POST-TRAUMATIC CHANGES IN PERCEPTIONS OF PURPOSE IN LIFE AND THREE DIMENSIONS OF LOCUS OF CONTROL IN STROKE AND HIP SURGERY PATIENTS

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A survey of stress and crisis literature indicated traumatic events tend to initially overwhelm individual coping resources. The adjustment process following such events appears to be characterized by phases in which gradual perceptual and cognitive reorganization occurs. Emotional shock, denial processes, and intrusive ideation accompany initial phases.

A study was conducted to explore the relationship between seriousness of illness and perceived traumatic impact of illness for existential purpose and meaning in personal existence and locus of control attribution in individuals experiencing recent traumatic illness. Post trauma perceptions of pre/post trauma changes in purpose in life, internality, powerful others control, and chance control dimensions were investigated using a retrospective ANOVA design. Subjects were hip surgery and stroke patients over age 65 with recent onset of illness.

Generally, a high level of perceived traumatic impact was associated with greater changes in the predicted directions for all dimensions except internality. Stroke patients,

however, tended to exhibit lesser effects than hip surgery patients. It was speculated that life-threatening illness produces greater denial mechanism utilization requirements. Defensive externalization was offered as a component of the denial process. Significant correlations between perceived illness trauma ratings and dependent measures for hip surgery patients only indicated a negative relationship with purpose in life and internality; and a positive relationship with powerful others and chance control attribution. Aging and treatment issues, suggestions for further research, and limitations of the study are discussed.

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POST TRAUMATIC CHANGES IN PERCEPTIONS OF PURPOSE IN LIFE AND THREE DIMENSIONS OF LOCUS OF CONTROL IN STROKE AND HIP SURGERY PATIENTS

In recent years, increasing interest has focused on psychological reactions to serious, life-threatening illness. Although many models of the coping process associated with critical illness exist, they have generally neglected existential constructs such as purpose or meaning in life. This research involves an attempt to explore the relationship between such concepts and traumatic stress reactions to severe illness. In addition, locus of control and perception of stress will be addressed.

Traumatic events may produce a crisis for the individual which places severe demands on coping resources. Researchers have described emotional upheaval occurring in a variety of catastrophic circumstances, including man-made and natural disasters (Frederick, 1981; Lifton & Olson, 1976; Lindemann, 1944; Melick, Logue, & Frederick, 1982; Titchner & Kapp, 1976; Titchner, Lindy, Lindy, & Murdaugh, 1981), concentration camp internment (Bettelheim, 1943; Chodoff, 1970; Dimsdale, 1974; Frankl, 1963, 1965; Moos & Tsu, 1976), combat exposure (Borus, 1974; Bourne, 1970; DeFazio, Rustin, & Diamond, 1975; Figley, 1978; Grinker & Spiegel, 1945; Lifton, 1973; Smith, 1980), and critical illness or physical disability (Benjamin, 1978;

Bergsma & Thomasma, 1977; Charatan & Fisk, 1978; Cohen, 1980; Cohen & Lazarus, 1979; Fink, 1967; Goodstein, 1983; Horowitz, 1982; Hudgens, 1974; Levine & Zigler, 1975; Levy, 1981; Lewis, Gottesman, & Gutstein, 1979; Mages & Mendelsohn, 1979; Moos, 1982; Moos & Tsu, 1979; Mossman, 1976; Schwab, 1972; Shontz, 1975; Thomas & Weiner, 1974).

The concept of trauma as a stimulus event which exceeds the individual's usual capacity to cope with stressors is traceable to Freud (1917/1955, 1919/1955). This model continued to evolve in the work of Kris (1965) and Fürst (1967). The essential view of current dynamic theorists suggests that a traumatic experience is one in which the ego is overwhelmed and rendered helpless and disorganized promoting regressive phenomenon (DeFazio, 1978).

Theories of crisis in the stress literature have shown a similar conceptual framework. In this area, fundamental ideas related to coping with critical events can be traced to Lindemann (1944) who described the recovery process, characterized by grief and mourning, of bereaved family members who lost loved ones in a tragic fire. Current approaches to crisis theory are derived mainly from Caplan (1964), Hansell (1970), and Taplin (1971). Their view is that an unexpected traumatic event produces severe psychological distress which cannot be resolved with usual coping strategies or processes. Novel attempts to cope are made, and, if they too fail, anxiety, depression, helplessness,

and a decrease in self-esteem may ensue (Lewis et al., 1979). Fink (1967), Moos (1982), and Shontz (1975, 1980, 1982) have applied crisis theory to attempts to cope with serious illness and disability. A composite representation of their views consists of phases of coping following the critical event which are characterized by a gradual cognitive and perceptual reorganization that is accompanied by emotional shock, denial mechanisms, and intrusive ideation. This process is hypothesized to eventually produce an altered schemata of self and the world which may be more adaptive for the individual. Similar models of traumatic stress reactions characterized by phases of affective numbing, denial, and intrusive thoughts have been described elsewhere (Cohen, 1979; Horowitz, 1976, 1979, 1982a, 1982b; Janis, 1971; Lazarus, 1966, 1974).

The typically sudden, unexpected onset of serious physical illness and the pervasive threat to the essence of an individual's life and adaptation involve a high potential for maladaptive coping. Lewis and his associates (1979) investigated psychological changes in cancer patients undergoing exploratory surgery. To distinguish the effects of cancer from those of surgery, a comparison group composed of patients hospitalized for hernia repair, and gall bladder removal was employed. Cancer patients reported more intense feelings of anxiety and helplessness than the surgery comparison group. These feelings became apparent almost immediately following surgery. Several weeks later, cancer patients were experiencing

more depression and lower self-esteem than patients undergoing surgery for less serious conditions. In a study of the use of defense mechanisms among three patient groups (Levine & Zigler, 1975) denial was most prevalent for stroke victims, whereas cancer patients displayed more denial than did heart patients.

Weisman (1979a) described four general psychosocial phases which are related to the stage, treatment, and progression of cancer. These included existential plight; accomodation and mitigation; recurrence and relapse; and deterioration and decline. This researcher observed that characteristic changes occur throughout the four stages in patients' primary concerns, goals, attitudes, time perspectives, coping patterns, and overall quality of life. During the existential plight phase patients are most concerned about their mortality, hope for a cure, maintain an apparently optimistic attitude, and tend to develop an open time perspective. Initially these patients utilized denial which was then followed by a tendency to switch to more active coping and problem solving strategies. Weisman (1979b) also observed that the degree of vulnerability and distress experienced by five groups of patients during this phase was influenced by illness related factors such as type and stage of cancer. Patients with colon cancer and malignant melanoma displayed peak vulnerability immediately after surgery, whereas patients with breast cancer and Hodgkin's disease experienced the most

distress about two months after the initiation of radiation or chemotherapy treatment. Patients with advanced lung cancer showed both the most severe distress and increasing levels of vulnerability and disturbance.

Attempting to return to a regular routine comprises the second phase of Weisman's model. Here, the patient must adapt to reduced energy, morale, and capacity for rapid decision-making while suffering variable impairment. Patients may also experience drastic alterations in quality of life such as changes in family and sexual role functions. The third phase, recurrence and relapse, constitutes a secondary existential dilemma, especially if a long period has lapsed since the initial onset of the illness. The final phase, deterioration and decline, provides some distance from many of the patient's initially pressing problems as acceptance of the inevitable outcome occurs. Weisman concluded that psychosocial issues are more likely to arise during transition in the course of illness, e.g., during the emotional impact of diagnosis, early convalescence, episodes of relapse or recurrence, and the time of progressive decline and deterioration.

Charatan and Fisk (1978) have observed that a common disturbance of mood after stroke is depression. Gainotti (1972) suggested that depressive catastrophic reactions were more common among patients with dominant hemisphere lesions,

particularly where nonfluent aphasia is associated with hemiplegia of the right side of the body. This may be explained somewhat by the fact that dominant hemisphere lesions frequently disturb language function. Patients with expressive language deficits can be generally receptively intact and experience severe frustration in trying and failing to speak. An increased sense of isolation may exacerbate psychosocial adjustment issues.

Folstein, Maiberger, and McHugh (1977) compared the emotional symptoms of a group of stroke patients with those of orthopedic patients with noncerebrovascular, but disabling conditions. Although the level of functional disability in both groups was the same, 45% of the stroke patients exhibited clinical depression compared to 10% of the orthopedic patients. They also observed that, in addition to depression of mood, patients with stroke involving the right hemisphere appeared particularly vulnerable and displayed irritability, apathy, and difficulty in concentration to a greater extent than left hemisphere or orthopedic patients. While Folstein and his associates interpret the difference in incidence of psychiatric symptoms between the stroke and orthopedic groups as suggesting that the appearance of a mood disorder is a specific psysiological reaction to infarction of the brain, it may be that illness perceived as more life-threatening or involving a critical organ has a catastrophic emotional impact.

Viktor Frankl's (1963, 1965) analysis of the coping mechanisms of concentration camp survivors suggested that an individual who is confronted with the pressure of life's transitory nature begins to deal with the problem of purpose in life. He defined purpose in life as "the ontological significance of life from the point of view of the experiencing individual" (1965, p. 185). In reference to suffering and meaning, Frankl proposed that an individual does not despair because of any suffering itself, but because the suffering is not meaningful. Yalom (1980) observed during clinical work with patients dying of cancer that those with a sense of meaning in their lives were able to face death with less despair. Zuehlke and Watkins (1975) treated twelve terminal patients using Frankl's (1963, 1965) logotherapeutic techniques which heavily emphasize the development of meaning. They administered the Purpose in Life test (PIL) (Crumbaugh & Maholick, 1964) both before and after therapy. Results indicated a significant increase in purpose in life.

White and Liddon (1972) reported that five of ten cardiac arrest patients they studied experienced a "transcendental redirection" of their lives as a result of their illness and were thereby able to view the life-threatening episode as having been of positive value. Goodstein (1983) cited the "general meaning" of the disease to the patient as a key factor contributing to the psychological response to stroke. Moos (1982) stated that "when life's happenings seem capricious

and uncontrollable, as with the sudden onset of an acute health crisis, it is often easier to manage if one can find a general purpose or pattern of meaning in the course of events" (p. 139-140).

Cowie (1976) described a process whereby patients engaged in "reconstructive" coping work in order to "normalize" and attempt to make their heart attacks meaningful as something which was not really unexpected, but rather was building up slowly as the "obvious outcome" of a particular lifestyle. Williams (1983) characterized intrusive post traumatic stress symptoms among Vietnam veterans as "an adaptive pathway for many veterans in their search for the personal meaning of the losses, the atrocities, and their actions in guerrilla warfare" (p. 4). Thus, it appears that successful coping with health crises and other traumatically stressful experiences has frequently been associated with attempts to reconstrue or otherwise attribute meaning and purpose to those events.

The perceived severity of catastrophic events such as serious illness may be important when considering the traumatic impact of such events. Redfield and Stone (1979) have provided striking indications of individual differences in how people perceive life events, concluding that salient characteristics of events may vary widely among individuals. In a review of work with combat veterans and other traumatic stress victims, Hendin, Pollinger, Singer, and Ulman (1981)

proposed that the development of stress reactions is integrally associated with an individual's specific perception of the traumatic experience. Tennant and Andrews (1978), using a specially devised list of events, found that the distressing quality of life occurrences, rather than the events themselves, was related to the onset of neurotic symptoms. In contrast, the "universal salience" of catastrophic situations has been proposed by Sarason, Levine, and Sarason (1982) because the overwhelming characteristics of these situations evoke similar stress reactions in large numbers of individuals.

In addition to the qualitative meaning of life events, predictability and controllability appear to be aspects of situations which influence how individuals respond to those occurrences. In a discussion of these issues, Milburn and Watman (1981) have suggested that in threatening situations organisms survive by reducing randomness around them. They theorized that danger is implicit in unpredictability and consistently successful defenses are possible only with preparation which requires expectation and prediction of threat. Cohen (1980) reviewed experimental and correlational investigations of the aftereffects of stress on performance, and concluded that interventions that increase personal control and/or stressor predictability are effective in reducing post-stressor effects.

Kelly (1955) felt there was an inverse relationship between the degree of control and anxiety. He theorized that belief systems are formed as a mechanism to predict and control events. When this system is challenged convincingly, anxiety increases as the individual senses that some of the ability to affect or predict life's outcomes has been lost. He suggested unpredictable events and those over which individuals have little or no control are among the most distressing of all experiences. Predictability or the lack of it has been offered by others as a major factor in the stress experienced from an event (Pennebaker, Burnam, Schaeffer, & Harper, 1977).

Some theorists (Coyne & Holroyd, 1982; Folkman, Schaefer, & Lazarus, 1979) have focused on the importance of cognitive appraisal processes in determining stress reactions and in guiding coping efforts. "Primary appraisal" of an experience may involve judgments that the event is (a) irrelevant to the individual's well-being, (b) benign-positive, or (c) stressful. A situation appraised as stressful involves subsequent judgments of harm-loss, threat, or challenge. Thus, once stress has been evaluated, "secondary appraisal" will ensue, involving the assessment of coping strategies with respect to their cost and probability of success. Factors in this stage of threat appraisal are likely to include (a) the individual's previous experience with such situations, (b) "generalized beliefs" about one's self and

the environment, and (c) the availability of resources. Such resources may include personal morale and assessment of health/vitality, problem solving skills, social support, and material resources.

If generalized beliefs held by an individual about self and the environment are an important factor in evaluating coping strategies during stress appraisal, consideration of the internal-external control construct may be of heuristic value. This construct was conceptualized by Rotter (1966, 1975) as a generalized expectancy to perceive reinforcement as contingent upon one's own behavior (internal control), or as the result of forces outside one's control and a function of fate, chance, or powerful others (external control). In a review of the locus of control literature, Lefcourt (1976) concluded that internal control expectancies about personally important events will be related to signs of vitality. Individuals will engage in affective and cognitive activity which suggest an active struggle with those meaningful occurrences. On the other hand, fatalistic attitudes or external control beliefs are associated with apathy and withdrawal. In Lefcourt's view, locus of control mediates involved commitment in pursuits, whereas if one feels helpless to effect significant events, resignation, indifference, and reduced involvement become evident.

Using Rotter's (1966) scale, Johnson and Sarason (1978) found a positive correlation between frequency of occurrence

of aversive life events and psychological disorder (anxiety, depression) for internal, but not external, locus of control subjects. The inference was made that the perception of more control over negative events by internals is associated with lower stress levels. These findings were replicated by Sandler and Lakey (1982). In a study involving individuals with internal locus of control who had experienced stressful life events, Gilbert and Mangelsdorff (1979) reported that subjects with highest internality seemed to experience higher stress than those with moderate or low internality. It was asserted that beliefs of high personal control may predispose individuals to greater stress experience when confronted with stressful life events.

Strickland (1978) reviewed the literature pertaining to locus of control expectancies and health related behavior. She affirmed that following a disabling disorder, beliefs about locus of control appear related to reactions to the illness and the struggle to recover. While it seemed internals were more able to use specific information about the disease for coping, externals were more responsive to general instructions. Strickland hypothesized also that the initial denial and defensiveness of internals faced with trauma may be helpful when an individual who is used to considerable personal control is confronted with events beyond his or her influence.

Although locus of control has generally been viewed as a stable attribute of persons, research with both naturally occurring and contrived events has revealed it susceptible to influence (Lefcourt, 1976). Foulds (1971) found and replicated that college students who were engaged in group therapy emphasizing expression, awareness of personal freedom, and responsibility became more internal on Rotter's (1966) scale. Remainis (1971) examined the effects of achievement motivation training courses among college students. Course content included exploration of their levels of aspiration and thoughts about achievement. A significant increase in internality following training was reported. Martin and Shepel (1974) found that nurses who received training in counseling skills exhibited increased internality following such experience.

Frankl (1965) indicated that experiencing a traumatic event could facilitate a noogenic neurosis. This state of severe existential frustration derives from a vacuum of perceived meaning in personal existence. Subsequently, this failure to experience a sense of meaning and purpose in life may lead to psychopathology (Crumbaugh & Maholick, 1964). Goodstein (1983), Cowie (1976), Moos (1982), and Yalom (1980) have reported the search for meaning in events by patients with life-threatening illness. It also appears from the presented evidence that perceived meaning of a stressful event may be an important moderator variable in the experience

of that event. Finally, while the generalized perception of control over events appears to be a meaningful factor when considering the behavior of individuals with serious illness, it also seems important to consider the impact of catastrophic events on these personal beliefs. The exploratory purpose of this study, then, was to investigate the relationship between a traumatic stressful event, serious illness, and the patient's subsequent sense of purpose in life, as well as personal beliefs relating to three dimensions of locus of control including (a) internality, (b) powerful others, and (c) chance.

The traumatic impact of serious illness would seem conducive to a heightened awareness of the finality of death and the subsequent consideration of existential issues. Until these issues are resolved, the initial effect would seem to be a destabilization of one's sense of meaning or purpose in life. Also, it would seem that personal beliefs about control would tend to shift from internality to externality, as one's sense of predictability and controllability was shaken. Further, it would appear that both of these effects would be exacerbated by increases in the level of perceived trauma.

In order to explore the possibility of a difference in catastrophic impact due to the actual seriousness of illness, the reactions of patients, who had experienced a stroke (life threatening illness) were compared to the reactions of patients

who had undergone orthopedic hip surgery (non-life-threatening illness). It was hypothesized that the Illness Seriousness Effect would also produce a decrease in purpose in life and internality, while producing an increase in the two externality dimensions.

Since experimenter manipulation of the illness/injury variable is not ethically possible, quasi-experimental retrospective methods (Campbell & Stanley, 1963) were used to assess subjects' post-trauma perceptions of their sense of purpose and meaning in life and their personal beliefs along the I, P, and C dimensions. It was hypothesized that following the traumatic event, serious illness/injury, subjects would exhibit a diminished sense of purpose and meaning in life, decreased internality, and increased externality as related to post-trauma perceptions of their pre-trauma levels on these dimensions. This hypothesis was further qualified by the prediction that the greater effect of experiencing serious illness/injury for stroke patients (life-threatening illness/injury) than for hip surgery patients (non-life-threatening illness/injury) would be more apparent when its traumatic impact was perceived as severe than when perceived as moderate.

It was also hypothesized that levels of perceived traumatic impact of illness/injury as indicated by scores on the perceived illness trauma rating scales would demonstrate negative relationships with subjects' post-trauma perceptions

of their current sense of purpose and meaning in life (PIL scores) and current internality control beliefs (I scale scores), while demonstrating positive relationships with subjects' post-trauma perceptions of their current powerful others (P scale scores) and chance (C scale scores) control beliefs. These relationships were expected to be consistent for both stroke and hip surgery groups.

Method

Subjects

Sixty patients divided into four groups were used in the present study. A median split of perceived illness trauma rating scale scores categorized 40 stroke patients into two groups of 20 each. The group with highest perceived illness trauma ratings was designated the severe trauma perception (STP) stroke group (age range = 66-83; $\bar{X}$ = 75.6). Descriptions of cerebral insult which were specified in medical records for this group included: right frontal infarct; right middle cerebral insult; right hemispheric infarct over the right middle cerebral artery distribution; right ischemic infarction; large low density abnormality in portions of the right frontal, right temporal and right parietal areas; and cerebrovascular accident in the right parietal area. Medical records for other patients in the STP stroke group did not designate specific areas of insult and patients were simply diagnosed as right cerebrovascular accidents.

The stroke group with lower perceived illness trauma ratings was designated the moderate trauma perception (MTP) group (age range = 69-85; $\bar{X}$ = 74.6). Descriptions of cerebral insult which were specified in medical records for this group included: right middle cerebral infarct; right parietal infarct; low density abnormality in the right parietal area; right temporal ischemic infarct; and areas of decreased density in the right posterior parietal to occipital region and in the right paraventricular area near the anterior horn along the lateral aspect of the right lateral ventrical. Medical records for other patients in the MTP stroke group did not designate specific areas of insult and patients were simply diagnosed as right cerebrovascular accidents. Patients in both stroke groups were therefore only individuals with right hemispheric injuries. Also, patients in both the STP and MTP stroke groups had experienced no prior stroke or other life-threatening illness.

A median split of perceived illness trauma rating scale scores categorized 20 hip surgery patients into two groups of 10 each. The hip surgery group with the highest perceived illness trauma ratings was designated the severe trauma perception (STP) hip group (age range = 69-87; $\bar{X}$ = 78.2). The hip surgery group with lower perceived illness trauma ratings was designated the moderate trauma perception (MTP) group (age range = 68-89; $\bar{X}$ = 77.4). Patients in both hip

surgery groups had undergone either artificial joint replacement or surgical pinning of the existing joint following a traumatic injury.

The combined hip surgery group included fifteen females and five males. Six of these subjects were married, while two were never married and twelve were widowed. The combined stroke group included 29 males and eleven females. Twenty-eight of these subjects were married, while three were never married and nine were widowed.

Additional inclusion criteria for all subjects were orientation to person and either time or place. Also, all subjects were screened for cognitive status using the Similarities subscale of the WAIS-R (Wechsler, 1981). The criterion for this measure was a scale score of six. Patients in the stroke groups participated in the study within three weeks post stroke. Patients in the hip surgery groups participated in the study within four weeks post injury. No payment or other compensation was offered in exchange for participation.

Materials

Purpose in Life Test. The Purpose in Life Test (PIL) (Crumbaugh & Manolick, 1964) was used to assess perceived purpose and meaning in personal existence. This twenty item questionnaire is generally accepted as a measure of Viktor Frankl's concept of existential vacuum (Phillips, 1980). It

has demonstrated validity and reliability (Crumbaugh, 1968; Phillips, 1980; Sharpe & Viney, 1973; Yarnell, 1971).

I, P, and C Scales. The I, P, and C scales were used to assess three dimensions of control expectancy: internal (I scale), powerful others (P scale), and chance (C scale) (Levenson, 1981). Levenson (1981) reported that these scales provide a more multidimensional view of locus of control while comparing favorably with Rotter's (1966) instrument in terms of reliability and validity. In addition, she reported that, unlike the Rotter scale, correlations between I, P, and C scale items and the Marlow-Crowne Social Desirability Scale (Crowne & Marlowe, 1964) were negligible and nonsignificant.

Perceived Illness Trauma Rating Scales--Stroke/Hip Surgery. Two experimenter-designed scales were included to assess subjects' levels of perceived trauma relating to stroke or hip injury. These scales consisted of a single statement evaluating the perceived impact of the particular injury with numbers extending from one (no serious impact) to seven (extremely serious impact). These scales are included in Appendices B and C.

Similarities Subscale of the WAIS-R. The Similarities subscale of the WAIS-R (Wechsler, 1981) was used as a screening measure of cognitive functioning for all subjects. This measure requires categorization of items and can be considered an evaluation of conceptual ability with regard to the

concretization of thought which is frequently present following brain injury (Mossman, 1976).

Procedure

A retrospective (Campbell & Stanley, 1963) procedure was used to assess post-trauma perceptions of pre-trauma purpose in life and locus of control dimensions. The instructions provided on the PIL and the I, P, and C scales were read to each subject and they were then instructed to give the response that best described them one week before the onset of their illness or injury. All test items were read to all subjects. Following initial administration of both measures, the PIL and the I, P, and C scales were readministered in the same manner with instructions to give the response that best described them currently. Prior to their involvement in the study, all subjects were told that their identities and responses to the instruments would be kept confidential, and that they could withdraw their consent to participate at any time. This information was also included in the informed consent agreement (Appendix A) which all subjects were asked to read, or have read to them, and, if acceptable, sign before participating in the study.

Statistical Design

A quasi-experimental design (Campbell & Stanley, 1963; Cook & Campbell, 1979) utilizing retrospective measures was used. A 2 X 2 X 2 factorial ANOVA with repeated measures on the last factor (Kirk, 1968; Winer, 1971) employed seriousness

of illness/injury (hip surgery/stroke) as levels of the first factor in the design. A median split of perceived trauma rating scale scores for both stroke and hip surgery groups produced perceived traumatic impact of illness/injury (moderate/severe) as levels of the second factor. Pre- and post-trauma perceptions of dependent variable dimensions were employed as levels of the repeated measure factor. Separate 2 X 2 X 2 analyses were conducted for each of the four dependent variables (PIL and I, P, and C scale scores). F ratios for the three-way interactions were computed and tested for significance, as were tests of appropriate simple effects, for each dependent variable to test each hypothesis of interaction effects.

In addition, Pearson product moment correlations were used to examine and test hypothesized relationships between perceived trauma rating scale scores and subjects' post-trauma perceptions of their current PIL and I, P, and C dimensions. Correlations were computed separately for stroke and hip surgery groups.

Results

Purpose in Life

Mean PIL scores for both stroke groups and both hip surgery groups are shown in Table 1 (Appendix D). The results of the analysis of variance for this dimension indicated a significant seriousness of illness effect, $F(1,56) = 7.01$, $p < .01$; a significant pre/post illness effect, $F(1,56) = 84.58$, $p < .001$; a significant seriousness of illness by perceived

traumatic impact two-way interaction effect, $F(1,56) = 5.46$, $p < .05$; a significant perceived traumatic impact by pre/post illness two-way interaction effect, $F(1,56) = 15.534$, $p < .001$; and a significant seriousness of illness by perceived traumatic impact by pre/post illness three-way interaction effect, $F(1,56) = 8.32$, $p < .01$ (see Figure 1). The indication of a significant three-way interaction precluded meaningful interpretation of lower order interactions and main effects for this dimension.

The nature of the seriousness of illness by perceived traumatic impact by pre/post illness interaction effect was examined by the use of statistical and graphic methods outlined by Kirk (1968) and Winer (1971). Pre/post illness simple effects were significant for the STP hip group, $F(1,18) = 55.52$, $p < .001$; the STP stroke group $F(1,38) = 37.03$, $p < .001$; and the MTP stroke group, $F(1,38) = 15.37$, $p < .001$).

As can be seen, pre/post illness simple effects were most apparent for the STP hip group, followed by the STP stroke group and the MTP stroke group, respectively. These findings are not consistent with the hypothesized interaction effect relationships. Except for the MTP hip group, mean PIL scores in Table 1 (Appendix D) for all other groups showed perceived decreases in the hypothesized direction following illness/injury. However, it appears that the pre/post illness effect on perceptions of purpose and meaning in life was greater for the less serious illness condition when the traumatic impact of illness was perceived as severe than for the more

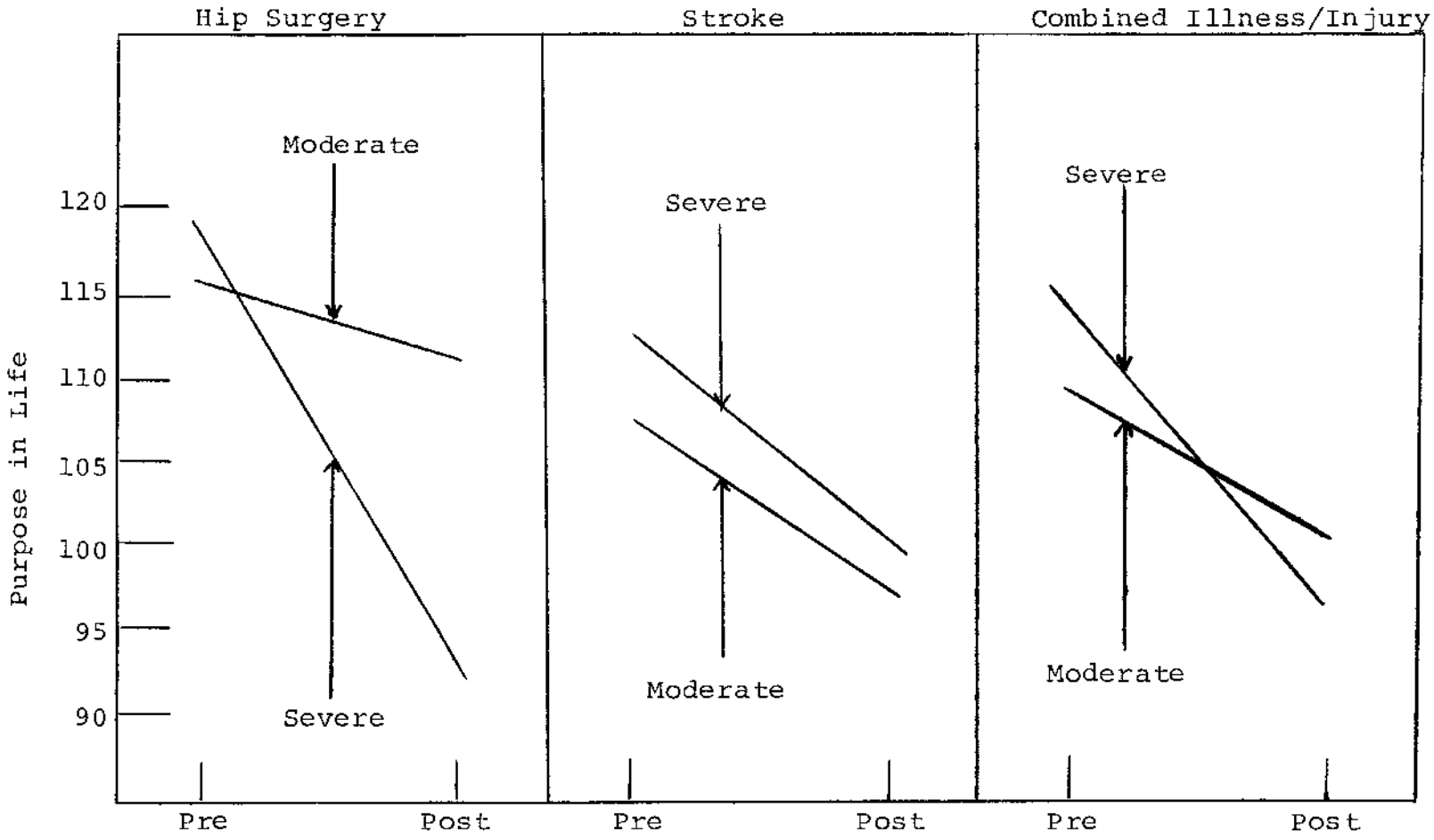

Figure 1. Seriousness of illness by perceived traumatic impact by pre/post illness interaction for Purpose in Life Test scores.

serious illness condition when the traumatic impact of illness was perceived as severe or moderate. Although severe and moderate perceptions of traumatic impact for all stroke patients were associated with lower pre/post illness simple effects than the STP hip group, the relationship of a greater pre/post illness simple effect for the STP stroke group than for the MTP stroke group was consistent with the research hypothesis. As was noted, no pre/post illness simple effect was apparent for the moderate trauma perception hip group.

Internality Control Attribution

Mean I scale scores for both stroke groups and both hip surgery groups are shown in Table 1 (Appendix D). The results of analysis of variance for this control dimension yielded a significant perceived traumatic impact effect, $F(1,56) = 10.76$, $p < .01$; and a significant seriousness of illness by perceived traumatic impact two-way interaction effect, $F(1,56) = 21.49$, $p < .001$ (see Figure 2). The latter significant interaction effect precludes meaningful interpretation of the perceived traumatic impact main effect. All other main and interaction effects for this dimension were nonsignificant.

Statistical and graphic methods outlined by Kirk (1968) and Winer (1971) were also used to examine the nature of the interaction effect for this dimension. Analysis of simple effects for perceived traumatic impact produced significant

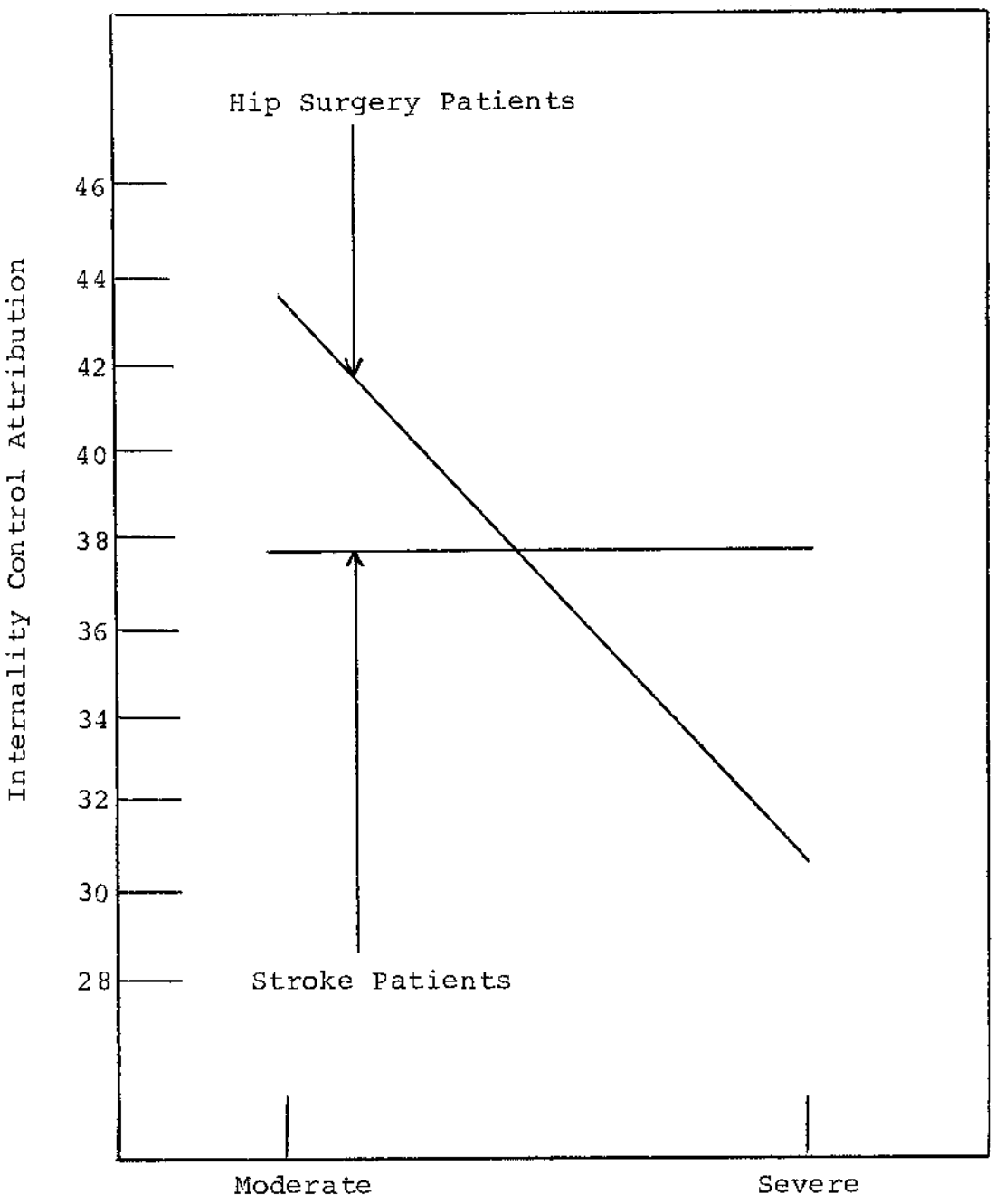

Figure 2. Seriousness of illness by perceived traumatic impact interaction for I scale scores.

results for the hip surgery group, $F(1,38) = 12.61$, $p < .01$; but not for the stroke group. In other words, the analysis indicated no apparent difference between the levels of perceived traumatic impact effect on the dependent variable for stroke patients. Significantly lower perceptions of the internality control dimension were, however, obtained for the STP hip group than for the MTP hip group. The overall three-way interaction research hypothesis was also not confirmed for this dependent variable dimension.

Powerful Others Control Attribution

Mean P scale scores for both stroke and both hip groups are shown in Table 1 (Appendix D). The analysis of variance for this dependent variable dimension produced a significant seriousness of illness main effect, $F(1,56) = 9.37$, $p < .01$; a significant pre/post illness main effect, $F(1,56) = 13.23$, $p < .01$; and a significant seriousness of illness by traumatic impact of illness by pre/post illness three-way interaction effect, $F(1,56) = 4.67$, $p < .05$ (see Figure 3). Due to statistical significance of the three-way interaction effect on this dimension, interpretation of the two significant main effects obtained was not done.

Pre/post illness simple effects were significant for the STP hip group, $F(1,18) = 10.53$, $p < .01$; and the MTP stroke group, $F(1,38) = 5.12$, $p < .05$. Pre/post illness simple effects for the STP stroke group and the MTP hip group were nonsignificant.

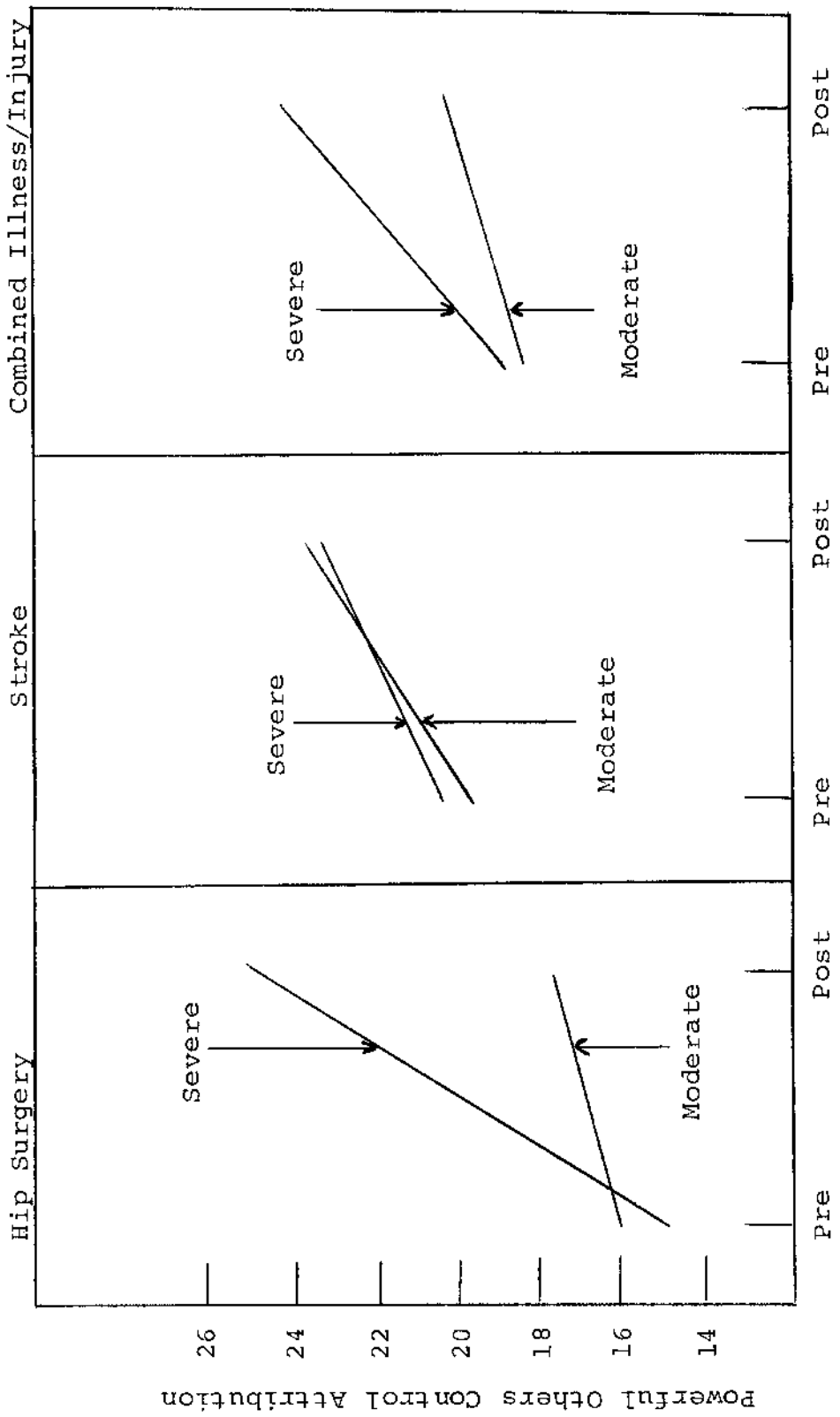

Figure 3. Seriousness of illness by perceived traumatic impact by pre/post illness interaction for P scale scores.

As is indicated, pre/post illness effect of perceived increases in powerful others control attribution was most apparent for the hip surgery patients whose illness was perceived as severely traumatic. The next most apparent pre/post illness effect on this dimension was for stroke patients whose illness was perceived as moderately traumatic. There were apparently no meaningful changes in perceptions of this attribution for hip surgery patients whose illness was perceived as moderately traumatic or for stroke patients whose illness was perceived as severely traumatic. Although changes in the dependent variable dimension occurred in the predicted direction for two of the four groups, the overall three-way interaction relationships did not support the research hypothesis.

Chance Factors Control Attribution

The mean C scale scores for both stroke groups and both hip surgery groups are reported in Table 1 (Appendix D). A significant pre/post illness main effect, $F(1,56) = 45.07$, $p < .001$; and a significant traumatic impact of illness by pre/post illness two-way interaction effect, $F(1,56) = 8.50$, $p < .01$ (see Figure 4), were indicated by the analysis of variance for this dependent variable dimension. Because of the obtained statistically significant two-way interaction effect, the single significant main effect was not interpreted.

Simple effects for the pre/post illness factor on this dimension were significant for patients whose illness/injury

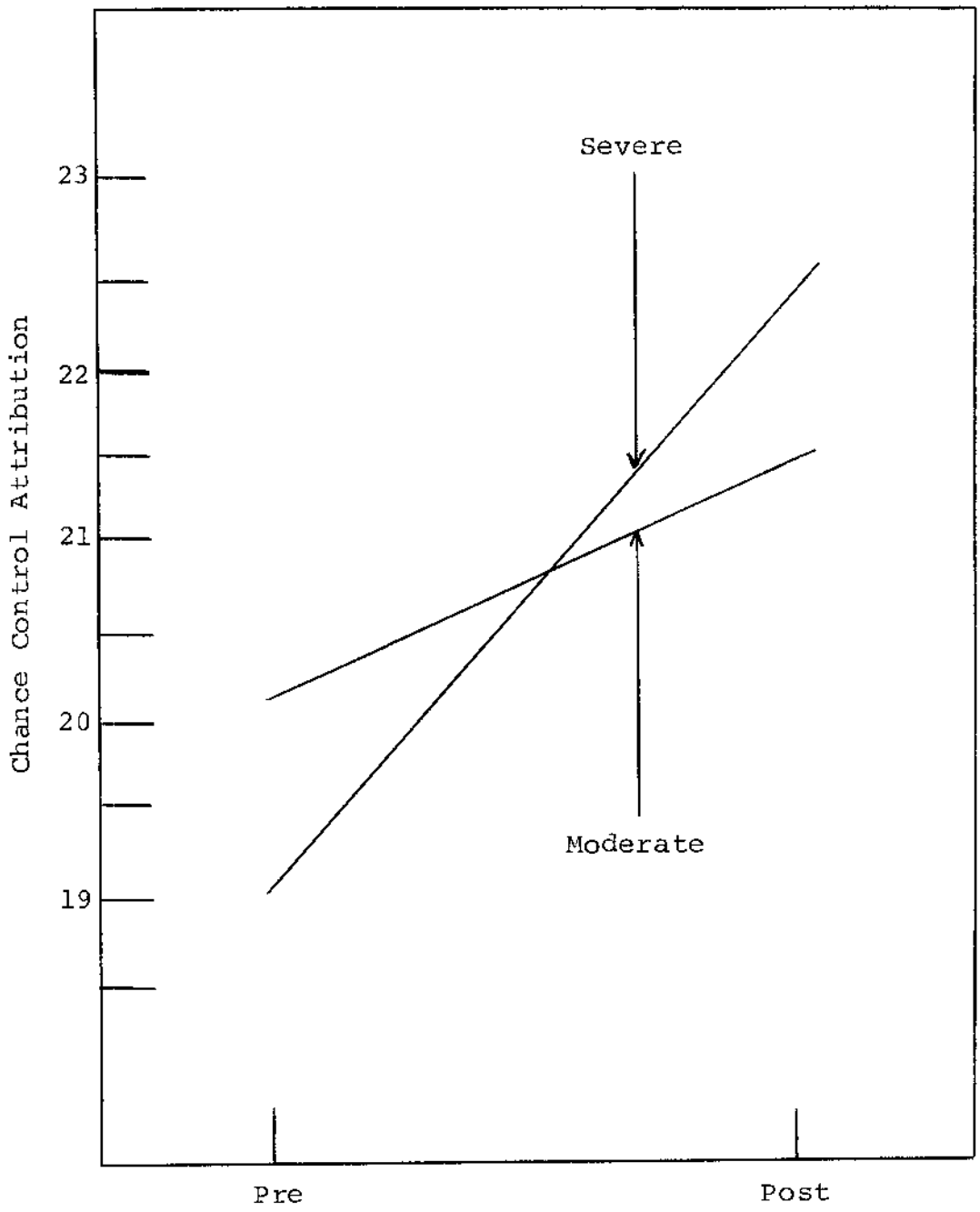

Figure 4. Perceived traumatic impact by pre/post illness interaction for C scale scores.

was perceived as having had a severely traumatic impact, $F(1,58) = 46.37$, $p < .001$; and for patients whose illness/injury was perceived as having had a moderately traumatic impact, $F(1,58) = 7.20$, $p < .001$.

The pre/post illness effect of perceived increases in chance factors control attribution appeared greater for all patients with severely traumatic perceptions of their illness/injury than for all patients with moderately traumatic perceptions of their illness/injury. These changes were in the direction predicted by the research hypothesis. Unlike that hypothesis, however, this analysis indicated no differential effect for the seriousness of illness factor for the chance attribution dimension.

Perceived Illness Trauma and Post-Trauma Purpose in Life and Locus of Control Attribution

The results of the correlational analyses between Perceived illness Trauma Rating Scale scores and stroke patients' current PIL and I, P, and C scale scores are shown in Table 2.

Table 2

Correlations Between Perceived Illness Trauma Scores and Stroke Patients Current PIL and I, P, and C Scale Scores

	Purpose in Life	Internality	Powerful Others	Chance
Perceived Illness Trauma	-.16	-.12	.03	.16

Note. All correlations for stroke patients were nonsignificant.

As can be seen, no significant relationships were demonstrated between Perceived Illness Trauma Rating Scale scores and any of the dependent variable dimensions and the related research hypothesis is not supported.

Correlation coefficients for Perceived Illness Trauma Rating Scale scores with hip surgery patients' current PIL and I, P, and C scale scores are shown in Table 3.

Table 3

Correlations Between Perceived Illness Trauma Scores and Hip Surgery Patients Current PIL and I, P, and C Scale Scores

	Purpose in Life	Internality	Powerful Others	Chance
Perceived Illness Trauma	-.73*	-.75*	.65*	.69*

*$p < .01$, 2-tailed test of significance.

As is indicated, Perceived Illness Trauma Rating Scale scores showed significant negative correlations with $r(18) = -.73$, $p < .01$, and internality, $r(18) = -.75$, $p < .01$; while showing significant postive correlations with powerful others control attribution, $r(18) = .65$, $p < .01$, and chance factors control attribution, $r(18) = .69$, $p < .01$. In other words, hip surgery patients with high Perceived Illness Trauma Scale scores tended to perceive their current sense of purpose and meaning in life, as well as their feelings of personal control following their illness/injury as low. Greater Perceived

Illness Trauma Scale scores for the same patients were associated with perceptions of high externality in terms of both powerful others and chance factors control attribution.

Discussion

Basic assumptions underlying this study are that experiencing a traumatic event such as serious illness/injury tends to destabilize usual coping processes and to produce decreases in the sense of purpose and meaning in personal existence. Such experiences also decrease personal control beliefs while producing increases in attribution to external control factors, such as the influence of powerful others and chance. Also, the actual seriousness of an illness/injury, as well as its level of perceived traumatic impact, can have an exacerbating effect on such tendencies. For example, experiencing a life threatening illness should result in most destabilization of coping processes. The results obtained provide partial support for these hypotheses.

Generally, a high level of perceived traumatic impact of illness/injury was associated with greater changes in the predicted directions for all dimensions except internality. As will be recalled, no pre/post illness/injury changes were significant for this dependent variable. Also, it should be noted that although the analysis of variance yielded significant three-way interactions for the PIL and the powerful others control dimensions, examination of simple effects did not confirm the predicted multiplicative relationships. It

should also be noted that only two-way interactions were significant for the internality and the chance control factor dimensions.

Findings for the PIL variable indicate that perceived decreases in the sense of purpose and meaning in personal existence are greatest for the STP hip surgery group, followed by the STP stroke group, and the MTP stroke group, respectively. As was noted, there were no apparent perceived changes in the sense of purpose and meaning in personal existence for the moderate trauma perception hip surgery group. These relationships suggest that the seriousness of illness effect is the reverse of what was predicted. However, consideration of the nature and function of the denial mechanism as part of the coping process (Fink, 1967; Horowitz, 1976, 1979; Levine & Zigler, 1975) may provide some explanation for these results.

First, it may be speculated that the lowest levels of perceived impact of trauma may be associated with more active denial processes. Since the onset of illness/injury for all subjects was recent, stress and crisis theories would suggest a considerable tendency to employ denial mechanisms at this stage (Horowitz, 1979; Moos, 1979; Shontz, 1975, 1980). Now, if we assume that experiencing a non-life-threatening illness/injury (hip surgery) has a lower denial process utilization requirement than experiencing a life-threatening illness (stroke), a greater perceived decrease in the PIL dimension for the hip surgery patients could be expected. That is, the smaller

relative decreases in the PIL dimension for stroke patients may be because they require and utilize more denial for successful coping. The MTP stroke group may actually represent individuals who require and utilize the most denial in this situation. For the MTP hip surgery group, a more reality oriented perspective may be held. Their illness/injury is not life-threatening, its traumatic impact is perceived as moderate, and the net effect on these patients' perceptions of changes in the PIL dimension may be negligible. On the other hand, the severe trauma perception hip surgery group with generally lower denial requirements than the stroke (life-threatening illness/injury) groups appears to perceive the greatest decrease in the PIL dimension. For this latter group, illness/injury is perceived as having a highly traumatic impact on their lives. Denial requirements are, however, lower relative to stroke groups.

For the internality dimension, no significant main effect for pre/post illness was produced, nor was this factor a component of the significant two-way interaction which was obtained. Analysis of simple effects indicates no difference in the perception of the internality variable between severe and moderate trauma perception stroke groups. STP hip surgery patients, however, had a lower perceived internality than MTP hip surgery patients. These results also imply no perceived changes for any of the four patient groups in this dimension following an illness or injury.

We may continue to rely on the denial concept to interpret these findings. Milburn and Watman (1981), as well as Kelly (1955) have emphasized the importance of control and predictability in coping with the environment. A greater sense of personal control over events would seem to be consistent with a reduction in anxiety, especially under catastrophic conditions. The lack of apparent changes in perceptions of this dimension by both groups of stroke patients can be speculatively attributed to extremely active denial processes relative to this dimension. It may be that the illusion of as much personal control as is possible is a very important aspect and function of the denial mechanism. In this case, it also appears that differences in the level of perceived traumatic impact of illness/injury have no effect on the perceptions of the internality dimension for the stroke patients. Less denial utilizing hip surgery patients did show differential effects for this dimension in the predicted direction relative to the severity of traumatic impact. STP hip surgery patients had lower perceptions of internality than MTP hip surgery patients.

Interpretation of results to this point has tended to rely on the association of an active denial process with lower perceptions of the traumatic impact of illness/injury It may also be speculated that successful employers of the denial process may also be successful copers. In a discussion of the internal-external locus of control dimension, Phillips

(1980) described the coping process of "defensive externals" whose style of attribution was first reported by Rotter (1975). According to Phillips, "defensive externals" display adaptive coping by denying or avoiding depression. They thereby remain engaged with the environment in an effort to counter or replace losses or failure with success or substitution, maintaining a sense of purpose and meaning by these processes. For these individuals, control of reinforcement is externalized in failure but not success situations (Rotter, 1975). Thus it appears that the coping style of a "defensive external" may be similar to that of an active and successful utilizer of the denial mechanism. These concepts may be helpful in interpreting the results relating to the powerful others control dimension.

Findings related to perceptions of control attribution to powerful others in the environment are similar to those reported for the PIL dimension, with the exception that for the STP stroke group, no pre/post illness changes were apparent. The MTP hip surgery group also displayed no apparent pre/post illness changes for this dimension. That is consistent, however, with the previous interpretation that the traumatic impact of illness/injury on these patients is negligible.

In view of the literature relative to defensive externalization, increases in powerful others control attribution for the MTP stroke group, which are greater than for the STP stroke

group, may be due to a change in the nature of the coping process relative to this dimension. The reality of hospitalization is such that persons perceived as powerful exert a significant influence on the personal existence of those hospitalized. Utilizing denial mechanisms may be more difficult to accomplish should the intrusive ideation associated with stress and crisis reaction processes (Cohen, 1979; Fink, 1967; Horowitz, 1976, 1979, 1982a, 1982b; Janis, 1971; Lazarus, 1966, 1974; Moos, 1982; Shontz, 1975, 1980, 1982) be facilitated by the environment. Hospitalized patients may find it more difficult to avoid being confronted by the reality of their circumstances. In such situations, less successful copers, i.e., STP stroke patients, may merely increase their level of denial. More successful copers, i.e., MTP stroke patients, may cope with this "failure situation" by externalization. It may be speculated that successful copers were able to achieve an adaptive balance between denial and defensive externalization, while the rigid denial requirements of the less successful copers precluded the possibly adaptive use of defensive externalization.

Seriousness of illness had no apparent effect on chance attribution. In other words, whether an illness was perceived as life-threatening or not had no influence on perceived pre/post changes in chance factors control attribution. However, the perceived traumatic impact of illness or injury did influence the overall perceptions of this dimension. It

appears that all subjects perceiving their illness as having had a severe impact upon their lives, also perceived a greater sense of being influenced by chance factors than subjects perceiving their illness as having had a moderately traumatic impact. Again, it appears that moderate perceptions of the traumatic impact of illness may be associated with more active denial mechanisms.

Correlational analysis indicated no relationships between Perceived Trauma Rating Scale scores and perceptions of post-trauma PIL, I, P, or C dimensions for the combined stroke patient group. Significant relationships were obtained in the predicted directions for all four dimensions for hip surgery patients. For the latter group, as was expected, higher levels of perceived impact of illness trauma were associated with low perceptions of post trauma sense of purpose and meaning in life and feelings of personal control. Also for this group, higher levels of perceived impact of illness trauma were associated with high perceptions of powerful others and chance control attribution. These relationships are consistent with the speculations of Tennant and Andrews (1978) regarding the perception of events. They suggest that the distressing quality of certain events is related to the onset of adjustment and coping difficulties. At least for hip surgery patients, it seems important to consider individual perceptions of trauma when considering the coping process and evaluating the impact of traumatic illness/injury.

A final consideration of the results obtained is made with reference to the aged adult population studied. Cohen (1979) suggests that different stages in the life cycle may be associated with the employment of different types of coping strategies, and that older patients may be more likely to use avoidant coping strategies. Mages and Mendelsohn (1979) report that in the aged adult population, serious life-threatening illness (cancer) produces an acceleration of developmental aging processes. For example, disengagement from external investments, dependency, and the need to review and integrate past experiences tend to increase. They also report that many older adults appear to face such experiences with less anger than do younger patients.

> The young are angry because they may not ever have a chance to develop their lives; the mid-life adults are angry because their lives may be cut short before they can finish their tasks; the pre-retirement and retirement age group are angry because they may not be able to enjoy the leisure earned by a lifetime of work. But many of the older people, particularly those who have reviewed their past and feel they have lived their lives well, were able to deal with their lives with a greater degree of equanimity than the younger patients. They seem by virtue of their age, to have faced their mortality, and so the issue of dying <u>per se</u> has less intensity than it does for younger and middle-aged

> adults. This combined with generational differences, may well explain our finding that active modes of coping, as well as more overt and acute distress, are far more characteristic of younger than of older patients (Mages & Mendelsohn, 1979, p. 277).

Thus, it appears that avoidant, less active coping strategies may be more prevalent among the aged. It is possible, then, that the denial and defensive attribution mechanisms hypothesized to explain the results of this study are more likely to be used by older adults during the coping process. It is important, however, to remember that the effects on the coping process suggested by this investigation are assumed to occur during the initial or "denial" phase of the adjustment sequence since the onset of trauma for these patients was relatively recent. In other words, avoidant coping processes would be expected for all age groups during this stage of "shock".

With respect to the above research, the differential expression of anger by the aged may indicate that active intrapsychic processes may lead to the resolution of certain existential issues which enhance coping with their mortality. Therefore, over the course of the coping and adjustment process, apparently avoidant or less active strategies may continue to be utilized by the elderly. The aged may be developmentally in the best position to use such techniques.

In summary, the results of this study do not support the specifically hypothesized relationships. However, interpretations suggest that the seriousness of illness and/or perceived impact of trauma variables are important considerations in exploring the implications of post-trauma perceptions of the four dependent variables. Possible roles for denial and defensive externalization are also speculated. Suggestions for future research include further exploration of these concepts and variables, consideration of other types of traumatic events or illnesses relative to these dependent dimensions, and longitudinal studies of different populations at risk for various traumatic events. Such research would serve to further elucidate the nature of coping and adjustment processes.

These results also support the consideration of certain types of therapeutic intervention when designing effective treatment programs. Given the perceived decreases in the sense of purpose and meaning in personal existence, logotherapeutic approaches may be of some value with these populations. Also, it may be important to consider methods of encouraging adaptive control attributions. In terms of the denial mechanism, Fink (1967) has cautioned that treatment attempts should take into account the nature of such mechanisms, as well as the individual's need for such defense. A reality oriented approach may be perceived like the crisis event, as a threat.

Finally, consideration should be given to the limitations of the present study. The design was retrospective in nature, and thus, represents a quasi-experimental investigation of perceptions of change in the dependent variable dimensions. Also, generalizability of the implications of this research are limited to the population studied. The design included only patients over 65. It may well be that existential and locus of control issues following traumatic events differ as a function of aging, as well as developmental characteristics. In addition, although there were comparison groups, no true control group was included. The nature of this study should, therefore, be considered exploratory. Despite these limitations, the present findings are valuable in that they suggest certain relationships among the studied variables which should be examined further. Speculation on the roles of other processes such as denial and defensive externality, serves to raise a number of questions concerning the nature of coping with stress and crisis.

APPENDIX A

I HAVE BEEN ASKED TO PARTICIPATE IN A STUDY OF EMOTIONAL RESPONSE TO ILLNESS.

I UNDERSTAND THAT THIS INVOLVES MY COMPLETING THREE QUESTIONNAIRES CONCERNING MY ATTITUDES AND FEELINGS BEFORE AND AFTER I BECAME ILL.

MY PARTICIPATION IS COMPLETELY VOLUNTARY AND I MAY WITHDRAW MY CONSENT TO PARTICIPATE AT ANY TIME.

I UNDERSTAND THAT IF I CHOOSE NOT TO PARTICIPATE IN THIS STUDY, THE CARE AND TREATMENT I AM RECEIVING WILL NOT BE AFFECTED.

I UNDERSTAND THAT IF I HAVE ANY QUESTIONS REGARDING THIS STUDY OR THIS FORM, THEY WILL BE ANSWERED SO THAT I SATISFACTORILY AND COMPLETELY UNDERSTAND.

I HAVE READ AND UNDERSTAND THE INFORMATION ABOVE AND I SIGN THIS CONSENT FORM WILLINGLY.

SIGNATURE_____ DATE_____

WITNESSED BY_____ DATE_____

I AM UNABLE TO READ THIS FORM MYSELF, BUT IT HAS BEEN READ AND EXPLAINED TO ME BY _____.

I UNDERSTAND THE INFORMATION STATED ABOVE AND I WILLINGLY SIGN THIS FORM.

SIGNATURE_____ DATE_____

WITNESSED BY_____ DATE_____

Appendix B

PERCEIVED ILLNESS TRAUMA RATING SCALE--STROKE

For the following statement, circle the number that would be most nearly true for you.

Having a stroke:

has had no serious impact on my life						has had an extremely serious impact on my life
1	2	3	4	5	6	7

Appendix C

PERCEIVED ILLNESS TRAUMA RATING SCALE--HIP SURGERY

For the following statement, circle the number that would be most nearly true for you.

Having a broken hip:

has had no serious impact on my life						has had an extremely serious impact on my life
1	2	3	4	5	6	7

Appendix D

Table 1

Mean Scores of Patients With Different Traumatic Perceptions of Their Illness/Injury

Group	Repeated Measures	
	Pre-Trauma	Post-Trauma
	Purpose in Life Test	
Hip Surgery		
Moderate	115.2	112.0
Severe	119.4	93.6
Stroke		
Moderate	106.4	96.8
Severe	113.2	98.3
	I Scale	
Hip Surgery		
Moderate	44.0	43.4
Severe	38.0	26.9
Stroke		
Moderate	39.7	35.3
Severe	38.8	36.2

Note. Maximum score for Purpose in Life Test = 140. Maximum score for I scale = 48. Mean score for Purpose in Life Test = 106.9, standard deviation = 14.9. Mean score for I scale = 37.8, standard deviation = 12.4.

Table 1

Mean Scores of Patients With Different Traumatic Perceptions of Their Illness/Injury

	Repeated Measures	
Group	Pre-Trauma	Post-Trauma
	P Scale	
Hip Surgery		
Moderate	16.0	17.4
Severe	14.6	25.5
Stroke		
Moderate	19.4	23.9
Severe	20.75	23.5
	C Scale	
Hip Surgery		
Moderate	17.8	18.8
Severe	19.4	24.6
Stroke		
Moderate	21.2	22.75
Severe	18.8	21.4

Note. Maximum score for P and C scales = 48. Mean score for P scale = 20.1, standard deviation = 7.0. Mean score for C scale = 20.5, standard deviation = 7.3

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