

STATE/TRAIT ANXIETY, DEPRESSION AND
LOCUS OF CONTROL FOR PARENTS OF
LEUKEMIC CHILDREN AND OTHER
PARENT GROUPS

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CHAPTER I

INTRODUCTION

Recent medical advancements in the treatment of the pediatric cancer patient have resulted in extended life spans for the oncology patient. Consequently, patients and their families are faced with a multitude of medical procedures as well as crises over a prolonged period of time (Katz, Kellerman, Rigler, Williams, & Siegel, 1977; Koocher, O'Malley, Gogan, & Foster, 1980). The manner in which parents cope with their child receiving professional health care services is important. A parent whose child is leukemic, receiving psychological services, or is a "well-child" receiving a routine physical examination, may deal with these three situations differently. Parents in these different groups may manifest patterns of behavior which are specific to the type of service their child is receiving. These patterns of behavior are important in the development of interventive as well as preventative programs which address the psychosocial needs of these parents. The purpose of the present research was to differentiate patterns of behavioral responses in

different parent groups which would be conducive to application in therapeutic modalities. Anxiety, depression, and locus of control have been addressed as clinical issues in individual, group, and family therapies. Treatment programs have existed which focus on decreasing the individual's level of depression and/or anxiety. The type of program utilized has often been dependent on variables such as the depth of depression and the level of anxiety, precipitating factors (i.e., life stressors, hospitalization, and loss), and the course and duration of the depression and anxiety. These treatment programs may have included parent/patient education, group and family support systems, relaxation procedures, as well as programs which have focused on fostering a sense of control for the parents and the patients (Nannis, Susman, Strobe, & Woodruff, 1982; Ruggero, 1979; & Sperling, 1979). Although these programs have been in existence, additional information was necessary to identify parent groups at "high risk" for anxiety and depression.

Groups of parents studied in this research differed by the type of professional health service their child was receiving. Two of the groups consisted of parents whose children were diagnosed as leukemic. In one of the leukemia groups, the child was waiting to undergo a bone marrow aspiration (BMA), a painful medical procedure given frequently and repeatedly as a diagnostic measure.

In the second leukemic group, the child's leukemia was in remission and they were awaiting a routine physical examination.

The third group was comprised of parents whose children were receiving psychological services with no physical complaints or concerns addressed in the child's treatment. The fourth group involved parents of a well-child. The child was receiving a routinely scheduled physical examination from the family pediatrician. No physical complaints or concerns were noted at the time of the appointment.

Parent involvement is important in the delivery of health care services to children (Schowalter, 1979). As a primary care giver for the child, the parent is often instrumental in "setting the mood" when the child interacts with the professional. The parent may also more adequately address difficulties the child is experiencing when their own level of distress is minimized. To aid in the effectiveness of the parent in the overall treatment program of the child, the parent's psychosocial needs must be addressed.

The purpose of this study was to differentiate patterns of anxiety, depression, and locus of control for parents grouped by the type of professional services their children were receiving. Once groups were identified as being at high risk for depression and

anxiety, appropriate preventative programs for those groups were then suggested.

Information from the literature as well as from the present study was essential in the formulation of preventative programs for groups at high risk for depression and anxiety. Initially, the literature review focused on the ability of parents and their families to deal with childhood leukemia. Attention was then given to research which examined behavioral responses, depression and anxiety, in relation to groups undergoing stressful situations and also in relation to nonclinical groups. In concluding the literature review, the relationships between locus of control and anxiety and depression were summarized.

Literature Review

Advancements in medical technology and treatment of the oncology patient have dramatically increased the life span of the patient with childhood leukemia (Katz et al., 1977; Koocher et al., 1980). This extended life span for the child has also extended the mourning process for the parents. Parents of children with leukemia have been reported to progress through a tri-phasic anticipatory mourning process (Townes, Wold, & Homes, 1974). Initially, the parent reacts with shock and denial of the diagnosis. Then the diagnosis is accepted; however, the prognosis is rejected through denial. Finally, both the

diagnosis and prognosis are accepted. Natterson and Knudson (1960) reported that the entire tri-phasic anticipatory mourning process takes at least four months to complete.

In a review by Gogan, O'Malley, and Foster (1977), most parents reportedly went through a phase of self-blame. Binger, Ablin, Feuerstein, Kushner, Zoger, and Mikkelson (1969) reported that in 50 per cent of the families, at least one member needed psychiatric help as a result of a negative reaction to the crisis. Binger et al. also stated that persistent overt denial of the diagnosis by parents was not noted in their findings. However, fathers apparently often absented themselves from involvement with their families. It was also reported that in approximately one-half the families one or more siblings who were previously well began to demonstrate behavioral difficulties in coping with the situation.

Findings in one study indicated that the parents of cancer patients investigated were able to function effectively during the period of illness (Chodoff, Friedman, & Hamberg, 1964). The defenses reportedly utilized most often by parents were isolation of affect, denial, and increased motor activities. The function and appropriateness of these defenses when used in moderation was also discussed. Information regarding time of interview in relation to confirmation of diagnosis was

not available; however, it appears that differences in time from diagnosis to interview could partially account for discrepancies in the reported coping abilities.

Another variable thought to affect a parent's coping ability was concurrent stressors in the family. Kalnins, Churhill, and Terry (1980) reported that almost one-half of the families studied had to deal with an additional major health problem in another family member. A number of various stressors were likely to occur, some of which were under the control of the families and some of which were not under their control such as additional illnesses and occupational layoffs. Individuals may have appeared to be adjusting and coping well with their personal life; however, their vocational adjustment may have been simultaneously poor (Morrow, Hoagland, & Carnrike, 1981). Morrow et al. reported parents under 30 were found to have more impaired adjustment.

Plumb and Holland (1977) utilized the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) in their study of 96 cancer patients, 66 next-of-kin of cancer patients, and 99 physically healthy persons who attempted suicide. In comparison to results found in a brief review by Plumb et al., the frequency of depression in the cancer group was low with three-fourths scoring in the not-depressed range and less than a fifth being moderately depressed. In addition to total Beck Depression Inventory scores, items were delineated by

inclusion in either a physical or non-physical category. Similar means for physical items were reported for the cancer patients and suicide attempt patients, both of which were higher than the mean for the next-of-kin group. Means for the cancer patients and next-of-kin were nearly identical for non-physical items and were significantly lower than the means for the suicide attempt group.

Plumb et al. expressed a need for caution in examining total depression scores with cancer patients. Physical items on depression measures scored as indications of depression might actually have been manifestations of the physical difficulties or complications directly related to the cancer. These authors also stated that variability in both the methods of assessment and the physical status of the cancer patients between studies could lead to difficulties in accurate comparative analyses.

Depressive symptomatology has been widely researched in both experimental and clinical populations. While a general consensus may exist in regard to the physical and emotional manifestations of depression, theoretical rationales for depression abound and are often disparate and may appear incompatible. Peterson (1979) investigated Seligman's (1975) focus on learned helplessness in depression and Beck's (1967) emphasis on the role of self-blame in depression.

Peterson stated that when these two theories were combined, a paradox for depression was formed in that the depressed person accepted blame for situations in which they felt helpless. Peterson's research with a college population offered support for the paradox of simultaneous helplessness and self-blame in depression; however, this same paradox was also evident, albeit to a lesser degree, in nondepressives. Seligman, Abramson, Semmel, and von Baeyer (1979) found that depressed students tended to attribute bad outcomes to factors which were global in nature, internal, and stable. These same depressed students attributed good outcomes to nonglobal causes which were external and unstable.

As research in the area of depression continued, revisions of the theoretical frameworks associated with depression were on-going, and new considerations were taken into account. In a study by Warheit (1979), depressive symptomatology was examined in relation to life events, coping, and stress. This study emphasized the need for inclusion of coping and adaptation variables in stress-illness models which were open rather than closed systems. Warheit (1979, p. 502) defined stress as:

the altered state of an organism produced by agents in the psychological, social, cultural, and/or physical environments. It is assumed that this altered state, when unmitigated, produces deleterious effects on the physical and/or mental well-being of affected individuals.

Warheit's longitudinal study indicated that individuals with high life-event scores (indicators of high stress) had significantly more depressive symptomatology than those with low scores. Furthermore, it was found that persons with high loss scores had more depressive symptomatology than did individuals with low/moderate loss scores. This research also reported that both the presence of a spouse and friends were significantly correlated with lower depression scores for the high loss group and that the presence of a spouse was reliably correlated with lower depression scores for low/moderate loss groups as well.

In relation to depressive symptomatology in cancer patients and their families, disparities were apparent throughout the literature. Warheit's (1979) findings indicated increased depressive symptomatology with increased stress; however, Chodoff et al. (1964) stated that parents of cancer patients functioned effectively. Chodoff et al. also cited several defenses utilized by the parents which could have at least partially accounted for the absence of depressive symptomatology in this particular group of parents. Parents of cancer patients may use these defenses to cope with their child's leukemia; consequently, the depression was either absent or the symptoms were masked by the defenses of affect isolation, denial, and increased motor activities. If this were the case, groups of parents experiencing less

stress than parents of leukemic children might actually exhibit more depressive symptomatology than parents of the leukemic group.

The study of the relationship between anxiety and stress has also been researched extensively. Spielberger, Gorsuch, and Lushene (1970) developed the State-Trait Anxiety Inventory (STAI) which measures anxiety through two distinct anxiety dimensions: state anxiety (A-State) and trait anxiety (A-Trait). A-State was defined by Spielberger et al. as an emotional state which is transitory in nature and fluctuates over time in response to perceived situational factors. A-Trait was reported to be a fairly stable factor which is characterized as individual differences in anxiety proneness. These differences reflected an individual's tendency to respond with elevations in A-State to situations perceived as threatening.

Spielberger et al. also stated that high A-Trait individuals were expected to exhibit elevated A-State levels in comparison to low A-Trait individuals because the high A-Trait person was most likely to perceive a wider range of situations as dangerous or threatening. It was also reported that a great number of individual differences existed in whether or not elevations in A-State would be manifested. The individual's past experiences affected their perception of a situation as threatening or dangerous and accounted for these

individual differences. This was supported by O'Neil's (1969) study of college students in a stressful situation. Students with high A-Trait scores responded with greater A-State elevations than did low A-Trait persons in the stressful situation. Correlations between A-State and A-Trait are variable and depend upon the amount and type of stress the person is undergoing as well as the individual's perception of the situation (Spielberger et al.).

In a study of surgery-induced stress, Auerbach (1973) investigated anxiety with surgery patients both pre- and post-operatively. Results indicated a slight decline in State-Trait Anxiety Inventory A-State scores from 24 hours prior to surgery to 48 hours after the surgery with a sharp decrease after this period. Patients who scored higher on A-Trait had higher levels of A-State than did low A-Trait patients both before and after the surgery. Interestingly, however, both groups exhibited very similar patterns of A-State decline. Auerbach noted that threats to self-esteem resulted in greater increases in A-State for high A-Trait subjects than for low A-Trait subjects (Spielberger, 1972); however, this was not the case when the threat involved physical danger. In physical danger situations, state anxiety reactions were found to be unrelated to trait anxiety levels (Auerbach, Kendall, Cuttler, & Levitt,

1976; Spielberger, Auerbach, Wadsworth, Dunn, & Taulbee, 1973).

Two key factors in determining whether an individual would exhibit state anxiety were the individual's level of trait anxiety and the person's perception of a particular situation as dangerous and threatening or safe and non-threatening. The introduction of individual differences (past experiences) and accountability for amounts and types of stress resulted in difficulty in the prediction of levels of state/trait anxiety for groups.

Gogan et al. (1977) stated that most parents of leukemic children go through a period of self-blame. If the parent was in this phase of self-blame, it would appear that perceived threats to their self-esteem would have been forthcoming; however, the trait anxiety level and past experiences would also have been factors. In looking at health care services, situations which included familiarity with both the surroundings and the procedures would most likely be perceived as non-threatening and would logically result in less state anxiety. The parent's perceptions of the service provider and the surrounding environment appeared to be a vital factor in determining the level of state anxiety and whether the clinic experience was perceived as stressful or not to the parent.

Another factor felt to be important when examining an individual's manner of coping with various stressful

situations was perceived locus of control. Rotter (1966) developed the Internal-External Locus of Control Scale (I-E) as a measure of perceived locus of control. Rotter (1966, p. 1) stated that one of the determinants for locus of control is:

...the degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions.

Rotter stated that when individuals perceive the contingencies in their lives as being controlled by powerful others, fate, chance, or luck, they have a belief in external control and are externally oriented in their perception of locus of control. Internally oriented people perceive events as being contingent on their own behavior or their own relatively permanent characteristics.

Correlations examined between parents' locus of control and the child's locus of control revealed that children whose parents were both high in external locus of control scored low in intelligence and high in anxiety. Mothers' and fathers' locus of control were significantly correlated to their daughters' locus of control orientations but were not significantly correlated with their sons' orientations (Ollendick, 1979). The majority of research involving locus of control examined this variable in relation to some other

variable rather than simply studying locus of control in isolation.

Studies examining the relationship between locus of control and depression are often inconsistent in their findings. Support for a simple relationship between external locus of control and depression has been found (Calhoun, Cheney, & Dawes, 1974; Prociuk, Breen, & Lassier, 1976); however, Fogg (1977) reported that this positive relationship held primarily for males and was not evident for females.

In a study of 39 inpatients at a private psychiatric hospital, Peterson, Sushinsky, and Demask (1978) found no significant differences for external locus of control between depressed and non-depressed patients. Peterson et al. suggested that the locus of control/depression relationship may not be a simple one-to-one relationship. They emphasized the importance of distinguishing between different types of depression, and they expressed the need for assessment of varying definitions of depression and also the populations under study.

Becker and Lesiah (1977) reported a positive correlation between depression (Beck Depression Inventory) and both covert hostility and external control (Internal-External Locus of Control Scale) with external control also correlating with covert hostility. This study found, through analysis of subscales on the Buss-Durkee Hostility Inventory, that depression was not

related to overt expressions of hostility and that guilt, resentment, irritability, and suspicion were positively related to depression. These findings were supported by Winefield's (1981) research which revealed a negative correlation between externally directed aggression and external locus of control and depression. Winefield's subjects consisted of hospitalized depressives, parents of seriously ill children, and healthy controls.

Evans (1981) examined the relationship between experienced control rated by the Tiffany Experienced Control Scale (E-C), depression, and locus of control. Findings indicated that individuals who perceived themselves as possessing an internal locus of control with high experienced control were less depressed than low control internals and both high and low control externals.

Archer (1979) reported the occurrence of a meaningful relationship between greater externality and general trait anxiety. This study emphasized the importance of examining the situational context in which the state anxiety is measured when considering the relationship between locus of control and state anxiety. Archer and Stein (1978) found no significant main or interactive effects between locus of control and state anxiety. They viewed their findings as supportive of an interactionist model rather than a model which proposes a simple inverse relationship between anxiety and an

internally oriented locus of control. In the interactionist model, situational expectancies which are very powerful may "wash out" generalized expectancies.

One study (Molinari & Khanna, 1981) differentiated externality into two constructs. The first category was defensive externals, defined as persons who have low expectations of success in achieving goals. Congruent externals comprised the second category and were described as individuals with the sincere belief that reinforcement was not contingent upon their own behavior. The findings by Molinari et al. indicated that congruent externals become more depressed than defensive externals or internals. Internals also exhibited less anxiety than did both groups of externals.

Johnson and Sarason (1978) hypothesized that locus of control acted as a moderator variable for depression and anxiety and life stress. They found empirical support for this hypothesis with a significant correlation between negative change and both depression and trait anxiety, with these correlations existing only for subjects with an external locus of control. These findings supported the assumption by Johnson et al. that the individuals who were most susceptible to adverse reactions such as depression and anxiety were those undergoing a great deal of life stress with the concurrent perception of little control over these events.

As was found when the literature on anxiety was reviewed, the locus of control research also emphasized the importance of the individual's perceptions. After having reviewed literature concerning parents of cancer patients and depression, state/trait anxiety, and locus of control, the literature appeared to emphasize the severity of the stressor less and less. A great deal of importance was attached to the individual's perception of the situation in determining the manner in which they responded to that experience.

Service providers who establish programs for parents at high risk for anxiety and depression should consider these findings. Particular attention should be given to the parents' perception of their locus of control and also toward minimizing the threatening nature of situations which involve interactions between the patient/parent and the treatment facility.

Statement of the Problem

The purpose of this study was to differentiate patterns of anxiety, depression, and locus of control for parents grouped by the type of professional services their children were receiving. Results of this research lent empirical support for the identification of problematic areas in various parent groups. Information from this study was important in developing specific

programs whose aim was to decrease anxiety and depression in parent groups at risk for depression and anxiety.

Parents of leukemic children were hypothesized to undergo a more stressful situation than parents whose children received psychological services and those parents of children who received a routine physical examination and for this reason the leukemic groups were expected to exhibit significantly higher levels of situational (state) anxiety than the other two groups. Within the leukemic group, the state anxiety level for the bone marrow aspiration group was hypothesized to be higher than the level of state anxiety for the remission group because of the extreme discomfort associated with the bone marrow aspiration.

The parents of the leukemic children were anticipated to perceive themselves as having little control over the actual physical condition of their child and to consequently perceive their locus of control as being externally oriented. In keeping with Seligman's (1975) theory of learned helplessness, these groups were also expected to demonstrate indications of depression.

It was postulated that parents of children receiving psychological services would perceive themselves as being rather helpless in effecting changes in their child's behaviors and psychological adjustment, and they were hypothesized to be significantly more externally oriented in their perception of locus of control and to be more

depressed than the other three groups. Furthermore, it was put forth that the parents of children receiving a routinely scheduled physical examination would score significantly lower on depression and anxiety and would perceive their locus of control as more internally oriented than the bone marrow aspiration, in-remission, and psychological services groups.

CHAPTER II

METHODOLOGY

Subjects

Subjects consisted of 100 parents receiving services for their children, with four different groups of 25 subjects. The majority of children in the clinics were accompanied by their mothers. The first group consisted of 21 females and four males who were parents of leukemic children scheduled to undergo a Bone Marrow Aspiration (BMA) within two hours at the outpatient treatment clinic in the Oklahoma Children's Memorial Hospital Oncology Department. The second group consisted of parents whose children were diagnosed as leukemic, however, the leukemia was in remission and the child was awaiting a routine physical examination at the Oncology Department of Oklahoma Children's Memorial Hospital. Within this second group, 23 of the parents were females. Group three was comprised of parents whose children were receiving outpatient psychological services from the Department of Pediatric Psychology at the University of Oklahoma Health Sciences Center, with no concomitant physical disorders. Twenty of the subjects in group three were females. In group four, the parents' children

were awaiting a routine physical examination from their family pediatrician. No physical complaints or concerns were expressed or evident in this group as the examination was of a routine nature. Of this parent group, 24 of the subjects were females.

Scales

Three different self-report measures were utilized in this research; the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch & Lushene, 1970), and the Rotter (1966) Locus of Control Scale (I-E).

The Beck Depression Inventory is a self-report measure of depression which was designed to rate the depth of depression in the individual. A reliability coefficient of .86 and a correlation coefficient of .66 between the Beck Depression Inventory and clinicians' ratings of depth of depression were reported by Beck et al. (1961).

The State-Trait Anxiety Inventory is a self-report measure of anxiety as a stable anxiety-proneness characteristic in individuals (trait anxiety) as well as a measure of transitory anxiety which fluctuates in response to various situational factors (state anxiety). Spielberger et al. (1970) indicated that correlations for test-retest reliability on trait anxiety ranged from .73

to .86 while those for state anxiety ranged from .16 to .54. The low correlations for state anxiety were anticipated as state anxiety scores were expected to reflect the transitory nature of anxiety states. Reliability coefficients for internal consistency on state anxiety ranged from .83 to .92. Spielberger et al. also reported significant correlations between the State-Trait Anxiety Inventory and several other measures of anxiety which attested to the State-Trait Anxiety Inventory's validity.

The Internal-External Locus of Control scale measures perceived locus of control in individuals, with highly externally oriented individuals perceiving their lives as being controlled by forces outside of themselves, such as fate, chance, or luck. Highly internally oriented persons perceive themselves as basically being in control of the contingencies in their lives. Test-retest reliability for the Internal-External Locus of Control Scale decreased from a correlational coefficient of .72 for one month to .55 for two months as reported by Rotter (1966). On the Beck Depression Inventory, the State-Trait Anxiety Inventory, and the Internal-External Locus of Control Scale, high values on the scales of measurement corresponded to more depression, greater anxiety, and higher externality respectively.

Procedure

Each subject was approached individually by the researcher while awaiting their scheduled appointment in their respective clinic. The physical characteristics of all three clinics were similar. The researcher explained to the potential subjects that the information gained from these self-report evaluations would be useful in assisting professionals in assessing the needs of various groups of patients/clients. Subjects were informed of the voluntary nature of their participation and of the independence between this study and their treatment at the clinic. Confidentiality was also emphasized.

All three scales were presented to the subjects at the same time, with the researcher reviewing each set of instructions with the subject. Subjects first completed the Internal-External Locus of Control Scale and then followed with the Beck Depression Inventory and the State-Trait Anxiety Inventory. Completion time ranged from 15 minutes to 40 minutes, with all three measures typically being completed within 20 minutes. Subjects were allowed to take short breaks during their participation; however, if they were unable to complete all the scales before the patient was actually seen by their respective professional, the data for all three scales were omitted. For this reason, four subjects from the bone marrow aspiration group, five subjects from the in-remission group, two subjects from the psychology

group, and four subjects from the pediatrician group were omitted. The researcher was available to address questions raised by the parents during the actual administration.

CHAPTER III

RESULTS

Two types of analyses were used to examine the data. As shown in the Appendix, Tables I-IV, an analysis of variance was utilized to explore differences which might exist between the various groups. The analysis obtained means from the Beck Depression Inventory, State-Trait Anxiety Inventory, and the Internal-External Locus of Control Scale and compared them to their respective means in the different groups. The Tukey's Studentized Range Test was then used to provide a post hoc pair-wise comparison to specify significant differences between groups.

Table V in the Appendix represents the second type of analysis which provided correlational data between the various measures within each group. The correlation between each measure was represented by a correlation coefficient and a corresponding level of significance.

The means for the four groups on all three measures are contained in Table VI of the Appendix. In comparing the means for the four groups on the depression measure, the analysis of variance revealed that the differences for the depression measure were not significant,

$F, (3,96) = 2.48, p > .065$. Nonsignificance for depression contraindicated the need for a post hoc comparison; consequently, the Tukey test was not performed for the depression measure.

The analysis of variance yielded a significant effect for State anxiety, $F (3,96) = 5.22, p < .0023$. The Tukey test specified that the State anxiety mean for the Pediatrician group was significantly higher than those of the other three groups, which were not significantly different from each other.

Means for the Trait anxiety measure also yielded significant differences between groups, $F (3,96) = 7.48, p < .001$. Results of the Tukey test indicated that the bone marrow aspiration group exhibited a significantly lower Trait anxiety mean than those obtained for the other three groups. Mean scores for the Pediatrician, Remission, and the Pediatric Psychology groups did not differ significantly from each other. Means from the four groups used in the analysis of variance for the Internal-External Locus of Control measure yielded no significant differences between groups, $F (3,96) = 2.36, p > .075$.

Correlation coefficients and their corresponding level of significance were obtained between each measure within the four groups and are represented in Table V of the Appendix. Only those coefficients which achieved an acceptable level of significance ($p < .05$) were reported.

As none of the correlations within the bone marrow aspiration group were significant, this group was omitted from Table V in the Appendix.

Within the remission group, a correlation coefficient of $+0.50$ was obtained between depression and Trait anxiety. As the subjects Trait anxiety scores increased, the subjects reported more depressive symptomatology. Other correlations with acceptable levels of significance within this group were between the depression and the internal-external locus of control scores with a correlation of $+0.46$, and a correlational coefficient of $+0.46$ between Trait anxiety and Internal-External Locus of Control. The parents who were more externally oriented in their perceived locus of control also reported higher levels of Trait anxiety and depression. The Pediatric Psychology group revealed two negative correlations; -0.62 between depression and State anxiety and -0.79 between State anxiety and locus of control. In this group, as State anxiety increased, depression decreased and the subjects perceived their locus of control as being more internally oriented. For the Pediatrician group, as depression increased, state anxiety decreased as exemplified by a correlation coefficient of -0.52 .

CHAPTER IV

DISCUSSION

While several hypotheses set forth received empirical support from this study, other stated hypotheses were not supported and the data yielded results which were actually quite the opposite from those anticipated. Support for the hypothesis that the leukemic groups would exhibit significantly higher state anxiety scores than the other two groups was not apparent. In fact, the bone marrow aspiration group possessed the lowest A-State mean although it was significantly different from only the pediatrician group which as a group scored unusually high on A-State.

In examining state anxiety for the leukemia groups, the time from diagnosis of the leukemia to the administration of the self-report measures may have been an important variable. As reported by Townes et al. (1974) and Natterson et al. (1960), parents tend to progress through a triphasic anticipatory mourning process which typically involves a time period of at least four months. The parents' actual progress through the anticipatory mourning process and the defenses they utilized at the time they completed the self-report

measures could have influenced their responses on these measures.

An important factor specifically for the bone marrow group may have been the actual number of bone marrow aspirations the child had received prior to the administration of the self-report measures. Information regarding time from diagnosis and number of previous bone marrow aspirations was not obtained as many parents had previously received services for their children at other facilities and accurate data were not available.

Although the bone marrow aspiration group exhibited the lowest State anxiety mean in this study, state anxiety means for the leukemic groups exceeded several of those means from previous studies, as shown in Table VII, that involved measurement of anxiety in very stressful situations such as surgery and actually being a cancer patient (Auerbach, 1973; Lewis, Gottesman, & Gutstein, 1979; and Spielberger et al., 1970). In effect, all four parent groups were experiencing as much anxiety or more than individuals who were about to undergo surgery. It would appear that when the children in these groups were about to receive services from their respective clinics, the parents were more anxious than if they were receiving services directly for themselves.

The unusually high A-State scores for the parents receiving a routine physical examination for their children from a local pediatrician was surprising and

counters the hypothesis stated earlier. As indicated by their A-State scores, this group was extremely anxious, and it would appear that these parents perceived this situation as very threatening. This setting and situation were hypothesized to be the least threatening in the present study with comparably low anxiety means; however, the data indicated that this was not the case.

As stated in the literature review, care must be exercised when examining A-State scores in isolation. Variables such as A-Trait scores, additional stressors, and the situational context in which the scores were obtained must also be considered. Unfortunately, data on life event stressors were not obtained, and it is felt this could have been an important variable when examining indexes of behavior such as those studied in this research.

Parents in the psychological services group received the highest means for depression and externality; however, these differences were not significant and the hypothesis for this group was not supported. The depression mean was not indicative of even mild depression when compared with those cut-offs established by Beck (1961).

The correlational data yielded a number of interesting within-group results. For the remission group, parents' depression scores correlated positively with externality. Individuals within this group with an

external locus of control reported more depressive symptomatology. This type of correlation was also expected in the psychological services group, but the data did not support this expectation.

It is suggested that parents with leukemic children in remission accept "blame" or responsibility for the condition of their child. Simultaneously, they perceive themselves as helpless to correct the situation. This supposition was described by Peterson (1979) in the examination of the paradox which exists in depression when individuals accept blame for situations in which they feel they have little or no control. This same correlation also supported the notion that internally oriented individuals are less likely to demonstrate indications of depression and is in keeping with Seligman's (1975) learned helplessness model of depression.

Within the group of parents whose children were receiving psychological services, a negative correlation between state anxiety and both depression and externality existed. The least anxious parents in this group were the most depressed and their locus of control was more externally oriented than those parents with high state anxiety. The high Internal-External Locus of Control Scale scores received for this group suggested that they accepted little responsibility for their actions and consequently they perceived the situation as non-ego

threatening. The resultant effect would be increased externality with decreased state anxiety.

The negative correlation between depression and state anxiety was the only significant correlation found in more than one group. As in the psychological services group, this correlation was also apparent in the pediatrician group. As indications of depression increased, state anxiety decreased and vice versa.

Various groups yielded different significant correlations. The only significant differences between the four groups reported by the ANOVA for depression, anxiety, and locus of control were for state and trait anxiety. The correlational data allowed for closer examination of patterns within the groups. Information from both analyses was useful in identifying parent groups as high or low risk groups for depression and anxiety.

All four groups reported depressive symptomatology characteristic of the nondepressed individual; however, in comparison to normative data obtained from previous studies (Table VII), all four groups appeared very anxious. The pediatrician group exhibited the highest level of state anxiety from those presently studied. The anxiety level of the parents should be addressed by the professionals providing services to the children and parent programs could easily be incorporated into the overall treatment program of the child. State anxiety in

particular can usually be decreased through preventative measures. For the pediatrician group, programs which familiarize parents with medical procedures and provide educational information might prove beneficial.

In reviewing the literature, two variables were noted as instrumental in influencing an individual's level of situational anxiety. The first variable was the level of trait anxiety present. Findings in the present research did not support the occurrence of a significant correlational relationship between state and trait anxiety. The second variable thought to influence state anxiety was the perception of the current situation as threatening or unsafe to the individual.

The pediatrician well-child examination was hypothesized to be the least threatened group; however, this group exhibited the highest state anxiety mean. People tend to feel less threatened in circumstances with which they are familiar and in situations with fairly certain outcomes. Although outcomes in the leukemic groups and the psychological services groups may not have been favorable, professionals in these groups tend to work closely with the patients in keeping them informed as to the prognosis for the child (Nitschke, Wunder, Sexauer, & Humphrey, 1977). Of those groups studied, the well-child examination represents the most ambiguous service provided in relation to possible outcomes or "surprising findings" for the child. Although these data

were not gathered, the parents in the pediatrician group probably maintained less contact with their service provider than did the leukemic groups and the psychological services group.

The development of a program aimed at decreasing anxiety for parents in the pediatrician group should begin by emphasizing an encouragement of information sharing between the service providers and the patient and family. Parents should be encouraged to ask questions and also to offer information for the pediatrician and staff. Acknowledgement of the parents' anxiety as an important group phenomenon may help to partially diffuse the anxiety without minimizing the importance or genuineness of the parents' concern.

Well-child examinations are important and should be encouraged. Involvement of parents and pediatricians in groups which focus on healthy development would promote familiarity with one another rather than fostering the idea that the health-service provider is always the bearer of bad news. These healthy groups may involve parents who group together based on the age of their child or they may be grouped by interest in promoting education through workshops, seminars, or classes. Parent participation in groups concerning their child may assist the parent in gaining a sense of increased control and awareness of the physical and psychological well being of their child.

In an attempt to familiarize the parents with the specific procedure to be used during the well-child examination, a brief explanatory note could be mailed to the parents prior to the examination. This note could include several components. One component would be primarily educational and would provide age ranges for relevant developmental tasks. Particular emphasis should be directed at the "averaging" process in determining these ranges and should note that certain developmental delays are quite acceptable and at times may be anticipated.

A useful component of this form would also be a checklist in which both caregivers could identify developmentally important behaviors which were observed in the home setting. The checklist would increase the awareness of parents as to significant behaviors rather than relying on the parents' memory after the fact. This section could also include a checklist of the child's past medical history.

The third component of the well-child preparatory note would include details as to the actual examination in very specific, concrete, and straightforward terms. A note containing these three components would familiarize the parents with the actual examination and would relieve the pressure placed on the accompanying parent to provide accurate information concerning behaviors and developmental milestones and would also allow the

accompanying parent to attend fully to the child while at the clinic. Use of this note would hopefully assist parents in maintaining appropriate levels of anxiety by increasing their familiarity with well-child examinations as well as developmental norms and the note would also provide useful and accurate information to the parents and to the pediatrician.

Parents should be encouraged to utilize their pediatrician and health service providers as a strong resource within the community. The ideas suggested for the pediatrician group are all quite applicable to the leukemic groups and psychological services group and are encouraged considering the high level of anxiety which is also present in these groups.

For the leukemic groups, clinic staff should attempt to integrate the parents in the overall treatment program of the child. An increased awareness of medical procedures may sometimes be thought to increase anxiety, however, education in this area may decrease the ambiguity and uncertainty associated with unfamiliar medical procedures. Certainly, procedures such as bone marrow aspirations are thought to be anxiety producing. The adage that even "bad news is better than no news at all" may serve as a useful reminder when attempting to decrease the generalized anxiety of the parent.

Parents whose children are receiving psychological services would appear to benefit from groups which

emphasize parenting techniques congruent with the developmental level of the child. Participation in programs such as Parent Effectiveness Training (Gordon, 1975) could increase parenting efficacy as well as helping the parent gain a sense of control. The psychological services professional should work with the parent in treating the child and should remove the "mysticism" sometimes associated with the delivery of psychological services.

Parents whose children are leukemic, who receive psychological services, or who are well-children receiving a routine physical examination have all been identified as being at high risk for experiencing high levels of anxiety. Several specific strategies have been suggested which approach anxiety reduction in a preventative manner. These suggestions, when implemented by professionals, actually represent a basic philosophy in the provision of health care which promotes the use of education, positive interactions between patients, parents, and professionals, and open communication in maintaining lower levels of anxiety in the parent groups studied.

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APPENDIX

SUMMARY TABLES

TABLE I
ANALYSIS OF VARIANCE FOR DEPRESSION

Source	df	MS	F
Model	3	95.29	2.48*
Error	96	38.49	
Total	99		

$F(3,96) = 2.48.$

* $p > .05.$

TABLE II
ANALYSIS OF VARIANCE FOR STATE ANXIETY

Source	df	MS	F
Model	3	748.84	5.22*
Error	96	143.42	
Total	99		

$F(3,96) = 5.22.$

* $p < .01.$

TABLE III
ANALYSIS OF VARIANCE FOR TRAIT ANXIETY

Source	df	MS	F
Model	3	719.56	7.48*
Error	96		
Total	99		

$F(3,96) = 7.48.$

* $p < .001.$

TABLE IV
ANALYSIS OF VARIANCE FOR I-E

Source	df	MS	F
Model	3	35.64	2.36*
Error	96	15.09	
Total	99		

$F(3,96) = 2.36.$

* $p > .05.$

TABLE V
CORRELATION COEFFICIENTS BETWEEN DEPRESSION (BDI),
ST/TR ANXIETY, AND I-E WITHIN EACH GROUP

Group#	Scales	Correlational Coefficient
Remission	BDI/TR	+ .50**
	BDI/I-E	+ .46*
	TR/I-E	+ .46*
Psychology	BDI/ST	- .62***
	ST/I-E	- .79****
Pediatrician	BDI/ST	- .52**

n = 25 for each group.

* p < .05.

** p < .01.

*** p < .001.

**** p < .0001.

TABLE VI
 MEAN SCORES ON DEPRESSION (BDI), ST/TR
 ANXIETY, AND I-E FOR EACH GROUP

Group*	BDI	ST	TR	I-E
BMA	5.92	47.48	33.68	9.16
Remission	6.52	50.60	44.16	10.48
Psychology	8.24	49.40	43.48	10.96
Pediatrician	3.52	59.80	45.28	8.36

*n = 25 each group

TABLE VII
 MEAN SCORES ON STATE ANXIETY
 FOR SURGERY PATIENTS

Patients	Mean*
General medical and surgical (Speilberger et al., 1970)	42.68
Administered 24 hours prior to surgery (Auerbach, 1973)	39.29
Administered evening before exploratory surgery for cancer (Lewis et al., 1979)	45.00
Administered evening before general surgery (Lewis et al., 1979)	38.00

* STAI (Speilberger et al, 1970) was administered to all groups.

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