PRESIDENTIAL ADDRESS—1976

Social Support as a Moderator of Life Stress

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"I assure you it is much wholesomer to be a complaisant, good humored, contented Courtier, than a Grumbletonian Patriot, always whining and snarling."

—John Adams to his wife Abigail. The Hague, July 1, 1782

Social support is defined as information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations. The evidence that supportive interactions among people are protective against the health consequences of life stress is reviewed. It appears that social support can protect people in crisis from a wide variety of pathological states: from low birth weight to death, from arthritis through tuberculosis to depression, alcoholism, and the social breakdown syndrome. Furthermore, social support may reduce the amount of medication required, accelerate recovery, and facilitate compliance with prescribed medical regimens.

Everybody talks about health, but nobody does much about it. The issue was stated clearly by Stephen Smith (53), the first president of the American Public Health Association. He said, ". . . . the customs of society must be so changed that the physician is employed to prevent rather than cure disease." Only recently has this concept begun to be implemented in the United States as a part of the Health Maintenance Organization movement (37). It is, therefore, timely to address ourselves to preventive issues. As the title suggests, this essay will focus on social support. It will examine some of the areas in which social support has been demonstrated to have dramatic health-related ef-

fects and identify some in which it seems to have had no effects. It will not attempt to review all the diverse literature on this subject, for exhaustive bibliographies are available (23, 30, 49). Rather, it will emphasize the way that social support acts to prevent the unfortunate consequences of crisis and change.

Before proceeding, we must come to some mutual understanding of the concept of social support. For the present discussion, social support is conceived to be information belonging to one or more of the following three classes:

1. Information leading the subject to believe that he is cared for and loved.
2. Information leading the subject to believe that he is esteemed and valued.
3. Information leading the subject to believe that he belongs to a network of communication and mutual obligation.

Let us examine each in turn.

Information that one is cared for and loved or, as the Greeks might say, information about agapé, is transmitted in intimate

situations involving mutual trust. In a dyadic relationship, this information meets Murray et al.'s (43) need succorance for one person, need nurturance for the other, and need affiliation for both. It is often called emotional support.

Information that one is valued and esteemed is most effectively proclaimed in public. It leads the individual to esteem himself and reaffirms his sense of personal worth. It may be called esteem support.

Information that one belongs to a network of mutual obligation must be common and shared. It must be common in the sense that everyone in the network has the information and shared in the sense that each member is aware that every other member knows. The relevant information is of three kinds. The first answers the questions: What is going on and how did it begin? What is the relationship between us? How and when did we get here? These questions are the essence of history. The second pertains to goods and services that are available to any member on demand and includes information about the accessibility of services that are only occasionally needed, e.g., equipment, specialized skills, technical information. The third contains information that is common and shared with respect to the dangers of life and the procedures for mutual defense. In this last sense, the knowledge that a competently staffed hospital is available in case of need is socially supportive.

The present meaning of social support does not include the activities of the hospital in repairing a broken leg. Those activities are material services and are not of themselves information of any of the major classes mentioned above. This does not mean that the deferential manner of the intern may not provide esteem support or that the tender care of the nurses may not communicate emotional support. It is only

to say that the services do not in themselves constitute such support because social support, being information, cannot be measured as mass or energy. This distinction is important, for goods and services may foster dependency, while the classes of information listed above do not. In fact, they tend to encourage independent behavior.

This set of dimensions is hardly new. Angyal (1), Antonovsky (2), Fromm (22), Leighton (34), Weiss (56), and many others have illustrated and illuminated them. Perhaps the most notable illumination is the novel Come Near by Alexander Leighton (35). Gerald Caplan (9) and his colleagues have taught the importance of these concepts in community mental health. But let's face it, these notions have been expressed over the millenia in the writings of most of the world's religious leaders. I have only added some precision and emphasized that it is information rather than goods or services that is central to the concept.

The first group, emotional support, was initially expressed in the need terms of Murray (43). The second can similarly be expressed as need recognition from the Murray lexicon. The third is clearly akin to at least two of Leighton's (34) essential striving sentiments: "Orientation in terms of one's place in society ..." and "The securing and maintaining of membership in a definite human group." This means that the whole concept can be expressed in person-environment fit terms (21,41) or as the extent to which the relevant needs are met.

Social support begins in utero, is best recognized at the maternal breast, and is communicated in a variety of ways, but especially in the way the baby is held (supported). As life progresses, support is derived increasingly from other members

of the family, then from peers at work and in the community, and perhaps, in case of special need, from a member of the helping professions. As life's end approaches, social support, in our culture, but not in all cultures, is again derived mostly from members of the family.

As will be seen in the section on the mechanism of this effect, it is my current opinion that social support facilitates coping with crisis and adaptation to change. Therefore, one should not expect dramatic main effects from social support. There are of course some main effects simply because life is full of changes and crises. The theory says that it is in moderating the effects of the major transitions in life and of the unexpected crises that the effects should be found. This theory is supported by the work of Pinneau (49), who found few effects in cross-sectional studies.

With this background, it is time to turn to a careful examination of the extent to which this social support protects an individual as he passes through the various transitions and crises of the life cycle. We will begin with the infant in utero and end with death.

PREGNANCY, BIRTH, AND EARLY LIFE

The elegant study of Nuckolls et al. (44) is a good place to start this review. This was a study of 170 army wives delivered at a large military hospital. Data on life change scores before and during pregnancy and on psychosocial assets were collected. The measure of psychosocial assets (TAPPS) covers all three of the areas described above as the main components of social support in a subjective way and relatively little else except for some assessment of affect, which we know from

TABLE 1. Percent of Women with Complications of Pregnancy by Life Change Score and Social Support (TAPPS) [Recalculated from Data of Nuckolls et al. (44)]

| Life change score | Social support | | t | P |
	High	Low		
High [a]	33% (15) [b]	91% (11)	3.87	<0.001
Low	39% (72)	49% (72)		NS

Interaction $t = 2.24$ $P < 0.05$.
[a] High both before and during pregnancy.
[b] Numbers in parentheses are the numbers of women in the respective cells.

other studies to be associated with support.

A recalculation of the data of Nuckolls et al. (44) is presented in Table 1. Those women who are designated as having high life change scores are those who were above the median both before and during pregnancy. All other women have been included in the low category. The measure of social support (TAPPS) is split at the median. As can readily be seen, the proportion of women having complications is excessive (91%) only in the high life change /low social support cell. However, the upper left-hand cell (high life change and high support) is the really interesting one, for here 15 women were exposed to the same high frequency of life changes but had no increase in complications, presumably because of some protective effect exerted by the high level of social support. One useful point about this study is that, if the association is causal, the direction is clear, for the complications cannot have influenced the TAPPS score, which was measured at the first visit, or the life changes, almost all of which occurred well before the complications. This kind of moderating effect will appear again and again as this review progresses.

Another approach to social support in

TABLE 2. Percent of Babies with Birth Weight < 2500 g by Education, Race, and Wantedness [Recalculated from Data of Morris et al. (42)]

	Wanted or did not matter		Timing error or unwanted		P
	N	%	N	%	
Less than 12 years education					
Black	867	10.7	1657	11.5	NS
White	2118	4.9	1434	6.1	NS
12 or more years education					
Black (%)	227	3.1	257	10.5	<0.001
White (%)	875	2.4	359	6.4	<0.01

pregnancy is reported by Morris et al. in 1973 (42). The data come from a study of wantedness of babies in 60 major hospitals in 17 cities. A simplified presentation of their findings is to be seen in Table 2. It is clear that, at least for women who have completed high school, the reporting that a baby was wanted at the time it was conceived is associated with a significant decrease in the frequency of low birth weight. This is true for both blacks and whites. Over against this, one must set a Swedish study that did not find a difference in birth weight between babies for whom abortion was requested but refused and other babies (27). However, education was not used as a control variable in this study. It is not reasonable to suppose that "wantedness" is information that is transmitted from mother to fetus and influences growth rate. Rather, it seems likely that the most common reason that a woman rejects her baby is that she herself feels inadequately socially supported. The societal reaction to illegitimate pregnancy is a case in point. In this instance, the causal direction is not so clear, for the inquiry was made the day after delivery and it is possible that babies known to be small were less likely to be declared to have been wanted than those known to be large.

Moving on to the first major social demand that the child faces, namely, achievement of sphincter control, Stein and Susser (54) tell us that control of bladder function at night was significantly delayed for those children whose mothers went out to work while the children were in the second six months of life. This was not true if the mother went to work earlier or later in the child's life nor was it true of the small number of children who had a substantial parental separation. These data are open to a variety of possible interpretations, so further study is indicated, but it seems at least possible that social support given by the mother during the time when toilet training is beginning is important to the early acquisition of sphincter control.

When we get to the important area of later social development, there are two studies. Forssman and Thuwe (20) have shown that wanted children adapt to and /or cope with the stresses of growing up better than those who started out with a parental request for abortion that was denied, in a study that followed a matched series of 120 cases and 120 controls until age 21. The cases fared worse with respect to juvenile delinquency and need for psychiatric treatment. Particularly striking was the distribution with respect to

TABLE 3. The Educational Achievement of Unwanted Children Compared with That of Controls. [Data of Forssman and Thuwe (20)]

	Unwanted	Controls	Total
Advanced study	17	40	57
Completed required schooling	90	74	164
Retarded	13	6	19
Total	120	120	240

$X^2 = 13.4; P < 0.005.$

educational achievement. This is presented in Table 3. It is of special interest that the authors point out that the negative effects were essentially wiped out for those cases that were reared by their two natural parents together. The force of simple economic factors in this situation cannot be neglected.

The more recent study by Dytrych et al. (17) of the children of Czech mothers who had been twice refused abortion for the relevant pregnancy has an appropriately matched control group but is subject to the criticism, on the material so far presented, that the number of significant findings does not seem to exceed the number to be expected by chance. However, the findings in the area of socialization into school are quite suggestive because, of the 15 performance and behavioral items presented, all are in the predicted direction and two are significant. We will all look forward to the full report with interest. The possibility that social support increases the efficiency of socialization in school must be kept in the forefront of our minds.

TRANSITIONS TO ADULTHOOD

There seems to be little information about the effects on the transitions to col-

lege, to first job, and to marriage. This is an area in which the literature must be more thoroughly combed and in which specific research is indicated.

HOSPITALIZATION

The effects of social support on an individual in relation to hospitalization for mental and physical illness are widespread, but much of the evidence is inferential. That is to say, the several studies in question imply differences in social support without measurement. The social breakdown syndrome, which is so intimately intertwined with admission to mental hospital, can be largely prevented (24). This prevention is accomplished by a community-oriented service providing continuing care from the same team with hospitalization held to the minimum. Surely, that which is provided is mostly social support, although some specific services are included.

Moving on to hospitalization of children for tonsillectomy, there is a considerable volume of clinical literature. Much of this was summarized by Jessner and her colleagues back in 1952 (29). It indicates that supportive behavior on the part of parents and staff is helpful in preventing post-hospital psychological reactions. Recalculation of Jessner's own data indicates that the simple provision, by the parents, of adequate information about the anticipated hospitalization has a significant effect in preventing postoperative reactions.

In concluding this section, we should take note of the evidence that treating patients with myocardial infarcts at home carries no greater, and perhaps less, risk of death than treating them in the hospital intensive care unit. This is despite all the intensive care and fancy equipment that is

available in the hospital. Mather and his colleagues (38, 39) deserve congratulations for their foresight and courage in setting up this field experiment. The mechanism by which staying at home exerts its protective effect was presumably identified by Leigh et al. in 1972 (33), when they pointed to the association of cardiac arrhythmias with high separation anxiety and the direction of hostility inward rather than outward. Both of these psychological sets are presumably reduced in the supportive atmosphere of the home. Obviously, network support is particularly at issue. However, Engel (19) suggests that the effect may be due simply to protection from environmental insults.

RECOVERY FROM ILLNESS

This section shows the importance of the supportive physician in recovery from congestive heart failure and from surgical procedures and the importance of psychosocial assets in the recovery from psychosomatic illness, especially tuberculosis and asthma. Then the evidence that social support keeps the patient in treatment and promotes compliance with prescribed regimens will be reviewed.

In 1953, Chambers and Reiser (10) described the association of emotionally significant events with the onset of episodes of cardiac failure. In addition, they demonstrated the extraordinarily beneficial effects that emotional support from the physician could have on the course of the disease. A related finding is reported by Egbert et al. (18). They took two comparable groups of surgical patients. One group was given special supportive care by the anesthetist and the other served as a control. The surgeons managing the patients did not know which patient was in which group. The patients in the special care group needed substantially less medication for pain and were discharged on the average 2.7 days earlier than the control group. Both findings were statistically highly significant.

This same kind of effect must be demonstrable for a variety of other conditions involving fragile equilibrium. It points to the fact that social support is an important component of the therapeutic process. As Francis Peabody (47) stated in his essay *The Care of the Patient*, "One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient." More recently, Lambert (32) and Caplan (9) have emphasized the importance of social support in the psychiatric management of life crises.

Some years ago, Berle, working with Harold Wolf and others (4), developed an index of social and psychological characteristics of the patient, which had substantial prognostic value with regard to recovery from psychosomatic illness. Over half of the score on this index is easily codable to the categories of social support enumerated above. Holmes et al. (26) showed that this scale was highly predictive of the outcome of sanatorium treatment for tuberculosis, in that all the treatment failures were in the lowest third of the scores on this index. This is consonant with the evidence reviewed by Chen and Cobb (11), suggesting that tuberculosis is a disease of social isolation, i.e., low social support.

More recently, de Araujo and van Arsdel, working with Holmes and Dudley (16) in Seattle, used this Berle Index to show a remarkable interaction of social support with life change with respect to the need for steroid therapy in adult asthmatics. Table 4 summarizes their data. The figures in the cells are average daily

TABLE 4. Average Daily Steroid Dosage in Milligrams per Day for Patients with Asthma by Life Change Score and Social Support (Berle Index). [de Araujo et al. (16)]

| Life change score | Berle Index | |
	High	Low
High	5.6 (12)[a]	19.6 (11)[b]
Low	5.0 (10)	6.7 (4)

[a] Number of cases.
[b] This cell is significantly different from each of the other cells ($P < 0.01$).

doses of steroids (prednisone or equivalent). It is clear that those with low life change scores needed only small doses of steroids and that those with a lot of life changes and a low Berle Index needed three to four times as much. The important point about this table is that those with a high Berle Index were protected from the need for high doses of steroids that presumably would be generated by a high life change score. It is this interaction between life change and support, in a way that suggests a protective effect of support, that is the focus of this review.

There are a lot of pathways to the above mentioned effects. They fall into two major classes. The first is a direct effect through neuroendocrine pathways. This is the one that we in psychosomatic medicine are most apt to emphasize. The second is through promoting compliant behavior on the part of the patient. There is a large quantity of very consistent evidence pointing to the fact that those patients who are not socially isolated and are well supported are, in our casual lingo, good patients, in that they stay in treatment and follow our recommendations. The evidence on dropping out of treatment is summarized by Baekeland and Lundwall (3), who state, "The importance of social isolation and/or lack of affiliation was in-

dicated in 19 out of 19 studies (100%) that considered them." In a review of compliance with therapeutic regimens that does not overlap with the above, Haynes and Sackett (25) indicate that only one of 22 articles in which social support-relevant variables were measured gave evidence contrary to the hypothesis that social support is positively associated with compliance. Six of the 22 articles found no evidence either way. As data on such matters go, this association of cooperative patient behavior with various components of the social support complex is one of the best established facts about the social aspects of medical practice.

LIFE STRESS

Here data will be presented on the dangers of stopping drinking without social support and the way in which social support protects against depression in the face of extensive life changes. After that, we will go on to two particular life changes: job loss and bereavement.

Joan Jackson, in a chapter in Sparer's book *Personality, Stress and Tuberculosis* (28), presented some truly remarkable data, the significance of which did not receive adequate recognition at the time. I have recalculated her data in Table 5. She compared the men sent to the police farm for alcoholism with the alcoholics admitted to the tuberculosis sanatorium with respect to the frequency of men attempting to stop drinking in the preceding year with and without the support of an institutionally based program and/or Alcoholics Anonymous. As you can see, the frequency distributions are highly significantly different ($P<0.005$). The relative risk calculation says in essence that men who tried to stop drinking on their own, i.e., without the support of an organized program, had

TABLE 5.   The Risk of Tuberculosis to Men Stopping Drinking in the Preceding 12 Months without Social Support [Recalculated from Data of Jackson (28)]

	Alcoholic admissions to	
	Police farm	TB Sanatorium
Stopped drinking during past 12 months		
Without support	1	18
With support	5	2
Did not stop drinking	28	27
Total	34	47

$\chi^2 = 14.8$; $P < 0.005$; relative risk $= \dfrac{18 \times 33}{1 \times 29} = 20$.

TABLE 6.   Percentage of a Random Sample Who Had a Recent Onset of Affective Disorder by Life Stress and Social Support [Brown et al. (7)]

	Social support	
Life stress	Confidant	No confidant
Severe event or major difficulty	4% (2/45)	38% (17/45) [a]
Neither	1% (1/82)	3% (1/34)

[a] Significantly different from each the other cells ($P < 0.001$). Interaction: $t = 3.60$, $P < 0.001$.

20 times the likelihood of being admitted to the tuberculosis sanatorium as their peers who did not try to stop or who tried with support. In fact, the numbers suggest that the risk of tuberculosis is reduced for those who try with support, but they are too small to be convincing. This is an impressive difference and deserves attention from those who work with alcoholics. Again, the social support dimension emerges as especially important for tuberculosis.

Turning to the work of George Brown and his collaborators (7), one finds another striking datum. In Table 6 is shown the percent of a random sample of women classified as having a severe affective disorder. They are divided by whether or not they had a confidant. A confidant was defined as a person, usually male, with whom the woman had "a close, intimate and confiding relationship." The table makes it clear that those women who had severe events and lacked a confidant were roughly 10 times more likely to be depressed than those in any of the other three cells. If one assumes that the events had some causal relationship here, one is forced to the conclusion that the intimate relationship is somehow protective. Although one must be cautious about interpreting the effect of life events on depression because depressed people overreport unpleasant events, I have seen no evidence that depressed people tend to deny their confidants.

Alcoholism is related to depression, so it is not surprising that Quinn (50) found that escapist drinking, but not other forms of drinking, is significantly elevated only among those who have high job stress and are not supported by their supervisors. These data come from the National Quality of Employment Survey, 1972-73 (50).

EMPLOYMENT TERMINATION

This is a major life crisis for most men, particularly if they have dependents and have been stably employed for some years.

My colleagues and I have made a special study of this matter. The doctoral dissertation of Susan Gore (23) was specifically focused on the moderating effect of social support on a selected set of outcome variables. Our total study examined a wide variety of economic, social, psychological, and medical variables in 100 men whose jobs were abolished and 74 men whose employment was stable. The men were visited by public health nurses before the termination, soon after the termination, and then at 6, 12, and 24 months after the plant closings. The men were all married blue-collar workers with about 19 years of seniority. In this study, the measure focused almost entirely on network support, although there was one item on subjective emotional support. This measure had moderating effects on some physiological variables and some indicators of illness, but not with regard to others. Cholesterol and uric acid levels in the serum were higher during the weeks surrounding the termination for those with little support than for those with adequate support. No such differences were observed with respect to norepinephrine in the urine or creatinine in the serum, although important changes over time were noted with respect to each and both were modified by the level of psychological defense (12). The changes in level of complaints noted on a symptom check list was significantly moderated by high social support, but no effect was noted on hypertension or, surprisingly enough in view of the findings of Cobb et al. (13), on peptic ulcer. At the other end of the social support scale, the finding that marital hostility is associated with ulcer disease was replicated.

When it came to arthritis, the data presented in Table 7 emerged. Here it can be seen that there was a 10-fold increase in the proportion of men found to have two or

TABLE 7. The Effect of Social Support in Preventing Joint Swelling in Relation to Job Loss

	Social support			
	High	Med	Low	Total
Two or more joints with observed swelling	1	5	12	18
Other	27	36	17	80
Total	28	41	29	98 [a]
Percent with two or more joints swollen	4%	12%	41%	

[a] Two cases have missing data.
$\gamma = 0.732; P < 0.0003$.

more joints swollen as one went from the highest to the lowest quartile of the social support dimension. This was not predicted in advance, so the matter was examined with some care and the finding stands up no matter how you look at it.

BEREAVEMENT

Everyone acts as though social support were important to those who are bereaved and many authors suggest that this should be appropriate behavior, but hard evidence on the subject seems difficult to come by. Parkes (45) presents some suggestive evidence that opportunities for affiliation and affiliative behavior correlate positively with good psychological state 13 months after bereavement. The most striking data are provided by Burch (8). Recalculating her data, it is possible to conclude that a married man who lost his mother had no increased probability of suicide. However, if he were single or his marriage had been terminated, his risk of suicide was increased ninefold by the death of his mother. Dr. Burch also showed that those men who had less contact with

relatives had a greater probability of suicide than those with more contact. Considering the importance of the question and the potential of the study design, the analyses presented by Gerber (22a) are disappointing. One wishes that the data were more fully presented and more appropriately analyzed. However, on four of the six health dimensions presented, the bereaved subjects who had received professional support were better off during the period 5-8 months after bereavement. Further research in this area is clearly indicated.

AGING AND RETIREMENT

In this area, as in hospitalization of children, there are a lot of strong impressions about the importance of social support in protecting people from the consequences of the stress of growing old and infirm. The best data that have come to hand are those of Blau (5). She supports the view that being married or being employed or having substantial social activity ("participation") is protective against the development of low morale. Similarly, Lowenthal and Haven (36) find in a sample of 280 persons aged 63 and older that 85% of those with low social interaction were depressed, whereas only 42% of those with high social interaction were depressed.

THREAT OF DEATH

Life threats are most striking in battle and as life's end approaches. These two situations will be examined in turn. There are many studies of the effects of morale, which is presumably a derivative of social support on the frequency of neuro-psychiatric disorders. Rose's (52) rather clean study illustrates the point. He compared two battalions from the same regiment with respect to morale and neuro-psychiatric casualties. These battalions were otherwise quite similar. The battalion with high morale had roughly half as high a rate of psychiatric casualties as the battalion with low morale. To the extent that high morale involves high self-esteem and group cohesiveness, mutual esteem support and network support are central to the maintenance of morale.

In a similar vein, Swank (55) found that every soldier in the Normandy campaign who had lost 75% or more of his buddies developed combat exhaustion. Reid (51) reports almost identical findings for bomber crews in the Royal Air Force. Just to clinch the matter firmly, I quote from the military experience of two distinguished psychiatrists. Francis Braceland (6) said, "It became obvious early in the course of the war that the most important prophylactics against psychiatric casualties in the military forces were proper individual motivation and high morale. . . ." William Menninger (40) added, "We seemed to learn anew the importance of group ties in the maintenance of mental health."

It would be improper to close this review without drawing attention to the life sparing effects of anticipated ceremonial occasions. Phillips and Feldman (48) in a truly remarkable paper showed in five different populations that deaths are reduced in the 6 months preceding birthdays and increased in the succeeding 6 months. A summary of their data is presented in Figure 1. They went on to hypothesize that, if this were a social support effect, it should be more striking for the most distinguished. This they found to be dramatically confirmed.
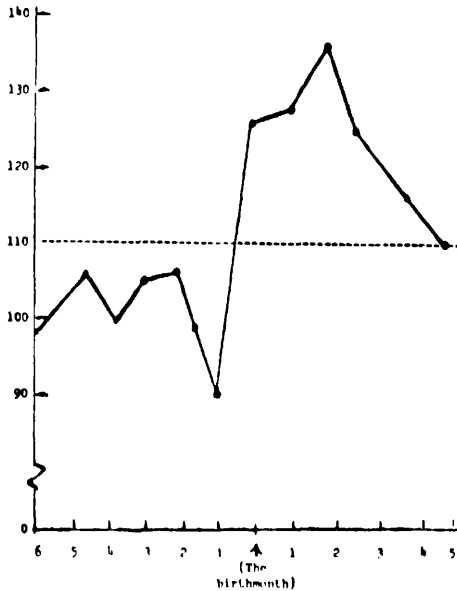
Fig. 1. Number of deaths before, during, and after
birth month (all five samples combined).

DISCUSSION

We have seen strong and often quite hard evidence, repeated over a variety of transitions in the life cycle from birth to death, that social support is protective. The very great diversity of the studies in terms of criteria of support, nature of sample, and method of data collection is further convincing that we are dealing with a common phenomenon. We have, however, seen enough negative findings to make it clear that social support is not a panacea.

The conclusion that supportive interac-

tions among people are important is hardly new. What is new is the assembling of hard evidence that adequate social support can protect people in crisis from a wide variety of pathological states: from low birth weight to death, from arthritis through tuberculosis to depression, alcoholism, and other psychiatric illness. Furthermore, social support can reduce the amount of medication required and accelerate recovery and facilitate compliance with prescribed medical regimens.

In a number of the studies that have been cited, it is possible to suggest alternatives to the social support explanation for the

findings. For example, the birth weight findings of Morris et al. (42) might be due to a reporting artifact, in that high school graduate mothers appreciate the significance of low birth weight and therefore tend to over-report their small babies as unwanted, while the less well-educated mothers do neither. Similarly, the excess of suicides among sons not currently married described by Burch (8) could conceivably be related to unresolved maternal ties, rather than to a lack of social support. At the other extreme, such studies as those of Nuckolls et al. (44), de Araujo et al. (16), Egbert et al. (18), or my own on job termination are considerably less amenable to alternative interpretations because the social support was measured in advance, the stress was defined, and the outcomes were sufficiently specific to avoid major confounding. The crux of the matter seems to be that, although one or two of the studies presented might turn out on further investigation to be truly irrelevant, the series is so long and so diverse that it demands attention.

I may well have missed important findings both positive and negative. I would welcome additions to my files from readers who can identify such omissions. However, it should be clear that I have focused on the interaction of social support with environmental stress and have intentionally omitted a modest volume of studies that demonstrate a simple direct effect of social support on health. These studies are mostly included in the reviews by Gore (23), Kaplan et al. (30), and Pinneau (49). The effect on tuberculosis is noted by Chen and Cobb (11). The full range of data on coronary heart disease has never been assembled in one place. This deserves attention, for the collective effect of the full set is impressive. These data are not presented here because they are mostly reported as main effects rather than as moderating the effects of social stress.

What remains is to consider possible mechanisms for the observed protective effects. At the present time, the most attractive theory about the nature of this phenomenon involves pathways through facilitation of coping and adaptation. (Coping in my language means manipulation of the environment in the service of self and adaptation means change in the self in an attempt to improve person-environment fit.) It would not be unreasonable to suppose that esteem support would encourage a person to cope, i.e., to go out and attempt to master a problem. Likewise, emotional support and a sense of belonging might provide the climate in which self-identity changes can most readily take place.

As evidence that mastery of a new task takes place best under supportive conditions, I would draw attention to the classical experiment of Coch and French (15) in the pajama factory. They found that "participation" markedly reduced the time needed to get back to full production after a change in the nature of the task. An invitation from management to participate in the planning and implementation of a change is certainly direct esteem support. Participation may incidentally increase other forms of support, but that is not central to the argument that esteem support facilitates coping.

Parsons' (46) study clarified the sick role. Since successful role changes involve identity changes, it is logical to presume that movement in and out of the sick role is assisted by those things that facilitate the relevant identity changes. Clearly, social support facilitated remaining in treatment (3) and may speed recovery (18). The hypothesis is strong but, as far as I know, untested that social support facilitates

identity change, which, in turn, facilitates role change.

Further research on the proposed mechanism through which social support might operate is clearly indicated. In addition, there is an obvious need for further investigation of the moderating effects of social support on the consequences of the following transitions: entry into primary school, entry into college, first job, marriage, residential change, and bereavement. Surely, investigation will proceed on the effect of social support on the outcome of medical treatment because the results are likely to point to methods for reducing the costs of medical care. This review has focused on acute stress. There remains an important question as to whether social support can moderate the effects of chronic stress such as that experienced by air traffic controllers (14).

There appears to be enough evidence on the importance of social support to warrant action, although, of course, all the details as to the circumstances under which it is effective are not yet worked out. Following the behest of Stephen Smith (53) cited at the beginning of this review, we should start now to teach all our patients, both well and sick, how to give and receive social support. Only in rare instances of clear psychiatric disability should this instruction require a psychiatrist. It seems to me that this is the real function for which Richard Cabot designed the profession of medical social work.

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