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An Analysis Of Variables Affecting Parental Adjustment To Head Injury

Leif Eric Leaf
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AN ANALYSIS OF VARIABLES AFFECTING PARENTAL ADJUSTMENT TO HEAD INJURY

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AN ANALYSIS OF VARIABLES AFFECTING PARENTAL ADJUSTMENT TO HEAD INJURY

A Dissertation

Presented to

The School of Graduate Studies

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by

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APPROVAL SHEET

The dissertation of Leif Eric Leaf, Contribution to the School of Graduate Studies, Indiana State University, Series I, Number 1524, under the title An Analysis of Variables Affecting Parental Adjustment to Head Injury is approved as partial fulfillment of the requirements for the Doctor of Philosophy Degree.

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ABSTRACT

The purpose of this study was to investigate the relationship between parental adjustment to the head injury of a child and selected psychological variables. A derived adjustment score, based on recent life events and self-esteem, was chosen as the dependent variable. Six independent variables including social support, socioeconomic status, sex, family environment, depression, and time passage since the accident were investigated. Independent variables were examined individually to determine their relationship to adjustment and in combination to determine their effectiveness in predicting adjustment.

The sample consisted of 60 parents, 30 two-parent, intact families who were active members of a head injury support group.

The six independent variables were analyzed for individual significance using a Pearson-product moment correlation. Only socioeconomic status was found to be significant. The independent variables were found to be significant when combined in a linear combination. The stepwise regression generated a set of predictor variables: socioeconomic status, sex, social support, time, depression, and family environment, that were significantly related to adjustment.

It was concluded that SES was the best predictor of adjustment to head injury. Results provided support for previous research indicating that adjustment to head injury is an interaction of many variables. It was determined that the independent variables utilized in the study were reliable predictors of adjustment.

Further research to examine (a) the early interaction between medical personnel and families following the accident, (b) the influence of socioeconomic status on adjustment, and (c) the impact of head injury on the relationship to siblings was suggested.

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Chapter 1

INTRODUCTION

Statement of the Problem

In a rapidly changing, fast-paced society, the exposure of individuals to serious injury has significantly increased. The longer life span, operation of high-speed vehicles, and the acceptance of more stressful lifestyles have all contributed to the increased number of persons incurring a serious head injury (Clearinghouse, 1981).

Each year 100,000 of these people die and 30,000 to 50,000 are left with significant physical and mental impairments (Clearinghouse, 1981). The young and adolescent populations seem to be at the most risk, with motor vehicle accidents being by far the predominant cause (Cope & Hall, 1982). The high number of auto accidents have recently been estimated to cost society upwards of $4 billion per year. The financial burden aside, the psychological and sociological implications can be devastating not only to victims but also to those closest to them. Oddy and Humphrey (1978) have reported the drastic effect on personal and family life when a head injury is sustained (Jennett, 1975; Rosenbaum & Najenson, 1976). These researchers have stated the need to analyze the specific variables involved in parental adjustment to head injury.

The lack of information regarding impact and adjustment variables due to head injury is a current problem for researchers in this area (Oddy & Humphrey, 1978; Oddy, Humphrey, & Uttley, 1980). The fact that current information is not available limits professionals working in the area. In reviewing the literature, many variables are mentioned (Oddy &

Humphrey, 1978, 1980) in relation to post trauma adjustment, with depression, socioeconomic status, family environment, social support, and time passage since the accident among five of the more important variables.

Purpose of the Study

Research in relation to parental adjustment to head injury, although limited, seems to show that adjustment is affected by an interaction of factors. The problems faced by the parents can begin immediately after the head injury and continue throughout the lifespan of the injured family member. The possible disabilities occurring with head injury are stated in the government publication Head Injury: The Problem, The Need (1980):

> Temporary or permanent disability may occur in varying degrees and combinations in functional areas such as the following: ability to concentrate, memory, learning, abstract thinking, psychosocial adjustment, oral and written communication and physical coordination. (p. 1)

Although these disabilities are directed to the head-injured victim, the entire family unit is affected by a large number of changes, including: role changes, financial difficulties, family system issues, and most significantly, changes in lifestyle (Rosenbaum & Najenson, 1976). The purpose of the present study was to investigate the relationship between the criterion variable of adjustment and the following predictor variables: depression, socioeconomic status (SES), family environment, social support, and time passage since the accident. The measures were obtained from both mothers and fathers of head-injured dependent children.

Research has previously shown that adjustment within families has been differentiated significantly by the ability of parents to handle

the pressure and family system changes adequately (Oddy & Humphrey, 1978). In examining the current literature on family adjustment to head injury, however, it is not apparent that these variables (depression, SES, sex, social support, family environment, and time passage) have been studied simultaneously to determine their collective and interactional effects. Examination of these variables addresses the mediating effects of each variable as well as an analysis of the effects of all six variables taken in combination in relation to adjustment to head injury.

This study addressed the following questions in an attempt to determine these relationships:

Question 1: What is the extent of the relationship between parental depression and parental adjustment to head injury?

Question 2: What is the extent of the relationship between family environment and parental adjustment to head injury?

Question 3: What is the extent of the relationship between social support and parental adjustment to head injury?

Question 4: What is the extent of the relationship between family socioeconomic status and parental adjustment to head injury?

Question 5: What is the extent of the relationship between time passage since the accident and parental adjustment to head injury?

Question 6: What is the relationship between subsets of variables (depression, SES, family environment, social support, and time) and adjustment of parents involved with head injury?

Rationale

In recent years the range of interest of applied psychology has widened to include many areas. One area currently receiving much

attention is health psychology. The field of health psychology has received increased interest in relation to physical disorders and how these affect individuals and families (Millon, Green, & Meagher, 1982). Within this area psychologists have demonstrated specialties which are proving to be a great asset to the medical community. Some of the specialty areas in which psychologists have made a definite contribution are biofeedback, education on wellness, and family therapy (Millon et al., 1982). These service provisions and the increased awareness within the medical community of the relationship between lifestyle and medical illness have allowed medical psychology to gain a secure foothold.

Current areas of special interest to psychologists practicing in health settings range from working with cancer patients and their families to providing counseling services for minor emotional adjustments. An area which has recently received much attention from health psychologists is cognitive rehabilitation and family intervention for the head injured (Alexy, 1983).

Work dealing with specific needs of the head injured has begun to show that much can be done through counseling and retraining to aid the patient in adjusting to a new and challenging lifestyle (Alexy, 1983). Besides the patient, much attention has been directed toward helping the family to accept and adjust to the changes incurred by the head-injured family member. In recent literature related to adjustment in families involving head injury, many variables have been highlighted; of these variables depression, family environment, social economic status, social support, and time passage are seen to be the more pertinent (Oddy & Humphrey, 1978; Panting & Merry, 1972). The question now

becomes how can parental adjustment to head injury be better determined and, more importantly, how can the counseling psychologist better aid the family in adjusting to the injury? By examining some of these major variables and how presently involved families have adjusted, further insight can be gained.

Theoretical Background

To understand the basis for this study, one should be familiar with Lazarus, Coyne, and Aldwin's definition and theoretical model of stress. They have developed a stress model which is explicitly cognitive-phenomenological (Lazarus, Coyne, & Aldwin, 1981). Stress is seen as being controlled by cognitions, and stressful emotions and coping (adjustment) are products of those cognitions. In research related to adjustment to head injury, the amount and type of stress on parents is related closely to their preoccupation with the injury and their inability to choose helpful coping techniques (Panting & Merry, 1972).

In looking at stress and life events such as head injury, this cognitive phenomenological model, with its situational adaptation and coping aspects, "fits" rather appropriately. If stress is due to an interaction between the experience in the environment and the person's cognitive appraisal, then understanding a person's cognitions about the event increases understanding about how families adjust to head injury. In this framework, the initial adaptation encounter, environmental demands, cognitive appraisal process, coping, and the person's emotional response all interact to determine the influence of the stress (Lazarus, Coyne, & Aldwin, 1981).

The aspect of appraisal becomes significant as the ongoing relationship between one's environment and one's well being leads to coping processes consistent with one's personal agenda. Personal agenda, then, determines to a large measure how well a person copes (adjusts) with the stressor. The effects of the person's coping choices are appraised and reacted to as part of continuous psychological, social, and physiological processes. The better the coping choices match with the person's agenda, the more successful the adjustment.

Since adjustment was the focus of this present study, a review of Lazarus' definition of coping and how this model describes adaptive coping is presented. Coping is defined by Lazarus and Launier (1978) as efforts, both action oriented and intrapsychic, taken by the individual to manage environmental and internal demands and conflicts which tax or exceed the resources of the person. Since coping involves the action taken by the person to adjust or accommodate the stressor, then the absence of such action can lead to ineffective coping. The function of coping seems to have two purposes: first, alteration of the ongoing person-environment relationship and, second, the control of stressful emotions. In looking at coping behavior in a wide variety of stressful situations, Coyne (1980) has observed that there is a need to evaluate a person's larger social environmental network and to see how these impinge upon subsequent coping efforts. Dealing with stressful life events and strong social support are seen, then, as only two measures of adequate coping. In describing various coping skills, Coyne points out that depression seems to make a person inept at meeting role responsibilities within their social network. As the depressed person makes

ineffective use of coping skills, these interact with environmental stress to validate the person's poor self concept. Both negative self concept and depression perpetuate the person's poor adjustment and coping.

Within stress research, many factors appear to be relevant to determining the effects of stress adjustment. What seems to be evident is a stronger correlation between life events and stress impairment scores for those events classified as outside the control of the person. This, in the case of head injury, seems appropriate due to the almost total lack of control the person has over the event (Dohrenwend & Dohrenwend, 1974). Along with stressful events, the role of socio-economic status and self esteem have also been shown to have a major determining influence on adjustment to stress.

Studies which have addressed SES seem to show consistently that the prevalence of psychological disorders is quite high among lower SES individuals. Specific life events, however, show less variability of influence across social strata, with perceived control and problem solving resources as two major issues (Wills & Langner, 1980). In addition to SES, Wills and Langner see self esteem as crucial in adjusting to stress. They see self esteem as central to the person's attitude formed over long periods of time, and as having a profound effect on the person's social network. There seems to be strong support from the literature that a high rating on subjective self esteem is indexed with better adjustment in stressful situations (Wills & Langner, 1980).

Definition of Terms

The following are definitions of key terms used in this study:

1. Adjustment: The physical, psychological and/or reactions to events or situations occurring in a person's life. Adjustment can be seen as the ability of the person to manage issues and environmental demands (Coleman, 1974). In this study, adjustment was operationally defined as a derived adjustment score combining the person's rating of adjustment on the Schedule of Recent Events (Holmes and Rahe, 1967) and the Rosenberg Self-Esteem Inventory (Rosenberg, 1965).

2. Parents of the Head-Injured: Defined as two-parent, intact families who are currently active members in the Head Injury Foundation of Indiana, the Kansas Head Injury Association, or the Missouri Head Injury Association. The parents have a dependent child who has a medical diagnosis of closed head injury.

3. Social Support: That information which causes a person to feel that he/she is:

(a) cared for;

(b) esteemed and valued;

(c) a member of a significant social system (Cobb, 1976).

For this study, "social support" was operationally defined as the score obtained on Kaplan's Measure of Social Support (Kaplan, 1975).

4. Depression: A psychological construct which is characterized by symptoms such as loss of interest, persistent sad mood, sleep disturbances, and guilt which can be accompanied by physiological and behavioral changes. The level of depression was operationally defined by the score obtained on the Beck Depression Inventory (Beck, 1972).

Assumptions

1. Traumatic events, such as head injury, impose severe stress on family members requiring specific psychological changes in order to adjust.

2. People are capable of assessing their present levels of adjustment with some degree of accuracy.

3. Parents (husband and wife) are able realistically to approximate the amount of change that has occurred in the family as a result of the head injury.

Delimitations

1. The parent sample consisted of those parents whose child has sustained a head injury, and generalization to parents with children afflicted with other injuries may not be appropriate.

2. The study was conducted with a volunteer sample of subjects who were presently involved in a head injury support group. Generalization should be restricted to similar subjects.

3. The selection of variables for this study was limited to those deemed significantly related to adjustment.

4. The sample was taken predominately from two large, midwestern cities (Indianapolis, Indiana and Kansas City, Missouri); therefore, generalization should be made to a population similar in terms of socio-cultural, economic, and geographic variables.

Limitations

1. The variables selected represent psychological constructs and as such the study is limited by the validity of the instruments

selected to measure these constructs.

2. Because all the subjects were members of a support group and volunteers, the study does not reflect a random sample.

Summary

In this chapter the intent and purpose of the study was presented. The large number of those receiving head injuries and the undeniable impact upon those within their families raises significant need for psychological/counseling services. The recent interest in providing services in the medical arena by professional psychology makes the need even greater for studies of this nature.

The study was directed at attempting to understand the dynamic interaction of variables which affect how parents adjust to such a traumatic event. It was hoped that the results of this study would better enable health care practitioners to meet the needs of these families and individuals.

Chapter 2

REVIEW OF RELATED LITERATURE

This chapter presents a review of the literature on adjustment to head injury as a stressful life event and each of five variables (SES, family environment, social support, depression, and time) as they relate to head injury. The literature review is presented under the following: Adjustment to Head Injury, Depression, Family Environment, Social Support, SES, Time, and Summary.

Adjustment to Head Injury

Research in which the effects of closed head injury have been examined has consistently shown that patients who experience a head injury and remain comatose for a few days or weeks suffer irreversible alterations of their social and psychological makeup (Lezak, 1981). Of these changes, the greatest handicaps have been the person's inability to control, regulate, and adapt one or more of the dimensions of complex behavior (Lezak, 1981; Levin & Grossman, 1978). These persons are often unable to initiate, continue, or eliminate specific behaviors. As these head-injured persons are incorporated back into their respective families, they bring new and unanticipated stresses into the system.

The impact of an injury as traumatic as a head injury has many devastating effects on family adjustment. In examining the burden on the family following a severe head injury, researchers have found numerous factions to be present. Some of the more reoccurring and harmful consequences are: depression, irritability, personality change,

tension/anxiety, slowness, and anger (Brooks & Aughton, 1979). In writing about family responses to head injury, Lynch (1982) states that the research with head-injured victims shows that family perceptions are significantly changed after the head injury. These perceptions center on the cognitive, personality, and physical changes within its own behavior, the most frequent of which are depression, increased irritability, and a decrease in social contacts (Lezak, 1978).

Part of the difficulty in helping these families is finding current information related to family adjustment to head injury. The literature contains much information about the effect of head injury on the cognitive, behavioral, and physical abilities of adults, but contains little with respect to how families adjust to injuries of children. The sequelae of head injury on a child is different than the impact on adults. One of the major reasons for this differentiation is the organization and plasticity of the child's brain (Levin, Benton, & Grossman, 1982). In reviewing the research on head injuries in children, Levin, Benton, and Grossman did not report any conclusive studies of the long-term effects of head injury. It was noted that many of those reported to have recovered from an injury still had some deficits. Work is needed to determine the developmental status of the central nervous system (Levin, Benton, & Grossman, 1982). Studies show that a significantly high number recovers ambulation and self care, but that of this number, less than 10 percent have normal neurological or cognitive functioning (Levin, 1982). Transient language disability appears to be common, however; studies have shown that two percent of the children receiving head injury have severe aphasia (Levin et al., 1982). Children who are

head injured demonstrate confusion, disorientation, heightened irritability, and drowsiness similar to head-injured adults. The duration of these effects and the possible cognitive impairments, however, are due more to severity factor and length of PTA (post traumatic amnesia) than to age (Chadwick, Rutter, Brown, Shaffer, & Traub, 1981; Levin et al., 1982). Severity of injury was found not only to be reflective of degree of impairment, but also of rate and extent of recovery. Children with minimal and less severe injury seemed to recover cognitively and behaviorally throughout the first year. Of those more seriously impaired, however, recovery was still taking place some two and one half years after the accident. Studies which have examined recovery of children from head injury indicate that less than 10 percent show normal neurologic and cognitive functioning years after the incident (Levin et al., 1982).

With such devastating statistics reflecting the impact of head injury on the child, the resultant impact on the family can be equally as devastating. In one of the four major studies addressing how families react to traumatic head injury, Muriel Lezak (1978) developed a six-staged sequence through which the family progresses in reaction to the brain-damaged member (See Appendix B). Although Lezak's study and others referred to in the present study are mainly concerned with adults, inference to children and adolescents is appropriate in view of the behavioral nature of many of the changes and the similar perceptions of the families (Lezak, 1981; Lynch, 1982). The adjustment of the family to the head injury, then, can be viewed in six different stages, each with its own problems and issues to be encountered by the family.

The stages begin with the first day following the accident and continue through the first two years post-accident. In her research, Lezak describes each stage, the time of hospitalization, the patient's perception, family expectation, and family reaction at each stage. Although the major body of this research deals with adult head-injured victims, Lezak makes reference to other family members being the identified patient and how each stage can be seen as a family reaction to such a traumatic event, without regard to the particular member injured (Lezak, 1978).

In the description of the first stage (Stage I), the time since hospitalization of the patient is from zero to three months. The perception of the patient by the family is somewhat difficult because of several factors such as fatigue, inactivity, and weakness. The expectation of the family is that full recovery will be achieved within one year and the family reaction is happiness. Stage II spans the time since hospitalization, from one to three months to six to nine months. The family perception of the patient is that of non-cooperation, non-motivation, and a self-centered attitude. The expectation is that the patient in this stage would have a full recovery if they would only try harder. The reactions of the family members may be bewilderment, anger, and anxiety. Stage III spans much more time since hospitalization--six to nine months to nine to 24 months and can be an indefinite period since many patients cognitively and physically remain in this stage for extended periods of time. The patient is perceived to be irresponsible, self-centered, irritable, and lazy. The expectation of the family at this stage is that the patient should have more independence and should

be able to help him/herself more. The family reaction to the patient at this stage is that of discouragement, guilt, depression, and "going crazy." Later, in Stage IV (time since hospitalization is nine months or more and can continue indefinitely), the patient is viewed to be different, difficult, and child-like, with little expectation of change, if any at all. The family reaction at this stage is that of depression, feeling despaired, and "trapped." In Stage V the patient's time since hospitalization is 15 or more months (usually time limited) and the patient exhibits difficult, child-like dependency in his/her behavior. The family's expectation is that there will be little or no change at all in his/her condition and the family experiences reactions of mourning. Stage VI (18 to 24 months or later) shows the patient exhibiting difficult, child-like behavior with little or no expectation of recovery. At this time, the family reaction is that of needing to reorganize their lives and becoming emotionally, if not physically, disengaged as well. The need for professional intervention at any stage is evident; however, the increased stress and pressure occurring around Stages III to VI make intervention critical at these points (See Appendix B).

An important fact is that family members are not ready to see the injured person as he is now, but they choose to remember how the person was previously (Lezak, 1981). The feelings of guilt, despair, anger, denial, and depression that accompany any major loss or trauma are seen to some degree in all stages (Kubler-Ross, 1969; Lezak, 1981). When older children, adolescents or adults are affected, many families report that the person's behavior resembles that of a three-year-old child. The difficulty arises, however, when a person, who was autonomous and

once able, fails to realize the extent of his/her cognitive and physical limitations (Lynch, 1982). The fact that few families expect or can anticipate the behavioral, cognitive problem without understanding the nature of the neurological changes taking place makes the role of the professional so much more vital. One commonly occurring problem for families in the early stage of adjustment is unrealistic optimism. Studies have shown that professionals, as well as families, are guilty of such unrealistic optimism (Lezak, 1981). In helping families to adjust, however, high expectation initially helps families to cope with the trauma, but the level of expectation needs to be carefully monitored. Many reports that deal with recovery from head injury lead to an erroneous assumption that as sensory and motor skills improve, so do psychological and mental functions (Lynch, 1982). Although families usually seek help immediately following the accident, it is not until Stage IV that most families seek out professional help in adjusting (Lynch, 1982). In this stage and the following stages, the role of the psychologist is to help the family work through their pre-accident emotional involvement with the patient and begin to develop new reorganized emotional ties to the injured member.

In working with families of the head injured, it has been found that each family responds in their own style within each stage (Lezak, 1978). Throughout working with the families, it is apparent that early intervention and support could lessen some of the horrendous trauma they are experiencing.

If, then, families do adjust to head injury using a wide variety of strategies and coping behaviors, it becomes of interest to the

practicing health professional to attempt to address these stages. In this type of research the various stages of family adjustment and the factors affecting adjustment at each stage are studied. The way in which a family adjusts to such a traumatic event, then, is seen as a complex interaction of variables and perceptions.

Depression and Head Injury

In reviewing the research related to head injury, it is difficult to cite a study that does not list depression as a major aspect of parental adjustment. Parents who are experiencing the impact of head injury often manifest depression. The depression occurring in these families exists at varying levels. For some families depression can be of a chronic nature; for others, the depression can vary depending on how the patient's condition changes (Lezak, 1978). The symptoms of this depression (anxiety attacks, obsessive ruminations, disturbed sleep and eating habits, lethargy or agitation) are the behaviors many families refer to when they report they are "going crazy" (Lezak, 1981). Research that has inquired into the response of an individual to depression shows that people tend to view depression as a cycle which manifests a concern about loss and future loss: thus, attempts to adjust to or cope with the new or dissimilar situation are confounded (Lazarus et al., 1981). Families suffering with a head injury seem to at times perceive their particular depression on both levels, their loss and their uncertain future.

Of studies in which immediate and extended family responses to head injury have been examined, depression has been shown to be a major characteristic (Lynch, 1982; Rosenbaum & Najenson, 1976; Oddy & Humphrey, 1978; and Panting & Merry, 1982). Examining family responses to such

serious illness as accidents, Blumberg et al. (1980) found that parents tended to take the initial news and diagnosis the hardest but continue to display degrees of depression throughout the illness. Oddy et al. (1978) found that measures of depression were highly correlated with the severity of the injury and the length of hospitalization. Lynch (1982) examined family perceptions of head injury and found depression to be one of the most frequently occurring difficulties. Researchers suggest that families be engaged to work on developing realistic gains, learn appropriate management skills, and deal with their emotional distress (Lezak, 1978). The many inappropriate behaviors of the head-injured person often lead to an increase in the feelings of guilt, depression, and anger among family members.

If the present study was to address the major issues involved for families in adjusting to the impact of head injury, depression was surely of high importance. The fact remains that each major article or book addressing adjustment to head injury identifies the degree of depression felt by the parents. As such, this study addressed the relationship of depression to adjustment and how depression related to other significant variables.

Family Environment and Head Injury

Although the specific incident of head injury affects the afflicted, the entire family experiences the stress and changes imposed upon them (Jennett, 1975). Few studies have investigated the nature of these stresses and how they interact with other factors within the family (Oddy & Humphrey, 1978).

Characterological changes in the family member seem to be the major source of changes in the family's interaction style. These changes are:

1. impaired capacity for social awareness, self-centeredness;

2. impaired capacity for self-control, self-regulation;

3. social dependency, decreased or absent behavioral initiative;

4. emotional alterations, apathy, irritability and either greatly increased or decreased sex drive;

5. inability to profit from experiences, to absorb new material (Lezak, 1978).

Awareness of these changes along with impaired intellectual functioning and sensorimotor loss combine to greatly impact the family (Jennett, 1975). The initial difficulty of families is their need to learn to accommodate and compensate for the stronger characterological changes enumerated above (Lezak, 1978). The fact that the characterological changes leave the person more demanding, dependent, irresponsible, or dangerous causes resentment and depression in the family members who are geared to deal with the patient as in the premorbid personality. Families, in dealing with a limited ability member, are apt to react in the following manner:

1. the family overprotects, and does not let the person do what he/she can;

2. the family always puts the patient first: members rearrange their lives to help the injured person;

3. the family overuses logic and reason to determine patient needs: they overreact to patient needs;

4. the family allows one person to be the primary care taker;

5. family members cut off certain social ties and develop a feeling of being trapped (Lezak, 1978; Blumberg, 1980).

In a study which examined how family members suffer when head injury occurs, it was found that significant numbers (61 percent) of wives and relatives needed medical support with sleeping pills and tranquilizers. More than half of the participants felt that supportive services were not adequate. It was noted that husbands and wives felt they experienced significantly more support if the head injury was to a child than if a spouse was injured (Panting & Merry, 1978).

In an examination of how families react to crises, it has been found that family framework has a great deal to do with the level of adjustment (Hill, 1965). Research seems to show that during a crisis the event itself is not the determinant of the severity of the crisis but a measure of the family's ability to adapt to the crisis (Walsh, 1981). Four important factors among family framework serve as resources in aiding the family to adapt. These are:

(a) family integration: The ability of a family to develop a sense of cohesiveness, a sense of belonging one to another in a meaningful way;

(b) adaptability: The ability to be flexible, their lack of rigidity in relation to unexpected crises;

(c) organization: The ability to separate families who respond effectively from those who fall apart in crises. The clear understanding of rules, responsibilities, and structure helps to create a more secure family;

(d) expressiveness: The ability to be open within the family, for members to share feelings, thoughts and fears. The availability of processing openly disagreements and fears makes resolution more readily available (Walsh, 1981).

It has been observed that families which foster autonomy of the individual, yet seek cohesiveness as a family unit, are likely to be best adjusted to head injury. These families have open communication, an honest and flexible system, accept responsibility for themselves, and do not blame other members (Walsh, 1981).

Jellinch, Torkelson, & Harvey (1982) pointed out that family dynamics play a major role in adjusting to head trauma. The need of these families for counseling and direction from support personnel highlights the need for inquiry in these areas. In this study, the role of family environment was examined in relation to adjustment. By examining the relationship of family environment with critical adjustment variables, greater information can be provided for professionals working with families affected by head injury.

Social Support and Head Injury

As interest in stress and stress management increases, much work is being done to help determine positive responses to stress-related illness. In reviewing research on stress, it becomes evident that sudden unexplained changes in lifestyle are significant causes of stress reactions (Holmes & Rahe, 1967). The literature on social support and physical illness has been frequently noted in medical studies relating to stress (Kaplan, 1975). Social support is seen as fundamental to crisis intervention. Andrew et al. (1978) found that victims of auto

accidents who received crisis intervention involving social support manifested shorter periods of symptomology than did victims not given such support. Furthermore, victims receiving the intervention had recovery levels higher than those not receiving such treatment.

In examining the benefits of early intervention with head-injured patients, it was found that those receiving the earlier professional attention and strong support made significant gains (less hospital time, better rehabilitation, financial savings) over those not seen as rapidly (Cope et al., 1982). Involvement of the family and relatives in the treatment of the head injured has proven to be reassuring and fruitful. This is aided significantly if professional support is provided early and continued during adjustment (Kaplan, 1975). In providing support for the families of the head injured, the literature strongly suggests that social support plays a large role in the family's ability to adjust and manage the crisis (Dzau & Boehme, 1978; Lezak, 1978). One particular concern of family members is that of being locked in with the support and concern of relatives and friends (Lezak, 1978). Relatives of the head injured often report suffering from emotional and physical illness which required medication and psychological services (Oddy & Humphrey, 1978).

The role of the psychologist in treating families of the head injured has been mainly one of meeting some of the support needs during the critical period following the accident (Lezak, 1978). Social support, as related to psychological issues, has been found to be related to depressive reactions, bereavement, and affective disorders. These disorders have been seen to increase in the absence of strong social

support (Brown, Bhrolchain, & Harris, 1975; Maddison & Walker, 1967). The importance of strong social support can be seen in relation to perceived adjustment and to the degree that the family is able to acknowledge that support.

The relationship of social support to adjustment was addressed in order to provide information to aid professionals working with the families of head injuries. The important role of social support in family adjustment is seen throughout the literature as being greatly impacted through professionals involved with family members.

SES and Head Injury

Medical expenses and rehabilitation in America are costly, often placing the family of the ill or disabled in severe financial straits. The stresses placed upon the family of the head-injured are many, and financial responsibility is one of the greatest (Lezak, 1978). In examination of the expenses for hospitalization, the length of stay can be quite long. The costs often amount to over $500.00 a day, with an average stay of up to three months (Cope et al., 1982). It takes little calculation to figure how these costs could financially affect a family. Estimates of the cost of health care which are frequently reported in the literature show rehabilitation services are not typically covered by many insurance policies and that the families often maintain the lifelong financial responsibility for the handicapped member (Bosshardt, Gibson, & Snyder, 1979).

Holmes (1967) discussed life situations which have high stress indicators and a preponderance of these are related to financial difficulties. The relationship between stress and financial status has been

reported in many studies in which stress factors were examined (Holmes & Rahe, 1967; Holmes & Masuda, 1974).

The fact that a family's entire financial base is changed drastically due to the head injury puts undue strain on the family system. As medical bills mount and the ability to manage them decreases, the impact is felt by all members of the family (Bond, Rosenthal, Griffith, & Miller, 1983). In the present study, the family SES was viewed as a measure of financial status. The financial status of the family bears directly upon the availability and type of care rendered to the head-injured member. The relationship between SES and adjustment is, then, much deeper than just being able to meet the bills.

Time and Head Injury

In serious physical illness the duration and nature of the illness combine to have a significant impact on family adjustment. The length of the patient's comatose state, the length of the hospital stay, and time passage since the accident have all been shown to have an impact on family adjustment (Oddy & Humphrey, 1978; Hendrick, 1981; Cope & Hall, 1982). In observing that families adjust to the stress of the head injury at various intervals, the consistency of emotional and marital problems is easier to explain (Oddy & Humphrey, 1978). In researching families during differing time intervals following head injury, Oddy (1978) found similar adjustment problems up to 12 months. Families dealing with significant lifestyle changes due to illness or accidents have been seen to fluctuate in relation to the condition of the patient (Blumberg, Fluhertz, & Lewis, 1980). As previously seen in the chart by Lezak (Appendix B), the stages that families proceed through in

adjusting to the head injury last from day one to greater than 24 months following the injury. In studies for which symptoms were defined as problems due to head injury, an increase in intensity and exaggeration of the problems was noted well after the initial year (Bond et al., 1983).

Due to the nature of head injury, time passage since the occurrence of the accident has been referred to in the research as having a strong relationship with adjustment (Oddy & Humphrey, 1978; Lezak, 1978). In working with the head injured, it has been found that a period of mourning is needed by the patient and the family in order to allow them time to discharge sorrow and seek support (Alexy, 1983). By assessing time passage since the accident, this study addressed the relationship between time passage and adjustment.

Summary

In the review of research related to head injury and the variables of depression, social support, socioeconomic status, family environment, and time passage, it has been shown that each variable does relate significantly with adjustment. The studies, however, are limited not only in number, but more importantly in specific reference to how parents of head-injured children adjust following the accident.

Chapter 3

PROCEDURES

This chapter presents the procedures and general format of this study. The chapter presents six sections: Sample, Design, Data Collection, Instruments, Hypothesis, and Statistical Analysis.

Sample

The sample for this study was composed of husbands and wives (intact families). The parents contacted for the sample were all at the time of the study members of state groups of the National Head Injury Foundation and were members of either the Head Injury Foundation of Indiana, the Head Injury Association of Missouri, or the Head Injury Association of Kansas. The purpose of these organizations is to serve as support and resource bases for parents or spouses who have a family member who has suffered a traumatic head injury. All subjects had a child between the ages of seven and 23 who carried a medical diagnosis of closed head injury. The intent of the study was to examine parental adjustment to the closed head injury of a child. Such specifics concerning the nature and types of deficits were not gathered. The sample, however, represents only those children who sustained a severe closed head injury (see definition section, chapter 1).

All subjects for the study were volunteers who presented and signed consent forms prior to data collection and who completed all instruments. In gathering the data, the investigator presented to over 450 families from head injury support groups in the states of Indiana,

Missouri, and Kansas. More than 250 families took part in the study, but only those whose total research packets were returned were included in this study. The total sample for the study was 60 parents.

Research Design

In reviewing descriptive-observational studies, Cook and Campbell (1979) state that the use of a natural disaster rather than a planned intervention does facilitate causal inference, much like an experimental mode. The impact of a closed head injury to a family member constitutes such an event. Certain criteria, such as the event occurring abruptly, being precisely dated, and not being a result of a prior reaction are stated by Cook and Campbell as necessary to justify the establishment of a natural sample.

The present study examined family response to such a traumatic event, closed head injury. The study was a descriptive, survey-type one, which used a single set of observation material following the occurrence of the incident. In the observation materials, subjects were asked to respond to questionnaires relating to their present adjustment level, social support, socioeconomic status, depression, family environment, and time passage since the accident.

Data Collection

The initial contacts for the study were made with the Indiana Head Injury Foundation, the Missouri Head Injury Association, and the Kansas Head Injury Association. Contact was made with the president of each organization, and a time table was developed for securing final board approval. Upon approval, a contact letter was sent to all active family members, along with a consent letter and a general information

questionnaire (See Appendix C).

A presentation was made at a regularly scheduled monthly meeting, and research instruments were presented to those in attendance. Prior to the opening of packets, the rationale and purpose of the study were presented. Those members not in attendance but who had indicated an interest in participating were sent packets containing a cover letter and information identical to that received by members present at the meeting. After the investigator had moved to Kansas, contacts were made with the leaders of the Missouri and Kansas foundations in the same way as was done in Indiana. After contact was made and the ideas presented to board meetings, the same presentation procedures were followed with each group. The same mailing approach was utilized for members not present at the monthly Missouri and Kansas association meetings.

Families were given the statistics of head injury and the need for research relating to how families adjust to the trauma of head injury. This brief talk was followed by a question and answer period. After this time, the families were told to open the packets and to check that they had the following materials: the questionnaire, the Beck Depression Scale, the Schedule of Recent Events, Rosenberg's Self Esteem Inventory, and Kaplan's Social Support Measure. The investigator then discussed the instructions, answered any questions, and had the families complete the forms and instruments. After all packet materials were returned to the investigator, the families again were given an opportunity to raise questions or make comments.

Those families who were not actively attending the monthly meetings were contacted by mail through the group's mailing list. The packets were sent to those members with the same contents as were presented to those

attending the meeting.

Instruments

Schedule of Recent Events (SRE)

The publication of an article describing research attempts to quantify the importance of life experience by Holmes and Rahe (1967) led to the development of the Schedule of Recent Events. In a review of the major instruments used to assess stressful life events, Millon et al. (1982) stated how useful the SRE was in providing a competent, convenient measure of the cumulative effects of life events.

Holmes and Rahe developed the inventory by questioning 374 subjects about the readjustment required in response to some 43 life events. The 43 life events were clinically derived from a synthesis of Adolph Meyers' psychobiology and life chart schema (Holmes & Rahe, 1967). These events were combined with life event concepts from Pavlov, Freud, Fannon, and Schiner (Holmes & Rahe, 1967). Much of this early synthesis came from the research laboratory of Wolff who, from 1949, had used the life chart with over 5,000 patients to study quality of life and quantity of events (Holmes & Rahe, 1967).

The SRE is an inventory which presents a paper and pencil task on which the subject reports from among 43 events those which he or she has experienced in the last 12 months. The events are given a weighted score which reflects the amount of social readjustment required when the event occurs. The weights were determined in the development of the inventory based on marriage representing the 50 percent value. The original sample set scores in relation to either greater or less adjustment per event in reference to marriage.

In completing the inventory, the subject responds to each event which has occurred. The weight values for each event are summed and reflect the total of experienced events, which represents the person's SRE score. These values are referred to as life change units, the amount of change needed to adjust. Scores exceeding 300 are considered to reflect a stressful recent life (See Appendix D).

In estimating the reliability of the instrument, Lei and Skinner (1980) found an internal consistency reliability (coefficient alpha) of .80 when using the SRE with clinical populations. In a review of retrospective and prospective studies of health-related variables utilizing the SRE, Millon et al. (1982) found consistently strong reliability support for the SRE.

As the SRE is a measure of a construct, a test of construct validity should be applied. The high degree of relationship between the items on the SRE and events that have been researched and found to be stressful to human adjustment would indicate strong construct validity (Holmes & Rahe, 1967; Millon et al., 1982). In reviewing studies using measures of stress adjustment, the SRE is chosen consistently as the instrument most clearly measuring those concepts and aspects referred to as stressful life events (Dohrenwend & Dohrenwend, 1974; Grant, Sweentwood, Gerst, & Yeager, 1978).

In reviewing the SRE, several limitations have been raised, most notably the lack of specificity among the life events represented (Dohrenwend & Dohrenwend, 1974). The events listed in the SRE often present symptoms which are part of another illness. As such, the adjustment needed for that specific event may represent only a portion of the

total life change required.

A second argument raised about the SRE is the simplistic nature of the rating system. Holmes and Rahe designed the SRE on the concept that the relationship between physical stimuli and perceptual response could also be used to measure psychological dimensions related to social events (Millon et al., 1982). A third issue is the reliance on a case controlled sample which does not allow for the examination of factors leading to the illness (pre-existing conditions) (Millon et al., 1982).

With the current state of this research area, it appears that further examination of life event rating scales needs to be done. The relative effectiveness of the SRE and its adequate performance as a research tool with varying populations supports its use in this current study (Millon et al., 1982; Grant et al., 1978).

Beck Depression Inventory

The Beck Depression Inventory (Beck, 1972) is currently receiving much attention in psychological research. Beck and other researchers found the depression scale of the MMPI to be lacking in meeting the criteria for depression identification (Beck, 1972). The inventory is an explicit rather than a behaviorally inferred measure for evaluating depression.

The normative sample for the inventory was drawn from two patient samples and was obtained from routine admissions to a university hospital, a psychiatric outpatient department, and a psychiatric inpatient service for a large metropolitan hospital. The patients' major diagnostic categories represented psychotic disorders (41%), psychoneurotic disorders (43%), and personality disorders (16%) (Millon et al., 1982). The sample

was drawn randomly from the admission to the hospital. The initial studies included two samples: the first consisted of 226 patients, which was taken over a seven-month period. The second sample was a replication study of the first and consisted of 183 patients. The second sample was gathered over a five-month period, with the distribution of diagnoses being similar in both studies. In evaluating the nature of the sample in relation to the current study, its use with medically related depression suggested its use (Millon et al., 1982).

The Beck Depression Inventory consists of 21 items presented in a multiple-choice format reflecting specific behavioral signs of depression which are weighted in severity from 0 to 3. The inventory is presented either orally by having the presenter read the inventory or in written form for self-administration. The subject reads each statement and indicates the one that best fits his/her particular situation. The scores for each of the 21 items are then summed and the resultant score represents the person's degree of depression (Beck, 1972). The measure consists of an inventory composed of several categories of symptoms and attitudes. Each category describes a specific behavioral manifestation of depression and consists of a graded series of statements (Beck et al., 1961).

Estimates of the reliability of the instrument have remained high over many studies. One method for determining internal consistency was done by examining 200 cases and taking the category score and comparing it to the person's overall score. The comparisons were done using the Kruskal-Wallis Non-Parametric analysis of variance by rank. It was found that all categories showed a significant relationship to the total score

beyond the .001 level of significance (Millon et al., 1982; Beck et al., 1961). In another study of reliability, using a general medical population, the categories correlated with total scores in the .31 to .68 range. Split-half reliability when comparing odd and even items from 97 cases of the original sample produced results reflecting a coefficient of .86 with a Spearman-Brown correction increase to .93 (Millon et al., 1982).

In assessing the concurrent validity of the Beck Depression Inventory, the original study examined depression ratings compared with depth of depression ratings on specific categories using the Mann-Whitney U test. They yielded a significant relationship at $<.004$ level (Beck et al., 1961).

In another concurrent validity study, the Beck Depression Inventory scores were correlated with clinical assessments of depression producing a correlation coefficient of .66. In the same vein, the inventory was found to be discriminatory when compared to anxiety, correlating .59 with clinical ratings of depression and .14 with clinical ratings of anxiety (Millon et al., 1982). In over 85 percent of the cases used for prediction of clinical change in depressed patients, the Beck Depression Inventory was an accurate measure of patient change (Millon et al., 1982).

Although the Beck Depression Inventory is widely used, few published reports of its use have appeared (Millon et al., 1982). One study correlating the inventory with stressful life events found a significant relationship and lends supports for the use of the Beck Depression Inventory in the current study.

Measure of Social Support

The increased interest in stress reaction and its effect upon the psychological and physical wellbeing of a person has lead some researchers to study the role of social support in relation to etiology of stress reactions (Nuckells, Cassel, & Kaplan, 1972). In reviewing social support inventories, Dean and Lei (1977) concluded that measures for this construct are wanting in relation to standard properties of reliability and validity. In their article, however, they do make reference to an inventory developed by Kaplan as having "optimistic" features.

The Measure of Social Support, developed by Kaplan (1975), is composed of items used by Lowenthal and Havens (1968) and incorporates the dimensions of support developed by Mitchell (1969) (cited in Carnes, 1980). The inventory is intended to assess the subject's social support along the following dimensions: intimacy, adaptation, size of support groups, availability of support, frequency of group interactions, content of interaction, durability, and intensity of the group (Kaplan, 1975).

The choices of the subjects on each of the dimensions are summed with the total producing a score ranging from 10 (low) to 30 (high support) (see Appendix E).

As mentioned previously, current instruments that measure social support are limited in terms of reliability and validity. Carnes (1980), in a study that looked at stress reaction of female college students, found the measure to be highly reliable and appropriate for such a study. In their findings, Dean and Lin (1977), who performed research looking at social support inventories, state that Kaplan's measure is of sufficient research quality to be utilized as a research tool. In a study in which

depression was examined, as in the present study, Dean and Lin (1977) found item total correlations as high as .82 between social support scores and depression scores.

Dean concluded that this measure of social support, with its development from solid conceptualization and support, is the instrument of choice for measuring social support (Lowenthal & Havens, 1968; Mariwaki, 1973). In reviewing the limited studies available and the sparse research on social support measures, it does indeed appear that Kaplan's Measure of Social Support is the instrument of choice.

A very important aspect of this instrument was its relevance to the present study. As presented in chapter 2, social support has been found to be a critical factor in parental adjustment. The dimensions measured by the Measure of Social Support represent significant areas of support needed by the parents of a head-injured child.

Rosenberg Self-Esteem Inventory (RSI)

The Rosenberg Self-Esteem Inventory is a measure of the construct of self esteem. Self attitudes are conceptualized as components of self report, reflecting a person's emotional responses to his/her own perceptions of his/her strengths or weaknesses. These serve as the basis of the RSI. Rosenberg took this conceptualization and applied a factorial refinement to develop both affective and nonaffective components of self esteem. The inventory is set in a framework that reflects the subject's response to 10 items along a favorable to unfavorable continuum. The items are set in two groups, five in a positive frame ("I take a positive attitude toward myself"), and five set in a negative frame ("At times I think I am no good at all"). The subject is to respond on a

Likert-type scale, ranging from strongly agree (1) to strongly disagree (4). The strongest positive statement (strongly agree) would be, "I take a positive attitude towards myself," and the strongest negative statement (strongly agree) would be, "At times I think I am no good at all" (see Appendix F).

In developing the inventory, Rosenberg used it almost exclusively with adolescents; however, it has been used with a wide range of populations in research (Fisher, 1972; Lee, 1972; Kaplan, 1975). These studies and others suggest the appropriateness of this measure with populations other than the normative student sample.

In reference to reliability, the original study by Rosenberg of 5,024 students reported reliability (KR 20) estimates of the inventory to be .92 with a scaleability of .72 (Rosenberg, 1965). A test-retest reliability measure with a portion of the original sample over a two-week interval yielded a coefficient of .85 (Rosenberg, 1965).

Validity reports for the inventory must first begin with what the developer felt was the purpose of the test. The RSI is considered to be a measure of a person's self esteem. This should be related to the person's feelings of depression, anxiety, attitudes about the support of others, and measures of objective achievement. Rosenberg found the measure to be supported, in that high self esteem correlated with depression (.38) and with anxiety (.33) (Kaplan, 1975). In a study that addressed self-esteem motive and change in self attitudes in adolescents, the RSI was utilized as the measure of self esteem. As such, the RSI yielded good predictive validity for measuring self derogation ($p < .001$) (Kaplan, 1975).

In a congruent validity study, it was found that the RSI produced a validity coefficient of .67 with Kelley's Role Reporatory Test and Heath's Self Image Questionnaire. The RSI also resulted in a .56 coefficient when compared with clinical interviews.

From these findings, it would appear that the RSI has acceptable validity and reliability. The RSI was also found to be one of the best instruments for measuring self concept when compared with some 200 other instruments that measured the same construct (Crandell, 1975).

The Family Environment Scale (FES)

The scale is an instrument which focuses on the interpersonal relationships among family members, on the direction of personal growth, and on the organizational structure of the family. The FES was developed by Moos and associates at Stanford University (1974). The theoretical basis of the FES is Murray's concept of environmental press, which states that environments have unique possibilities, as do people.

The instrument is a paper and pencil inventory which asks family members to respond independently to 90 true-false questions. Form-R has 90 items which are set within 10 subscales along three major dimensions. The 90 items of the FES were derived from a pool of 200 items used in an earlier study. The sample for that study included over 1000 individuals from 285 families representing white, black, and Hispanic groups. The norm sample represented well functioning families as well as clinical families. The subscales and dimensions are:

Relationship Dimensions

1) Cohesion

2) Expressiveness

3) Conflict

Personal Growth

4) Independence

5) Achievement orientation

6) Intellectual-cultural

7) Active-recreational

8) Moral-religious

System Maintenance

9) Organizational

10) Control

The psychometric properties of the form-R are quite impressive. Internal consistency coefficients (N = 814) range from .64 to .79 for the 10 scales. Test-retest reliabilities over an eight-week interval for 97 members of nine families yielded a range from a moderate .68 for independence to a high .86 for cohesion. Subscale intercorrelation (N = 814) over .20 may be reflective of the somewhat similar but different aspects measured by the subtest, supporting the authors' contention that the dimensions represent distinct but related aspects of family social environment (Moos, 1974).

With respect to validity, the FES is believed to have strong concurrent validity and face validity. In Buros' Mental Measurement Yearbook (8th edition), Sines (1978) states that the instrument appears to have been carefully constructed and is psychometrically acceptable, although it is lacking in empirical validity. Dreger (1978), in a similar review in Buros, makes the suggestion that the FES is useful in studying middle-class families and for studying intrafamily comparisons. These

reviews and its current popular use helped suggest the use of the FES in the study. However, more empirical backing for validity and reliability is needed for the FES.

The need to assess family environment as a variable in the present study led the investigator to review all major available instruments of family assessment. The broad categories sampled by the FES and the systems orientation of the instrument make the FES appropriate for the present study. Although all dimensions were not needed for this study, the ease of administration and scoring helped to increase the feasibility of the FES.

In the present study, only two dimensions were utilized: the relationship dimension and systems maintenance. These dimensions were chosen because of the nature of the study. In this study, only family interaction as a result of head injury was of interest. It was believed that the dimension of personal growth was too self absorbing and would not have contributed to the purpose of the study. The family composite score was derived by the following formula: FES = cohesion + expressiveness - conflict + system maintenance (see Appendix G).

The Hollingshead Two-Factor Index of Social Economic Status

The Hollingshead Two-Factor Index of Social Position (ISP) was developed to help provide an objective, easy-to-use method for evaluating a person's position in society (Hollingshead, 1957). The ISP is based upon three major assumptions:

1) The existence of class structure in a community

2) Class structure is determined by arbitrarily agreed upon symbols.

3) These characteristic symbols can be utilized for data to stratify the population.

The instrument was developed in New Haven, Connecticut drawing from a sample of 522 homes. These homes supplied information concerning family; education; and ethnic, religious, economic, social, and residential background. Research supported the conclusion that the highest associations for social position were educational background and occupation (Hollingshead, 1957).

The index is determined by providing a score for educational and occupational levels of the heads of households. The family SES level is calculated using the following formula:

(O x 7) x (E x 4) = SES

O = occupational level

E = educational level

The educational levels are assigned a number from 1 to 7 using the following scale:

1 = Graduate professional training

2 = Standard college or university degree

3 = Partial college training

4 = High school diploma

5 = Partial high school training

6 = Junior high school training

7 = Less than 7 years of school

The following occupational levels are assigned a value of 1 to 7 using the following formula:

1 = Higher executive, proprietors of large companies, major

professionals;

2 = Business manager, proprietor of a medium-size business, lessor professionals;

3 = Administrative personnel, small independent and minor professionals;

4 = Clerical and sales workers, technicians

5 = Skilled manual employees

6 = Skilled machine operators

7 = Unskilled employees

As can be seen, the smaller the total index score, the higher the social position.

In developing the ISP, the researchers had to determine if the categories they were observing were truly reflective of the social hierarchy of the area. In order to address this question, they grouped the ISP scale into 33 intervals consisting of specific groups. The patterns within the groups were then correlated and factor analyzed. The resultant correlations were all high and positive. This high correlation helped to show that the norms and values of the pattern groups were consistent throughout the entire population studied. The correlation between groups was higher for those nearer in status than for those groups with greater distance in status. The finding helps to show the validity of the ISP as a measure of social economic status.

Reliability is supported, for the ISP was consistent in establishing itself as an objective measure of one's social stratification in a test-retest design (Hollingshead, 1957).

Research Hypotheses

The research hypotheses stated below refer to the questions presented in chapter 1. The hypotheses are stated in the null form. Hypothesis one is related to questions 1 through 4; hypothesis two is related to question 5, and hypothesis three is related to question 6.

Null Hypothesis One: There is no significant relationship between parents' adjustment scores and scores on each of the following independent variables: depression, family environment, social support, social economic status, and time passage since the accident.

Null Hypothesis Two: There is no significant relationship between parents' adjustment scores and the following independent variables when taken as a singular linear combination: depression, social support, family environment, social economic status, and time passage since the accident.

Null Hypothesis Three: There is no subset of parents' scores on the following independent variables which produce a significant relationship to parents' adjustment scores: depression, social support, family environment, social economic status, and time passage since the accident.

Statistical Analysis

The purpose of the study was to seek an answer to the question: What relationship do the variables of social support, depression, family environment, social economic status, and time passage have to parental adjustment to closed head injury?

The hypotheses presented in the previous section were analyzed utilizing the following statistical procedures:

Null Hypothesis One: Null Hypothesis One was tested using a Pearson-Product Moment correlation using the derived adjustment score and a score reflecting each of the independent variables. The rationale in choosing this procedure is that it is commonly used to indicate a relationship between a dependent and independent variable. The correlation coefficient indicates to what degree the variation in the dependent variable is related to the specific independent variable being analyzed. The significance level set for rejection of this hypothesis was set at $p = < .05$.

Null Hypothesis Two: This null hypothesis was tested using a multiple regression analysis. The choice of this statistical method is recommended when the investigator has no theoretical or logical basis for choosing one variable over another (Cohen & Cohen, 1975). The level of significance was set at .05 for rejection of the null hypothesis.

Null Hypothesis Three: This null hypothesis was tested using a stepwise multiple regression. The regression was run on the adjustment score and the listed independent variables. This statistical procedure was chosen because of its capacity to identify the relative contribution of each variable to the amount of variance in the dependent variable. This analysis examines the accumulative contribution of each variable as well as the degree of variance accounted for by different combinations. The level of significance was set at .05 for rejection of the null hypothesis.

The data to be analyzed were entered separately, the corresponding score of each measure for each member of the sample. The parents' scores were not analyzed by parental dyads.

The data were analyzed on the Cyber computer at Indiana State University utilizing the SPSS (Statistical Package of Social Sciences) (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) and Minitab Statistical Project (Pennsylvania State University, 1982). These programs allow the computer to perform the Pearson correlations, the Multiple regression, and the Stepwise regression.

Chapter 4

RESULTS AND DISCUSSION

Research has shown that family adjustment to closed head injury is determined by an interaction of various factors. These factors, although often presented in the research as independent variables, have never been assessed with regard to their relationships to one another. The present study represented an attempt to address the nature of the relationships between family adjustment to closed head injury and specific adjustment variables.

The data were collected from thirty intact, two-parent families. All were parents of a child with a medical diagnosis of closed head injury. The data reflect the means, standard deviations, range of scores, and number of cases for each of the six variables. The figures are presented in Table 1. These data are presented to better inform the reader of the nature and characteristics of the sample.

The higher the scores on the derived adjustment score, the poorer the adjustment. This adjustment score reflects a combination of the individual's perceived stressors and his/her self esteem. The higher the scores on the Social Support (SS) measure, the stronger the social support networks. The higher the Depression (D) score, the higher the reactive depression the person is currently experiencing. The higher the Social Economic Status Score, the lower the socio-economic level. The higher the Family Environment score, the stronger the family unit.

In comparing the means for the adjustment score contained in Table 1, it can be seen that fathers had a mean score of 171.66 and

Table 1

Means, Standard Deviation, Range of Scores, and Number of Cases for Derived Adjustment Social Support, Depression, Social Economic Status, Family Environment, and Time

Variable	Mean	Standard Deviation	Range of Scores
Dependent Variable			
Adjustment			
F* (N=30)	171.66	120.78	0-347
M* (N=30)	128.90	95.33	8-486
Independent Variables			
Social Support			
F (N=30)	18.96	6.50	0-24
M (N=30)	15.50	6.81	2-26
Depression			
F (N=30)	9.66	7.42	0-27
M (N=30)	6.84	5.53	1-36
SES			
F (N=30)	369.26	221.00	28-560
M (N=30)	281.76	206.56	28-560
Family Environment			
F (N=30)	147.56	55.68	89-211
M (N=30)	137.53	51.95	70-268
Time			
F (N=30)	2.46	7.30	.5-3+
M (N=30)	2.40	7.70	.5-3+

* F = fathers, M = mothers

mothers a mean score of 128.5. These figures can be better understood by taking the two components of the adjustment score, SRE and RSI, and analyzing each part's relative contribution. The SRE is scored by totaling the number of perceived stressful events marked by the subject. A score of 300 or higher indicates a high degree of perceived stress. The SRI provides a measure of self esteem in that the higher the score, the stronger the feeling of self esteem. The derived scores are obtained by subtracting the RSI score from the SRE score.

In assessing the independent variables, the means for social support found fathers reporting a stronger sense of social support (18.96). The mean for mothers (15.50) was considerably lower than for fathers. The standard deviation value and range of scores again show the wide variability in subject responses.

In comparing the measure of depression, the fathers' mean was 9.66 which was higher than the mothers' mean of 6.84, thus indicating little presence of reactive depression.

The family rating on SES, which may have been the most critical variable, showed fathers' and mothers' means of 369.26 and 281.76, respectively. The large standard deviations and range of scores are reflective of the broad socioeconomic levels represented in the sample.

The amount of time passage since the accident showed that all families involved in the study had near equal means with similar ranges.

The summary statistics presented in Table 1 are consistent with those presented in the literature for each of the variables, that is, the finding that fathers feel a stronger sense of support than mothers would appear consistent with the idea that mothers, as primary caretakers,

often feel cut off and separated from outside support (Lezak, 1978; Panting & Merry, 1978). The fact that 95 percent of the sample children were males may, in part, explain the higher depression scores for the fathers. The role of future expectations and father-son relationships following a closed head injury is an area addressed by Lewin, Benton, and Grossman (1982). They contend that fathers will tend to internalize much of their disappointment and will withdraw to a greater degree than the mothers.

Null Hypothesis One

The intent of Null Hypothesis One was to examine the relationship between each of the independent variables and adjustment. Previous research has suggested that each of these variables plays a significant role in adjustment to head injury.

Null Hypothesis One: There is no significant relationship between parents' adjustment scores and parents' scores on each of the following independent variables: sex, social support (SS), time, social economic status (SES), depression, and family environment (FES).

Results: Socioeconomic status was the only variable of the six to show a significant relationship with adjustment scores for parents. The relationships between adjustment and the independent variables for parents are presented in Table 2.

From the data presented in Table 2, it can be seen that no significant relationships were found to exist between adjustment scores and independent measures of sex (.207), social support (.160), time (.026), depression (.228), and family environment (.019). Thus for these independent variables the null hypotheses were retained. Parents' SES

Table 2

Product-moment Correlations between Adjustment Scores and Social Support, Sex, Time, Social Economic Status, Depression, and Family Environment Measures

Variable	Parents (N=60) Correlation Coefficient
Sex	r = -.207
Social Support	.160
Time	.026
Social Economic Status	-.318 *
Depression	.228
Family Environment	.191

p = .05

($r = .318 > .05$) was correlated significantly different from zero, leading to rejection of the null hypothesis.

Null Hypothesis Two

Although each of the independent variables has been shown to be related to adjustment to head injury, the relationship between these variables has not been addressed. Null Hypothesis Two examined the relationship between these variables in a simple linear combination.

Null Hypothesis One: There is no significant relationship between parents' adjustment scores and parents' scores on the following independent variables when taken in a single linear combination: sex, time, family environment (FES), social economic status (SES), social support (SS), and depression.

Results: The data presented in Table 3 indicate that only the variables of SES, FES, and depression had Beta coefficients which were significantly different from zero. FES, with a Beta of .330, was significant at the .010 level. SES, with a Beta of -.356, was significant at the .004 level. Depression, with a Beta of .291 was significant at the .027 level of significance.

The R^2 for these variables include SES (.212), FES (.086), depression (.295), sex (.038), time (.038), and social support (.226) and indicate that none of the variables individually explain a significant amount of variance of the criterion variable of adjustment.

The data in Table 4 (ANOVA) show that the variables, when set in a linear regression, account for a significant amount of variance of adjustment with an F value of 3.70, significant at the .004 level.

Table 3

Results of the Multiple Regression Analysis between Adjustment Scores and Measures of Sex, Time, Family Environment, Social Economic Status, Social Support, and Depression

Variable	Multiple R	R Square	R Square Change	Beta	F	p
Sex	.196	.038	.038	-.129	1.02	.317
Time	.196	.038	.0002	.029	.06	.806
FES	.294	.086	.048	.330	7.20	.010*
SES	.461	.212	.126	-.356	9.03	.004*
SS	.476	.226	.013	.170	1.95	.168
Depression	.543	.295	.068	.291	5.16	.027*

* = significant Beta value

Table 4

Results of the Analysis of Variance of the Multiple Regression between Adjustment Scores and Scores on Time, SES, Sex, FES, Depression, and Social Support

Source	df	SS	mean square	F
Regression	6	209022	34837	3.70*
Residual	49	458968	9367	
Total	55	667991		

* = significant at .01

Although each variable was not singularly significant in explaining the variance of adjustment, the combined strength of the relationship between the predictor variables was sufficient enough to reject the null hypothesis.

Null Hypothesis Three

Null Hypothesis Three: There is no subset of parent scores on the following independent variables which produce a significant relationship to the parents' adjustment scores: social economic status (SES), sex, social support (SS), time, depression, and family environment scale (FES).

Results: A stepwise multiple regression was used to help determine the degree of relationship between each of the independent variables and the subject's adjustment score. The procedure in a stepwise regression is to identify the most powerful predictor of variance in the dependent variable. After the initial step, the subsequent step includes the next most powerful variable and continues in a step-by-step method until all the variance is explained or a level of significance is reached.

The results of the stepwise regression are reported in Table 5. The table presents information on the relative amount of variance in the dependent variable accounted for by each of the independent variables. The regression equation is set up to regress Y (adjustment) with each X (the independent variables). The first step included in the regression was SES, which accounted for 10 percent of the variance. The next step entered sex, accounting for seven percent, increasing the regression value to 17 percent explained. The next step entered social support, accounting for five percent of the variance, raising the total R^2 to 22 percent. The next step entered time, accounting for 6.2 percent of the

Table 5

Results of the Stepwise Regression Analysis between Adjustment Scores and Measures of Social Economic Status, Sex, Social Support, Time, Depression, and Family Environment

Variable	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
SES	-0.160	-0.184	-0.202	-0.204	-0.203	-0.204
T Ratio	-2.46	-2.88	-3.20	-3.33	-3.34	-3.31
Sex		- .59	- .54	- .37	- .25	- .25
T Ratio		-2.14	-1.97	-1.36	1.89	- .88
SS			.65	.89	.93	.93
T Ratio			1.83	2.46	2.58	2.55
Time				4.40	5.00	4.90
T Ratio				2.13	2.39	2.28
Depression					2.70	2.70
T Ratio					1.38	1.37
FES						.30
T Ratio						.17
S	105	102	99.9	96.7	95.8	96.8
R^2	.1011	.1727	.2228	.2864	.3125	.3129

F = 4.02

Table F sig. at <=.01 = 3.18

variance. The final two variables, depression and family environment, added only another 2.66 percent to the explained variance, thus raising the total percent of explained variance to 31.29 percent. The F value for the Stepwise Regression was determined by the following equation:

$$F = \frac{R^2}{1 - R^2} \cdot \frac{N - K - 1}{K}$$

The F value for the Stepwise Regression was 4.02 (Table F sig. .01=3.18).

The finding of a significant F value was sufficient reason to reject the null hypothesis. The relationship was sufficiently high to infer that the independent variables are strongly related to adjustment to head injury.

Discussion

To better understand the meanings of these findings, the results will be discussed in terms of the following questions. First, how do these results compare with the results of previous studies presented in the literature? Second, how appropriate were the instruments in measuring the constructs and variables? Third, how critical was the sample, with regard to characteristics and size, to the overall findings?

The results of the present study indicate that the independent variables of depression, SES, social support, time passage, sex, and family environment were significantly related to adjustment following head injury to a child. The F value (4.02) for the Stepwise Multiple Regression was significant at the .01 level of significance. These results, when compared to previous research, support the findings indicating the importance of these variables (Lezak, 1978; Lynch, 1982;

Walsh, 1980).

SES was found to be significant in all analyses for the parents (Pearson r = -.318, Linear regression R^2 = .212, Multiple regression R^2 = .10). Research evaluating the impact of stressful life events suggests that medical and financial concerns are the more stressful events (Holmes & Rahe, 1967). The significance of SES in this study supports this contention. Two major research findings consistent with the results of the study are: 1) the devastating effect that a continual financial burden places on a family in adjusting to head injury (Bond et al., 1983), and 2) the critical role financial responsibility plays in family adjustment to head injury (Lezak, 1978). The significance of the finding for parents supports the clinical observation that fathers were very concerned with their ability to afford costly medical treatment and that mothers were concerned with how the expenses would take away from the other family members.

Although parental dyads were not studied in the present research, sex was included as a research variable to explore any possible relationships between sex and adjustment. Sex was not found to be significantly correlated for intact families but was a significant predictor variable on the multiple regression (adding .07 to the R^2). In a study examining how relatives adjust to the head injury of a family member, Oddy et al. (1980) found that wives (mothers) were more emotionally affected and more apt to seek out support than were fathers. Consistent with this finding, in the present study, many of the fathers only attended support group meetings at the request of their wives.

In a post-hoc analysis of parent scores, no significant differences

were found between parent scores for fathers or mothers except on depression. In reviewing fathers' scores on the Beck Depression Inventory, it was found that they had higher depression ratings than did mothers. This finding is not consistent with research that suggest that mothers, as the primary caretakers of the head injured, experience more depression (Lezak, 1978). In comparing husband and wife scores on these variables, a significant relationship was found (.001) for SES, SS, time, and FES (Table 7). Depression was the only variable not significantly correlated, indicating that fathers in this population had higher depression scores. As mentioned previously, the higher depression scores for fathers may bear a strong relationship to financial concerns. Fathers made reference to this on the questionnaires, indicating that much of their concern and worry was about increasing medical and rehabilitation expenses.

Social Support was found to be a significant predictor. The importance of social support in helping families to adjust to medical trauma is mentioned in several studies addressing family response to a traumatic event (Cope, 1982; Andrews, 1978). The lack of a significant difference in social support scores for fathers and mothers reflects a finding contrary to Oddy et al. (1980), who found mothers more willing to seek support and to identify more easily with the injured family member. The significant number of low support scores coming from active members in a parental support group may be consistent with this idea that those experiencing significant stress are unaware of the support around them.

The importance of time passage found by Lezak (1978) and Oddy (1980) is suggested by these results. The importance of time passage with head injury may be related to the significance of SES in overall

Table 6

Results of the Pearson Correlations between Fathers and Mothers on the Independent Variables: SES, Time, SS, Depression, and FES

Variable	Correlation	Significance
SES	.7157	.001 *
Time	.8829	.001 *
SS	.2080	.001 *
Depression	.1065	.288
FES	.6488	.001 *

* = Significance at .001

family adjustment. From clinical observations, both parents spoke of the emotional and financial drain that the ongoing medical problems posed for the family. Levin et al. (1982) found that years after the accident parents continue to cling to the hope that the child will achieve some sort of marginal rehabilitation. The importance of time passage in predicting adjustment is supported as the parents deal with the issues of acceptance and denial (Kubler-Ross, 1969).

Depression has been mentioned in every major study addressing family/parental adjustment to head injury (Lezak, 1978; Lynch, 1982; Levin et al., 1982). In the present study, depression was not significant for either fathers or mothers on the Pearson correlations. The Linear Multiple Regression depression had the highest R^2 value (.29) and was a significant predictor on the Stepwise Regression (Step 5, R^2 = .34). Lezak (1978) found depression in family members at each stage of the adjustment process. She also noted that, throughout the adjustment process, the levels of depression fluctuated often. The significance of depression in the multiple regression supports these notions. Lynch (1982) found that depression was an initial variable holding families back from better adjustment. In reviewing parents' scores on the Beck Depression Inventory, it was noted that fathers had considerately higher scores than did mothers. This finding was not consistent with that of Oddy (1978), who found mothers to be more emotionally involved than fathers. The clinical observations that the majority (75%+) of the head-injured children were early adolescent males and that the fathers were not active participants in the support groups may have interacted to produce higher depression scores for the fathers.

In evaluating the role of family environment in adjustment, the FES score did not correlate significantly for either parent. However, family environment was found to be a significant predictor variable on both the linear regression and the multiple regression (Step 6, R^2=.31). Walsh (1980) has suggested that, as a response to a traumatic injury, the entire family interaction style is affected. Issues of denial, blame, and guilt have been listed as plaguing families following head injury to a child. In clinical observations, both parents listed these concerns as problem areas in addition to increased turmoil concerning family roles and responsibilities. It appeared that if the head-injured child was an older child, as were the majority in the sample, the parents had to significantly alter their life schedule to make accommodations for the care of the child.

Research Instruments

In reviewing the results, an analysis of the instruments used to measure the dependent and independent variables is needed to assess possible effects on the outcome of the study. Initially, a decision was made to utilize a derived adjustment score, combining two measures to arrive at a single adjustment score. The role that stressful life events play in adjustment is well documented in stress research (Holmes & Rahe, 1967; Lei & Skinner, 1980). The role of self esteem is supported by research exploring how people cope with stressful life events (Lazarus et al., 1981).

In order to determine if the significance levels found in the study were adversely affected by the use of the derived adjustment score, a post-hoc analysis was conducted using SRE without the influence of RSI

for the criterion variable. The results of this analysis yielded lowered R^2 levels for all measures. This reduction of R^2 may be explained by the increased score range and the reduced homogeneity of variance when the RSI is omitted from the adjustment scores. The results of this analysis would then support the use of the derived adjustment score in place of a single measure of adjustment.

In another analysis of the derived adjustment score with the parents' self rating (rating on the questionnaire), a relationship was indicated. Families were asked to rate on a scale of 1 (low adjustment) to 5 (good adjustment) how they felt they had adjusted to the accident. The derived score yields an opposite direction score, in that the higher the score the poorer the adjustment. In a point biserial correlation, the family rating and the derived score correlated at -.296. Although not significant, the negative correlation does suggest a relationship as the scores move in opposite directions with a lower derived score indicating better adjustment and higher self adjustment ratings.

In measuring depression, several limitations of the Beck Depression Inventory (BDI) were noted. Although widely used in clinical settings, the BDI has been criticized for measuring a limited base of depressive issues. The results of the present study would tend to suggest that the BDI does not measure depression well in relation to head injury or any ongoing traumatic event. Only seven of the parents in the sample (N=60) were found to be experiencing significant levels of depression, although the majority of the parents complained of recurrent depressive feelings.

Another limitation noted in the study was the inability of the instruments to measure the fluctuating levels of depression experienced

by the parents. This limitation may have been a function of the sample and the unstable nature of the depression experienced by the parents with a head-injured child (Lezak, 1978; Lynch, 1982).

The construct of family environment, as measured in the present study, was primarily concerned with the interactional style of the family. As such, the three subscales used for the derived score reflect this concern and do not include the maintenance or personal growth subscales. This decision not to include the entire FES score may have affected the significance levels attained for this variable; however, in the analysis of the results FES was found to be a significant predictor variable.

In comparing the scores of the fathers and mothers, the authors suggest a discrepancy score which reflects the difference between the partners' scores (Moos, 1974). This type of scoring may have been informative, but the focus of this study was not to address the differences between spouses but to examine how individual parents adjusted to the head injury of a child.

Social support was measured by using the Kaplan Measure of Social Support (1975). The use of this instrument in studies addressing medical concerns suggested its selection for the present study. The data yielded by the instrument in this study also supported its selection. An interesting finding, however, was that six of the parents had support scores indicating very little support even though all were active members of a parental support group. This may add to the notion that those experiencing significant stress are often unaware of the support around them.

One of the more critical aspects of the study is the sample and its representativeness of the general population. The sample chosen for participation in this study was selected to reflect a broad population of parents who had a head-injured child. The observation that all of the families in the sample were at the time active members of a support group is significant, in that these families may represent the best adjusted of families coping with head injury. If the sample had included families not involved in support groups, then stronger relationships between variables might have been found.

The wide range of scores on the measure of social economic status seems to demonstrate that the sample was representative of a wide range of social classes. Another aspect was the number of subjects comprising the sample. The sixty parents, husbands and wives, provide a representative sample of parents of the head injured.

An interesting clinical observation of the sample was the freedom of expression that was seen in the responses to items of the questionnaire. The admission to much pain, fear, and anxiety by both mothers and fathers was very frequently reported. It would appear that those parents who are involved in an active support group have progressed to a point where they are beyond the initial denial and anger stage (Lezak, 1978) and are now in a position to be better helped.

From information provided on the research questionnaires (Appendix C), it appears that parental adjustment to head injury is an interaction of many complex variables. The fact that each family member's perception is framed within her or his own phenomenological field makes assessment approximate at best. Although the respondents to the questions spoke of

the difficulties experienced by each individual parent, one constant theme emerged--the lack of sensitivity on behalf of medical personnel at the time of the accident. Families adjust to the trauma of head injury in very individual ways, and the importance of knowledgeable, concerned professionals appears to be critical in helping parents to gain maximum adjustment.

Summary

In summary, the findings of this study support the notion that parental adjustment to the head injury of a child is an interaction of many factors. Certainly the significance of socioeconomic status and the ability to afford costly medical/rehabilitation treatment was the most critical finding of this study. The influence of the other research variables examined in this study provides information regarding the role of depression, social support, time passage, sex, and family environment and adjustment. The significant relationship found in Hypothesis Three suggests that the contribution of each variable is crucial in adjustment to the head injury of a child. The level of depression, the amount and type of social support, and the nature of the family system all appear to be major contributors affecting adjustment. By examining these and other pertinent factors, more conclusive information can be provided to help families adjust to the trauma of head injury.

Chapter 5

SUMMARY AND CONCLUSIONS

Summary

Purpose

The purpose of this study was to determine the relationship between selected variables and parental adjustment to traumatic head injury. Data were gathered by having husbands and wives respond to a series of instruments and a questionnaire. The independent variables investigated in this study were: depression as measured by the Beck Depression Inventory (Beck, 1966); family environment as measured by the Family Environment Scale; social support as measured by Kaplan's Measure of Social Support (Kaplan, 1975); time passage since the accident; sex of the parent; and social economic status as measured by Hollingshead's Two-factor Index (Hollingshead, 1957). The adjustment score was derived by combining the score on Holmes and Rahe's Schedule of Recent Events (Holmes & Rahe, 1968) and the Rosenberg Self-esteem Inventory (Rosenberg, 1965). This derived score is based upon the assumption that adjustment to head injury is related to the person's perception of stress in his/her life and his/her perception of his/her own strengths (Oddy & Humphrey, 1978; Wills & Langner, 1980; Lazarus & Launier, 1978). The independent variables were selected for the reason of their frequency and importance in head injury literature. Every major study addressing family adjustment to head injury included one or all of these variables (Lezak, 1978; Lynch, 1982; Oddy & Humphrey, 1978).

Review of Literature

In a review of the literature related to family adjustment to head injury, there is presented a number of studies acknowledging the interrelationship between the aforementioned variables (Lezak, 1978; Oddy et al., 1972; Lynch, 1982). Research efforts have, however, for the most part, been limited to family adjustment to adult head injuries. The generalization to adjustment, when children are involved, is presented in a review of social, psychological, and cognitive studies by Chadwick et al. (1981) and Levin et al. (1982). These studies relate that stages and characteristics in adjusting to the head-injured child are similar to those of adults, with the major exception being that of prognostic indicators (Levin, 1983).

Family perception of how the injured member impacts on the family system, the accommodations needed to absorb such changes, and the degree of personal responsibility are consistent findings in family adjustment literature. The development of schema utilizing various stages and levels of adjustment has been presented by researchers to help facilitate understanding of family adjustment (Lezak, 1972; 1978).

The lack of available research looking at family adjustment to head injury limits the effectiveness of professionals in helping these families. Investigating the relationships between major adjustment variables--depression, time, social support, social economic status, and family environment--was an attempt to combine previous research with current research findings.

Hypotheses Investigated

The following null hypotheses were investigated in this study:

Null Hypothesis One

There is no significant relationship between parents' adjustment scores and parents' scores on each of the following independent variables: depression, family environment, social support, social economic status, and time passage since the accident.

Null Hypothesis Two

There is no significant relationship between parents' adjustment scores and parents' scores on the following independent variables taken as a singular, linear combination: depression, social support, family environment, social economic status, and time passage since the accident.

Null Hypothesis Three

There is no subset of parents' scores on the following independent variables which produce a significant relationship with parents' adjustment scores: depression, social support, family environment, social economic status, and time passage since the accident.

Sample

The sample for the present research was composed of families who were presently involved with head injury support groups in Indianapolis, Indiana; Kansas City, Missouri; and Overland Park, Kansas. The sample was invited to participate in the study following a presentation by the investigator at one of the group's regular, monthly meetings (See Appendix A). The total number of subjects who participated in the study was 60: thirty husband and wife combinations of two-parent, intact families.

Collection of Data

After initial contact was made with the head injury support groups, the investigator made presentations on the purpose and background of the study at a regularly scheduled monthly meeting. Following the presentation and a brief question and answer period, the members were invited to participate in the study. Those agreeing to participate were given test packets which contained the Schedule of Recent Events (Holmes & Rahe, 1967); Rosenberg Self Esteem Inventory (Rosenberg, 1965); Beck Depression Inventory (Beck, 1966); Family Environment Scale (Moos, 1972); Kaplan Measure of Social Support (Kaplan, 1975); and the research questionnaire. Those members who wished to participate but had to leave the meeting were given packets containing self-addressed, stamped envelopes. The presidents of each head injury association took questionnaire packets for those members who were not present but who had previously agreed to participate upon clarification of the purpose of the research. Included in each packet was a cover letter addressing the topics presented at the meeting. After the initial group in Indianapolis, Indiana was contacted and sampled, the investigator moved to the Kansas City, Missouri area. Upon arriving in Kansas City, the investigator contacted the presidents of the Kansas and Missouri Head Injury Associations. The same data collection procedures as those with the Indiana group were employed.

Analysis of Data

Null Hypothesis One was addressed by using Pearson Product-Moment Correlation between the adjustment score and each of the independent variables. Null Hypothesis Two was tested by using a Multiple Linear Regression. Null Hypothesis Three was analyzed by applying a Stepwise

Multiple Regression to test possible subsets of the independent variables.

Results of the Study

The results of the study in relation to each of the null hypotheses are presented.

Null Hypothesis One: The null hypothesis was retained for all variables except socioeconomic status, which was significant at the .05 level of significance.

Null Hypothesis Two: When the variables were taken as a linear group, they were found to be significantly related to adjustment. The null hypothesis was, therefore, rejected.

Null Hypothesis Three: A subset of predictor variables was found that explained a significant amount of the variance in the criterion variable. The null hypothesis was, therefore, rejected.

Conclusions

The present study addressed the relationship between critical factors in adjusting to the trauma of a closed head injury and perceived levels of parental adjustment. Lezak (1978), Lynch (1982), and other researchers have found that family/parental adjustment is affected by specific factors, such as level of depression, amount of family support, social support outside the family, time passage since the accident, and ability to secure medical services. This study inquired into the relationship between each of these factors and adjustment, as well as the relationships between these factors.

The most salient conclusion of this study is that socioeconomic status appears to be the best predictor of family adjustment. A significant relationship between socioeconomic status and adjustment was found

for parents, and socioeconomic status was the strongest predictor variable in the multiple and stepwise regression (10.11%).

This conclusion is supported by the research finding of Lezak (1978), who stated "of the stresses put on the family of the head injured the financial responsibility is one of the greatest." In reviewing stressful life events, Holmes and Rahe (1967) found the life situations which had higher stress ratings had a preponderance of increased financial responsibility. The high cost of medical treatment and long-term rehabilitation in America has been the focus of many news and consumer articles and needs little reiteration here. The increased cost and the fact that major insurance policies fail to cover long-term rehabilitation and maintenance place this life-long financial responsibility on the family of the head injured (Bosshardt, 1979).

It also supports the notion offered by Cope and Hall (1982) that the length of coma, length of hospital stay, and the amount of time elapsed since the accident significantly impact family adjustment.

A second conclusion drawn from the study was the significant relationship between the independent variables when taken as a single linear group. Previous research has shown that each of the variables was significantly related to adjustment; however, when taken singularly, the variables were not seen as significantly related to adjustment. The finding in Hypothesis Two that these variables were highly interrelated may explain why the variables are significantly related to adjustment when taken in a single linear group and not when taken individually. The variables, when taken as a set, support the previous research and demonstrate a strong relationship one to another. The many aspects of parental

adjustment to head injury can in part be explained by these independent variables of depression, SES, family environment, social support, sex, and time passage.

A third conclusion is closely identified with the second. The best set of predictor variables identified in the study was socioeconomic status, sex, social support, time passage, depression, and family environment. The amount of variance explained by these variables was 31.11 percent. It can be concluded that these variables are significantly related to parental adjustment to head injury.

These conclusions should be interpreted with certain precautions. First, their application is specific to those parents who are currently involved in an active support group. The concepts of social support, depression, and family environment may be very different with existing support in contrast to parents not involved in a support group. Secondly, the utilization of the instruments selected to measure the independent variables represents an attempt to examine such constructs in combination within a population of parents of head-injured children. An example was the use of the Schedule of Recent Events, which does not include an event similar in nature to closed head injury, but is used in measuring stress related to medical illness (Holmes & Rahe, 1967).

Implications

The results of the study have provided some insight into the relationship between critical adjustment variables and how parents adjust to the head injury of a child. If head injury is seen as a significant stressful life event and the process by which an individual appraises, and responds to that event is termed adjustment, then these results can

affect several considerations relative to the assessment and treatment of families expressing the trauma of closed head injury.

The variables included in this study represent those variables found in the research to be most critical in adjustment to head injury. If these internal factors are seen as significantly related to adjustment, then those involved in health care for these families should be cognizant of these factors in the families' lives. The positive relationships between socioeconomic status and adjustment have strong relevance for those who develop and determine the presentation of medical care in a community. If the trauma of head injury and its impact on the family are to be addressed, then the need for medical assistance and lower cost rehabilitation programs will need to be addressed. Insurance companies and federal health care policies which deny that rehabilitation can occur six months to a year past the accident will need to reevaluate their positions. It is not surprising to find that those who can afford to obtain good medical and rehabilitation services are better adjusted. The response by the fathers of this study indicated that they were concerned most about how this unexpected long-term financial burden would impact on the family as a whole. This response suggests a new way of viewing how the financial burden is affecting the family. Those family members who have to change their lifestyles and who have to do without because the money is going elsewhere will need to be provided services to help them adjust. The psychosocial implications of such changes can very easily be seen as an area where family therapy and adjustment counseling could be offered. If family stress is increased due to financial burdens, and if the financial burden of head injury is a critical element, then mental

health programs might well target these families for special programs. If families are to be helped during this crisis, programs which are aimed at helping families to explore and understand the nature of head injury, as well as alternatives for adjusting, will be necessary.

That SES was seen as the strongest variables with a significant influence on adjustment and the interaction effect of the research variables makes a strong statement about the need to address all the variables. The interaction of depression and time passage related to SES seems to be a natural progression for the families. The initial depression and dismay discussed by Lynch (1982) and the unreleased burden of time passage are two very critical areas that need to be addressed in working with the families. The impact of stressful life events is very much based on the person's perception and interpretation of that event. The use of therapeutic interventions that help parents to analyze their thoughts, emotions, and irrational beliefs concerning the event can help them to better identify ways to improve adjustment.

In this study significance for the relationship between the research variables and adjustment was found. It was also demonstrated that these variables do account for and help to indicate levels of adjustment experienced by parents of head-injured children. The data from the families used in the study give credence to the role that social support plays in adjusting, since these families were all active members in ongoing support groups for families of head-injured children.

The observation that many of the families were open and willing to share feelings of both hope and discouragement would tend to support their readiness for intervention. These families, although experiencing

the ongoing stresses related to head injury, had been unaware of the head injury support groups for several months following the accident. The lack of public awareness and the poor referral rate by professionals are two immediate areas where change can be made with little expense or effort by those working with these families.

In summary, mental health workers who may deal with these families should be aware of how depression, social economic status, social support, family environment, and time passage contribute to parental adjustment to head injury. Efforts to help facilitate better adjustment should include measures to educate families about the nature and course of head injury and present alternative ways of dealing with the problems encountered by the families.

Recommendations

The following recommendations are made for future research:

1) Since socioeconomic status was found to be significantly related to adjustment, a study delineating socioeconomic classes and comparing scores on independent measures for each class would provide critical information.

2) Because the sample utilized in the present study only included parents who were active members of a head injury support group, a study using a sample of nonmember parents should be conducted.

3) The high degree of displeasure expressed by family members with the way medical personnel reacted during the early period following the injury indicates a need for further study of staff-family interaction. A study examining the initial procedures and policies following hospitalization could provide information to lower the negative effect of this

experience.

4) The critical role played by time passage for both parents suggests the development of a study which examines parental/family adjustment over specified time intervals (6, 12, 18, and 24 months). This information could be useful in working with families at various stages.

5) The effects of head injury on a child are experienced by the entire family. A study examining the effects on the lives of siblings is suggested.

6) The role of support groups is commonly viewed as very helpful to families during times of crisis. A study examining the role and services of head injury support groups could provide information to improve the range and effectiveness of services offered.

7) Á study examining the response to and adjustment of single parents to the trauma of head injury to a dependent child should be conducted.

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APPENDIX A

LETTER OF INTRODUCTION

Indiana State University
Terre Haute, Indiana 47809
(812) 232-6311
Department of Counseling

July 15, 1983

Dear Parent(s):

This letter is to inform you of the study in which you are being asked to participate. As members of families which have experienced the effect of head injury, you are being asked to help provide information which may be useful in helping future families adjust to such a traumatic event.

As you know, the large numbers of young adults and adolescents who are affected by head injury are devastating. In most of these cases the injured person becomes or remains the direct responsibility of the parent(s). Research has shown that the impact on personal and family life is great in all instances of head injury.

In this study, you will be asked to estimate how you as a parent have adjusted to the changes caused by the head injury in the following areas: felings of social support, family interaction and interpersonal changes, feelings of sadness or depression, time since the accident, and to provide some information about yourself.

The purpose of this study is to help determine how these factors interact to aid in adjustment; it is felt that if these can be better understood then helping families to adjust will be more successful. If you are willing to participate in this study please fill out the attached release form. This information and your responses will be gathered at the August HIFI meeting. It is hoped that as many as possible will participate so that the outcome will be of more value. If you are unable to attend the August HIFI meeting, please return the forms to Leif Leaf, Department of Counseling, SE 1520, Indiana State University, Terre Haute, Indiana 47809 by August 30.

Most Sincerely,

Leif Leaf, M.A.
Doctoral Fellow

LL:mlc
Enc.

APPENDIX B

STAGES OF FAMILY ADJUSTMENT

Stages in the evolution of family reactions
to a brain-damaged member

By: Muriel Lezak, 1978

Stage	Time Since Hospitalization	Perception of Patient	Expectation	Family Reaction
I	0-1 to 3 months	A little difficult because of (fatigue, weakness, etc)	Full recovery by one year	Happy
II	1-3 months to 6-9 months	Not cooperating not motivated self centered	Full recovery if he'll try harder	Bewildered, anxious angry
III	6-9 months to 9-24 months; can continue indefinitely	Irresponsible, self centered, irritable, lazy	Independence if know how to help him	Discouraged guilty, depressed, going crazy
IV	9 months or later; can continue indefinitely	A different, difficult, child-like person	Little or no change	Depressed, despairing, "trapped"
V	15 months or later; usually timelimited	A difficult child-like dependent	Little or no change	Mourning
VI	18 to 24 months or later	A difficult child-like dependent	Little or no change	Reorganization, emotionally if not physically disengaged

APPENDIX C

RESEARCH QUESTIONNAIRE

Name _____ Age _____

Name of injured family member _____ Age _____

Relationship to head-injured person: father _____
mother _____
spouse _____

Your occupation _____

Your highest education level _____

Age of child/spouse when head injury occurred _____

Please list other family members' names and ages in respective order:

Name	Age	Sex

Please answer the following questions:

1) What was particularly disturbing during the initial period following the accident?

2) What kind of assistance/help from medical or other professionals would have reduced the stress?

3) Briefly describe the nature and effect of the head injury. (Medical diagnosis, impairments).

4) How do you feel you have adjusted to the accident?

Poorly _____, fairly well _____, well _____, better than expected ____,

Very well _____

Please check the approximate time passage since the head injury has occurred to your family member.

Less than 6 months _____, 6 to 12 months (1 year) _____, 13 to 18 months _____, 10 to 24 months (2 years) _____, 2 to 3 years _____, More than three years _____

APPENDIX D

SCHEDULE OF RECENT EVENTS

Score yourself on the life change scale.
What events have happened to you in the past 12 months?

Event Rank	Event Value	Happened (X)	Your Score	Life Event
1	100			Death of spouse
2	73			Divorce
3	65			Marital separation
4	63			Jail term
5	63			Death of close family member
6	53			Personal injury or illness
7	50			Marriage
8	47			Fired from job
9	45			Marital reconciliation
10	45			Retirement
11	44			Change in health of family member
12	40			Pregnancy
13	39			Sex difficulties
14	39			Gain of new family member
15	39			Business readjustment
16	38			Change in financial state
17	37			Death of close friend
18	36			Change to different line of work
19	35			Change in number of arguments with spouse
20	31			Mortgage over $10,000
21	30			Foreclosure of mortgage or loan
22	29			Change in responsibilities at work
23	29			Son or daughter leaving home
24	29			Trouble with inlaws
25	28			Outstanding personal achievement
26	26			Wife began or stop work
27	26			Begin or end school
28	25			Change in living conditions
29	24			Revision of personal habits
30	23			Trouble with boss
31	20			Change in work hours or conditions
32	20			Change in residence
33	20			Change in schools
34	19			Change in recreation
35	19			Change in church activities
36	18			Change in social activities
37	17			Mortgage or loan less than $10,000
38	16			Change in sleeping habits

39	15	_____	_____	Change in number of family get togethers
40	15	_____	_____	Change in eating habits
41	13	_____	_____	Vacation
42	12	_____	_____	Christmas
43	11	_____	_____	Minor violation of the law

This scale shows the relative weight that can be attributed to stress-reducing situations. For example, the death of a spouse is a great deal more stress-producing than a change in sleeping habits. After you have added up your score, take a close look at it. If your score is high, you are under a lot of stress. Try to think of ways you could decrease your score. Circle those checked events over which you have some control. Consider the importance to you of exercising control over these events.

Holmes, Thomas H., and Masuda, Monoru, Psychosomatic Syndrome. Psychology Today, April 1972.

APPENDIX E

KAPLAN'S MEASURE OF SOCIAL SUPPORT

Please check the response to the right of each statement that best describes how you've been in the past 12 months.

Is there anyone in particular you confide in or talk to about yourself or your problems?	( ) Yes ( ) No
In the past year, has there been any change in your relationship with this person?	( ) I've no particular confidant. ( ) Maintained the same confidant. ( ) Lost this confidant, but found another. ( ) I gained additional confidence. ( ) I lost this confidant and did not find another.
How many people can you confide in and talk to about your problems?	( ) None ( ) 1 ( ) 2 ( ) 3 ( ) 4 or more
How accessible are (how easily can you communicate with) the person(s) with whom you discuss your problems?	( ) Not accessible at all. ( ) Not very accessible. ( ) Somewhat accessible. ( ) Very accessible.
How often do you talk over your problems with your confidant?	( ) Not at all ( ) Not often ( ) Sometimes ( ) Very often
Do you feel free to talk about anything you wish with your confidant (the person with whom you talk over your problems)?	( ) Not at all ( ) Not very ( ) Somewhat ( ) Very
Do the people you talk over your problems with tell you about their problems?	( ) No ( ) Some ( ) Yes
How long have you known the person(s) with whom you talk over your troubles?	( ) Less than 6 months ( ) Several years ( ) More than 2 years
How often do you meet with the person(s) with whom you talk over your troubles?	( ) Rarely ( ) Not often ( ) Sometimes ( ) Very often
How important to you is the person with whom you can discuss your problems?	( ) Not important at all ( ) Not very important ( ) Somewhat important ( ) Very important

APPENDIX F

ROSENBERG SELF-ESTEEM INVENTORY

Please indicate how strongly you agree or disagree about the following statements about yourself. Circle the number to the right of each statement to indicate your choice. 1 means strongly disagree; 2 means mostly disagree; 3 means mostly agree; 4 means you strongly agree.

Question	strongly disagree	mostly disagree	mostly agree	strongly agree
I certainly feel useless at times.	1	2	3	4
At times I think I am no good at all.	1	2	3	4
I wish I could have more respect for myself.	1	2	3	4
All in all, I'm inclined to feel that I'm a failure.	1	2	3	4
I feel that I have a number of good qualities.	1	2	3	4
I feel that I am a person of worth, at least on an equal plane with others.	1	2	3	4
I am able to do things as well as most other people.	1	2	3	4
I take a positive attitude toward myself.	1	2	3	4
On the whole, I am satisfied with myself.	1	2	3	4
All in all, I'm inclined to think that I'm a failure.	1	2	3	4