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ASSERTIVENESS AS A PERSONALITY FACTOR AFFECTING THE LIFE CHANGE -
HEALTH CHANGE RELATIONSHIP

THE UNIVERSITY OF ARIZONA

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**ASSERTIVENESS AS A PERSONALITY FACTOR AFFECTING
THE LIFE CHANGE-HEALTH CHANGE RELATIONSHIP**

by

Catherine Lee Boyer

**A Thesis Submitted to the Faculty of the
DEPARTMENT OF PSYCHOLOGY
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF ARTS
In the Graduate College
THE UNIVERSITY OF ARIZONA**

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ABSTRACT

Assertiveness was not found to be related to reports of illness or life change. A significantly larger percentage of highly assertive subjects were repressors compared to low and average assertive subjects. Repressors and sensitizers did not differ significantly in types of illness reported but sensitizers reported significantly more illness than repressors as well as significantly more negative life change, but not positive life change. Life change and illness were significantly related only for female subjects, which contradicts much previous research. This raises questions about the differential effects of stress on males and females and the possible differences in the reporting of stress and illness by males and females. Although a measure of sick role tendency was included to control for a positive response bias on the illness measure, it was not found to be related to either doctors visits or reported illness.

CHAPTER 1

INTRODUCTION

During the past decade, many researchers have directed their investigative efforts toward life change, stress, and subsequent illness. Hinkle et al. (1957) have established that within a large population, one-fourth of the subjects experience over one-half of all illness and upwards of 75% of total days disability. Those with the greatest amount of sickness disability experienced a wide variety of illnesses of various types and various etiologies, involving a number of body systems. In addition, those having a greater number of minor illnesses experienced a greater number of major illnesses. These subjects also exhibited a greater number of mood, thought, and behavior disturbances. The authors conclude that whatever affects illness affects all types of illness, and that illness probably arises out of some changing and unpredictable relationship between each individual and his environment. This conclusion is further based on the additional finding that illness episodes occur in clusters over several years followed by periods of relatively good health. This observation holds true for those subjects with a low incidence of health problems as well.

Life Change and Illness

Some investigators, most notably Holmes and Rahe (1967), have addressed the environmental component of this relationship, and

their findings have consistently supported the contention that those clusters of illness are indeed significantly associated with periods of environmental change and stress, although correlations have been low, typically in the +.30's. One of the highest correlation coefficients (+.41) was obtained by Hebert (1978) between life change and seriousness of illness in female college students.

Simonton and Simonton (1974), well-known for their work with cancer patients, find that very often cancer is detected six to eighteen months after a severe loss which engenders feelings of hopelessness. Life change is also associated with psychological upsets such as depression, tension, anger, and confusion (Constantini et al. 1974). An individual faced with such change must adapt, psychologically and/or physiologically, and this effort hypothetically puts the person at risk. Stress and life change may be considered "precipitating" factors in illness development.

Studies done with children provide additional support for the tenability of the life change-health change model. Mutter and Scheifer (1966) found that, compared to a control group, families of ill children had been more disorganized during the six month period prior to illness, exposing the children to more psychological and societal changes which were threatening and had a disruptive impact. Coddington (1972) observed that hospitalized children had experienced more frequent and/or severe life events prior to illness than their healthy peers. In a study of chronically ill children, those under high stress experienced 69 episodes of acute illness over a three week

period, while those under low stress experienced only 19, when roughly equated for severity of chronic disability (Bedell et al. 1977). In addition, the low-stressed children indicated significantly more positive attitudes about themselves. These attitudes may influence the amount and duration of stress and life change one encounters as much as, if not more than, stress influences attitudes. If this is the case, life change may not merely be an environmental factor, but a personality-mediated variable as well.

The possible influence of personality variables was explored by Thurlow (1971), who feels that many currently used objective methods of assessing life change are less relevant to health than an individual's subjective perception of that change. Holmes and Rahe's (1967) Schedule of Recent Events is one of those objective measures in which the various changes are weighted according to the amount of adjustment involved. Sarason (1978), like Thurlow, believes that subjective perception is a key factor in the measurement of life change and has developed the Life Experiences Survey, which allows for subjective scaling, in addition to assessment of primarily negative events, as opposed to Holmes and Rahe who include both positive and negative events.

There continues to be disagreement in the literature over the respective stressful impact of negative and positive life changes (Mirowsky and Ross 1980). The subjective perception aspect of this research adds weight to the probability that some of the association between life change and illness is due to individual

variables rather than environmental ones. Perception of whether or not some change is stressful, and how much energy is required to adapt, rests with personality variables such as self-image and coping ability (Thurlow 1971).

Sick-Role Tendency and Illness Behavior

Due to this probable personality influence and to the fact that psychological upset is associated with life change, sick-role tendency (a tendency to notice and report symptoms) becomes a problem in measurement. Jacobs, Spilken, and Norman (1969), found that high reporters of illness had angry, defiant coping styles, and concluded that those with maladaptive coping behaviors experience more life crises and thus seek medical care for symptoms others might ignore. In addition, anxious individuals tend to visit physicians more frequently than non-anxious individuals (Derrick 1971). Cluff, Canter, and Imboden (1966) identified a group of psychologically vulnerable subjects with low ego strength and hypochondriacal tendencies, who reported more influenza, but who exhibited no difference in serologic titers, when compared with a control group. These vulnerable subjects also had a longer period for symptomatic recovery. In another study (Stoekle, Zola, and Davidson 1964) of those reporting to a medical clinic for functional complaints but in whom no illness could be found, 84% reported accompanying psychological distress at the time; of all new patients, only 43% were judged to have somatic illness. However, no mention is made of psychological distress which might have been manifest in those with verifiable illness. At any

rate, these investigators suggest that illness behavior, not illness, may be a means of coping with high levels of stress.

Closely related to the issue of illness behavior is the lack of definite diagnostic criteria for illness. Many studies use only self-report measures, which are highly subject to confounding by sick-role tendency. One solution is to account for this through a measure of sick-role tendency, similar to one developed by Mechanic and Volkart (1961). A second method is to apply strict diagnostic criteria as was done in a particularly well-designed study of families by Meyer and Haggerty (1962). Illness was defined as the presence of streptococcal bacteria determined by throat cultures taken every three weeks. Results showed that one-fourth of all streptococcal throat infections followed an acute family crisis. Streptococcal respiratory infections, as well as non-strep ones, were four times as likely to be preceded by acute family stress. Prospective studies such as this one are superior to others that attempt to measure previously experienced life change in an already unhealthy group, since for some subjects, illness may affect perception and reporting of life change.

Spilken and Jacobs (1971) addressed this possibility by pre- and post-illness assessment of life change. The differences observed were consistent with the hypothesis of chance fluctuation; illness behavior was no more likely to result in increased scores on life crisis, manifest distress, and defiance than was its absence.

The authors cite this as support for the hypothesis that these factors antedate illness behavior.

Psychophysiological Strain and Illness

Undoubtedly, not all who experience change become ill, or are even significantly stressed by that change. The small but significant correlations found between life change and illness also indicate the probable existence of intervening variables, such as personality related factors. The amount of strain experienced by an individual due to change has been investigated as just such an intervening variable, using Langer's measure of psychophysiological strain (Garrity, Marx, and Somes 1978). This index of the psychological costs of the struggle to cope with change adds to the power of the life change-health change relationship. This appears similar to the subjective ranking of the impact of life change. However, as this index relies on an individual's perception of strain, physiological measures of anxiety should also be taken.

There is substantial data to suggest that emotions and tensions have a direct bearing on the progress of such diseases as hypertension, hyperuricemia, and diabetes mellitus (Dlin 1977). Other research shows that anxiety is a risk factor in coronary heart disease (Segers and Mertens 1977). Within a large sample of volunteers for a preventive exam, Ostfeld et al. (1964) found significant correlations between Anxiety Scale Questionnaire scores and blood lipids and arterial blood pressure when sex, age, weight, and exercise

were accounted for as moderator variables. Again, mention must be made of the fact that subjective perception is an individual factor and perceived strain probably reflects a combination of variables.

Physiological Factors

The idea that psychological upset results from life crises and change is fairly well-established. That such upset leads to health breakdown via physiological changes is less well-substantiated. The exact mechanisms by which this change might occur are also uncertain. Many researchers emphasize the fight-flight reaction or Selye's General Adaptation Syndrome (GAS), which consist of very definite physiological changes. These changes consist primarily of sympathetic nervous system arousal which ultimately alters neurophysiological activity, endocrine and immunological balances, blood supply and pressure, respiration rate and pattern, and digestive processes (Cannon 1932; Pelletier 1977; Selye 1956).

In laboratory rats, when parts of the dorsal hypothalamus are cut, thereby affecting thymus functioning, there is suppression of primary antibody responses and prolonged retention of antigens in the blood (Korneva and Khai 1963). As Pelletier (1977) indicates: "It is significant that those regions of the hypothalamus which are cut, thereby creating the preconditions for a lab animal to be pre-disposed toward disease, are precisely the same regions of the brain which are most receptive to human emotional stress."

Research by Selye (1956) on the effects of the GAS, indicates that eosinophil cells, which regulate serologic immune

reactions and allergic hypersensitivity to foreign substances, are reduced in number. The levels of these cells in the blood of cancer patients is often markedly depleted. Eosinophil cells have also been found to be lower in individuals under chronic stress (Pelletier 1977). However, these lowered levels in those with cancer may merely represent the stress of being very ill. Work on the rise in adrenocorticosteroid levels under strain, in addition to the fact that these steroids depress lymphocyte levels in the blood, leads to speculation that antibody formation would also be affected (Pelletier 1977).

Wenger's (1966) \bar{A} test of autonomic balance, a measure of sympathetic versus parasympathetic dominance, has been used as a physiological measure in life change research. Good health and psychological adjustment are associated with high \bar{A} scores (parasympathetic dominance), while low \bar{A} scores (sympathetic dominance) are related to a variety of illnesses. Clemens (1954) demonstrated significant differences in \bar{A} scores between groups with fast and slow growing cancers. At follow-up, those with lower scores died earlier, while those with higher scores were more likely to still be alive. Low \bar{A} scores have also been significantly associated with anxiety (Smith and Wenger 1965) and emotional instability (Jost and Sontag 1944).

Emotional Expression and Illness

These physiological changes are pathological only when prolonged, therefore the question seems to be "What is it that leads to an inability to return to one's baseline level of arousal?" Other

variables must be involved besides life change, perception of that change as stressful, and becoming stressed as a result of that perception. Part of the answer may lie with the fight-flight theory of arousal under stress. In our society, in these times, there are many occasions when fight and flight are no longer acceptable or appropriate means of coping with arousing or threatening situations, and the physiological readiness for action cannot be directly discharged (Pelletier 1977).

There are many maladaptive ways of discharging arousal and these are integrally related to personality. Some individuals on occasion do resort to fight or flight, but the societal repercussions serve only to generate additional tension. An often used method of dealing with stress-induced arousal is emotional suppression, which may inhibit reduction of that arousal, if not aggravate it. According to Pelletier (1977), an internalizing, passive response such as conscious restraint, leads to frustration, resentment, aggressiveness, or defensiveness. Other maladaptive ways of coping with strain are passive-aggressive types of behavior or some type of discharge against a substitute target. Many investigators studying personality and illness have found a variety of patterns and behaviors to be associated with increased vulnerability, and there is a common thread among most of them which deals with ineffective emotional discharge.

Friedman and Rosenman (1974) are noted for their work on heart problems and the Type A personality, who is, among other

things, characterized by an easily-aroused but well-rationalized hostility, which is usually kept under control and externalized only during brief and random outbursts at unexpected times. These researchers found that extreme Type A subjects showed blood fat and hormone abnormalities that the majority of coronary patients showed. Friedman and Rosenman cite this as support for the contention that the behavior contributes to the development of the abnormality.

When anger and aggression are generalized, the effects are diffuse on a psychosocial and neurophysiological level, resulting in behavioral and physical disorders (Pelletier 1977). Hokanson, Burgess, and Cohen (1963) found that experimentally produced anger through frustration is followed by elevations in blood pressure, and that the opportunity to express anger through aggression directly against the frustrator is associated with a significant decrement in blood pressure. Aggression against substitutes did not significantly decrease blood pressure, but there is suggestive evidence that the degree of post-aggression tension-reduction is roughly proportional to the similarity of the aggression object to the original frustrator. Again, aggression in our society is usually not acceptable, but based on these findings, one might hypothesize that optimum coping involves expression of anger to the original frustrator in an appropriate way, perhaps through open, honest verbal communication.

The role of emotional expression in illness onset is given additional credence by research results indicating that hostile attitudes are more highly correlated with blood pressure increases than

hostile behaviors (Whitehead et al. 1977). Repressed hostility is also associated with cancer (Goldfarb, Driesen, and Cole 1967; Greene and Miller 1958; Klopfer 1957; LeShan 1957). Kissen (1966) noted that men with lung cancer typically have poor emotional discharge. A study on women with breast cancer found that immunological deficiencies were more marked in those who showed extreme suppression of anger. Immunological deficiencies were also found to be higher in women over forty with extreme suppression of feelings other than anger. A less common finding associated with immunological abnormality was extreme expression of anger (Pettingale, Greer, and Tee 1977).

Repressed emotions are also cited as prominent in the personalities of arthritics, specifically, repressed hostility, rigidity, worrying, and inhibition (Solomon and Moos 1964). Engel (1953) described patients with ulcerative colitis as unable to express hostility and anger directly. In a study of families with a psychosomatically ill child, several common characteristics were elucidated, among them conflict avoidance and poor communication of feelings (Minuchin et al. 1975). One difficulty with much of the research on repressed hostility is a lack of control groups. There may be many healthy individuals who repress anger or other emotions. Measured emotional states may also be a product of illness rather than a cause.

Repression-Sensitization and Illness

Closely related to the idea of emotional maladjustment and illness is research which deals with the repression-sensitization dimension. This is reflected also in sick-role tendency. Sensitizers

are described as using approach-type behaviors such as intellectualization, ruminative worrying, and obsessive behavior. Repressors, on the other hand, use avoidance behaviors such as repression, denial, and rationalization in dealing with anxiety arousing stimuli. Sensitizers have been shown to obtain significantly higher scores than repressors on measures of anxiety (Sathyavathi, Kumariah, and Murthy 1978). Sensitizers also indicate a greater frequency and/or severity of illness than repressors, even though repressors may be just as unhealthy (Byrne, Steinberg, and Schwartz 1968).

Another study tested this dimension using a psychosomatic group, a medical group, and a healthy control group. Results indicated that both the psychosomatic and medical groups disclaimed strong emotions, and the medical group was more sensitized, obsessive, and anxious than the other groups, with a tendency to insulate themselves from their own feelings under high stress (Wennerholm and Zarle 1976). As with some other correlational studies, the results may reflect a consequence of illness rather than a cause.

Sheldrake (1977) distinguishes between more clearly stress-related illnesses and illnesses where stress is less clearly involved, a distinction similar to the one between psychosomatic and medical groups in the previous study. Women were found to report more illness than men and men are more likely to report non-stress related illnesses. Science students, first-borns, or only children, more "outer-directed" types, also tend to report non-stress related illnesses, and according to Sheldrake, are more likely to suppress direct evidence of stress.

These characteristics seem to echo those of the Type A personality, and these individuals could be designated as "repressors." Reporting of stress-related illness is more typical of arts and social science students, described as "inner-directed," more receptive to and accepting of inner mental states and emotions. These individuals might be considered "sensitizers."

Social Support Systems

Social support systems have also been investigated as a possible moderator variable in the relationship. These are of an environmental nature; however, as with other environmental factors, there is a reciprocal interaction with intraindividual variables. Caplan (1974) defines such a system as "enduring interpersonal ties to a group of people who can be relied upon to provide emotional sustenance, assistance, and resources in times of need, who provide feedback, and who share standards and values." These people may be associated with home, church, recreation, or work environments. The role of social assets in illness is similar to "failure to thrive" in institutionalized infants.

One study using the Social Assets Scale, a self-report measure, found a moderate, but significant negative correlation with patients' present severity of arthritis (Luborsky, Todd, and Katcher 1973). This measure was used with five other measures (observer-rated social assets, Holmes and Rahe's Schedule of Recent Events, a symptom checklist, and self-rated level of success). Combined, these

factors accounted for 26% of the variance of the severity dimension. Obtained relationships were stronger for self-reported complaints of illness than for documented illness, and it may be that in this study, the relationship may reflect a common tendency to complain.

The Berle Index, a measure of psychosocial resources, is negatively associated with steroid requirements in chronic intrinsic asthma patients, regardless of recent life change (Berle et al. 1952). Nuckolls, Cassel, and Kaplan (1972), using an instrument similar to the Berle, but designed for pregnant women, found that social assets were negatively correlated with complication rates at delivery among women with a high life change score before and during pregnancy. As with the life change component of this illness model, social assets may also be reciprocally related to individual personality variables. The individual with deficient coping mechanisms perhaps expresses emotions inappropriately, thus determining or altering the nature of the social support system, and affecting also the amount of life change and stress experienced.

Locus of Control

One's control, or perceived control, over stressful events has been investigated as a factor which can result in a more positive definition of an event and thereby mediate the effects of stress. Research shows that people have a definite preference for controllable as opposed to uncontrollable stimulation. The effects of repeated exposure to uncontrollable stimulation have also been investigated. Seligman's model of learned helplessness is a well-known example of

this type of research. In one animal study, rats who had no control over the occurrence of shocks showed more ulceration than rats who had control (Weiss 1971). This may not be so much an element of cognitive appraisal, but of coping. In this case, controlling shocks appears to be a way of acting or coping.

A study by Glass, Singer, and Friedman (1969) indicates that only perception of such control is necessary, not actual control. They found that subjects performed better on certain tasks if they had only perceived control over an aversive noise.

A number of studies have been conducted using Rotter's Locus of Control measure. Individuals who are considered to have an external locus of control feel little sense of control over the events of their own lives. Conversely, individuals with an internal locus of control do have a sense of control over events in their lives. Johnson and Sarason (1978) found that negative life changes were significantly related to anxiety and depression only for external locus of control subjects, thus suggesting that one's sense of control over events does indeed mediate the effects of those events.

A related study by Ferrare (1979) suggests that having alternatives from which to choose in one's life has an impact on health. He studied residents of nursing homes and found that unexplained deaths were significantly higher among residents who did not have other alternatives to the nursing home. In a study of executives, Kobasa (1979) found that those who demonstrated a belief that one can control and transform the events of one's experience

reported less illness. Again, this study suffers from the utilization of only reports of illness, rather than actual documentation. The same factors which yield a positive definition of life events could easily lead to a positive definition of one's health status.

Illness Development as a Closed Feedback Loop System

Illness undoubtedly results from, and participates in, a complex interaction among a number of variables. Zimbardo (1969) has conceptualized the development of disease as a closed feedback loop system, "which tends to be stable and self-regulatory, but within which a physical or psychological disruption can be amplified through its effects on other components of the system, resulting in spiraling intensity whose terminal state cannot be predicted from a knowledge of the initial boundary conditions." Pelletier (1977) maintains that causation is only philosophically relevant in such a system, that cause and effect reductionism has been counter-productive in psychosomatic research and clinical practice. A more pertinent issue is to determine what factors participate in this system, and to what extent.

The possible factors are sometimes difficult to identify, partly because a precise definition of maladaptive or adaptive coping does not exist. Lazarus (1966) defines the adequate coper as one who acts directly on a problem rather than avoiding it, those actions are not impulsive, but rationally considered. He is optimistic about success and has little anxiety about his own aggression. This

definition is compatible with current conceptualizations of assertiveness, and assertive behavior is often thought to be indicative of appropriate, productive coping. Manuel J. Smith (1975) describes verbal assertion as the alternative to passive-aggressive and passive-avoidant behaviors, an alternative intended to be adaptive in that the physiological fight-flight arousal is not maintained for undue periods of time.

Virtually no studies exist which examine the role of assertiveness in the maintenance of physical health. One case study of migraine headache showed that assertiveness training, in addition to psychodynamic insight, was effective in symptom relief (Lambley 1976).

This study represents an attempt to examine further the role of assertiveness in health maintenance. Under the assumption that assertiveness is an indicator of adaptive coping behavior and appropriate emotional expression, unassertive individuals were hypothesized to be emotionally repressed, and therefore vulnerable to stress and subsequent illness. An additional hypothesis in this study concerned the relationship between assertiveness and the repression-sensitization dimension. If assertion represents appropriate expressive behavior, it may be visualized as the midpoint of a continuum, where one extreme represents repression, and the other, sensitization.

The specific aim of this study was to investigate the relationship between assertiveness and reported illness, under varying conditions of life change. In addition, the relationship between assertiveness and the repression-sensitization dimension was assessed. Specifically, the hypotheses of the study were:

1. Low assertive subjects with high life change scores will have significantly higher illness scores than any other assertiveness-life change combination.
2. High assertive-low life change subjects will have significantly lower illness scores than any other assertiveness life change combination.
3. Subjects with high scores on sick-role tendency will have higher illness scores over all assertiveness-life change combinations than subjects with low scores on sick-role tendency.
4. A significantly greater number of high assertive subjects will score in the average range of the repression-sensitization scale, than in the extreme directions.
5. Sensitizers will endorse more clearly stress-related illnesses while repressors will endorse less clearly stress-related illnesses.

CHAPTER 2

METHOD

Subjects

The population sample consisted of 74 male and 133 female undergraduate students at the University of Arizona, who volunteered to participate in the study in exchange for extra credit points in psychology classes.

Procedure

A series of self-report instruments were administered to the subjects during a single session. Those instruments were:

1. The Assertion Inventory (Gambrill and Richey 1975).

This 40-item scale permits respondents to rate for each item their degree of discomfort behaving assertively and their probability of engaging in an assertive behavior. Ratings on these two dimensions are totaled to yield two scores which have been designated AD and AR. AD refers to the amount of subjective discomfort associated with behaving assertively. AR refers to the reported likelihood of responding assertively. Each dimension of assertiveness was analyzed separately with respect to stress and illness.

2. The Life Change Inventory (Constantini et al. 1974).

This 50-item device measures the degree of life change

experienced by college students and provides a means for investigating the degree of readjustment necessitated by those changes, by the assignment of different weights to the items. This inventory yields a score which constitutes a measure of life stress.

3. Sick-role tendency (Mechanic and Volkart 1961). A series of three questions representing hypothetical symptoms and requiring an indication of the subject's likelihood of consulting a physician for each symptom was administered as a measure of sick-role tendency to control for positive response bias on the illness scale.

4. The Repression-Sensitization scale (Byrne 1961). This scale, composed of 175 items from the Minnesota Multiphasic Personality Inventory, measures the extent to which an individual uses defenses such as repression, denial, and rationalization (repressors) or defenses such as intellectualization, worrying, and obsessive behavior (sensitizers).

5. The Symptom Checklist. This instrument was created for this study and allows for the endorsement of various medical problems experienced over the previous six months. The Symptom Checklist consists of 62 medical problems distilled from the Cornell Medical Index (1949). The Checklist also yields information regarding severity of the problem, whether or not a physician was consulted, and whether or not medication was prescribed. The illness score used in this study reflects the number of reported illnesses and severity of illness.

A particular illness rated as mild received a rating of one; an illness rated as moderate received a rating of two; and an illness rated as severe received a rating of three. Ratings for each subject were then totaled for the illness score. The number of problems endorsed by each subject was also totaled to yield an illness score which does not take severity into account. In addition, five physicians were asked to rate each medical problem according to the extent to which they felt that problem to be stress related. A rating of one represented least stress related and a rating of five represented most stress related. Any medical problem with an average rating of 2.5 or lower was designated as less stress related. Any medical problem with an average rating of 3.5 or higher was designated as more stress related. Then for each subject in the study, the number of more and less stress related illnesses endorsed were totaled.

The relationships among assertiveness, life change, and illness were investigated using a multiple regression analysis on subjects representing the upper and lower 25% of the sample on the assertiveness dimension. This extreme groups design was used in order to test for the presence of a relationship between assertiveness and illness. The upper and lower 25% of the sample has been recommended by Myers (1978) as the optimal size of extreme groups, hence these percentage values were used in this study. If a relationship is curvilinear, the extreme groups design will be misleading.

Therefore, prior to statistical analysis, data points were plotted to ensure that there was no curvilinear trend.

The analysis was conducted on males and females combined for AD and AR scores respectively (N = 102). Male and female subjects were also analyzed separately with respect to both AD and AR scores (males, N = 42; females, N = 60). A two-way analysis of variance was also performed with extreme groups, primarily in order to test for interaction effects between assertiveness and life change.

Relationships between sick-role tendency, reported illness, and doctors visits were examined via Pearson product-moment correlations.

For hypothesis four, the relationship between assertiveness and repression-sensitization was assessed by calculating the percentages of repressors, sensitizers, and average range subjects of the R-S scale (± 1 SD above and below the mean) who fell into three assertiveness categories: high, average, and low. Scores falling more than one standard deviation below the mean were designated as low assertive. Scores higher than one standard deviation above the mean were designated as high assertive. Scores falling within ± 1 SD about the mean were designated as average assertive. A chi-square test was performed.

The percentages of more and less stress related illnesses endorsed by repressors and sensitizers were determined for analysis of hypothesis five and a chi-square test was performed. In addition, male and female mean differences on life change, assertiveness, and illness measures were examined by t-tests.

Results

Sick-role tendency - The measure of sick-role tendency was originally included to control for a positive response bias in illness reporting. However, a correlation of $+0.08$ ($p < ns.$) was obtained between the measure of sick-role tendency and reported illness on the Symptom Checklist. Furthermore, a correlation of -0.12 ($p < ns.$) was obtained between sick-role tendency and doctors visits reported on the Symptom Checklist. At least in this particular sample, this measure does not appear related to a positive response bias and therefore was not used in the data analysis.

Life change, assertiveness, and illness - A multiple regression analysis was performed on the data from assertion, life change, and illness measures. Subjects included in the analysis were those whose AD and AR scores placed them in the upper and lower 25% ($N = 102$) of the sample ($N = 207$). The analysis was performed separately for males ($N = 42$) and females ($N = 60$), as well as for both sexes together. A separate analysis was performed for AD and AR scores in order to determine whether reported assertive behavior might have different mediating effects than the level of subjective discomfort experienced in behaving assertively. This analysis specifically related to hypotheses one and two, which suggested that assertiveness would account for a significant amount of the variance in the relationship between stress and illness.

One of the assumptions of this study was that a relationship between life change and illness would be obtained, as many

previous studies of similar design have obtained small, but significant relationships. This assumption did not hold true. A significant relationship between life change and illness was obtained for female subjects only. When data were analyzed on female subjects in the upper and lower 25% of the sample according to AR scores, life change accounted for 16% of the variance of illness scores ($F = 11.4$, $p < .0001$). For males under AR scores, life change accounted for only 5.9% of the variance of illness scores ($F = 2.46$, $p < ns.$). For both males and females under AR scores, life change accounted for 12% of the variance ($F = 13.41$, $p < .0001$). However, this is due primarily to the strong relationship between life change and illness for females.

For female subjects in the extremes of the sample according to AD scores, life change accounted for 27% of the variance of illness scores ($F = 21.3$, $p < .0001$) and less than 1% of the variance for males ($F = .194$, $p < ns.$). For males and Females combined, life stress analyzed under AD scores accounted for 16% of the variance ($F = 19.12$, $p < .0001$). Again, this is due primarily to the strong relationship between life change and illness for females only.

Given the absence of a significant relationship between life change and illness for males, the role of assertiveness in the life change-health change relationship can be considered only with respect to female subjects. The analysis does yield data about the amount of variance in illness scores explained by assertiveness scores for both male and female subjects.

Results of the multiple regression analysis indicated that neither the assertiveness-discomfort (AD) score nor the assertiveness-responding score (AR) was found to be significantly related to illness for males, females, or both sexes combined. In no case did assertiveness measures account for more than 4% of the variance of illness scores. Including the assertiveness variable in the analysis decreased the predictiveness of life change for illness.

When the data were analyzed by AR scores in the upper and lower 25% of the sample for both sexes combined, assertiveness accounted for 2.86% of the variance of illness scores ($F = 3.3$, $p < ns.$). For females, assertiveness accounted for less than .9% of the variance of illness scores ($F = .63$, $p < ns.$). For males, assertiveness accounted for 3.7% of the variance of illness scores ($F = 1.57$, $p < ns.$).

When the data were analyzed by AD scores for both sexes combined, assertiveness accounted for 2.3% of the variance of illness scores ($F = 2.73$, $p < ns.$). For females, assertiveness accounted for 3% of the variance ($F = 2.45$, $p < ns.$). For males, assertiveness accounted for such an insignificant amount of the variance of illness scores, that the F-level or tolerance level was insufficient for computation.

In addition to substantiating the results of the multiple regression, the extreme groups analysis of variance revealed no significant interactions between the two independent variables,

assertiveness and life change. For females under AR scores, assertiveness was not significantly related to illness ($F = .602$, $p < ns.$). Stress or life change was significantly related to illness ($F = 9.8$, $p < .05$). The interaction between life change and illness was not significant ($F = .525$, $p < ns.$). For males under AR scores, assertiveness was not significantly related to illness ($F = 2.6$, $p < ns.$). Life change was also not significantly related to illness ($F = .22$, $p < ns.$). The assertiveness-life change interaction was not significant ($F = 2.9$, $p < ns.$).

For female subjects under AD scores, assertiveness was not significantly related to illness ($F = 2.95$, $p < ns.$). Life change was significantly related to illness ($F = 10.9$, $p < .002$). The assertiveness-life change interaction was not significant ($F = 1.2$, $p < ns.$). For males under AD scores, assertiveness was not significantly related to illness ($F = .013$, $p < ns.$). Life change was also not related significantly to illness ($F = .22$, $p < ns.$). The assertiveness-life change interaction was not significant ($F = 2.9$, $p < ns.$).

Assertiveness and repression-sensitization - Hypothesis four stated that highly assertive individuals would score in the average range of the R-S scale. This was not found to be the case. Rather, significantly larger percentages of low and average assertive subjects fell into the average range of the R-S scale than high assertive subjects (see Table 1).

Table 1. Percentages of High, Average, and Low Assertive Subjects Falling in the Average and Extreme Ranges of the R-S Scale.

ASSERTIVENESS ^b		REPRESSION-SENSITIZATION ^a		
		REPRESSION	AVERAGE RANGE	SENSITIZATION
High	AR	6	14.5	3
	AD	7	19	3.4
Average	AR	4.5	36	14
	AD	5.7	38	12.6
Low	AR	1	15	5.6
	AD	0	9	5

^aExtreme ranges are defined as scores falling more than 1 SD above or below the mean ($M = 42.5$, $SD = 19$). The average range is defined as those scores falling within ± 1 SD of the mean.

^bHigh Assertiveness is defined as scores higher than 1 SD above the mean. Low Assertiveness is defined as scores lower than 1 SD below the mean. Average Assertiveness is defined as scores within 1 SD above and below the mean. (M for AR = 107.71, $SD = 13.88$; M for AD = 100.65, $SD = 19.14$).

It is interesting to note that the highly assertive group contained a much larger percentage of repressors and a smaller percentage of sensitizers than the low and average assertiveness groups. These percentages deviated significantly from expectation. For AR, $\chi^2 = 13$ ($p < .05$). For AD $\chi^2 = 13.3$ ($p < .01$).

Hypothesis five stated that sensitizers would endorse a significantly greater amount of more stress related illness while repressors would endorse a significantly greater amount of less stress related illness. This was not shown to be the case ($\chi^2 = .09$, $p < ns$).

The proportions of more and less stress related illnesses were similar for both repressors and sensitizers (see Table 2).

Table 2. Percentages of More and Less Stress Related Illnesses Endorsed by Repressors and Sensitizers.

	ILLNESS	
	% MORE STRESS RELATED	% LESS STRESS RELATED
Repressors	16.4	44
Sensitizers	20.5	46.5

While sensitizers and repressors did not differ significantly in the types of illnesses reported, they did differ significantly in other respects. As a group, sensitizers reported significantly more illness of all types than did repressors ($t = 4.14$, $p < .01$). The illness mean for sensitizers was equal to 17.13 ($SD = 10.19$) and the illness mean for repressors was equal to 8.48 ($SD = 5.84$). This did not appear to be a sex-related effect as the composition of males and females in each group was roughly proportional (sensitizers = 25 females, 13 males; repressors = 13 females, 8 males).

The amount of negative life change reported by sensitizers and repressors was also significantly different ($t = 2.4$, $p < .01$). The negative life change mean for sensitizers was equal to 27.34 ($SD = 14.32$) and the negative life change mean for repressors was equal to 19.19 ($SD = 11.12$). There was no significant difference

between repressors and sensitizers for the reporting of positive life change ($t = .47, p < ns.$).

Male-female differences - The striking difference between life change and illness relationships for males and females necessitated an investigation into other potential sex differences in obtained data. While life change and assertiveness means for males and females were not significantly different, females reported significantly more illness than males ($t = 2.79, p < .01$). The illness mean for female subjects was equal to 14.3 (SD = 9.66). The illness mean for males was equal to 10 (SD = 5.9).

CHAPTER 3

DISCUSSION

Research on the psychological variables which contribute to illness development has focused on two general factors: stressful life events and personality characteristics. Earlier studies merely investigated the relationship between life change and illness. The hypothesis was that stressful events demanded increased coping efforts which resulted in negative emotional states. These negative emotional states, if maintained, were thought to lead to chronic physiological arousal, which then created a strain on the body and a predisposition to illness. However, it soon became clear that individuals varied considerably in their responsiveness to life stress and vulnerability to illness. A number of moderator variables were then proposed and researched for their possible roles in the stress-illness relationship. The purpose of this study was to investigate the relationship of assertiveness to illness.

Rather than merely conducting a simple correlational study of assertiveness and illness, a measure of life change was included. This allowed an investigation of the possible interactions between life change and assertiveness, as well as their separate effects on illness reporting. The psychological variables which are found to contribute to illness development are indeed likely to be

interactive and perhaps best studied via multifactorial designs rather than with simple correlational models (Cohen 1979). For example, personality characteristics or coping skills could influence the frequency and intensity of life stresses encountered or avoided. These intraindividual variables might also influence the resolution of encountered life stressors. Conversely, one's past experiences with life stress may influence the development of certain personality characteristics and coping skills.

This study, although designed for yielding data about interactive and additive effects, has limitations in its ability to clarify these issues. Therefore, prior to embarking on a discussion of the results of this study, several methodological problems should be addressed, so that all results and their implications may be placed in an appropriate context.

In the overall conceptual and statistical design of this study, assertiveness and life change were treated as independent variables and illness was treated as the dependent variable. In light of the current emphasis on interactive effects, these designations may be artificial. Each of these three variables may in fact be interdependent. While this design is able to provide information about the relationship between life change and assertiveness and their separate and combined relationships to illness reporting, it is not able to account for any effects that illness might have on assertiveness and life change. Illness certainly carries its own unique set of stressors, some of which might involve changes in self-image and self-confidence (Cohen and Lazarus 1979).

Another methodological problem involves the use of self-report measures. In the measurement of illness, the use of subjects' reports of physical symptoms or illness, without confirmation of the existence of organic disease, makes the differentiation between actual illness and illness behavior impossible. Mechanic and Volkart (1961) have suggested that illness development and treatment seeking may be two distinct phenomena and that the latter should not be used as a direct measure of the former. Illness behavior may reflect certain personality characteristics, such as a tendency toward chronic anxiety or a need for reassurance. Cohen (1979) states that "much of the literature cited as supported for the idea that psychological factors are related to the development of physical illness may support only the notion that psychological factors influence illness behavior, that is, result in increased treatment seeking or increased reports of illness, but not necessarily increased incidence of illness."

The illness score in this study in all probability reflects both actual illness and illness behavior, but the relative representation of each is impossible to determine. It is a subjective measure that could have been highly dependent on each subject's psychological state of mind at the time of testing and/or characteristic ways of responding to physical symptomatology. Obtained relationships between illness, assertiveness, and life change may merely reflect a reporting tendency for illness. This tendency may be operating in more than one assessment situation, therefore, the measures of life change and assertiveness are similarly suspect.

Each measure may also be vulnerable to the effects of social desirability in subjects' responses to items.

The measure of sick role tendency was intended to control for an expected response bias in illness reporting. However, the SRT was not found to bear any significant relationship to reports of illness or doctors visits. Perhaps the measure cannot differentiate between those individuals with a tendency to overreport symptoms and frequent doctors' offices from those who merely take good care of themselves. Even so, the measure should detect the overreporters that do exist, showing at least a small relationship. The items of the SRT bear more face validity for detecting individuals who appropriately take care of their health needs than for individuals with a "sick-role tendency."

Also, sick-role tendency may not be a personality characteristic, but rather a temporary response to situational variables. Mechanic (1968) suggested that illness behavior may be a coping response to stress. Thus, individuals may be more likely to adopt a sick role and seek medical assistance when stressed. When such individuals are not stressed, for example, when completing test materials for this study, sick-role tendency may be irrelevant. This would certainly be interesting to investigate further. One might compare SRT scores for stressed and nonstressed groups.

Another major weakness of this study lies in the use of retrospective self-reports of life change and illness. These measures are subject to distortions of memory. Also, a determination of

whether illness results from certain variables or affects these variables cannot be made. Certainly, the knowledge that one is ill affects one's emotional state. Unlike a prospective study, retrospective studies cannot yield definitive information about causal relationships.

In this study, there is also the danger that the hypotheses being tested were clear to the subjects, since the life change and illness measures were administered simultaneously.

One must also be aware of criticisms in the literature (Cohen 1979) that life change instruments overlook the possibility that no change may be quite stressful, especially when some change was expected, such as a job promotion. Understimulation, as well as overstimulation, may result in increased physiological arousal.

These methodological shortcomings and potential biases should be kept in mind as the results of the study are discussed. In this study, the finding of a highly significant relationship between life change and illness measures for females and an insignificant relationship for males is puzzling. Previous studies clearly establish a small but significant correlation for both males and females between life change and illness as measured both by self-report and actual documentation. Still, with the use of self-report measures, perhaps these unexpected results derive from a positive response bias which is powerful and consistent across life change and illness measures for female subjects. However, while female subjects reported significantly more illness than male subjects,

life change means were not significantly different. Thus, this possibility does not appear likely.

Perhaps illness reporting was affected by social desirability factors. There certainly appear to be more permissive societal attitudes for the endorsement of physical and emotional distress for women than for men. A possible reluctance on the part of males to endorse physical illness may have obscured an existing relationship between stress and illness and would also account for the significant difference in illness means between males and females.

Hebert (1978) also obtained a high correlation between life change and seriousness of illness for female college students, when compared to correlations obtained in many earlier studies, which typically include both males and females, or male subjects only. Perhaps females are more susceptible to any illness-inducing effects of life change, aside from any reporting differences between males and females. Even so, the fact remains that relationships have been previously obtained between stress and illness for males in studies with similar designs. Males may have delayed effects.

Given these difficulties in interpreting the obtained life change-illness relationships, the inclusion of the assertiveness dimension clearly creates an interpretive morass. There are two different ways in which assertiveness may play a role in the stress-illness relationship. Assertive behavior, as part of an effective coping repertoire, may prevent the occurrence of stressful events. So viewed, assertiveness may affect the amount of life change one

experiences. Assertiveness may also mediate illness development via an individual's attempts to cope with the life change which has already occurred, thus ameliorating the stressfulness of change. The statistical analyses in this have the potential for generating information about both assertiveness roles.

As measured in this study, neither the capacity for behaving assertively nor a low level of subjective discomfort appear to significantly reduce any illness producing effects of life change. There was also no significant interaction between the two independent variables, life change and assertiveness. Therefore, assertiveness does not appear to affect the amount of life change encountered and life change does not appear to affect assertiveness in any significant way.

There are a number of reasons why these results might have been obtained. Assertiveness may not be a variable which is in any way relevant to the area of life change and illness. Assertive behavior may be useless in ameliorating illness inducing effects of life change or in preventing the occurrence of life change. There may be cases in which assertiveness actually creates stress if such behavior is viewed as inappropriate. For example, some highly assertive women may encounter negative social responses to their behavior.

Perhaps assertiveness is relevant to this area, but the Assertion Inventory lacks validity for this particular sample. Objective measures of assertive behavior would have certainly been superior to a self-report measure.

Other possible explanations include the methodological weaknesses discussed earlier. Is assertiveness unrelated to actual illness or illness behavior? Clearly, the relationship of assertiveness to actual illness is confounded. Assertiveness did account for some of the variance in the illness scores, albeit an insignificant proportion. Perhaps there are numerous psychological, as well as physical and historical, variables involved in illness development, each contributing to illness development in a small, but additive/interactive manner. In this case, significance would not be obtained for any one variable. Researchers will need to utilize increasingly more complex designs in order to accommodate this possibility.

The hypothesis that sensitizers would endorse a significantly greater amount of more stress related illness and repressors a significantly greater amount of less stress related illness was based on suggestive evidence in the literature that "outer-directed" types who suppressed direct evidence of stress tended to report non-stress related illnesses. "Inner-directed" individuals who were more receptive to inner mental states and emotions tended to report stress related illnesses. The outer-directed individuals were conceptually equated with repressors and the inner-directed types were equated with sensitizers.

In actuality, the proportions of more and less stress related illness among repressors and sensitizers were not found to be significantly different. According to these results, one's defense mechanisms or style of emotional expression do not affect the

likelihood of succumbing to (or reporting) a more stress versus less stress related illness.

The finding that sensitizers reported significantly more illness in general is consistent with other research (Byrne et al. 1968). Sensitizers also reported significantly more negative life change than repressors. These findings suggest two possibilities. One is that the sensitizing style is less healthy than the repressing style. Sensitizers may be more vulnerable to illness than repressors. They may also be more vulnerable to negative life change. Does this style create more stress due to obsessive worrying? Are sensitizers more likely to maintain a chronic state of physiological and emotional arousal? They have been found to score higher on measures of anxiety (Sathayavathi et al. 1978).

However, perhaps because of the obsessive worrying, these individuals are merely more likely to attend to and report negative change and illness. This is the second possibility. Sensitizers may report more symptoms and stresses, which Cohen (1979) and others (Mechanic and Volkart 1961) have labeled illness behavior. This possibility is substantiated by research which demonstrates that sensitizers have a lower tolerance for pain than repressors (Wagstaff 1977), suggesting that sensitizers may indeed be more likely to attend to and report unpleasant events and physical symptoms.

However, the R-S dimension is also tapped via self-report and may be affected by the same reporting tendency. An R-S score may not reflect any particular personality characteristic at

all, other than a response tendency which is evident in other measures as well.

One additional possibility exists which may account for these results. On the R-S scale, a score in the sensitization direction is obtained to a large extent by the endorsement of various emotional and physical symptoms. With this source of confound, the finding that sensitizers reported significantly more illness and negative life change is not surprising. The R-S scale then may be of questionable utility in the investigation of relationships between defensive and/or emotional styles, life change, and illness.

As with sensitizers, the fact that repressors are defined as individuals who deny and repress (and are designated as such by the actual test behavior of denying many physical and emotional symptoms) indicates a considerable chance of reporting bias for illness, in this case, a tendency to underreport.

Generally, while the R-S scale appears to be able to identify those who report high levels of psychological and physical distress, what the scale measures at the low reporting end is questionable. A low score is thought to indicate the use of repression type defense mechanisms. However, research into non-questionnaire correlates of the R-S scale has yielded conflicting findings (Wagstaff 1977). Of primary importance are studies that appear to directly contradict the hypothesis that repressors "avoid" aversive stimuli. They have been demonstrated to show a higher tolerance for pain, a longer duration of liking at unpleasant pictures, a lower recognition threshold for emotional stimuli, and greater physiological

responsiveness to stress. The test does not appear to be able to differentiate between those who deny symptoms and those who truly have very few, those who could be considered psychologically and physically healthy, at least at the particular point in time that the test was administered.

Evidence for the possibility that a score in the repression direction represents health rather than denial is suggested by the low reports of illness by repressors (although, again, with the use of self-report rather than actual documentation of illness, these low scores may reflect the denial process). An additional bit of evidence is the finding that the high assertive/low discomfort group contained a larger proportion of repressors than either low assertive/high discomfort or average assertive/average discomfort groups, if one considers assertiveness to be an indication of psychological health. Also interesting and potentially supportive of this contention is a study which showed that a sensitizing style was associated with marital discord, while a repressing style was not (Genshaft 1980).

In summary, this study appears to raise more questions than it answers. It yields results whose primary value is in suggesting avenues for future research and illustrating some of the methodological problems which have been common to life change-illness research.

Subsequent studies will need to either use objective measures of variables of interest or find some way to deal with

problems of reporting behavior. One might want to consider the use of an instrument which controls for social desirability factors in self-report questionnaires. The validity of current measures of sick-role tendency must be questioned and new measures considered.

Personal styles of reporting life change and illness may be considered worthy of study in their own right. They may provide considerable insight into some of the psychological dimensions of illness behavior. Such information might be of interest to health providers who deal with individuals using the health system as a means of coping with stress.

Due to the methodological limitations of this study, assertiveness cannot be dismissed as useless in mediating the stressful effects of life change and thus ameliorating subsequent impact on physical well-being. The results are merely inconclusive. Conceptually, assertiveness continues to have face validity as a variable which can be effective in managing stress. The variability of the relationship between life change and illness suggests that perhaps assertiveness may be more appropriately studied initially for its relationship to life change or stress management, without consideration of illness.

Most researchers have concentrated their investigative efforts on identifying and clarifying components of various stress-illness models, as does this study, rather than on attempts to validate any one model in its entirety. The vast amount of research in this area remains to be integrated. One criticism of the research

is that, at this time, more complex designs are needed, because it is apparent that the concept of stress and its relationship to illness is remarkably complex. However, with increasing complexity of design, persistence in the use of self-report measures becomes extremely hazardous. There is also a dearth of methodologically sound research from which to build more complex studies. "It may well turn out to be the case that psychological stress is a catalyst for other risk factors rather than a true participant in the disease process" (Garfield 1979).

In the current literature, stress-illness models have been evolving from overly simplistic to increasingly complex. There are general rules common to most. They are the illness results from the interaction of stressful stimuli, emotional and physiological arousal, and the success or failure of coping responses. Current psychosomatic theory as conceptualized in George C. Stone's Psychology and the Health System (1979) seems to contain one of the most well-developed definitions of our theoretical state of the art and certainly illustrates the complexity of the state. This definition holds that environmental stressors give rise to emotional states through the mediation of cognitive appraisals which are individualized through the particular cultural, familial, and idiosyncratic learning of the person. These emotional states, in turn, determine patterns of physiological arousal that serve as information sources, but which also may have etiological impact in pathogenesis. Illness and its treatment are stressors themselves,

so that both the maintenance of health and the course of disease involve a dynamic interplay among environmental, social, cognitive, and physiological systems (Lipowski 1976).

Some innovators in the medical community have already put information from this field of research into action. Some studies, for example, indicate that information about medical procedures plays a critical role in mediating the stressful effects of such procedures, therefore information in many settings is an integral part of preparation for treatment. However, other research suggests that the time at which the information is given may affect the benefits of the information (Cohen and Lazarus 1979)

There are a number of other current interventions for managing stress, which have developed from stress-illness research findings. Different treatments have different emphases depending on the branch of research from which they are derived. For example, biofeedback has origins in the physiological models of stress. Relaxation and meditative techniques have some relationship to physiological theories as well, but they also overlap with models that emphasize coping skills. The basic assumption, however, is physiological, i.e. that chronic physiological arousal puts one at risk for illness development and any interventions which reduce arousal also reduce that risk. Physical exercise as a stress management technique follows similar assumptions. There are also interventions which emphasize perceptual and cognitive factors and attempt to modify negative perceptions of stress and develop positive belief systems

around the meaning of stress in one's life. This clearly derives from the work of Lazarus and others who believe that a negative evaluation of a stressor heightens its deleterious effects.

Assertiveness training may be considered as a stress management technique from several perspectives. It is a coping skill useful in managing the events of one's life, in sickness and in health. It is also compatible with theories that emphasize ineffective emotional discharge or repressed hostility as important variables in the stress-illness relationship. Assertiveness could be considered as an appropriate alternative to fight or flight and thereby be related conceptually to physiological theories. However, its utility in mediating or preventing stress has yet to be demonstrated experimentally.

The entire concept of stress management has as one of its most fundamental themes the idea of control, which has been studied for its role in the stress-illness relationship. Stress management has a number of components, many of which were mentioned above. Few of these have been directly related to the prevention and/or amelioration of illness and disability. Nevertheless, the emphasis is one of teaching people that they can learn skills to cope with stressors in their lives, that they can have some control over their lives. At the very least, this may reduce the emotional distress which so often comes with stress and illness.

To conclude, caution must be exercised in the application of results from studies in this area, as with results from any studies which transfer to the provision of direct services. The role of

stress in illness and the research on moderator variables are not only intriguing, but for the most part possess considerable clinical or face validity, which is perhaps why many interventions are already well-established. However, as yet undiscovered interrelationships among these variables must be considered.

The evolution of treatment in the health system is beginning to reflect the more complex and system-oriented conceptualizations becoming increasingly evident in the research. The individual and his environment are seen as a system whose components continually interact. This translates into divergent members of the treatment system being more prepared to integrate and coordinate their skills. They are also prepared to coordinate their skills with the skills of the individual in distress, with the awareness that the client too is a vital component of the system.

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