specify more accurate directions of influence and consider several points in time (Barrera, 1986; Schwarzer, 1985). Cohen & Wills (1985), for example, have hypothesized that cognitive social support is more likely to exert a main effect while behavioral support would be more likely to produce buffer effects. This seems a reasonable assumption in so far as the receipt of support in most cases is likely to be preceded by a prior situation of need. Wethington & Kessler (1986), however, have found the opposite pattern in their study. Wills (1985) has made a distinction in terms of types of supportive *functions*. He proposed that social integration, status support, companionship and information support would be prone to have main effects, while instrumental and appraisal support would be more appropriate for buffer effects. Cohen & McKay (1984) have stated that, in order to prove effective, social support must match the specific needs of the recipient. These needs differ with respect to the kind of stressor and time of exposure. Research results will remain inconsistent as long as no *complex causal models* are applied to longitudinal data. It is suggested to focus on the role of multiple mediators instead of being preoccupied with a single moderator.

This discussion refers to the concept of numerous supportive actions within a dyadic or network relationship. It would make sense not only to ask retrospectively how much help has been accumulated over a specified period of time, but to obtain a series of

data pertaining to different support constructs accompanying the flow of events during a possibly helpful transaction in times of stress. Researchers have repeatedly stated that social support operates in complex ways, but, in contrast, continue to report zero-order correlations among global variables and, thus, contribute to further obscuring the specific causal pathways. We need not compile additional cross-sectional correlation studies on global support–health relationships, but should conduct more theory-guided process analyses. Also, studies have to be more fine grained with respect to the timing of support and to the appropriateness of aid from different sources.

REFERENCES

- Badura, B. (ed.) (1981) *Soziale Unterstützung und chronische Krankheit. Zum Stand sozialerpidemiologischer Forschung*. Frankfurt: Suhrkamp.
- Badura, B., Kaufhold, G., Lehmann, H., Pfaff, H., Schott, T. & Waltz, M. (1987) *Leben mit dem Herzinfarkt*. Berlin: Springer-Verlag.
- Barrera, M. (1986) 'Distinctions between Social Support Concepts, Measures, and Models', *American Journal of Community Psychology* 14: 413–45.
- Berkman, L.F. (1985) 'The Relationship of Social Networks and Social Support to Morbidity and Mortality', in S. Cohen & S.L. Syme (eds) *Social Support and Health*, pp. 141–60. Orlando, FL: Academic Press.
- Berkman, L.F. (1986) 'Social Networks, Support, and Health. Taking the Next Step Forward', *American Journal of Epidemiology* 123: 559–62.
- Berkman, L.F. & Syme, S.L. (1979) 'Social Networks, Host Resistance, and Mortality: A Nine-year Follow-up Study of Alameda County Residents', *American Journal of Epidemiology* 109: 186–204.
- Cobb, S. (1976) 'Social Support as a Moderator of Life Stress', *Psychosomatic Medicine* 38: 300–14.
- Cohen, S. (1988) 'Psychosocial Models of the Role of Social Support in the Etiology of Physical Disease', *Health Psychology* 7(3): 269–97.
- Cohen, S. (1989) 'Social Support and Physical Health: Symptoms, Health Behaviors and Infectious Disease', in M. Cummings, A.L. Greene & K.H. Karraker (eds) *Life-span Developmental Psychology: Perspective on Stress and Coping*. Hillsdale, NJ: Lawrence Erlbaum.
- Cohen, S. & Edwards, J.R. (1989) 'Personality Characteristics as Moderators of the Relationship between Stress and Disorder', in R.W.J. Neufeld (ed.) *Advances in the Investigation of Psychological Stress*. New York: Wiley.
- Cohen, S. & McKay, G. (1984) 'Social Support, Stress and the Buffering Hypothesis: A Theoretical Analysis', in A. Baum, S.E. Taylor & J.E. Singer (eds) *Handbook of Psychology and Health*, Vol. 4, pp. 253–67. Hillsdale, NJ: Lawrence Erlbaum.
- Cohen, S. & Syme, S.L. (1985) 'Issues in the Study and Application of Social

- Support', in S. Cohen & S.L. Syme (eds), *Social Support and Health*, pp. 3–22. New York: Academic Press.
- Cohen, S. & Wills, T.A. (1985) 'Stress, Social Support, and the Buffering Hypothesis', *Psychological Bulletin* 98: 310–57.
- Cohen, S., Lichtenstein, E., Mermelstein, R., Baer, J.S. & Kamarck, T.W. (1988) 'Social Support Interventions for Smoking Cessation', in B.H. Gottlieb (ed.) *Marshaling Social Support. Formats, Processes, and Effects*. Newbury Park, CA: Sage.
- Cohen, S., Kaplan, J.R. & Manuck, S.B. (1989) 'Social Support and Coronary Heart Disease: Underlying Psychologic and Biologic Mechanisms', in S.A. Shumaker & S.M. Czajkowski (eds) *Social Support and Cardiovascular Disease*. New York: Plenum.
- Cutrona, C.E. (1986) 'Objective Determinants of Perceived Social Support', *Journal of Personality and Social Psychology* 50: 349–55.
- Cutrona, C.E. (1989) 'Ratings of Social Support by Adolescents and Adult Informants: Degree of Correspondence and Prediction of Depressive Symptoms', *Journal of Personality and Social Psychology* 57(4): 723–30.
- Dunkel-Schetter, C. (1984) 'Social Support and Cancer: Findings Based on Patient Interviews and their Implications', *Journal of Social Issues* 40: 77–98.
- Dunkel-Schetter, C. & Bennett, T.L. (1990) 'The Availability of Social Support and its Activation in Times of Stress', in I.G. Sarason, B.R. Sarason & G.R. Pierce (eds) *Social Support: An Interactional View*. New York: Wiley.
- Dunkel-Schetter, C., Feinstein, L. & Call, J. (1987a) 'A Self-report Inventory for the Measurement of Social Support', unpublished manuscript, Los Angeles, UCLA, Department of Psychology.
- Dunkel-Schetter, C., Folkman, S. & Lazarus, R.S. (1987b) 'Correlates of Social Support Receipt', *Journal of Personality and Social Psychology* 53: 71–80.
- Filipp, S.-H., Ferring, D. & Klauer, T. (1986) *Deskription und Effektanalyse von Formen der Krankheitsbewältigung bei Tumorkranken* (Forschungsbericht 8). Trier: Universität Trier, Fachbereich I Psychologie.
- Folkman, S. & Lazarus, R.S. (1989) *The Ways of Coping Scales*. Palo Alto, CA: Consulting Psychologists Press.
- Ganster, D.C. & Victor, B. (1988) 'The Impact of Social Support on Mental and Physical Health', *British Journal of Medical Psychology* 61: 17–36.
- Heitzmann, C.A. & Kaplan, R.M. (1988) 'Assessment of Methods for Measuring Social Support', *Health Psychology* 7(1): 75–109.
- Hobfoll, S.E. (1988) *The Ecology of Stress*. Washington, DC: Hemisphere.
- Hobfoll, S.E. (1989) 'Conservation of Resources: A New Attempt at Conceptualizing Stress', *American Psychologist* 44(3): 513–24.
- Hobfoll, S.E. & Lerman, M. (1988) 'Personal Relationships, Personal Attributes, and Stress Resistance: Mothers' Reactions to their Child's Illness', *American Journal of Community Psychology* 16(4): 565–89.
- Hobfoll, S.E. & Lerman, M. (1989) 'Predicting Receipt of Social Support: A Longitudinal Study of Parents' Reactions to their Child's Illness', *Health Psychology* 8(1): 61–77.
- House, J.S., Robbins, C. & Metzner, H.L. (1982) 'The Association of Social Relationships and Activities with Mortality: Prospective Evidence from the Tecumseh Community Health Study', *American Journal of Epidemiology* 116: 123–40.

- House, J.S., Umberson, D. & Landis, K.R. (1988) 'Structures and Processes of Social Support', in W.R. Scott & J. Blake (eds) *Annual Review of Sociology*, Vol. 14, pp. 293–318. Palo Alto, CA: Annual Reviews Inc.
- Kulik, J.A. & Mahler, H.I.M. (1989) 'Social Support and Recovery from Surgery', *Health Psychology* 8: 221–38.
- Lazarus, R.S. & Folkman, S. (1984) *Stress, Appraisal, and Coping*. New York: Springer-Verlag.
- Lazarus, R.S. & Folkman, S. (1987) 'Transactional Theory and Research on Emotions and Coping', *European Journal of Personality* 1: 141–70.
- McCormick, I.A., Siegert, R.J. & Walkey, F.H. (1987) 'Dimensions of Social Support: A Factorial Confirmation', *American Journal of Community Psychology* 15: 73–7.
- Manne, S.L. & Zautra, A.J. (1989) 'Spouse Criticism and Support: Their Association with Coping and Psychological Adjustment among Women with Rheumatoid Arthritis', *Journal of Personality and Social Psychology* 56: 608–17.
- Newcomb, M.D. (1990) 'What Structural Equation Modeling Can Tell Us About Social Support', in B.R. Sarason, I.G. Sarason & G.R. Pierce (eds), *Social Support: An Interactional View*. New York: Wiley.
- Peters-Golden, H. (1982) 'Breast Cancer: Varied Perceptions of Social Support in the Illness Experience', *Social Science and Medicine* 16: 483–91.
- Reed, D., McGee, D., Yano, K. & Feinleib, M. (1983) 'Social Networks and Coronary Heart Disease among Japanese Men in Hawaii', *American Journal of Epidemiology* 117: 384–96.
- Ruberman, W., Weinblatt, E., Goldberg, J.D. & Chaudhary, B.S. (1984) 'Psychological Influences on Mortality after Myocardial Infarction', *New England Journal of Medicine* 311: 552–9.
- Sarason, B.R., Shearin, E.N., Pierce, G.R. & Sarason, I.G. (1987) 'Interrelations of Social Support Measures: Theoretical and Practical Implications', *Journal of Personality and Social Psychology* 52: 813–32.
- Sarason, B.R., Pierce, G.R. & Sarason, I.G. (1990a) 'Social Support: The Sense of Acceptance and the Role of Relationships', in B.R. Sarason, I.G. Sarason & G.R. Pierce (eds) *Social Support: An Interactional View*. New York: Wiley.
- Sarason, B.R., Sarason, I.G. & Pierce, G.R. (eds) (1990b) *Social Support: An Interactional View*. New York: Wiley.
- Sarason, I.G., Sarason, B.R. & Shearin, E.N. (1986) 'Social Support as an Individual Difference Variable: Its Stability, Origins, and Relational Aspects', *Journal of Personality and Social Psychology* 50: 845–55.
- Schwarzer, R. (1985) 'Social Support and Stress: Causal Models', in R. Schwarzer (ed.) *Stress and Social Support* (Forschungsbericht 4). Berlin: Freie Universität, Institut für Psychologie.
- Schwarzer, R. (1989) *Meta-analysis Programs, Version 4.0*. Raleigh, NC: National Collegiate Software Clearinghouse.
- Schwarzer, R. & Leppin, A. (1989a) *Sozialer Rückhalt und Gesundheit: Eine Meta-Analyse* (Social Support and Health: A Meta-analysis). Göttingen: Hogrefe.
- Schwarzer, R. & Leppin, A. (1989b) 'Social Support and Health: A Meta-analysis', *Psychology and Health: An International Journal* 3: 1–15.
- Schwarzer, R. & Weiner, B. (1990) 'Die Wirkung von Kontrollierbarkeit und Bewältigungsverhalten auf Emotionen und soziale Unterstützung', *Zeitschrift für Sozialpsychologie* 21: 118–25.

- Schwarzer, R. & Weiner, B. (1991) 'Stigma Controllability and Coping as Predictors of Emotions and Social Support', *Journal of Social and Personal Relationships* 8: 133–40.
- Seeman, T.E. & Berkman, L.F. (1988) 'Structural Characteristics of Social Networks and their Relationships with Social Support in the Elderly: Who Provides Support?', *Social Science and Medicine* 26: 737–49.
- Siegrist, K. (1986) *Sozialer Rückhalt und kardiovaskuläres Risiko*. München: Minerva.
- Tardy, C.H. (1985) 'Social Support Measurement', *American Journal of Community Psychology* 13: 187–202.
- Thoits, P.A. (1983) 'Dimension of Life Events as Influences upon the Genesis of Psychological Distress and Associated Conditions: An Evaluation and Synthesis', in H.B. Kaplan (ed.) *Psychosocial Stress: Trends in Theory and Research*, pp. 33–103. New York: Academic Press.
- Thoits, P.A. (1985) 'Social Support Processes and Psychological Well-being: Theoretical Possibilities', in I.G. Sarason & B.R. Sarason (eds) *Social Support: Theory, Research and Applications*, pp. 51–72. Dordrecht, The Netherlands: Martinus Nijhoff.
- Vinokur, A., Schul, Y. & Caplan, R.D. (1987) 'Determinants of Perceived Social Support: Interpersonal Transactions, Personal Outlook, and Transient Affective States', *Journal of Personality and Social Psychology* 53: 1137–45.
- Wethington, E. & Kessler, R.C. (1986) 'Perceived Support, Received Support, and Adjustment to Stressful Life Events', *Journal of Health and Social Behavior* 27: 78–89.
- Wills, T.A. (1985) 'Supportive Functions of Interpersonal Relationships', in S. Cohen & S.L. Syme (eds) *Social Support and Health*, pp. 61–82. New York: Academic Press.
- Wortman, C.B. & Dunkel-Schetter, C. (1987) 'Conceptual and Methodological Issues in the Study of Social Support', in A. Baum & J.E. Singer (eds) *Stress*, pp. 63–108 (*Handbook of Psychology and Health*, Vol. 5). Hillsdale, NJ: Lawrence Erlbaum.
- Wortman, C.B. & Lehman, D.R. (1985) 'Reactions to Victims of Life Crises: Support Attempts that Fail', in I.G. Sarason & B.R. Sarason (eds) *Social Support: Theory, Research and Applications*, pp. 463–89. Dordrecht, The Netherlands: Martinus Nijhoff.