THE RELATIONSHIP OF SOCIAL SUPPORT, EMOTIONAL EXPRESSION, AND HEALTH STATUS: A LISREL ANALYSIS OF CONCEPTUAL MODELS

by

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(ABSTRACT)

The present study investigated the relationship between hostility, self-concealment, social support, stress, and health. A path model was proposed, evaluated, and modified using the linear structural relations (LISREL) method of latent variable path analysis. Subjects were 402 undergraduate psychology students at Virginia Polytechnic Institute and State University. All subjects completed self-report measures initially and 293 subjects completed mailed follow-up measures of health status one semester later. Health care utilization data was obtained from the Student Health Services. Results indicated that social support had strong direct effects, but relatively weak indirect effects on health. Whereas, hostility and self-concealment were found to have indirect effects, but not direct effects, on health. Hostility affected health via effects on social support, stress, and self-concealment. Self-concealment affected health via its effect on stress, and stress directly affected health. These findings suggest that emotional expression has an important influence on the relationship between social support, stress, and health.

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The Relationship of Social Support, Emotional Expression, and Health Status: A LISREL Analysis of Conceptual Models

Social support is a multifaceted concept that has been associated with positive health outcomes in numerous studies. House (1981) defined social support as an interpersonal transaction involving one or more of the following: emotional concern, instrumental aid, information, or appraisal information relevant to self-evaluation. Evidence that social support may be an asset to health first came from epidemiological research with grossly defined measures such as marital status and involvement in organizations (e.g., Berkman & Syme, 1979). Later studies evaluated specific components of social support, such as instrumental and problem-oriented emotional support, in relation to health status (e.g., Seeman & Syme, 1987). Yet, the mechanisms by which social support may protect individuals from disease remain unclear. It has been proposed that social support may influence health by facilitating psychological states associated with improved immune functioning, influencing health-promoting behaviors, and by decreasing life stressors by facilitating the adoption of appropriate social roles and behaviors (Cohen & Syme, 1985). Still, while social support has been associated with better physiological functioning, the processes by which this occurs have been scantly researched. At present little can be said conclusively about how the presence of supportive others

results in better health status.

Cohen and Williams (1991), in a review of literature on psychosocial variables and infectious disease, observed that social support, introversion-extraversion, and susceptibility to infection were consistently related. Introverts and people with less social support were found to be more susceptible to infection and illness across several studies. They suggested that introversion-extraversion and social support may reflect a single underlying construct. The present study explores a similar hypothesis: that emotional expression, occurring in the context of social support, is a mechanism by which social support affects health. Later, a model of the relationship of social support, emotional expression, and health is presented. First, to establish the plausibility that emotional expression and social support are related, relevant literature is reviewed.

Social Support and Emotional Expression

A body of social-psychological research indicates that emotional expression is related to social support received. Individuals who have difficulty expressing themselves self-disclose less and have less social support. Snell (1989) found that socially anxious individuals self-disclose less than nonsocially anxious individuals. Sarason, Sarason, Hacker, and Basham (1985) found that people with poor social skills, by self-report and observer ratings, had less

social support than people who were more socially skilled. Further, extraverted people report having more social support while, neurotic, depressed, hostile, and lonely individuals report less social support (Sarason, Sarason, & Shearin, 1986). Thus, people who are more socially at ease self-disclose more and report having more social support. These findings are consistent with the notion that self-disclosure is important in the development of interpersonal relationships (Kelley et al., 1983).

The above findings suggest that emotional expression, depending on the amount and type, may either facilitate or inhibit receipt of social support. Conversely, other research suggests that social support may elicit both experience and expression of emotion. Winsted and Derlega (1985) found that in anticipation of handling a snake, subjects who waited with a friend reported experiencing more emotion overall than subjects who waited with a stranger. Subjects who waited with a friend reported more fear and anxiety, while those waiting with a stranger reported more depression and hostility. For men, length of friendship was positively correlated with amount of emotion experienced. While this study did not directly assess expression of emotion, Winsted and Derlega reasoned that the presence of a stranger or a less familiar friend may have inhibited both the expression and experience of negative affect.

The notion that close friends may elicit expression of emotion is consistent with results of research investigating social determinants of self-

disclosure. Chaikin and Derlega (1974) found that individuals perceived self-disclosure to friends and people of the same age as more appropriate than disclosure to strangers or people older or younger than themselves. Further, a person's expectation of a partner's behavioral response (e.g., degree of emotional expression expected) has been shown to in part to determine that response (Notarius & Johnson, 1982; Zanna & Peck, 1975). Thus, findings suggest that people are more likely to self-disclose to friends (i.e., social support) and will likely disclose more intimately to friends who expect them to do so.

The above findings, and research on gender roles, are consistent with Thoits (1985) view that social support is governed by behavioral expectancies associated with role relationships. Men may self-disclose less about intimate topics than women in part because of the role behavior expected of them. Saurer and Eisler (1990) found that men who conform more to traditional gender roles, have more difficulty expressing tender emotions and report less satisfaction with their social support network. Similarly, Morgan (1976) found females disclose more about intimate topics, while males may self-disclose as much as females about non-intimate topics. Given these findings it is not surprising that have women been found to both elicit more emotional expression (Caldwell & Peplau, 1982) and provide more support (Antonucci & Akiyama, 1987) to both men and women. Thus, those who provide the most

social support are those who elicit the most emotional expression.

In summary, research suggests that emotional expression may affect receipt of social support. Hostility, poor social skills, and social anxiety were associated with less social support, while extraversion and social competence were related to more social support (Sarason et al., 1985; 1986; Snell, 1989). Further, social support may elicit emotional expression, and self-disclosure in particular (Chaiken & Derlega, 1974; Notarius & Johnson, 1982; Winsted & Derlega, 1985; Zanna & Peck, 1975). How emotional expression occurring in the context of social support may affect health is the next topic of discussion.

Emotional Expression, Social Support, and Health

Discussing traumatic events with others has long been thought to be of psychological and physical benefit. Breuer and Freud (1895/1966) developed the cathartic method, or "talking cure," to treat hysterical symptoms. They observed that hysterical symptoms were most likely to cease after patients discussed traumatic events in detail. Recent studies have provided some credence to these early clinical observations. Research on the effects of psychotherapy on health support the notion that self-disclosure is of benefit. Jones and Vischi (1980) reviewed 13 studies that evaluated the effect of introducing mental health services into organizations and found that introduction of psychotherapy was associated with a 20% decrease in medical care

utilization. Similarly, Mumford, Schlesinger, and Glass (1981), in a review of 15 studies published between 1965 and 1980, found people who underwent psychotherapy showed a 13% decrease in medical care utilization as compared to control subjects.

Pennebaker and colleagues have developed a program of research investigating the relationship of self-disclosure about traumatic events and risk of illness. In a study with college students Pennebaker (1985) found that subjects who reported having at least one upsetting trauma that they had not discussed with anyone used student health services more, reported more symptoms and disease, and took more over-the-counter medication. Pennebaker & Hoover (1986) reported that college students and adults who experienced traumatic events in childhood (e.g., sexual or physical abuse, death or divorce of parents) and had not disclosed the trauma to others were more likely to report current health problems than those who had disclosed the trauma. Similarly, Pennebaker and O'Heeron (1984), in a study with spouses who had been bereaved in the past year because of accident or suicide, found that those who reported talking to friends about the death reported less illness than those who did not. This relationship remained after controlling for the number of close friends prior to and following the death. Thus, amount of social support was not found to be related to health; rather, social support was related to health when it was associated with expression of emotion related to

the occurrence of a stressful event. It appears that the provision of confiding support, and/or the confiding itself, may have reduced the effect of the trauma on health.

Pennebaker and colleagues also conducted experimental research to test the hypothesis that expression of feelings about stressful events reduces the likelihood of disease. Pennebaker and Beall (1986) had college students write for 15 minutes each night on 4 consecutive evenings about either a preassigned trivial topic or about traumatic experiences that had occurred in their lives. Writing about a traumatic event was associated with higher blood pressure and negative moods following the essays, but with fewer health center visits in the following 6 months. In a later study, Pennebaker, Kiecolt-Glaser, and Glaser (1988) also compared writing about traumatic events as compared to writing about trivial events. Subjects wrote for 20 minutes on each of 4 consecutive days. Blood pressure, health center visits, and immune function was assessed. Writing about traumatic events resulted in less utilization of health services and improved immune function as compared to writing about trivial events. Also, within the writing group those who were high-disclosers had better immune responses than low-disclosers. No significant relationships were found for blood pressure. Murray, Lamnin, and Carver (1989) compared the effect of brief psychotherapy, writing about traumatic events, and writing about trivial events. Neither health center visits or self-report of days restricted due to

illness were significantly influenced by the interventions. Further, no clear relationships for blood pressure or heart rate were found. The failure of this study to find significant results may have been due to the manipulation of disclosure being of insufficient duration to obtain effects. Previous studies involved 4 consecutive daily sessions of at least 15 minutes duration; this study had one 30 minute session. In addition, in previous studies subjects were informed that their responses would be read, but they would not be identified in any way except by subject number. As noted by Murray et al., no feedback was given to subjects about what would be done with the essays. Thus, subjects may have disclosed less, thinking that they might be identified in relation to what they disclosed.

Esterling and colleagues extended earlier research by evaluating self-disclosure and personality style in relation to immunological control of Epstein-Barr Virus (EBV) (Esterling, Antoni, Kuman, & Schneiderman, 1990; Esterling, Antoni, Margulies, Fletcher, & Schneiderman, 1991). Subjects were asked to compose a letter to a close friend about a highly stressful event that they had not widely discussed with others. On the basis of a self-report measure subjects were identified as Repressors, Sensitizers, or neither personality style. Sensitizers were those who reported themselves as emotionally expressive, whereas Repressors were identified by responses indicating denial of negative feelings. The amount of self-disclosure was determined by mean percent of

emotional words in writing samples. Thus, people were classified as high- and low- disclosers in each personality group. Degree of disclosure was found to be associated with control of latent EBV. High-disclosers had better immune control of EBV than low-disclosers. Repressors who were either high- or low-disclosers had poorer control of EBV than Sensitizers. Within Sensitizers, those who disclosed less had poorer control of EBV. In a second study, Esterling et al. (1991) again compared Repressors to Sensitizers, but also manipulated degree of emotional disclosure. Subjects were randomly assigned to verbal or written disclosure of a stressful event, or a trivial written condition. Thus there were three groups, verbal/stress, written/stress, and written/trivial. Three weeks following the manipulation, subjects in the verbal/stress group showed better immune function than the written/stress group, which had better immune responses than the written/trivial control. In the verbal and written stress groups, but not in the written control group, immune function improved following the intervention. Within the written/stress disclosure group, those classified as low-disclosing/Sensitizers had the most dramatic pre-post intervention change in immune function. These results suggest that those who initially disclose little and have a Sensitizer personality style (i.e., in touch with emotions, but not expressing them) may evidence the greatest improvement in immune functioning if they are provided the opportunity to express their feelings about stressful events. Thus, it appears that individual differences may

influence the degree to which people benefit from self-disclosure of traumatic events.

In contrast to self-disclosure, hostility is a type of emotional expression associated with less social support and poorer health outcomes. Hostility, as measured by the Cook-Medley Hostility (Ho) scale of the Minnesota Multiphasic Personality Inventory, has been associated with Coronary Heart Disease (CHD) in prospective studies (Barefoot, Dahlstrom, & Williams, 1983; Williams, et al., 1980) and with all cause mortality (Barefoot et al., 1983; Shekelle et al., 1983). The Ho scale measures a basic mistrust of others and is therefore of particular relevance to this discussion because individuals who mistrust others would be expected to have less social support and disclose less than individuals who trust others. Ho scores are negatively correlated with social support as measured by satisfaction with social support (Hardy & Smith, 1988) and having people to turn to in times of need (Scherwitz, Perkins, Chesney, & Hughes, 1991). Similarly, high scorers on the Ho scale avoid seeking and have difficulty accepting social support when it is offered (Houston & Vavak, 1991). One study suggests that hostile individuals may drive potential support away. Chesney et al. (1990) found Type As to facially express more glare and disgust than Type Bs. Further, glare and disgust were significantly correlated with verbal hostility.

Thus, hostility appears to both drive away social support and result in

greater risk of CHD. These findings may relate to why behavior modification of Type A Behavior Profile (TABP) has resulted in decreased coronary risk (Friedman et al., 1984). Modification of TABP may increase availability and quality of social support by reducing hostile expression of anger in Type A individuals. Social support measured as having people to share joys and sorrows with was found to attenuate the effects of CHD in Type As (Blumenthal et al, 1987). Yet, from these studies it is unclear if greater CHD risk is a direct result of hostility and/or anger, an indirect effect of having less social support, or some combination of these factors. In sum, this literature finds that while hostile expression of emotion is associated with greater risk of CHD, having others that one is able to talk to may reduce risk.

Conclusions

The results of correlational and experimental research reviewed indicate that not expressing thoughts and feelings about stressful life events may be detrimental to one's health. Individuals who have been provided the opportunity to write or talk about their traumatic experiences have been shown to have better health on a number of measures. Given that social support is associated with self-disclosure, it is plausible that one mechanism by which social support affects health is by facilitating intimate self-disclosure. Conversely, social support, and self-disclosure, may be decreased by hostility. Hostility may

negatively influence health directly and/or indirectly via its affect on self-disclosure and social support. Hostility might also affect health by increasing stressful life events. That is, hostile individuals may interact with the world in a manner that creates stressful experiences. In sum, hostility may influence health by affecting social support, whereas self-disclosure may be a mechanism by which social support affects health. Social support and self-disclosure may offset the effect of stressful life events on health; and hostility may increase stressful life events, thus negatively affecting health.

The Present Study

The purpose of the present study was to evaluate a preliminary model that proposes relations among social support, emotional expression, stressful life events, and health. A large number of college students enrolled in psychology classes completed questionnaires on constructs of interest and consented to provide access to their Student Health Service medical records. The linear structural relations (LISREL) method of latent variable path analysis, developed by Jöreskog and Sörbom (1989), was used to analyze the interrelations among psychosocial variables and health.

A select number of variables relatively consistently found to be associated with health were identified from which a preliminary model could be tested. The proposed model is depicted in Figure 1. Aspects of emotional

expression depicted by the model are hostility, self-disclosure, and self-concealment. Hostility is proposed to have both direct (path c) and indirect effects on health. Hostility may indirectly affect health by decreasing social support (path d) and by increasing stressful life events (path a). As indicated by path b, stressful life events are viewed to have direct effects on health. Social support is also proposed to have direct (path g) and indirect effects (paths e and h) on health status. As depicted by path e, social support is proposed to indirectly influence health by facilitating self-disclosure, which has direct positive effects on health (path f). Also, social support is seen as having indirect effects on health by reducing self-concealment, which directly negatively affects health status (paths h and i). The sum of positive and negative effects will determine the total influence of these constructs on health status.

Self-disclosure and self-concealment are considered separately because they represent different, but related, constructs. For example, one could rate oneself high on disclosure while still concealing particular traumatic personal experiences. Although the constructs of self-disclosure and self-concealment are different, the mechanism by which they may affect health is presumed to be the same. That is, not discussing thoughts and feelings about stressful experiences is viewed to result in increased risk of health problems.

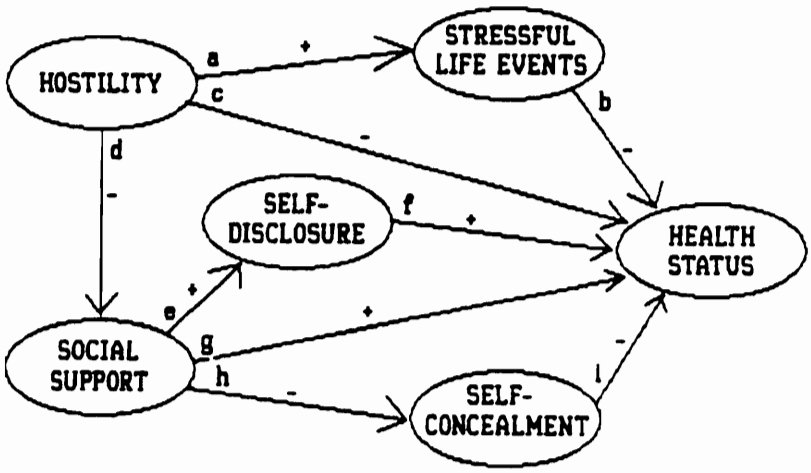

FIGURE 1. Proposed model.

METHOD

Subjects

Four hundred and two undergraduate students were recruited from the Virginia Tech psychology subject pool during the last 4 weeks of the 1991 Fall term and the first 4 weeks of the 1992 Spring term. Subjects received course credit for their participation. There were 64.8% females and 35.2% males in the sample who ranged in age from 18 to 26 years-old and had a mean age of 18.9 years. Percent of subjects and year of attendance in college was: 57.9% in first year, 21.7% in second year, 11.3% in third year, 7.1% in fourth year, and 2.1% in fifth year. 293 subjects (73%) responded to mailed follow-up questionnaires one semester later.

Procedure

Subjects signed-up for the study in a folder at a table in the Virginia Tech Department of Psychology used to recruit subjects from the psychology subject pool. The folder simply described the study as the "Social Support and Health Study." Recruited subjects met with experimenters in groups of 30 or less for testing at a time and date specified in a sign-up folder. Subjects completed consent forms (see Appendix A), addressed envelopes that were used to obtain follow-up self-report data on health perceptions and symptoms, and were administered questionnaires (see Appendices B-L). All forms and questionnaires were completed in less than 2 hours. Health care utilization

data were obtained from the Student Health Service for the period of August 1991 through April 1992. Mailed follow-up data were obtained during the last two weeks of May 1992.

Measures

Subjects completed a composite questionnaire of published and adapted scales that measured social support, self-disclosure, self-concealment, hostility, stressful life events, and health status. Social support was assessed with the Social Support Questionnaire (Sarason, Sarason, Shearin, & Pierce, 1987), the Perceived Social Support Scale (Blumenthal et al., 1987), and the Revised UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980). The Emotional Self-Disclosure Scale (Snell, Miller, & Belk, 1988) was used to measure self-disclosure and the Self-Concealment Scale (Larson & Chastain, 1990) was used to assess self-concealment. Hostility was measured with the Cook and Medley Hostility Scale (Cook & Medley, 1954). The Life Experiences Survey (Sarason, Johnson, & Siegal, 1978) and the Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981) were used to assess stressful life events. The Current Health Scale (Ware, 1976) and the Pennebaker Inventory of Limbic Languidness (Pennebaker, 1982) were used as self-report measures of health status.

Social Support Questionnaire. The Social Support Questionnaire (SSQ) is a 6-item scale that assesses perceived availability and satisfaction with social

support (Sarason et al., 1987). To assess availability of support subjects are asked to list people available in times of need. The following are representative items: "Who accepts you totally, including your worst and best points?" and "Whom can you count on to console you when you are very upset?" For each item assessing availability of support, subjects indicate their satisfaction with support received on a 6-point scale ranging from "very dissatisfied" (1) to "very satisfied" (6) (see Appendix B). Total scores are obtained for number and availability of support. Sarason et al. (1987) reported internal consistency coefficients ranged from .97 to .98 for number and from .96 to .97 for satisfaction. In the present study internal consistency coefficients for number and satisfaction were .92 and .89, respectively. The measure of satisfaction with support was used from this scale.

Perceived Social Support Scale. The Perceived Social Support Scale (PSSS) is a 24-item measure which uses a 5-point rating scale ranging from "strongly agree" (1) to "strongly disagree" (5) (Blumenthal et al., 1987). Representative items include, "I get the help and support I need from my friends," "I receive invitations to be with others," and "My family really tries to help me" (see Appendix C). Three factor-analytically derived subscale scores addressing perceived support from family, friends, and significant others and a total score are obtained. Blumenthal et al. (1987) reported internal reliability coefficients for the total scale, and for the significant other, family, and friends

subscales to be .88, .91, .87, and .85, respectively. Test-retest reliability for the total and three subscales was .85, .72, .85, and .75, respectively. The present study used only the total score, for which an internal consistency coefficient of .92 was found.

Revised UCLA Loneliness Scale. The Revised UCLA Loneliness Scale (RULS) is a 20-item measure that employs a 4-point scale ranging from "I have felt this way often" (4) to "I have never felt this way" (1) (Russell et al., 1980) (see Appendix D). The RULS has frequently been used as a measure of social support (e.g., Glaser, Kiecolt-Glaser, Speicher, & Holiday; 1985, Kiecolt-Glaser, 1987). Sample items include, "I lack companionship," "I do not feel alone," and "There are people I can talk to." A total loneliness score is derived by first reversing items 1, 4, 5, 6, 9, 10, 15, 16, 19, 20, then summing the items. Russell et al. (1980) reported an internal reliability coefficient of .94. An internal reliability coefficient of .92 was found in the present study. Test-retest reliability was not reported.

Emotional Self-Disclosure Scale. The Emotional Self-Disclosure Scale (ESDS) was adapted for use in this study (Snell et al., 1988). In its adapted version the ESDS is a 120-item scale in which subjects indicate the extent to which they discuss specific feelings (see Appendix E). On a 5-point scale ranging from "not at all" (1) to "thoroughly" (5), subjects indicate the extent to which they discuss their feelings. Representative items are "when you feel

depressed" and "when you feel happy." A total score and eight subscale scores may be derived. The subscales are depression, happiness, jealousy, anxiety, anger, calmness, apathy, and fear. In its adapted form, total coefficient alpha was found to be .98, and subscale reliabilities for discussing with females, males, and spouse or lover were .97, .96, and .99 respectively.

Self-Concealment Scale. The Self-Concealment Scale (SCS) is a 10-item scale that assesses concealment of intimate information, the keeping of secrets (Larson & Chastain, 1990). The measure uses a 5-point scale ranging from "strongly disagree" (1) to "strongly agree" (5). Items include, "I have an important secret that I haven't shared with anyone," and "Some of my secrets have really tormented me" (see Appendix F). Larson and Chastain (1990) reported an internal consistency coefficient of .83 and a test-retest coefficient of .81. The SCS was found to be correlated with a measure of self-disclosure -.27, and -.23 in a cross-validation study, thus indicating that self-disclosure and self-concealment are distinct but related concepts. In the present study the SCS was found to have a reliability coefficient of .86.

Cook-Medley Hostility Scale. The Cook and Medley Hostility Scale (HO) is a 50-item measure in which subjects identify statements as either true or false in describing them (Cook & Medley, 1954). The HO scale is comprised of items taken from the Minnesota Multiphasic Personality Inventory and was originally developed to discriminate teachers who had good verses bad rapport

with students. Smith and Frohm (1985) demonstrated convergent and discriminant validity indicating that high HO scorers were suspicious, resentful, and prone to anger. Cook and Medley (1954) reported an internal consistency coefficient of .86. Test-retest reliability coefficients of .85 (Barefoot et al., 1983) and .84 (Shekelle et al., 1983) have been reported.

The present study used a 41-item version of the HO scale (see Appendix G). The 41-item version was found to correlate .97 with the total 50-item version, and was found to have an internal consistency coefficient of .74, in a sample of 104 subjects obtained from the introductory psychology subject pool. In the present study the 41-item measure was found to have an internal reliability coefficient of .79.

Life Experiences Survey. The Life Experiences Survey (LES) is a 60-item scale in which subjects rate events experienced during the previous year according to the degree of positive or negative impact (Sarason et al., 1978). Ratings are made on a 7-point scale ranging from extremely negative (-3) to extremely positive (+3) (see Appendix H). Sarason et al. reported test-retest reliability coefficients for the total change score were .63 and .64. Estimation of internal reliability is not appropriate for this scale as only events experienced are rated. Events rated as having a negative influence were summed and used as a measure of stress in this study.

The Hassles Scale. The Hassles Scale (HS) is a 117-item scale in

which subjects are instructed to indicate what has "hassled" them in the past month (Kanner et al., 1981). Subjects rate each hassle they experienced on a 3-point scale as having been "somewhat," "moderately," or "extremely" severe (see Appendix I). A frequency score, the number of items checked, and an intensity score, the mean severity of all items checked, may be calculated. Test-retest reliability coefficients of .79 for frequency and .48 for intensity were reported by Kanner et al. (1981). Estimation of internal reliability is not appropriate for this scale as only hassles experienced are rated.

The Current Health Scale. The Current Health Scale (CHS) is a 9-item measure of health perceptions (Ware, 1976). On a 5-point scale ranging from "definitely true" to "definitely false," subjects indicate how true they feel statements are concerning their health (see Appendix J). Responses to items are totalled to derive a score indicating the subjects current perception of health. Reported internal consistency coefficients range from .89 to .92 and test-retest reliabilities range from .76 to .86 (Ware, 1976). The internal consistency coefficient was found to be .89 in the present study.

The Pennebaker Inventory of Limbic Languidness (PILL). This scale is a symptom checklist of 54 physical symptoms and complaints (Pennebaker, 1982). Subjects indicate how frequently they experienced symptoms on a 5-point scale ranging from "have never or almost never experienced the symptom" (1) to "more than once every week" (5) (see Appendix K).

Responses are summed across items for a total score. The validity of this measure is indicated by findings that high scorers make more physician and health center visits and have more health-related work absences than low scorers. The PILL was found to have an internal reliability coefficient of .92 in the present study.

Health Care Utilization. Health care utilization was obtained by reviews of medical records obtained from the Student Health Services (SHS). Utilization data was classified into 1) symptom driven visits for illness (e.g., bronchitis, eye irritation, otitis media, pharyngitis/strep, asthma, and urinary tract infections), 2) visits for treatment of injuries (e.g., bone fracture, contusion, dislocated shoulder, concussion, and sprains), 3) obstetric visits (e.g., pregnancy tests) and 4) other (e.g., encounters for unspecified procedures or administrative purposes, and any DSM-III R diagnosis). In addition, self-report of health care utilization outside of the SHS was obtained in a mailed follow-up questionnaire. Subjects indicated the medical reasons for, and number of visits to, outside providers (see Appendix L).

Statistical Analyses using LISREL

The present study was designed to evaluate a model that delineates direct and indirect relations between emotional expression, social support, stressful life events, and physical health (see Figure 2). LISREL, a causal modeling statistical procedure that incorporates both path analysis and factor

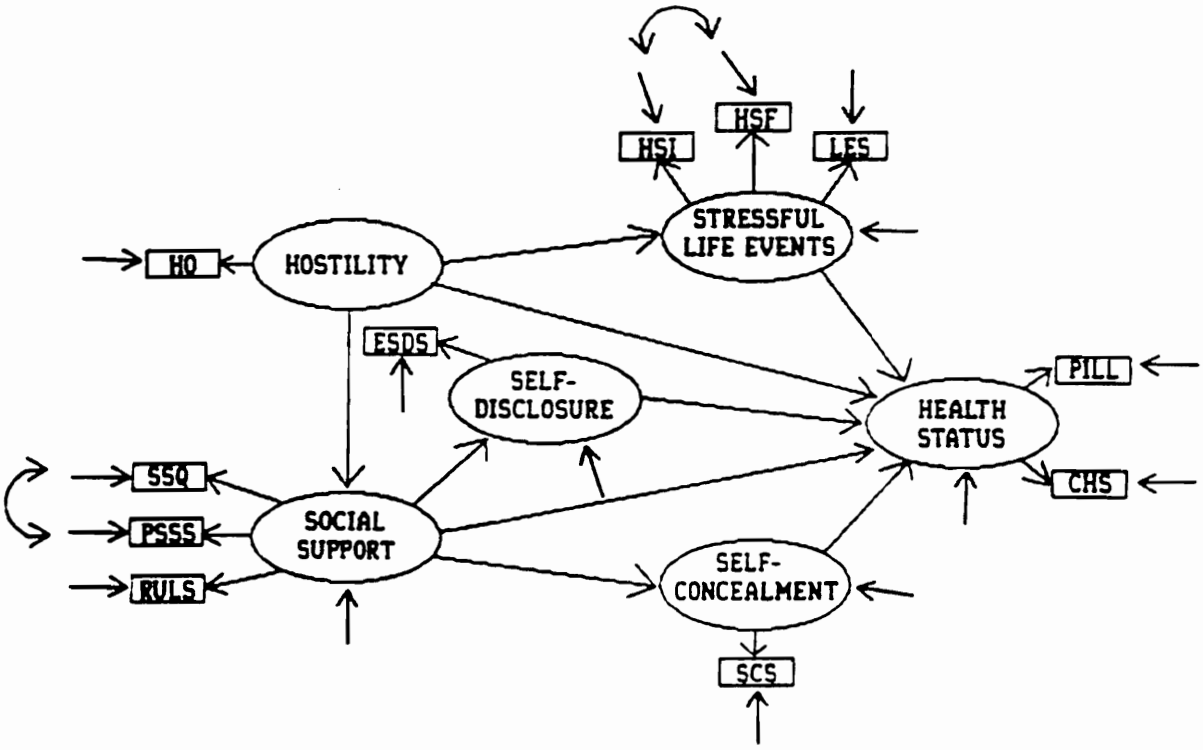

FIGURE 2. Preliminary model with latent and manifest variables illustrated.

analysis, is an excellent method for evaluating such a model (Jöreskog & Sörbom, 1989; Keith, in press). While LISREL does not evaluate causality in the same manner as true experiments, which control for confounding influences through random assignment, it can provide estimates of influences given the accuracy of the proposed model (Keith, in press).

LISREL has several advantages over other techniques for analyzing nonexperimental data. Multiple regression may be conducted in a haphazard manner without a pre-specified theory and results may be difficult to interpret. In hierarchical and stepwise regression, both direct and indirect effects are attributed to variables that are entered first into the equation, thus stripping later variables of variance that should be attributed to their indirect effects. In contrast, LISREL, like traditional path analysis, requires a pre-specified model and allows for tests of both direct and indirect effects. Unlike traditional path analysis, LISREL estimates measurement error and removes it from the analysis of latent variables. Latent variables are the unmeasured constructs produced by the common variance of measures used. For example, in Figure 2 social support is the latent variable that is measured by the manifest variables SSQ, PSSS, and RULS. Keeping with standard LISREL notation, manifest variables are indicated with rectangles and latent variables are indicated with ovals. Arrows connecting latent variables with manifest variables indicate factor loadings and arrows connecting latent variables indicate presumed causal

pathways. Unconnected arrows leading to manifest variables indicate measurement error.

LISREL estimates of the magnitude of the effects of presumed causes on presumed effects. These path coefficients among the latent variables are interpreted as standardized regression weights. Holding other variables constant, a change of 1 standard deviation in a presumed cause results in change in some percent of 1 standard deviation in a presumed effect. The estimated percent standard deviation change in the presumed effect is the path coefficient. LISREL t-values indicate the significance of total and direct effects indicated by the path coefficients.

LISREL computes the following statistics as indicators of the goodness-of-fit of models: chi-square, overall goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and root-mean-square residual (RMR). The chi-square statistic indicates whether the data are significantly different than would be predicted by the model. A nonsignificant chi-square, greater than .05, suggests a good fit. Yet, because chi-square is influenced by sample size, analyses of large samples are more likely to result in type 2 errors. Loehlin (1987) suggests Jöreskog's chi-square to degrees of freedom ratio as an alternative measure of fit, with a ratio of less than 2 considered acceptable. Statistics produced by the GFI and the AGFI (corrected for degrees of freedom) indices range from 0 (no correspondence to the data) to 1 (exact

correspondence), with values close to 1 suggesting a good fit to the data (Keith, in press). Generally, a GFI or AGFI of greater than .9 is considered adequate. Another fit statistic provided by LISREL is the RMR. The RMR is the square root of the mean of the squared discrepancies between the observed and implied covariance matrices. When a correlation matrix is analyzed, a RMR of less than .05 is considered an indication of good fit.

RESULTS

Evaluation of the Data

Prior to analyses, the data were inspected for accuracy, missing values, and departures from normality. Missing values and subject errors in responding to questionnaires (e.g., endorsing every stressor on the LES) were deleted. Variables with skew or kurtosis greater than 1 or less than -1 were transformed to produce normality. As recommended by Tabachnick and Fidell (1989), square root, logarithmic, and inverse transformations were used. The variables transformed were: SSQ, PSSS, UCLA, LES, HSI, HSF, CHS initially and at follow-up, PILL at follow-up, and the SHS utilization data alone and combined with self-reported outside use. The means and standard deviations of each variable prior to being transformed are presented in Table 1. The correlation matrix of variables following transformation is presented in Table 2.

The model analyzed with LISREL is presented in Figure 3. The self-

Table 1

Means and Standard Deviations of Variables Measured

Variable	n	M	SD
SSQ	402	31.96	4.40
PSSS	402	69.46	12.08
RULS	402	35.32	9.59
SCS	402	25.26	8.13
ESDS	402	269.15	55.25
HO	402	63.63	6.31
LES	397	10.79	9.46
HSI	400	34.36	24.56
HSF	400	21.53	15.11
PILL	402	114.48	21.66
CHS	401	34.06	7.16
PILL2	293	108.87	21.89
CHS2	293	34.42	7.76
SX	401	1.76	2.19
TOTSHS	401	2.39	2.88
SHSOTH	292	4.92	5.64

Table 2

Intercorrelations Among Measured Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. SSQ	1.00															
2. PSSS	.55**	1.00														
3. RULS	-.44**	-.56**	1.00													
4. ESDS	.39**	.50**	-.39**	1.00												
5. SCS	-.34**	-.41**	.53**	-.29**	1.00											
6. HO	-.21**	-.30**	.39**	-.16**	.45**	1.00										
7. LES	-.07	-.09	.14**	.08	.17**	.17**	1.00									
8. HSF	-.13**	-.15**	.20**	.03	.28**	.25**	.39**	1.00								
9. HSI	-.14**	-.16**	.23**	.03	.34**	.33**	.50**	.89**	1.00							
10. PILL	-.09	-.06	.15**	.09	.22**	.18**	.25**	.28**	.34**	1.00						
11. CHS	.27**	.25**	-.34**	.11*	-.30**	-.16**	-.22**	-.27**	-.30**	-.31**	1.00					
12. PILL2	-.16**	-.14*	.15*	-.02	.20**	.07	.15*	.13*	.19**	.70**	-.25**	1.00				
13. CHS2	.17**	.20**	-.30**	.09	-.18**	-.17**	-.20**	-.22**	-.26**	-.26**	.58**	-.28**	1.00			
14. SX	.00	.05	-.01	.08	.01	.02	.11*	.04	.08	.15**	-.14**	.07	-.20**	1.00		
15. TOTSHS	-.02	.03	-.00	.08	.04	.02	.10*	.07	.11*	.14**	-.16**	.11	-.20**	.88**	1.00	
16. SHSOTH	-.05	.06	-.02	.12*	.10	.04	.11	.11	.14*	.14*	-.19**	.14*	-.17**	.66**	.76**	1.00

Note. PILL2 = PILL completed in follow-up; CHS2 = CHS completed in follow-up; SX = based on symptom related visits to SHS; TOTSHS = total visits to SHS, not including laboratory procedures; SHSOTH = self-reported visits to health care providers other than the SHS with TOTSHS.

* $p < .05$ ** $p < .01$

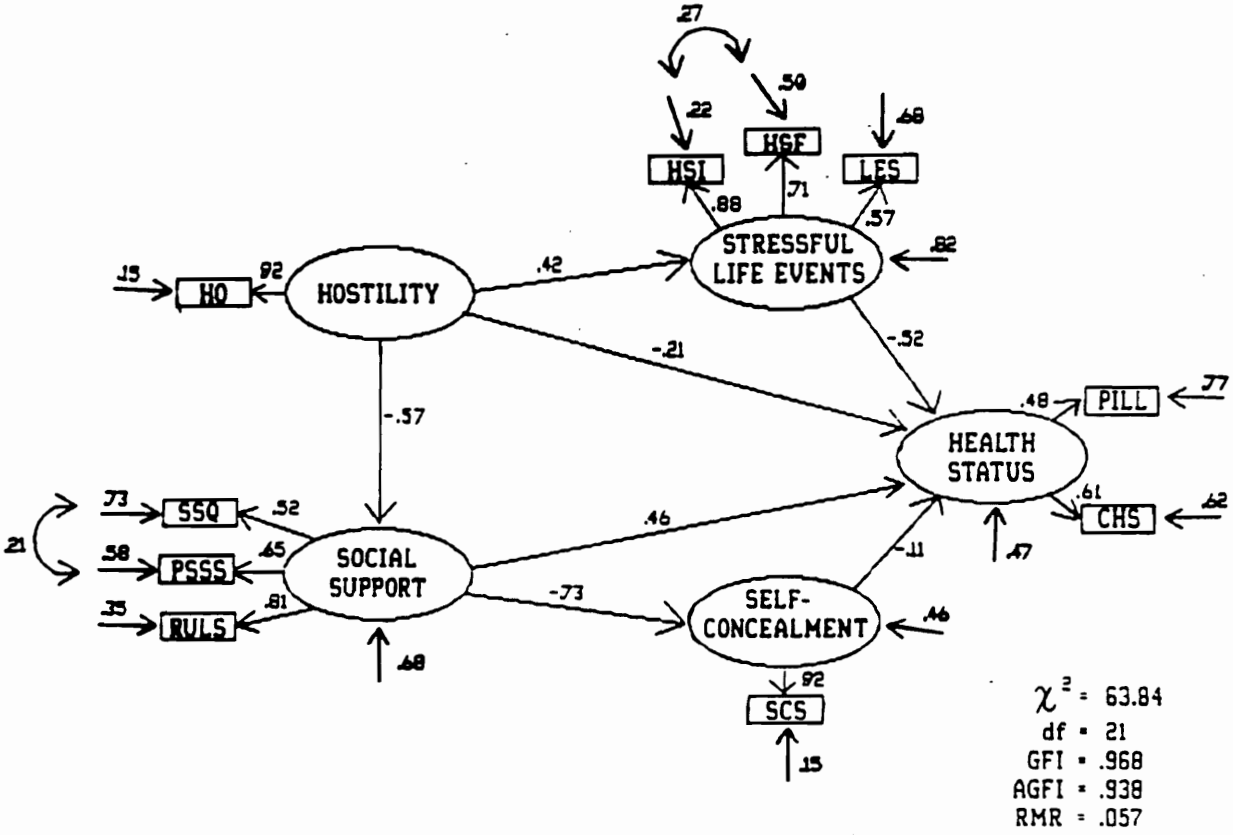

FIGURE 3. Preliminary LISREL model evaluating the effects of psychosocial variables on health status.

disclosure component of the model was removed due to severe measurement problems with the adapted version of the ESDS. A large number of subjects (60) completed no more than two-thirds of the ESDS, with items that assessed discussing topics with a spouse or lover frequently left blank. Further, subjects who completed the questionnaire appeared to develop a response bias due to the large number of items. Very little variability was found in responses as indicated by exceptionally high internal consistencies. Total internal consistency was .98 and subscale consistencies for discussing with females, males, and spouse or lover were .97, .96, and .99 respectively. The correlations presented in Table 2 using the ESDS were computed on the scale after excluding items on the spouse or lover subscale due to the large number of omits on this subscale. Omits on the other two subscales were replaced with an average response for that subscale.

The health care utilization data (i.e., SX, TOTSHS, SHSOTH) were also removed from the model prior to analysis with LISREL. The accuracy of this data as an indicator of health status was compromised by the finding that a large percentage (65.5%) of subjects reported use of health care services other than the SHS. Further, the correlations between utilization data and self-reported health status measures were very low, ranging from .07 to .20 (see Table 2). Correlations this low suggest either, 1) the utilization data was tapping into a construct different from the self-report measures or, 2) that the

data collected was not an accurate representation of either total health service use or presence of illness.

LISREL analyses were first run on a preliminary model using health measures obtained at the initial testing, illness symptoms and health perceptions. These analyses were based on an N of 395, out of 402, following deletion of missing data. From these analyses two alternative models were developed, evaluated, compared, and a final model was accepted. The final model was then evaluated using the sample of subjects who completed health measures in the mailed follow-up. These analyses were based on a sample size of 290, out of 293, following deletion of missing data. In initial preliminary analyses, LISREL modification indices suggested that the fit of the measurement model would be improved if measurement errors were freed to correlate on stress measures HSI and HSF, and social support measures SSQ and PSSS. It was determined to be theoretically justifiable to allow these measurement errors to correlate as the same extraneous variables could have affected responses on these measures. HSI and HSF may share measurement error because they are derived from the same measurement instrument. SSQ and PSSS may share measurement error because they are similar measures of the same construct. RULS was not assumed to share measurement error with SSQ and PSSS because it measures a somewhat different, though related, construct. Thus, based on initial analyses and theoretical considerations,

LISREL estimates of measurement error for HSI and HSF, and SSQ and PSSS, were freed to correlate while measurement error for all other measures was constrained.

Fit of the Preliminary Model

The LISREL goodness-of-fit indices indicated that the data fit the preliminary model moderately well, but that alternative models may provide a better fit. The GFI was .968, the AGFI was .938, and the RMR was .057, suggesting an adequate fit of the model to the data. However, the chi-square statistic was significant, $\chi^2(21, N = 395) = 63.84$, $p<.000$, suggesting a poor fit of the model. Similarly, the statistic χ^2/df of 3.04 suggests a less than adequate fit.

Estimated standardized path coefficients for the model are shown in Figure 3. T-values, indicating the significance of each path, are presented in Table 3. The preliminary model was modified based on LISREL computed path significance tests and modification indices that were consistent with theory. Two alternative models were generated and evaluated. The preliminary model, first alternative model, and second alternative model will be referred to as Model 1, Model 2, and Model 3, respectively.

In Model 2, the path from self-concealment to health was dropped and paths from hostility to self-concealment and from self-concealment to stressful life events were added (Figure 4). The path from self-concealment to stressful

Table 3

T-values for Paths in the Preliminary Model

	Independent variables			
Dependent variables	Stress	Support	Concealment	Hostility
Stress	---	---	---	7.37*
Support	---	---	---	-7.45*
Concealment	---	-8.60*	---	---
Health	-4.10*	2.66*	.80	1.85

Note. Stress = stressful life events; Support = social support; Concealment = self-concealment. Dashes indicate that no effect on independent variable on dependent variable was assumed in the path model.

* $p < .05$

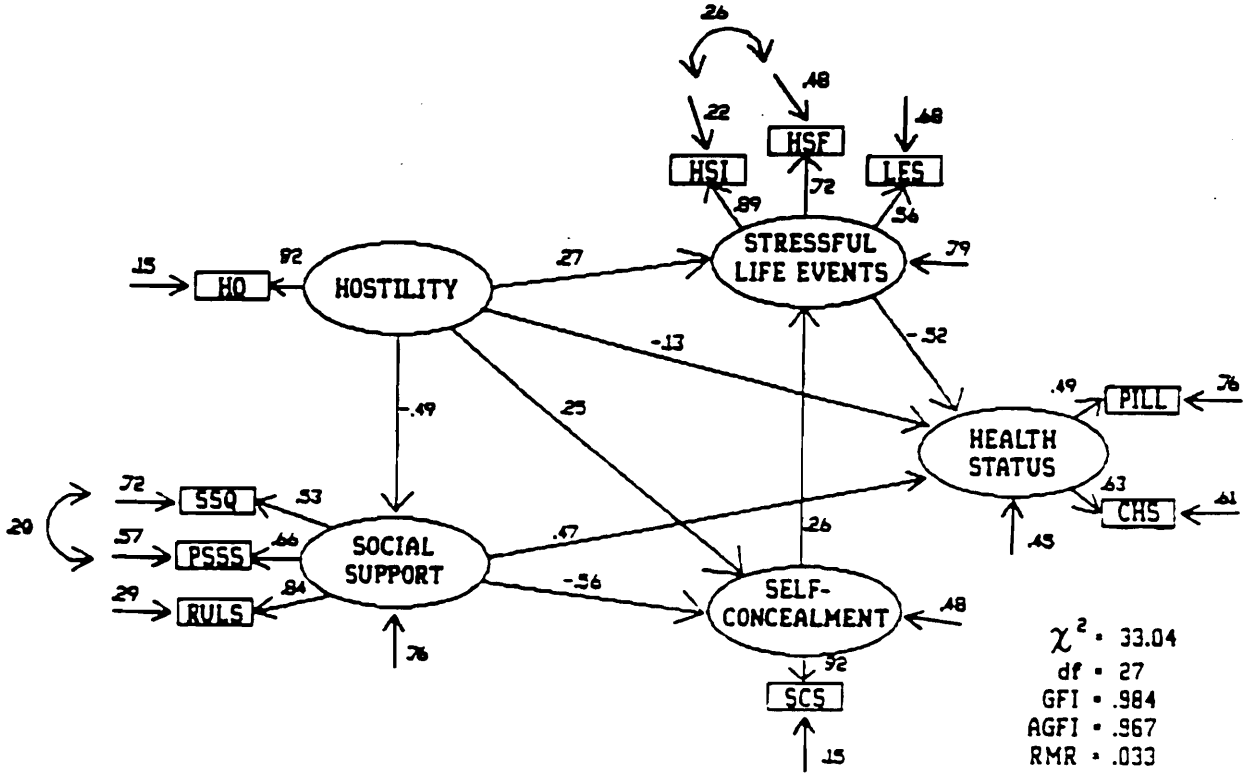

FIGURE 4. Model 2.

life events was added based on the premise that concealing traumatic events may result in an increased level of perceived stress. This premise is explained further in the discussion section. Model 3 was the same as Model 2 except the path from hostility to health was removed (Figure 5).

Fit of the Alternative Models

The LISREL goodness-of-fit indices indicated that the data fit Model 2 quite well (Figure 4). The GFI was .984, AGFI was .967, and RMR was .033, suggesting a good fit of the model to the data. Chi-square was not significant, $\chi^2(27, N = 395) = 33.04$, $p<.196$, and $\chi^2/df = 1.22$, indicating a good fit. Similarly, the goodness-of-fit indices showed the data fit Model 3 very well (Figure 5). The GFI was .982, AGFI was .965, and RMR was .034. The chi-square statistic was not significant, $\chi^2(28, N = 395) = 34.97$, $p<.171$, and $\chi^2/df = 1.25$. Because the alternative models were nested, they were compared with a χ^2 difference test to evaluate if Model 2 provided a significantly better fit to the data than Model 3. The χ^2 difference test yielded an insignificant difference, $\chi^2(1, N = 395) = 2.0$, $p<.25$, thus indicating that the path from hostility to health does not significantly improve the fit of the model. Therefore, Model 3 was accepted as the final model. To further evaluate Model 3, the model was run using the sample of subjects who completed longitudinal follow-up measures on health status, PILL2 and CHS2 (Figure 6). Again, Model 3 provided a very good fit to the data. The GFI was .989, AGFI was .979, and RMR was .020,

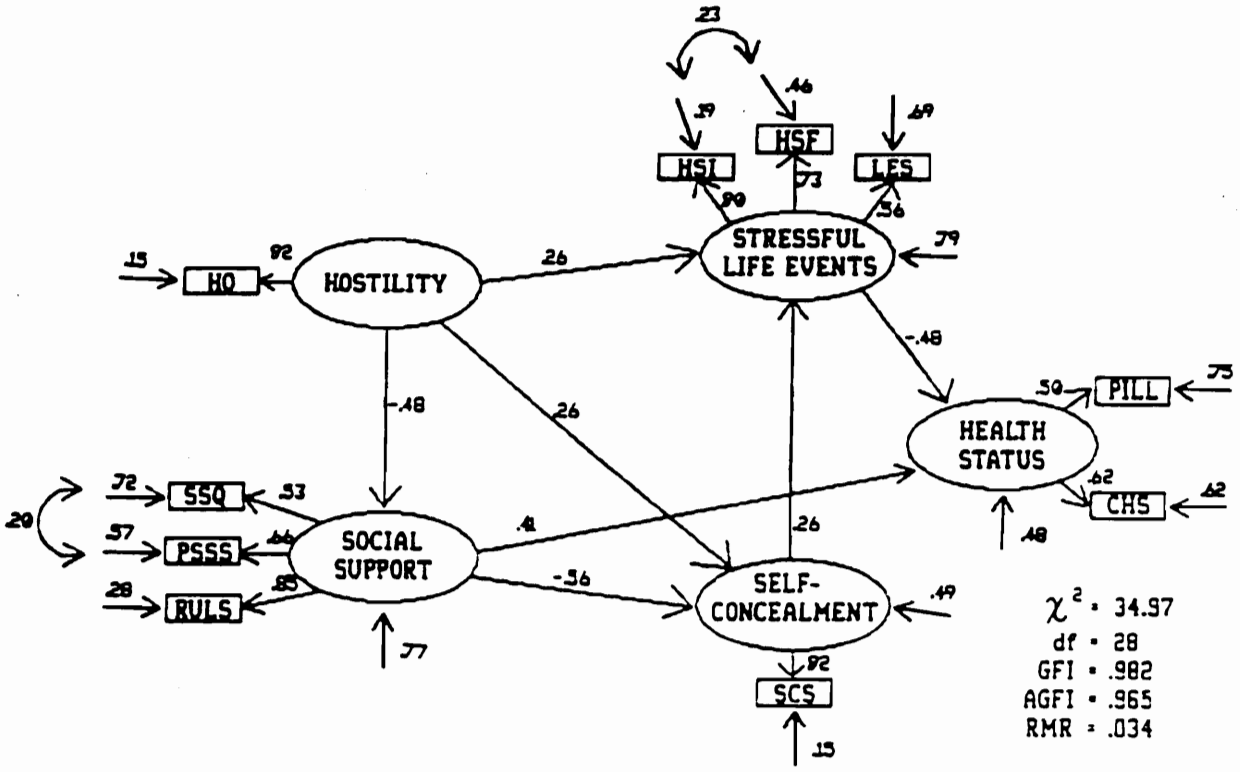

FIGURE 5. Model 3.

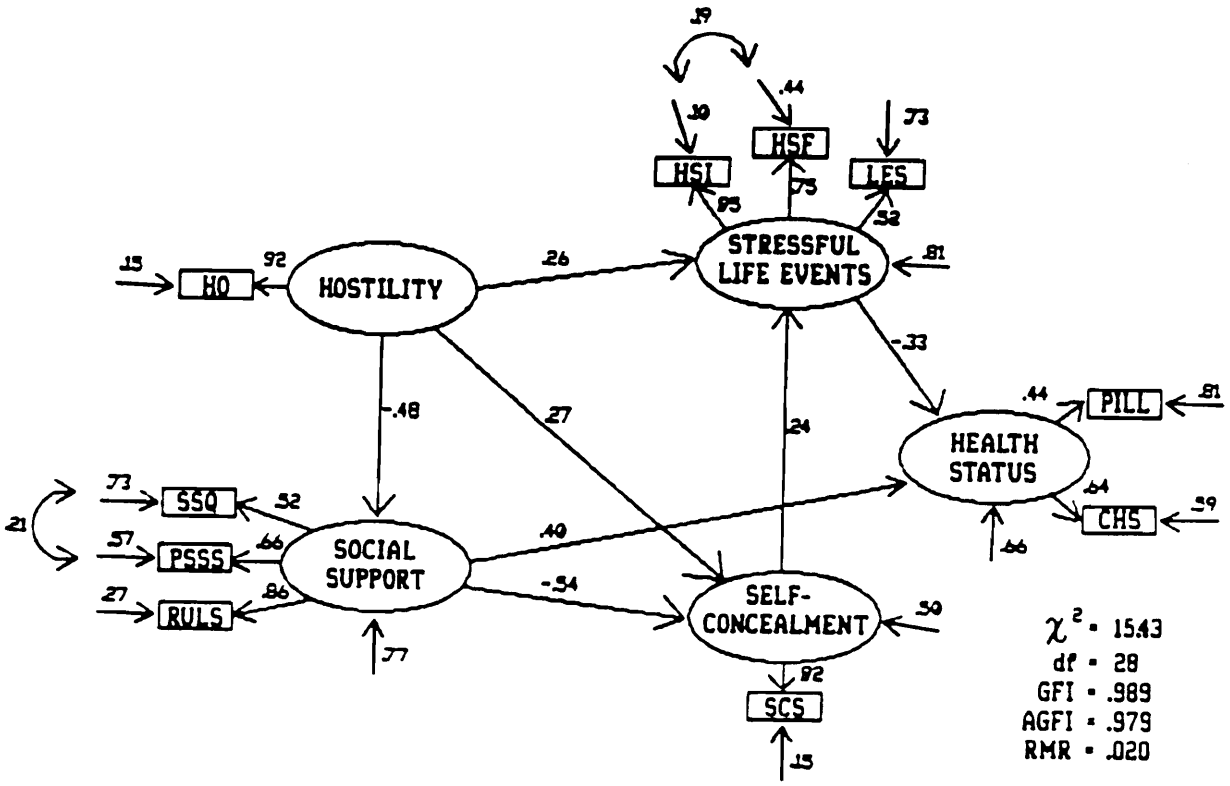

FIGURE 6. Model 3 with N = 290.

Chi-square was not significant, $\chi^2(28, N = 290) = 15.43$, $p<.974$, and $\chi^2/df = .55$.

Total, Direct, and Indirect Effects

In Table 4 LISREL completely standardized coefficient estimates of the total effects of independent variables on dependent variables are presented for Model 3 with $N = 290$. The total effects of each independent variable on each dependent variable were in the expected direction and significant at $p < .05$. Hostility positively affected stress (.260) and concealment (.266) and negatively affected support (-.482). Stress negatively affected health (-.332) while support positively affected health (.398). Support was negatively predictive of concealment (-.541) and concealment was positively predictive of stress (.237).

Completely standardized estimates of the direct and indirect effects of all predictor variables on health are summarized in Table 5. The direct and indirect effects of all variables were in the expected direction and significant at $p < .05$. Hostility was found to have its greatest indirect effect via support (-.213), as compared to effects on stress (-.086) and concealment (-.021). The effect of support on health via concealment (-.043) was small in comparison to its direct effect (.398). The direct effect of stress (-.332) on health was large in comparison to the indirect effect of concealment (.079).

Table 4

LISREL Completely Standardized Coefficient Estimates of Total Effects of Independent variables on Dependent variables

	Independent variables			
Dependent variables	Hostility	Stress	Support	Concealment
Stress	.260	---	---	.237
Support	-.482	---	---	---
Concealment	.266	---	-.541	---
Health	---	-.332	.398	---

Note. Stress = stressful life events; Support = social support; Concealment = self-concealment. Dashes indicate that no effect on independent variable on dependent variable was assumed in the path model. Significance is $p < .05$ for all paths.

Table 5

Direct, Indirect, and Total Effects on Health

	Effects		
Variable	Direct	Indirect	Total
Hostility	---	-.320[a]	-.320
Stress	-.332	---	-.332
Support	.398	.043	.441
Concealment	---	.079	.079

Note. Stress = stressful life events; Support = social support; Concealment = self-concealment. Dashes indicate that no effect of variable on health was assumed in the path model. Significance is $p < .05$ for all paths.

[a]Indirect effect via stress = -.086, via concealment = -.021, and via support = -.213.

DISCUSSION

Previous research on social support and physical health has neglected to investigate the role of emotional expression in relation to the affect of social support on health status. This study proposed to elucidate the association of social support and health by evaluating direct and indirect effects of emotional expression and social support on health using the LISREL method of latent variable path analysis. The effects of two aspects of emotional expression (hostility and self-concealment) were evaluated. In addition, how these aspects of emotional expression may affect perceived stress in relation to health was investigated. A final path model was identified and a confirmatory analysis using follow-up data on health was conducted. Results of the confirmatory analysis provided further support for the final model. The findings of the study suggest that emotional expression does influence, and is influenced by, social support in relation to health.

The most notable findings of this study were that social support had strong direct effects, but relatively weak indirect effects on health, and that aspects of emotional expression were found to have indirect effects, but not direct effects, on health. These results were generally consistent with hypotheses proposed, but were different in important ways (compare Figures 3 & 6). First, hostility and self-concealment were both initially hypothesized to have direct effects on health, however direct effect paths for these aspects of

emotional expression to health were not significant. Second, hostility was found to have a significant direct effect on self-concealment that was not predicted; it was originally hypothesized that hostility would affect self-concealment via social support. Finally, self-concealment was not found to have a direct effect on health as predicted, but rather was found to affect health via its affect on stressful life events. The meaning of the results is explored below.

Social Support and Health. The finding that social support had a strong direct effect on health is consistent with past epidemiological and correlational research (e.g., Berkman & Syme, 1979; House, Robbins, & Metzner, 1982; Seeman & Syme, 1987), while the finding that social support had indirect effects on health extends previous research. The present study suggests that social support may indirectly improve health by reducing self-concealment and subsequent perceived stress. The relationship found between social support and self-concealment is consistent with research by Sarason et al. (1985; 1986) indicating that people who have more social support are more emotionally expressive. As discussed by Winstead and Derlega (1985), the presence of friends may elicit expression of emotion. Thus, the results of the present study are consistent with previous research suggesting that social support may reduce self-concealment by eliciting self-disclosure. Still, further study is needed to determine how, and under what conditions, supportive others elicit self-disclosure. Although significant, the indirect effects of social support on

health via self-concealment found in this study were small, thus leaving the question of how social support affects health largely unanswered.

Self-concealment and Health. Self-concealment was found to have an indirect effect on health via its effect on stress rather than a direct effect on health as originally proposed. Before examining this finding in relation to previous research the decision to evaluate a path from self-concealment to stress will be explained. It might appear that it would be more logical to assume a path from stressful life events to self-concealment rather than the reverse given that one must experience a stressor before concealing it. However, stressors probably do not cause concealment as individuals exposed to the same stressor will vary in the degree to which they conceal that experience. In addition, the stressful life events measures used in this study assessed the degree to which events were perceived as severe or impacting on one's life. It seems reasonable to speculate that concealment may influence perceived stress. That is, whether or not a stressful experience is concealed may influence the degree to which one perceives an event as stressful. This notion is consistent with Pennebaker's (1985) assertion that disclosing traumatic events helps to resolve internal conflict, thus reducing the impact of that conflict on health.

The finding that self-concealment influenced health via perceived stress may be construed as consistent with earlier research examining the relationship

between disclosure of traumatic events and health (Pennebaker, 1985; Pennebaker & Hoover, 1986; Pennebaker et al., 1988; Esterling et al., 1990; 1991). Pennebaker (1985) suggested that self-concealment is associated with poorer health because concealment is stressful and takes physiological work. This assertion, however, is not entirely consistent with the findings of the present study as the direct path from self-concealment to health was not significant. It may be that it is the experience of stress caused by concealment, rather than the concealment itself, that takes physiological work. Further, the relationship between concealment and health is likely even more complex given that other research findings indicate that individual differences may influence the degree to which people may benefit from self-disclosure. Esterling et al. (1991) found that people who were in touch with their emotions but not expressing them showed the greatest improvement in immune functioning after being provided the opportunity to express their feelings about stressful events. Thus, whether or not concealment of stressful events results in greater experience of stress may be dependent on individual characteristics such as emotional sensitivity. However, further research is needed to clarify the nature of the relationship between emotional sensitivity, concealment, and stress.

In the present study, data on self-disclosure, a construct closely related to concealment, was not used in the path models analyzed due to measurement problems with the ESDS measure. However, the construct of

emotional self-disclosure is worthy of future study as past research has found a relationship between talking about traumatic experiences and health (Pennebaker, 1985; Pennebaker & Hoover, 1986; Pennebaker & O'Heeron, 1984). It would be valuable for future research to measure both self-disclosure and concealment to tease out the health promoting components of these constructs. For example, it may be that disclosure is only relevant to health when a traumatic event has occurred, otherwise one's tendency to disclose may be unrelated to health. In contrast, the tendency to disclose may have an important affect on daily stress, where those who disclose escape the accumulating effects of stress on health by talking regularly to supportive others. These hypotheses await further study.

Hostility and Health. Contrary to what was hypothesized, hostility was not found to have a direct effect on health. However, the findings of this study were consistent with those of other studies as hostility was found to have strong indirect effects on health. Consistent with other research findings (Hardy & Smith, 1988; Houston & Vavak, 1991; Scherwitz et al., 1991), greater hostility was found to be associated with less social support. The current study extends previous research by finding that hostility may affect health via its effect on social support. Thus, hostility may affect health indirectly, rather than directly, by driving away, or reducing satisfaction with, supportive others.

Hostility was also found to increase self-concealment independent of

social support. This finding is contrary to the original hypothesis that hostility would increase self-concealment only via the path of decreasing support. It appears that some hostile individuals may conceal troubling secrets and still have support networks that they are satisfied with. Given that the Cook-Medley Hostility Scale measures a mistrust of others, individuals who on this scale are rated as more hostile may be less likely to confide in others even when they consider others as a source of support. Thus, hostility may increase the likelihood of concealment even when higher levels of support exist.

Another indirect effect of hostility on health was via the affect of hostility on stressful life events. The results of the present study are consistent with research finding a relationship between stressful life events and health (Figley, 1984). In addition, these results further our understanding of the relationship between hostility and health as no other studies were identified that investigated the relationship between hostility, stress, and health. The findings suggest that those who are more hostile may experience more stressful events or experience stressful events as being more severe. Hostile individuals may interact with the world in a manner that actually increases both the number and intensity of events experienced as stressful. That is, the behavior of hostile individuals may facilitate conflict. This assertion is consistent with the findings of Chesney et al. (1990) that hostility was associated with expressions of glare and disgust. Still, conclusions are speculative at this time because the

questions of if, and how, hostile individuals might create conflict and stressful experiences awaits further investigation.

The results of this study suggest that hostility does not affect health directly; rather, hostility affects health by reducing social support, and increasing self-concealment and perceived stress. However, this conclusion is tentative given subject characteristics and health measures used in this study. Previous studies have found a relationship between hostility and heart disease (Williams et al., 1980; Barefoot et al., 1983), a disease found primarily in older populations than the one used in the present study. Thus, it is possible that hostility does directly affect health, but that these effects may not be detected until later in life. Further, direct effects of hostility on health may have been detected if health measures such as heart rate and blood pressure had been used in this study.

Limitations. The results of this study have limited generalizability due subject characteristics. Subjects used in this study were young and relatively healthy. Thus, if the effect of a variable on health takes years to appear, as might be the case with hostility, these effects would not have been evident in this study. In addition, the sample in this study may have had an insufficient number of subjects with an experience of trauma to detect possible direct effects of concealment on health. Studies may be more likely to find a direct effect of concealment on health by using a sample limited to subjects who have

experienced a traumatic event. This could be accomplished by studying concealment in a population who have been subjected to a trauma, such as a natural disaster, civil disturbance, or war.

Another limitation of this study is that it relied on self-report measures. In this study self-report may have increased the absolute magnitude of some of the obtained predictor variable path coefficients due to common method variance. In addition, conclusions drawn from self-report data must be tentative since reported behavior is only a proxy for actual behavior. Thus, the present study only provides limited evidence that the relationships found among variables examined do actually exist. However, the findings of this study suggest that further research with observable measures of emotional expression and social support is warranted.

In the present study it was necessary to abandon the health care utilization measures due to a large number of subjects using services outside of the Student Health Services. Thus, it was necessary to rely on self-report of illness symptoms and global perceptions of health in this study. Unfortunately, self-report of illness symptoms may be confounded by psychological factors such as neuroticism, which has been reported to result in the over-reporting of somatic complaints (Watson & Pennebaker, 1989). However, there is no simple solution to the problem of measuring physical health. Immune measures do not adequately approximate the immune system's functioning as a system

and are subject to a number of sources of variability (Temoshok, 1990). Thus, measurement of immune functioning only provides a proxy for health as results may not be highly correlated with illness. Physical exam is a poor measure of general health as individuals become ill a different times and it is impractical to examine subjects daily for an extended period. Finally, health care utilization is a poor estimate of physical health because psychological distress has been found associated with higher utilization (Finney et al., 1991; Mechanic, 1978). Moreover, for many people seeking care medical findings indicate that there is nothing physically wrong with them (Follette & Cummings, 1967). Thus, self-report of symptoms and health perceptions remain as possibly the most accurate measures of health. Future studies using multiple measures of health might help clarify how various measures of health are related to each other and to psychological variables.

Finally, conclusions from this study are limited given that data from some of the measures used were transformed to produce normal distributions and because the analyses performed were exploratory. The use of transformed data requires greater speculation in interpretation of the findings because the results are not in the original metric of the measures used. Further research evaluating the final model is warranted, given the exploratory nature of this study.

Conclusions. This study provides strong support to the notion that measures of emotional expression should be included in research examining the effects of social support on health. To a substantial degree hostility, and to a lesser degree self-concealment, affected health due to their association with social support. While social support may reduce the degree to which people conceal, this appears to be but a small part of the relationship between social support and health. It may be that having satisfactory social support simply results in a state of well-being conducive to good health; however, the mechanisms by which this occurs remain unclear and need to be studied. Finally, results from this study further our understanding about the relationship between stress and health. Hostility and self-concealment directly, and social support indirectly, appear to influence perceived stress, thereby affecting health. Research on how emotional expression may affect experience of stressful life events and perception of stress should further clarify the relationship between stress and health.

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Appendix A

Consent Form

The purpose of this study is to investigate the relationship of psychological factors to health. Participation in the study will involve filling out several questionnaires today, completing brief follow-up questionnaires that will be sent to you in April, and providing consent for experimenters to review your medical records from Student Health Services.

Your medical records will be kept confidential and will be reviewed in one of two ways:

1. Experimenters will obtain a computer printout of each visit and the diagnoses for each visit. The printout will not include your name, only your student number.

2. Student Health Services' approved personnel will review your medical record to determine the number of visits and the diagnoses. These data will be summarized and categorized by research assistants who will not know your name. Research assistants will have access only to summary records that are labelled only with study numbers.

Involvement in the study will require less than 2 hours today and 15 minutes to complete follow-up questionnaires. You will receive 3 credits for your participation, 2 credits for completing questionnaires today and 1 credit for completing follow-up questionnaires. While follow-up questionnaires will be sent to you next semester, you will receive all 3 credits this semester for your participation.

There are no apparent risks associated with this study. All information obtained will be confidential; only the experimenters will have access to the information you provide. Your name will only appear on this form. Your student identification number will be appear on 3 opscan forms to be completed by you.

This research project has been approved by the Human Subjects Research Committee and the Institutional Review Board. Questions about the project should be directed to the principal investigators:

Dana E. Putnam	231-6914
Dr. Jack W. Finney	231-6670

Or the chair of the Human Subjects Research Committee:

Dr. Helen J. Crawford 231-6520

I understand that I can withdraw from participation in this study without penalty at any time.

I hereby agree to voluntarily participate in the research project described above and under the conditions described above.

Signature:_____

I.D. #:_____

Phone #:_____

AUTHORIZATION TO RELEASE MEDICAL RECORDS

I hereby authorize the Student Health Services to release information contained in my medical record to Dana E. Putnam, M.S. and Jack W. Finney, Ph.D., as part of my participation in their study, in either of the following ways:

1. Experimenters will obtain a computer printout of each visit and the diagnoses for each visit. The printout will not include my name, only my student number.

2. Student Health Services' approved personnel will review my medical record to determine the number of visits and the diagnoses. These data will be summarized and categorized by research assistants who will not know my name. Research assistants will have access only to summary records that are labelled only with study numbers.

I understand that information obtained from my medical records will be kept strictly confidential.

Signature: _____

Student I.D. #: _____

Appendix B

COMPLETE THIS QUESTIONNAIRE BEFORE FILLING OUT THE OPSCAN. THERE ARE INSTRUCTIONS AT THE END OF THE QUESTIONNAIRE FOR FILLING OUT THE OPSCAN.

INSTRUCTIONS: The following questions ask about people in your environment who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give the persons' initials, their relationship to you (see example). Do not list more than one person next to each of the numbers beneath the question.

For the second part, circle how satisfied you are with the overall support you have.

If you have had no support for a question, check the words "No one," but still rate your level of satisfaction. Do not list more than nine persons per question.

Please answer all the questions as best you can. All your responses will be kept confidential.

EXAMPLE

Who do you know whom you can trust with information that could get you in trouble?

__ No one	1) T.N. (brother)	4) T.N. (father)	7)
	2) L.M. (friend)	5) L.M. (employer)	8)
	3) R.S. (friend)	6)	9)

How satisfied?

6-very satisfied	5-fairly satisfied	4-a little satisfied	3-a little dissatisfied	2-fairly dissatisfied	1-very dissatisfied

---

1. Whom can you really count on to be dependable when you need help?

__ No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

2. How satisfied?

6-very satisfied	5-fairly satisfied	4-a little satisfied	3-a little dissatisfied	2-fairly dissatisfied	1-very dissatisfied

3. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?

__ No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

4. How satisfied?

6-very satisfied	5-fairly satisfied	4-a little satisfied	3-a little dissatisfied	2-fairly dissatisfied	1-very dissatisfied

5. Who accepts you totally, including both your worst and your best points?

__ No one 1) 4) 7)
2) 5) 8)
3) 6) 9)

6. How satisfied?

6-very satisfied | 5-fairly satisfied | 4-a little satisfied | 3-a little dissatisfied | 2-fairly dissatisfied | 1-very dissatisfied

7. Whom can you really count on to care about you, regardless of what is happening to you?

__ No one 1) 4) 7)
2) 5) 8)
3) 6) 9)

8. How satisfied?

6-very satisfied | 5-fairly satisfied | 4-a little satisfied | 3-a little dissatisfied | 2-fairly dissatisfied | 1-very dissatisfied

9. Whom can you really count on to help you feel better when you are feeling generally down-in-the-dumps?

__ No one 1) 4) 7)
2) 5) 8)
3) 6) 9)

10. How satisfied?

6-very satisfied | 5-fairly satisfied | 4-a little satisfied | 3-a little dissatisfied | 2-fairly dissatisfied | 1-very dissatisfied

11. Whom can you count on to console you when you are very upset?

__ No one 1) 4) 7)
2) 5) 8)
3) 6) 9)

12. How satisfied?

6-very satisfied | 5-fairly satisfied | 4-a little satisfied | 3-a little dissatisfied | 2-fairly dissatisfied | 1-very dissatisfied

DIRECTIONS FOR FILLING OUT THE OPSCAN FOR ITEMS 1-12: For each item where you listed a number of people, count that number and enter it on the opscan. For each item asking your satisfaction, enter the number you circled on the opscan.

START OPSCAN FORM A

Appendix C

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

PSS

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement by using the following scale.

Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
1	2	3	4	5	6	7

24. There is a special person who is around when I am in need.
1 2 3 4 5 6 7

25. There is a special person with whom I can share joys and sorrows.
1 2 3 4 5 6 7

26. My family really tries to help me.
1 2 3 4 5 6 7

27. I get the emotional help and support I need from my family.
1 2 3 4 5 6 7

28. I have a special person who is a real source of comfort to me.
1 2 3 4 5 6 7

29. My friends really try to help me.
1 2 3 4 5 6 7

30. I can count on my friends when things go wrong.
1 2 3 4 5 6 7

31. I can talk about my problems with my family.
1 2 3 4 5 6 7

32. I have friends with whom I can share my joys and my sorrows.
1 2 3 4 5 6 7

33. There is a special person in my life who cares about my feelings.
1 2 3 4 5 6 7

34. My family is willing to help me make decisions.
1 2 3 4 5 6 7

35. I can talk about my problems with my friends.
1 2 3 4 5 6 7

36. Please mark 0 on your opscan.

Appendix D

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

Directions: Indicate how often you feel the way described in each of the following statements. Circle one number for each statement.

	Statement	Never	Rarely	Sometimes	Often
48.	I feel in tune with the people around me.	1	2	3	4
49.	I lack companionship.	1	2	3	4
50.	There is no one I can turn to.	1	2	3	4
51.	I do not feel alone.	1	2	3	4
52.	I feel part of a group of friends.	1	2	3	4
53.	I have a lot in common with people around me.	1	2	3	4
54.	I am no longer close to anyone.	1	2	3	4
55.	My interests and ideas are not shared by those around me.	1	2	3	4
56.	I am an outgoing person	1	2	3	4
57.	There are people I feel close to.	1	2	3	4
58.	I feel left out.	1	2	3	4
59.	My social relationships are superficial.	1	2	3	4
60.	No one really knows me well.	1	2	3	4
61.	I feel isolated from others.	1	2	3	4
62.	I can find companionship when I want it.	1	2	3	4

63. There are people who really understand me.	1	2	3	4
64. I am unhappy being so withdrawn.	1	2	3	4
65. People are around me but not with me.	1	2	3	4
66. There are people I can talk to.	1	2	3	4
67. There are people I can turn to.	1	2	3	4

68. Mark 0 on your opscan.

Appendix E

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

START OPSCAN FORM B

ESDS

For each of the following items, indicate if you discuss the topics indicated with male friends, female friends, and spouse or lover.
1 = discuss this topic not at all and 5 = discuss this topic totally.

	1 not at all	2	3 somewhat	4	5 totally
Times when you felt depressed.					
1. male friends	1	2	3	4	5
2. female friends	1	2	3	4	5
3. spouse/lover	1	2	3	4	5
Times when you felt happy.					
4. male friends	1	2	3	4	5
5. female friends	1	2	3	4	5
6. spouse/lover	1	2	3	4	5
Times when you felt jealous.					
7. male friends	1	2	3	4	5
8. female friends	1	2	3	4	5
9. spouse/lover	1	2	3	4	5
Times when you felt anxious.					
10. male friends	1	2	3	4	5
11. female friends	1	2	3	4	5
12. spouse/lover	1	2	3	4	5
Times when you felt angry.					
13. male friends	1	2	3	4	5
14. female friends	1	2	3	4	5
15. spouse/lover	1	2	3	4	5
Times when you felt calm.					
16. male friends	1	2	3	4	5
17. female friends	1	2	3	4	5
18. spouse/lover	1	2	3	4	5
Times when you felt apathetic.					
19. male friends	1	2	3	4	5
20. female friends	1	2	3	4	5
21. spouse/lover	1	2	3	4	5
times when you felt afraid.					
22. male friends	1	2	3	4	5
23. female friends	1	2	3	4	5
24. spouse/lover	1	2	3	4	5
Times when you felt discouraged.					
25. male friends	1	2	3	4	5
26. female friends	1	2	3	4	5
27. spouse/lover	1	2	3	4	5
Times when you felt cheerful.					
28. male friends	1	2	3	4	5
29. female friends	1	2	3	4	5
30. spouse/lover	1	2	3	4	5

* Please continue to use the same scale	1 not at all	2	3 somewhat	4	5 totally
Times when you felt possessive.					
31. male friends	1	2	3	4	5
32. female friends	1	2	3	4	5
33. spouse/lover	1	2	3	4	5
Times when you felt troubled.					
34. male friends	1	2	3	4	5
35. female friends	1	2	3	4	5
36. spouse/lover	1	2	3	4	5
Times when you felt infuriated.					
37. male friends	1	2	3	4	5
38. female friends	1	2	3	4	5
39. spouse/lover	1	2	3	4	5
Times when you felt quiet.					
40. male friends	1	2	3	4	5
41. female friends	1	2	3	4	5
42. spouse/lover	1	2	3	4	5
Times when you felt indifferent.					
43. male friends	1	2	3	4	5
44. female friends	1	2	3	4	5
45. spouse/lover	1	2	3	4	5
Times when you felt fearful.					
46. male friends	1	2	3	4	5
47. female friends	1	2	3	4	5
48. spouse/lover	1	2	3	4	5
Times when you felt pessimistic.					
49. male friends	1	2	3	4	5
50 female friends	1	2	3	4	5
51. spouse/lover	1	2	3	4	5
Times when you felt joyous.					
52. male friends	1	2	3	4	5
53. female friends	1	2	3	4	5
54. spouse/lover	1	2	3	4	5
Times when you felt envious.					
55. male friends	1	2	3	4	5
56. female friends	1	2	3	4	5
57 spouse/lover	1	2	3	4	5
Times when you felt worried.					
58. male friends	1	2	3	4	5
59. female friends	1	2	3	4	5
60. spouse/lover	1	2	3	4	5
Times when you felt irritated.					
61. male friends	1	2	3	4	5
62. female friends	1	2	3	4	5
63. spouse/lover	1	2	3	4	5
Times when you felt serene.					
64. male friends	1	2	3	4	5
65. female friends	1	2	3	4	5
66. spouse/lover	1	2	3	4	5

* Please continue to use the same scale	1 not at all	2	3 somewhat	4	5 totally
Times when you felt numb.					
67. male friends	1	2	3	4	5
68. female friends	1	2	3	4	5
69. spouse/lover	1	2	3	4	5
Times when you felt frightened.					
70. male friends	1	2	3	4	5
71. female friends	1	2	3	4	5
72. spouse/lover	1	2	3	4	5
Times when you felt sad.					
73. male friends	1	2	3	4	5
74. female friends	1	2	3	4	5
75. spouse/lover	1	2	3	4	5
Times when you felt delighted.					
76. male friends	1	2	3	4	5
77. female friends	1	2	3	4	5
78. spouse/lover	1	2	3	4	5
Times when you felt suspicious.					
79. male friends	1	2	3	4	5
80. female friends	1	2	3	4	5
81. spouse/lover	1	2	3	4	5
Times when you felt uneasy.					
82. male friends	1	2	3	4	5
83. female friends	1	2	3	4	5
84. spouse/lover	1	2	3	4	5
Times when you felt hostile.					
85. male friends	1	2	3	4	5
86. female friends	1	2	3	4	5
87. spouse/lover	1	2	3	4	5
Times when you felt tranquil.					
88. male friends	1	2	3	4	5
89. female friends	1	2	3	4	5
90. spouse/lover	1	2	3	4	5
Times when you felt unfeeling.					
91. male friends	1	2	3	4	5
92. female friends	1	2	3	4	5
93. spouse/lover	1	2	3	4	5
Times when you felt scared.					
94. male friends	1	2	3	4	5
95. female friends	1	2	3	4	5
96. spouse/lover	1	2	3	4	5
Times when you felt unhappy.					
97. male friends	1	2	3	4	5
98. female friends	1	2	3	4	5
99. spouse/lover	1	2	3	4	5
Times when you felt pleased.					
100. male friends	1	2	3	4	5
101. female friends	1	2	3	4	5
102. spouse/lover	1	2	3	4	5

* Please continue to use the same scale	1 not at all	2	3 somewhat	4	5 totally
Times when you felt resentful.					
103. male friends	1	2	3	4	5
104. female friends	1	2	3	4	5
105. spouse/lover	1	2	3	4	5
Times when you felt flustered.					
106. male friends	1	2	3	4	5
107. female friends	1	2	3	4	5
108. spouse/lover	1	2	3	4	5
Times when you felt enraged.					
109. male friends	1	2	3	4	5
110. female friends	1	2	3	4	5
111. spouse/lover	1	2	3	4	5
Times when you felt relaxed.					
112. male friends	1	2	3	4	5
113. female friends	1	2	3	4	5
114. spouse/lover	1	2	3	4	5
Times when you felt detached.					
115. male friends	1	2	3	4	5
116. female friends	1	2	3	4	5
117. spouse/lover	1	2	3	4	5
Times when you felt alarmed.					
118. male friends	1	2	3	4	5
119. female friends	1	2	3	4	5
120. spouse/lover	1	2	3	4	5

121. Mark 0 on your opscan.

Appendix F

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

SCS

For each of the following items, indicate the degree to which you agree with the statement.

	1 strongly disagree	2 mostly disagree	3 somewhat agree	4 mostly agree	5 strongly agree
37. I have an important secret that I haven't shared with anyone.	1	2	3	4	5
38. If I shared all my secrets with my friends, they'd like me less.	1	2	3	4	5
39. There are lots of things about me that I keep to myself.	1	2	3	4	5
40. Some of my secrets have really tormented me.	1	2	3	4	5
41. When something bad happens to me, I tend to keep it to myself.	1	2	3	4	5
42. I'm often afraid I'll reveal something I don't want to.	1	2	3	4	5
43. Telling a secret often backfires and I wish I hadn't told it.	1	2	3	4	5
44. I have a secret that is so private I would lie if anybody asked me about it.	1	2	3	4	5
45. My secrets are too embarrassing to share with others.	1	2	3	4	5
46. I have negative thoughts about myself that I never share with anyone.	1	2	3	4	5

47. Mark 0 on your opscan.

Appendix G

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

Instructions

This inventory contains numbered statements. Read each statement and decide whether it is true as applied to you or false as applied to you. If a statement is true or mostly true, as applied to you, circle the T. If a statement is false or not usually true, as applied to you, circle the F. Remember to give your own opinion of yourself. Do not leave any blank if you can avoid it. Thank you for your participation.

T=1 F=2

		1	2
		T	F
69.	When I take a new job, I like to be tipped off on who should be gotten next to.		
70.	When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing.	T	F
71.	I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first.	T	F
72.	I have often had to take orders from someone who did not know as much as I did.	T	F
73.	I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.	T	F
74.	It takes a lot of argument to convince most people of the truth.	T	F
75.	I think most people would lie to get ahead.	T	F
76.	Someone has it in for me.	T	F
77.	Most people are honest chiefly through fear of being caught.	T	F
78.	Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.	T	F
79.	I commonly wonder what hidden reason another person may have for doing something nice for me.	T	F
80.	It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.	T	F
81.	I feel that I have often been punished without cause.	T	F
82.	I am against giving money to beggars.	T	F

83.	Some of my family have habits that bother and annoy me very much.	T	F
84.	My relatives are nearly all in sympathy with me.	T	F
85.	My way of doing things is apt to be misunderstood by others.	T	F
86.	I don't blame anyone for trying to grab everything he can get in this world.	T	F
87.	No one cares much what happens to you.	T	F
88.	I can be friendly with people who do things which I consider wrong.	T	F
89.	It is safer to trust nobody.	T	F
90.	I do not blame a person for taking advantage of someone who lays himself open to it.	T	F
91.	I have often felt that strangers were looking at me critically.	T	F
92.	Most people make friends because friends are likely to be useful to them.	T	F
93.	I am sure I am being talked about.	T	F
94.	I am likely not to speak to people until they speak to me.	T	F
95.	Most people inwardly dislike putting themselves out to help other people.	T	F
96.	I tend to be on my guard with people who are somewhat more friendly than I had expected.	T	F
97.	At periods my mind seems to work more slowly than usual.	T	F
98.	I enjoy the excitement of a crowd.	T	F
99.	I find it hard to set aside a task that I have undertaken, even for a short time.	T	F
100.	I like to let people know where I stand on things.	T	F
101.	I am apt to pass up something I want to do when others feel that it isn't worth doing.	T	F

102.	I have sometimes staved away from another person because I feared doing of saying something that I might regret afterwards.	T	F
103.	I would certainly enjoy beating a crook at his own game.	T	F
104.	Religion gives me no worry.	T	F
105.	I have at sometimes had to be rough with people who are rude or annoying.	T	F
106.	I feel sure that there is only one true religion.	T	F
107.	There are certain people whom I dislike so much that I am inwardly pleased when they are catching it for something they have done.	T	F
108.	I am often inclined to go out of my way to win a point with someone who has opposed me.	T	F
109.	I am often said to be hotheaded.	T	F
110.	The man who had most to do with me when I was a child (such as my father, stepfather, etc.) was very strict with me.	T	F
111.	Lightning is one of my fears.	T	F
112.	When a man is with a woman he is usually thinking about things related to her sex.	T	F
113.	I do not try to cover up my poor opinion or pity of a person so that he won't know how I feel.	T	F
114.	I have frequently worked under people who seem to have things arranged so that they get credit for good work but are able to pass off mistakes onto those under them.	T	F
115.	I strongly defend my own opinions as a rule.	T	F
116.	People can pretty easily change me even though I thought that my mind was made up on a subject.	T	F
117.	Sometimes I am sure that other people can tell what I am thinking.	T	F
118.	A large number of people are guilty of bad sexual conduct.	T	F
119.	Please mark 0 on your opscan.		

COMPLETE THIS QUESTIONNAIRE BEFORE FILLING OUT THE OPSCAN. THERE ARE INSTRUCTIONS AT THE END OF THE QUESTIONNAIRE FOR FILLING OUT THE OPSCAN.

The Life Experiences Survey

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event. Be sure that all check marks are directly across from the items they correspond to.

Also, for each item checked below, please indicate the extent to which you viewed the event as having either a positive or negative impact on your life at the time the event occurred. That is, indicate the type and extent of impact that the event had. A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

		0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
122.	Marriage			-3	-2	-1	0	+1	+2	+3
123.	Detention in jail or comparable institution			-3	-2	-1	0	+1	+2	+3
124.	Death of a spouse			-3	-2	-1	0	+1	+2	+3
125.	Major change in sleeping habits (much more or much less sleep)			-3	-2	-1	0	+1	+2	+3
126.	Death of mother			-3	-2	-1	0	+1	+2	+3
127.	Death of father			-3	-2	-1	0	+1	+2	+3
128.	Death of brother			-3	-2	-1	0	+1	+2	+3
129.	Death of sister			-3	-2	-1	0	+1	+2	+3
130.	Death of grandmother			-3	-2	-1	0	+1	+2	+3
131.	Death of grandfather			-3	-2	-1	0	+1	+2	+3
132.	Other death (specify)			-3	-2	-1	0	+1	+2	+3
133.	Major change in eating habits (much more or much less food intake)			-3	-2	-1	0	+1	+2	+3
134.	Foreclosure on mortgage or loan			-3	-2	-1	0	+1	+2	+3
135.	Death of a close friend			-3	-2	-1	0	+1	+2	+3
136.	Outstanding personal achievement			-3	-2	-1	0	+1	+2	+3
137.	Minor law violations (traffic tickets, disturbing the peace, etc.)			-3	-2	-1	0	+1	+2	+3
138.	Male: Wife/girlfriend's pregnancy			-3	-2	-1	0	+1	+2	+3
139.	Female: pregnancy			-3	-2	-1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
140. Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)			-3	-2	-1	0	+1	+2	+3
141. New job			-3	-2	-1	0	+1	+2	+3
142. Serious illness or injury of father			-3	-2	-1	0	+1	+2	+3
143. Serious illness or injury or mother			-3	-2	-1	0	+1	+2	+3
144. Serious illness or injury of sister			-3	-2	-1	0	+1	+2	+3
145. Serious illness or injury of brother			-3	-2	-1	0	+1	+2	+3
146. Serious illness or injury of grandfather			-3	-2	-1	0	+1	+2	+3
147. Serious illness or injury of grandmother			-3	-2	-1	0	+1	+2	+3
148. Serious illness or injury of spouse			-3	-2	-1	0	+1	+2	+3
149. Serious illness or injury of other (specify)			-3	-2	-1	0	+1	+2	+3
150. Sexual difficulties			-3	-2	-1	0	+1	+2	+3
151. Trouble with employer (in danger of losing job, being suspended, demoted, etc.)			-3	-2	-1	0	+1	+2	+3
152. Trouble with in-laws			-3	-2	-1	0	+1	+2	+3
153. Major change in financial status (a lot better off or a lot worse off)			-3	-2	-1	0	+1	+2	+3
154. Major change in closeness of family members (increased or decreased closeness)			-3	-2	-1	0	+1	+2	+3
155. Gaining a new family member (through birth, adoption, family member moving in, etc.)			-3	-2	-1	0	+1	+2	+3
156. Change in residence			-3	-2	-1	0	+1	+2	+3
157. Marital separation from mate (due to conflict)			-3	-2	-1	0	+1	+2	+3
158. Major change in church activities (increased or decreased attendance)			-3	-2	-1	0	+1	+2	+3
159. Marital reconciliation with mate			-3	-2	-1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
160. Major change in number of arguments with spouse (a lot more or a lot less)			-3	-2	-1	0	+1	+2	+3
161. Married male: Change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.)			-3	-2	-1	0	+1	+2	+3
162. Married female: Change in husband's work (loss of job, beginning new job, retirement, etc.)			-3	-2	-1	0	+1	+2	+3
163. Major change in usual type and/or amount of recreation			-3	-2	-1	0	+1	+2	+3
164. Borrowing more than $10,000 (buying home, business, etc.)			-3	-2	-1	0	+1	+2	+3
165. Borrowing less than $10,000 (buying car, TV, getting school loan, etc.)			-3	-2	-1	0	+1	+2	+3
166. Being fired from job			-3	-2	-1	0	+1	+2	+3
167. Male: Wife/girlfriend having abortion			-3	-2	-1	0	+1	+2	+3
168. Female: Having abortion			-3	-2	-1	0	+1	+2	+3
169. Major personal illness or injury			-3	-2	-1	0	+1	+2	+3
170. Major change in social activities, e.g., parties, movies, visiting (increased or decreased participation)			-3	-2	-1	0	+1	+2	+3
171. Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)			-3	-2	-1	0	+1	+2	+3
172. Divorce			-3	-2	-1	0	+1	+2	+3
173. Serious illness or injury of close friend			-3	-2	-1	0	+1	+2	+3
174. Retirement from work			-3	-2	-1	0	+1	+2	+3
175. Son or daughter leaving home (due to marriage, college, etc.)			-3	-2	-1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
176. Ending of formal schooling			-3	-2	-1	0	+1	+2	+3
177. Separation from spouse (due to work, travel, etc.)			-3	-2	-1	0	+1	+2	+3
178. Engagement			-3	-2	-1	0	+1	+2	+3
179. Breaking up with boyfriend/girlfriend			-3	-2	-1	0	+1	+2	+3
180. Leaving home for the first time			-3	-2	-1	0	+1	+2	+3
181. Reconciliation with boyfriend/girlfriend			-3	-2	-1	0	+1	+2	+3
182. Other recent experiences which have had an impact on your life. List and rate.									
183. _____			-3	-2	-1	0	+1	+2	+3
184. _____			-3	-2	-1	0	+1	+2	+3
185. _____			-3	-2	-1	0	+1	+2	+3
186. Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)			-3	-2	-1	0	+1	+2	+3
187. Changing to a new school at the same academic level (undergraduate, graduate, etc.)			-3	-2	-1	0	+1	+2	+3
188. Academic probation			-3	-2	-1	0	+1	+2	+3
189. Being dismissed from dormitory or other residence			-3	-2	-1	0	+1	+2	+3
190. Failing an important exam			-3	-2	-1	0	+1	+2	+3
191. Changing a major			-3	-2	-1	0	+1	+2	+3
192. Failing a course			-3	-2	-1	0	+1	+2	+3
193. Dropping a course			-3	-2	-1	0	+1	+2	+3
194. Joining a fraternity or sorority			-3	-2	-1	0	+1	+2	+3
195. Financial problems concerning school (in danger of not having sufficient money to continue)			-3	-2	-1	0	+1	+2	+3

NOTE:
When completing your Opscan, for each item checked, please use the following system for scoring: -3=1, -2=2, -1=3, 0=4, +1=5, +2=6, +3=7

196. Please mark 0 on your opscan.

Appendix I

COMPLETE THIS QUESTIONNAIRE BEFORE FILLING OUT THE OPSCAN. THERE ARE INSTRUCTIONS AT THE END OF THE QUESTIONNAIRE FOR FILLING OUT THE OPSCAN.

The Hassles Scale

Directions: Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times.

Listed in the center of the following pages are a number of ways in which a person can feel hassled. First, circle the hassles that have happened to you in the past month. Then look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the circled hassles has been for you in the past month. If the hassle did not occur in the last month do NOT circle it.

	HASSLES	SEVERITY 1. Somewhat severe 2. Moderately severe 3. Extremely severe		
1.	Misplacing or losing things	1	2	3
2.	Troublesome neighbors	1	2	3
3.	Social obligations	1	2	3
4.	Inconsiderate smokers	1	2	3
5.	Troubling thoughts about your future	1	2	3
6.	Thoughts about death	1	2	3
7.	Health of a family member	1	2	3
8.	Not enough money for clothing	1	2	3
9.	Not enough money for housing	1	2	3
10.	Concerns about owing money	1	2	3
11.	Concerns about getting credit	1	2	3
12.	Concerns about money for emergencies	1	2	3
13.	Someone owes you money	1	2	3
14.	Financial responsibilities for someone who doesn't live with you	1	2	3
15.	Cutting down on electricity, water, etc.	1	2	3
16.	Smoking too much	1	2	3
17.	Use of alcohol	1	2	3
18.	Personal use of drugs	1	2	3
19.	Too many responsibilities	1	2	3
20.	Decisions about having children	1	2	3
21.	Non-family members living in your house	1	2	3
22.	Care for pet	1	2	3
23.	Planning meals	1	2	3
24.	Concern about the meaning of life	1	2	3
25.	Trouble relaxing	1	2	3
26.	Trouble making decisions	1	2	3
27.	Problems getting along with fellow workers	1	2	3
28.	Customers or clients give you a hard time	1	2	3
29.	Home maintenance (inside)	1	2	3

	HASSLES	SEVERITY 1. Somewhat severe 2. Moderately severe 3. Extremely severe		
30.	Concerns about job security	1	2	3
31.	Concerns about retirement	1	2	3
32.	Laid-off or out of work	1	2	3
33.	Don't like current work duties	1	2	3
34.	Don't like fellow workers	1	2	3
35.	Not enough money for basic necessities	1	2	3
36.	Not enough money for food	1	2	3
37.	Too many interruptions	1	2	3
38.	Unexpected company	1	2	3
39.	Too much time on hands	1	2	3
40.	Have to wait	1	2	3
41.	Concerns about accidents	1	2	3
42.	Being lonely	1	2	3
43.	Not enough money for health care	1	2	3
44.	Fear of confrontation	1	2	3
45.	Financial security	1	2	3
46.	Silly practical mistakes	1	2	3
47.	Inability to express yourself	1	2	3
48.	Physical illness	1	2	3
49.	Side effects of medication	1	2	3
50.	Concerns about medical treatment	1	2	3
51.	Physical appearance	1	2	3
52.	Fear of rejection	1	2	3
53.	Difficulties with getting pregnant	1	2	3
54.	Sexual problems that result from physical problems	1	2	3
55.	Sexual problems other than those resulting from physical problems	1	2	3
56.	Concerns about health in general	1	2	3
57.	Not seeing enough people	1	2	3
58.	Friends or relatives too far away	1	2	3
59.	Preparing meals	1	2	3
60.	Wasting time	1	2	3
61.	Auto maintenance	1	2	3
62.	Filling out forms	1	2	3
63.	Neighborhood deterioration	1	2	3
64.	Financing children's education	1	2	3
65.	Problems with employees	1	2	3
66.	Problems on job due to being a woman or man	1	2	3
67.	Declining physical abilities	1	2	3
68.	Being exploited	1	2	3
69.	Concern about bodily functions	1	2	3
70.	Rising prices of common goods	1	2	3
71.	Not getting enough rest	1	2	3
72.	Not getting enough sleep	1	2	3
73.	Problems with aging parents	1	2	3
74.	Problems with your children	1	2	3

	HASSLES	SEVERITY 1. Somewhat severe 2. Moderately severe 3. Extremely severe		
75.	Problems with persons younger than yourself	1	2	3
76.	Problems with your lover	1	2	3
77.	Difficulties seeing or hearing	1	2	3
78.	Overloaded with family responsibilities	1	2	3
79.	Too many things to do	1	2	3
80.	Unchallenging work	1	2	3
81.	Concerns about meeting high standards	1	2	3
82.	Financial dealings with friends or acquaintances	1	2	3
83.	Job dissatisfaction	1	2	3
84.	Worries about decisions to change jobs	1	2	3
85.	Trouble with reading, writing or spelling abilities	1	2	3
86.	Too many meetings	1	2	3
87.	Problems with divorce or separation	1	2	3
88.	Trouble with arithmetic skills	1	2	3
89.	Gossip	1	2	3
90.	Legal problems	1	2	3
91.	Concerns about weight	1	2	3
92.	Not enough time to do things you need to do	1	2	3
93.	Television	1	2	3
94.	Not enough personal energy	1	2	3
95.	Concerns about inner conflicts	1	2	3
96.	Feel conflicted over what to do	1	2	3
97.	Regrets over past decisions	1	2	3
98.	Menstrual (period) problems	1	2	3
99.	The weather	1	2	3
100.	Nightmares	1	2	3
101.	Concerns about getting ahead	1	2	3
102.	Hassles from boss or supervisor	1	2	3
103.	Difficulties with friends	1	2	3
104.	Not enough time for family	1	2	3
105.	Transportation problems	1	2	3
106.	Not enough money for transportation	1	2	3
107.	Not enough money for entertainment and recreation	1	2	3
108.	Shopping	1	2	3
109.	Prejudice and discrimination from others	1	2	3
110.	Property, investments or taxes	1	2	3
111.	Not enough time for entertainment and recreation	1	2	3
112.	Yard work or outside home maintenance	1	2	3
113.	Concerns about news events	1	2	3
114.	Noise	1	2	3

HASSLES	SEVERITY 1. Somewhat severe 2. Moderately severe 3. Extremely severe		
115. Crime	1	2	3
116. Traffic	1	2	3
117. Pollution	1	2	3

HAVE WE MISSED ANY OF YOUR HASSLES? IF SO, WRITE THEM IN BELOW:

118. _____	1	2	3

ONE MORE THING: HAS THERE BEEN A CHANGE IN YOUR LIFE THAT AFFECTED HOW YOU ANSWERED THIS SCALE? IF SO, TELL US WHAT IT WAS:

_____

119. Please mark 0 on your opscan.

PLEASE RESPOND TO HASSLES CIRCLED ON THE OPSCAN. IF AN ITEM WAS NOT CIRCLED DO NOT MARK IT ON THE OPSCAN.

START OPSCAN FORM C

Appendix J

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

13. Mark 0 on your opscan.

CHS

Please indicate how true you feel the following statements are for you.

	1 definitely true	2 mostly true	3 don't know	4 mostly false	5 definitely false
14. According to the doctors I've seen, my health is now excellent.	1	2	3	4	5
15. I feel better now than I ever have before.	1	2	3	4	5
16. I am somewhat ill.	1	2	3	4	5
17. I'm not as healthy now as I used to be.	1	2	3	4	5
18. I'm as healthy as anybody I know.	1	2	3	4	5
19. My health is excellent.	1	2	3	4	5
20. I have been feeling bad lately.	1	2	3	4	5
21. Doctors say that I am now in poor health.	1	2	3	4	5
22. I feel about as good now as I ever have.	1	2	3	4	5

23. Mark 0 on your opscan.

Appendix K

RESPOND TO ITEMS ON THIS QUESTIONNAIRE DIRECTLY ON YOUR OPSCAN.

On the following pages several common symptoms or bodily sensations are listed. Most people have experienced most of them at one time or another. We are currently interested in finding out how prevalent each symptom is among college students. All data will be confidential.

On this sheet, circle the letter that corresponds to the symptoms below which indicates how frequently you experience that symptom. For all items, use the following scale:

	1 Have never or almost never experienced the symptom	2 Less than 3 or 4 times per year	3 Every month or so	4 Every week or so	5 More than once every week
120. Eyes water	1	2	3	4	5
121. Itching or painful eyes	1	2	3	4	5
122. Ringing in ears	1	2	3	4	5
123. Temporary deafness or hard of hearing	1	2	3	4	5
124. Lump in throat	1	2	3	4	5
125. Choking sensations	1	2	3	4	5
126. Sneezing spells	1	2	3	4	5
127. Running nose	1	2	3	4	5
128. Congested nose	1	2	3	4	5
129. Bleeding nose	1	2	3	4	5
130. Asthma or wheezing	1	2	3	4	5
131. Coughing	1	2	3	4	5
132. Out of breath	1	2	3	4	5
133. Swollen ankles	1	2	3	4	5
134. Chest pains	1	2	3	4	5
135. Racing heart	1	2	3	4	5
136. Cold hands or feet even in hot weather	1	2	3	4	5
137. Leg cramps	1	2	3	4	5
138. Insomnia	1	2	3	4	5
139. Toothaches	1	2	3	4	5
140. Upset stomach	1	2	3	4	5
141. Indigestion	1	2	3	4	5
142. Heartburn	1	2	3	4	5
143. Severe pains or cramps in stomach	1	2	3	4	5

	1 Have never or almost never experienced the symptom	2 Less than 3 or 4 times per year	3 Every month or so	4 Every week or so	5 More than once every week
144. Diarrhea	1	2	3	4	5
145. Constipation	1	2	3	4	5
146. Hemorrhoids	1	2	3	4	5
147. Swollen joints	1	2	3	4	5
148. Stiff muscles	1	2	3	4	5
149. Back pains	1	2	3	4	5
150. Sensitive or tender skin	1	2	3	4	5
151. Face flushes	1	2	3	4	5
152. Severe itching	1	2	3	4	5
153. Skin breaks out in rash	1	2	3	4	5
154. Acne or pimples on face	1	2	3	4	5
155. Acne or pimples other than face	1	2	3	4	5
156. Boils	1	2	3	4	5
157. Sweat even in cold weather	1	2	3	4	5
158. Strong reactions to insect bites	1	2	3	4	5
159. Headaches	1	2	3	4	5
160. Sensation of pressure in head	1	2	3	4	5
161. Hot flashes	1	2	3	4	5
162. Chills	1	2	3	4	5
163. Dizziness	1	2	3	4	5
164. Feel faint	1	2	3	4	5
165. Numbness or tingling in any part of body	1	2	3	4	5
166. Twitching of eyelid	1	2	3	4	5
167. Twitching other than eyelid	1	2	3	4	5
168. Hands tremble or shake	1	2	3	4	5
169. Stiff joints	1	2	3	4	5
170. Sore muscles	1	2	3	4	5
171. Sore throat	1	2	3	4	5
172. Sunburn	1	2	3	4	5
173. Nausea	1	2	3	4	5

174. Please mark 0 on your opscan.

Please indicate how many times you saw doctors other than those at the student health service:	30	1 2 3 4 5 6 7 8 9 10
• in fall semester (including Thanksgiving & Christmas breaks)	31	1 2 3 4 5 6 7 8 9 10
if more than 10 visits, then darken in the number over 10	32	1 2 3 4 5 6 7 8 9 10
• in spring semester (spring break)?	33	1 2 3 4 5 6 7 8 9 10
if more than 10 visits, then darken in the number over 10	34	1 2 3 4 5 6 7 8 9 10
How many times did you see doctors other than those at the student health service for each reason shown below?	35	1 2 3 4 5 6 7 8 9 10
• cold, flu, eye or ear infection	36	1 2 3 4 5 6 7 8 9 10
• urinary tract infection or sexually transmitted disease	37	1 2 3 4 5 6 7 8 9 10
• accidents or injuries	38	1 2 3 4 5 6 7 8 9 10
• allergy or asthma	39	1 2 3 4 5 6 7 8 9 10
• skin problem, such as acne	40	1 2 3 4 5 6 7 8 9 10
• birth control	41	1 2 3 4 5 6 7 8 9 10
• physical check-up	42	1 2 3 4 5 6 7 8 9 10
• emotional problem such as stress or depression	43	1 2 3 4 5 6 7 8 9 10
• chronic illness such as arthritis, diabetes, or cancer	44	1 2 3 4 5 6 7 8 9 10
• other	45	1 2 3 4 5 6 7 8 9 10

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Supervisor: Kenneth D. Cole, Ph.D.

Spinal Cord Injury Service, 6 months. Psychological evaluation and treatment of individuals with spinal cord injuries. Treatment focuses on facilitating adaptive coping and working towards independent reintegration outside of the rehabilitation setting. Duties include staff support and training, and participation in weekly interdisciplinary team meetings.
Supervisor: Beatriz Coca, Ph.D.

Geropsychology, 4 months. Neuropsychological and psychological assessments and psychotherapy for patients referred from the Nursing Home Care Unit, Intermediate Care, Geriatric Evaluation and Management Unit, and the Outpatient Dementia Clinic. Responsibilities include conducting individual and family therapy with an elderly population with a variety of physical and psychological problems, providing staff support, and participation in weekly interdisciplinary team meetings.
Supervisor: Reda R. Scott, Ph.D.

Chronic Pain Management Program, 4 months. Interdisciplinary inpatient program with a variety of treatment modalities including psychotherapy, group therapy, vocational rehabilitation therapy, physical therapy, and kinesiotherapy. Responsibilities include psychological evaluation of patients referred to the program, pre- and post-treatment assessments, individual and group psychotherapy, and post-program follow-up sessions.
Supervisors: Richard W. Hanson, Ph.D. and
Kenneth E. Gerber, Ph.D.

Inpatient Psychiatry Service, 4 months. Psychological assessment for the purpose of diagnosis and evaluation of personality and neuropsychological status. Duties include individual, group, and family psychotherapy with acutely disturbed, suicidal, and potentially violet psychiatric inpatients. Patients with a wide variety of psychopathologies are treated, including various schizophrenic, affective, and personality disorders.
Supervisor: Susan H. Houston, Ph.D.

Graduate Clinician, Cardiac Rehabilitation Program, Virginia Polytechnic Institute & State University, 8/91 - 5/92.
Supervisor: Douglas R. Southard, Ph.D.

Responsibilities included individual psychotherapy, biofeedback, counseling patients on coronary heart disease risk factors (i.e., diet, exercise, stress, and hostility), and consulting with program staff regarding the implementation of cognitive-behavioral techniques with patients.

Graduate Clinician, Psychological Services Center, Virginia Polytechnic Institute & State University, 8/88 - 5/89, 8/89 - 5/89, 5/91 - 5/92.
Supervisors: Richard M. Eisler, Ph.D., Carolynn Pickett, Ph.D., Russell T. Jones, Ph.D., and Ellie T. Sturgis, Ph.D.

Conducted therapy, and personality and behavioral assessment, with individuals, couples, and families. Worked with clients with range of diagnoses including bulimia nervosa, obsessive compulsive disorder, sexual dysfunction, enuresis, encopresis, attention-deficit hyperactivity disorder, and oppositional-defiant disorder.

Therapist, National Institutes of Mental Health funded study on chronic adolescent suicide ideators, 1/91 - 8/91.
Supervisors: George A. Clum, Ph.D., and Carolynn Pickett, Ph.D.

Assessment interviews, individual and group therapy, and crisis intervention with acutely suicidal adolescents.

Psychology Extern, Department of Veterans Affairs Medical Center, Mental Hygiene Clinic, Salem, VA, 5/90 - 8/90.
Supervisor: Jerome D. Gilmore, Ph.D.

Conducted individual and group therapy, intake interviewing, and psychological assessment. Developed and conducted a stress management workshop. Worked with patients with a variety of diagnoses including schizophrenia, major depression, and post-traumatic stress disorder.

Graduate Assistant, Psychological Services Center and Child Study Center, Virginia Polytechnic Institute & State University, VA, 8/89 - 5/90.
Supervisors: Richard M. Eisler, Ph.D. and Jack W. Finney, Ph.D.

Assessed children for attention-deficit hyperactivity disorder, reviewed case files, and performed general administrative duties.

Counselor, Southwood Psychiatric Residential Treatment Center, Chula Vista, CA, 7/86 - 7/88.

Responsibilities included counseling and behavioral management of emotionally disturbed children and adolescents, and adolescents with substance abuse problems, as well as supervision of other counselors in a residential setting.

Counselor, Devereux Foundation, Santa Barbara, CA, 5/86 - 5/87.

Responsibilities included counseling and behavioral management of emotionally disturbed adolescents in a residential setting.

Group Counselor, Juvenile Hall, Santa Barbara, CA, 6/85 - 9/85.

Duties included intake, transport, and behavioral management of incarcerated adolescents.

RESEARCH EXPERIENCE:

Dissertation Research, Virginia Polytechnic Institute & State University Student Health Center, 8/91 - present.
Supervisor: Jack W. Finney, Ph.D.

Investigating the contribution of emotional expression to the relationship between social support and health status. A theoretical model was developed, evaluated, and modified with the statistical method LISREL. Utilization of medical services and self-report of symptoms were used as measures of health status. The study is completed, a manuscript has been written, and a defense is scheduled for April, 1993.

Adherence Research, Virginia Polytechnic Institute & State University, 8/91 - present.
Supervisor: Jack W. Finney, Ph.D.

Study evaluating the influence of social demand on accuracy of self-report of adherence to prescribed regimens.

Masters Thesis Research, Virginia Polytechnic Institute & State University, Student Health Center, 8/89 - 10/90.
Supervisor: Jack W. Finney, Ph.D.

A randomized clinical trial was conducted to investigate the influence of a commitment-based intervention on adherence with a 10-day antibiotic regimen. Measures of adherence included unannounced home visits to obtain pill counts and self-reported adherence.

Research Assistant, National Institutes of Health funded studies on Chronic Obstructive Pulmonary Disease and Arthritis, University of California, San Diego, CA, 9/86 - 7/88.
Supervisor: Robert M. Kaplan, Ph.D.

Conducted structured interviews, administered and coded questionnaires, and tested patients on treadmill while monitoring blood pressure, heart rate, and respiration.

Research Assistant, Chronic Low Back Pain Study, Department of Veterans Affairs Medical Center, San Diego, CA, 6/86 - 5/88.
Supervisors: Mark A. Slater, Ph.D., and Hamp Atkinson, M.D.

Assisted in data management, library research, and patient interviewing.

Research Assistant, Child Abuse Study, University of California, Santa Barbara, CA, 9/86 - 12/86.
Supervisor: Daphane Bugental, Ph.D.

Assisted in data management and coded interactions observed between parents and their children.

PUBLICATIONS AND PRESENTATIONS:

Putnam, D. E., Finney, J. W., Barkley, P. L., & Bonner, M. J. (1993). Enhancing commitment increases adherence to a medical regimen. (in press, Journal of Consulting and Clinical Psychology)

Putnam, D. E., Finney, J. W., Barkley, P. L., & Bonner, M. J. (1991). Enhancing commitment increases adherence to a medical regimen. Poster presented at the annual meeting of the Society of Behavioral Medicine, March, 1991, Washington, DC.

Finney, J. W., Putnam, D. E., & Boyd, C. M. (1991). The influence of experimenter demand on the accuracy of self-reported adherence behavior. Poster presented at the annual meeting of the Association for Behavior Analysis, May, 1992, San Francisco.

TEACHING EXPERIENCE:

Instructor, Virginia Polytechnic Institute & State University, Blacksburg, VA, 8/91 - 5/92.

Complete responsibility for two undergraduate courses on personality theory. Responsibilities included developing lectures, selecting texts, writing tests, grading papers, and supervising a graduate teaching assistant.

Graduate Teaching Assistant, Virginia Polytechnic Institute & State University, Blacksburg, VA, 8/88 - 8/89.

Taught four introductory psychology discussion sections. Duties included leading weekly discussions, developing activities, and grading papers.

Instructor, University of California, Santa Barbara, CA, 7/86 - 8/86.

Taught an introductory psychology course for incoming freshman students in the Summer Transitional Enrichment Program.

Tutor, University of California, Santa Barbara, CA, 6/86 - 7/86.

Tutored high school students taking college-level psychology courses in the Summer Juniors Program.

PROFESSIONAL MEMBERSHIPS:

American Psychological Association

Association for the Advancement of Behavior Therapy

The Society of Behavioral Medicine

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