



National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Notice - Notice

Notice - Notice

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Canada

TEMPERAMENT AND CHARACTERISTICS OF THE MOTHER-CHILD RELATIONSHIP:
PREDICTORS OF BEHAVIOURAL DIFFICULTIES IN CHILDREN
CONSEQUENT TO SHORT-TERM HOSPITALIZATION

by

SANDRA LARMOUR

A thesis submitted to the School of Graduate Studies
of the University of Ottawa in partial fulfilment
of the requirements for the degree of
Doctor of Philosophy
School of Psychology



National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

1-800-277-0770

1-800-277-0770

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-93592-8

Canada



UNIVERSITÉ D'OTTAWA
UNIVERSITY OF OTTAWA

Acknowledgements

I wish to express my sincere appreciation to my thesis supervisor, Dr. Gail Crombie, for her support, encouragement, and knowledgeable suggestions throughout the course of this thesis. I would also like to express my gratitude to Dr. Crombie for her patience and understanding. I have no doubt that both were stretched to the limit on a number of occasions.

I would also like to express my thanks to my thesis committee, Drs. Jane Ledingham, Michael McCarrey, and Barry Schneider, for their advice and recommendations throughout this endeavour.

Although he retired after taking on the initial supervision of my thesis, I owe a special thanks to Dr. Austin DesLauriers for his invaluable suggestions, his humour, and his wonderful ability to stimulate my thinking. He taught me to have confidence in my ideas and encouraged me to search for something new that could contribute to our knowledge of children's reactions in a particular situation.

I wish to thank the Ethics committee of the Children's Hospital of Eastern Ontario for their permission to secure the necessary subjects for this project. In particular, I would like to express my gratitude to Dr. Bernard (Chief of the E.N.T. department) and Dr. Goodman (Head of Psychology) for their confidence and co-operation in permitting me to disrupt their schedules and occupy precious space in their departments. I also extend my thanks to all the nurses in the E.N.T. department for

their kindness and humour, as well as their encouragement.

Sincere thanks is also extended to the parents and children who so willingly agreed to participate in this project knowing that they were making a rather lengthy commitment of their time. Without these wonderful people, this project could not have been completed.

It is appropriate to say a "special thanks" to Dr. Pierre Baron and to the School of Graduate Studies for their encouragement and commitment to ensure that I could complete this thesis by supporting me through a lengthy illness.

I also wish to thank my friends, especially Brenda Creelman and Linda Isham for their never ending faith that I would complete my thesis, and for the time they freely gave to reading, and checking all the data. I cherish their friendship.

I would like to express my sincere thanks to my husband Len, my mother, my sister Carol, and my cousin Linda for their support and encouragement even though they could not quite understand how anything could take so long. While others and even myself thought that this whole thing should be "shelved", they never wavered in their belief that I could and would finish. Thank you all!

I wish to express my sincere gratitude to the National Health and Research Development Program for taking the time to review my proposal, and for their confidence in funding this project although they had not previously granted fellowships to students in psychology. It is doubtful if this project would

have even been undertaken without the financial support they provided.

Finally, although he passed away before this thesis was completed, I would like to say thank you Dr. William Barry, for your wisdom, tenacity, and understanding of human nature. When things felt insurmountable your memory gave me the courage to continue.

Abstract

The purpose of the present study was to predict children's posthospitalization behavioural difficulties consequent to day surgery. Temperament characteristics and characteristics of the mother-child relationship were used to predict children's behavioural difficulties at three days, three weeks and two months posthospitalization. The mothers of the 57 subjects rated their child's pre- and posthospitalization behaviour on the Vernon Hospital Questionnaire. The Behavioural Style Questionnaire was used as the temperament measure and the Parenting Stress Index was used to assess the degree of stress within the mother-child relationship.

Repeated measures analysis of variance on the Vernon Hospitalization Questionnaire indicated that there were significant differences among children's scores at the pre- and posthospitalization periods. Subsequent analyses indicated significant differences on four of the six subscales of this questionnaire. HMRS were conducted on children's behavioural difficulties with three temperament variables and the total stress variable entered as predictors. The results of these HMRS indicated that mood and total stress predicted behavioural difficulties at pre- and two month posthospitalization, whereas adapt and total stress predicted behavioural difficulties at three days and three weeks posthospitalization. Assessment of the predictive accuracy of the sample regression equations by the

jackknife procedure indicated that the regression equations provide accurate predictors. Recommendations are proposed concerning how to identify children at risk for post-hospitalization behavioural difficulties.

Table of Contents

INTRODUCTION	xiv
A Theory of the Child "In Context"	xviii
Organization of the Literature Review	xxi
 CHAPTER 1	 1
Review of the Literature	1
Children's Responses to Hospitalization	1
Sociodemographic Factors	3
Age differences	3
Sex differences	7
Interpersonal Factors	8
Separation anxiety	8
Emotional status of parents	15
Parent-child interactions	19
Intrapersonal Factors	22
Lack of familiarity and consistency of environment	 22
Learned helplessness and perceived loss of control	 26
Perceptions and fears of medical/surgical interventions	 27
Personality characteristics and coping responses	33
Hospitalization Experience Factors	37

Table of Contents (continued)

Prior hospitalization and duration of hospitalization	37
Preparation programs	40
CHAPTER II	51
Introduction to Temperament and the Child-In-Context	51
Historical Development of Temperament Characteristics	53
The New York Longitudinal Study	53
Genetic component	65
Measurement issues	69
Definitions, and functional significance	71
Consonance-dissonance or goodness-of-fit model	73
Stability/consistency of temperament characteristics	79
Child and Environment	83
The child-in-context	83
Maternal characteristics	88
Summary	100
Present Study	103
Research Hypotheses and Theoretical Rationale	104
CHAPTER III	108
Method	108

Table of Contents (continued)

Subjects	108
Procedure	111
Measures	114
The Behavioral Style Questionnaire	114
The Parenting Stress Index	118
The Vernon Posthospital Behavior Questionnaire	123
Variable Selection and Analyses	126
 CHAPTER IV	 130
Results	130
Hypothesis 1	130
Age differences	130
Hypothesis 2	130
Sex differences	130
Hypothesis 3	133
Preorientation program	133
Hypothesis 4	133
Behavioural difficulties	133
Hypothesis 5	137
Predictors of behavioural difficulties	137
Assessing the Accuracy of the Prediction	148
 CHAPTER V	 151
Discussion	151

Table of Contents(continued)

Re-statement of the Purpose of the Study	151
Discussion of Hypotheses	153
Age differences	153
Gender differences	156
Preorientation program	156
Posthospitalization behaviour	159
Prediction of posthospitalization behavioural difficulties	165
Supplemental Analyses	176
Limitations of the Present Study	178
Concluding Comments	181
REFERENCES	183

APPENDICES

APPENDIX A	200
APPENDIX B	204
APPENDIX C	208
APPENDIX D	209
APPENDIX E	210
APPENDIX F	211
APPENDIX G	221
APPENDIX H	231
APPENDIX I	232
APPENDIX J	233
APPENDIX K	234

List of Tables

1. T-Tests for Differences between Subjects Completing the Study and those Not Completing the Study	112
2. Alpha Reliability Coefficients for Internal Consistency for the Present Study and for Normative Studies	127
3. Means and Standard Deviations for Predictor and Criterion Variables for the Present Study and Normative Studies	131
4. Pearson Product Moment Correlation Coefficient for Age and Predictor and Criterion Variables	132
5. Test for Independent Groups Assessing Gender Differences for Criterion and Predictor Variables	134
6. T-Tests for Independent Groups between Subjects Who Attend the Preorientation Program and Those Not Attending the Program	135
7. Means and Standard Deviations for the Subscales of the PHBQ at the Pre- and Three Posttest Periods	138
8. Pearson Product Moment Correlation Matrix of Predictor and Criterion Variables Entered in the Hierarchical Multiple Regression Equations	141
9. Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at the Prehospitalization Period	143

List of Tables(continued)

10. Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at Three Days Post hospitalization	144
11. Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at Three Weeks Posthospitalization	145
12. Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at Two Months Post- hospitalization	146
13. Supplemental Analyses T-Tests for Predictor Variables for Pre- and Posttest Data	180

INTRODUCTION

The purpose of the present study was to identify factors that would predict behavioural adjustment difficulties in children consequent to day surgery by focusing on internal child variables and external environmental variables which may place children "at risk" for such behavioural adjustment difficulties. The rationale for the project was influenced by the high rates of surgery for children. Statistics indicate that, in the United States, approximately 4 million children under 15 years of age are hospitalized annually and at least one third of all children will have undergone hospitalization before reaching adulthood (Field, Alpert, Vega-Lahr, Goldstein, & Perry, 1988). In Canada, statistics indicate that approximately 94,431 children are admitted annually to a paediatric hospital (Canada Health Statistics, 1987-1988). The Canadian statistics, however, do not include information on the number of children admitted to general or adult hospitals. Many researchers in the area of child hospitalization have clearly identified that the hospital experience and the various procedures inherent in such an experience are stressful for children (Field et al., 1988; Thompson, 1985).

In 1979, Werry stated that although most children who undergo hospitalization experience few deleterious effects, we should be aware of the fact that many children will be acutely unhappy in the hospital and a few will be permanently damaged. However, the majority of investigations of the short-term effects of

hospitalization on children were conducted over 20 years ago (Saylor, Pallmeyer, Finch, Eason, Trieber, & Folger, 1987). An extensive literature review of articles on child hospitalization published before 1965 was conducted by Vernon, Foley, Sipowicz, and Schulman (1965). The authors concluded that prolonged separation from mother and lack of familiarity with the hospital setting appeared to be significant factors associated with psychological upset. This term was used by Vernon et al. (1965) to describe a multidimensional phenomenon which included behavioural, physiological, and subjective components.

In a review of the literature from 1965 to 1985, Thompson (1985) identified over 300 research reports that have emerged since 1965. Thompson (1985) concluded that the primary focus of the research studies on child hospitalization and health care was to chronicle children's psychological upset during their hospitalization, while undergoing treatment either in the hospital or in a day treatment facility, and during the posthospitalization period. Assessment of children's emotional responses to hospitalization or health care (e.g., outpatient department, dental treatment) received the most attention with 161 studies out of over 300 studies reviewed devoted to this topic (Thompson, 1985). Documentation of the immediate emotional responses of children manifested during health care treatment was identified in 143 studies. Less attention was directed to children's posthospital responses (66 studies).

Research in this latter area has examined posthospital

psychological upset within a time frame of 2 days to more than 10 years post discharge. According to Thompson (1985), the majority of studies on posthospital responses have been concluded within one month following discharge from the hospital. The present study, in an attempt to provide more long-term data, assessed children's posthospital responses at three specific points in time; 3 days, 3 weeks, and again at 2 months. Whereas Vernon et al.'s review of the literature up to 1965 identified separation anxiety and lack of familiarity with the hospital setting as variables impacting on children's responses to hospitalization, Thompson's review identified a number of sociodemographic factors and intra and inter personal factors which appeared to impact on children's immediate and posthospital responses.

He determined, from his review of the literature up to 1985, that the areas of most importance were the following: (1) children's perceptions of illness, hospitalization, and health care; (2) children's emotional and psychological behavioural responses to hospitalization and medical care; (3) family members reactions to a child's hospitalization; (4) aspects of the hospital experience unrelated to medical care such as activities and interactions with medical personnel and parents; and (5) the initiation of a number of intervention strategies designed to reduce psychological upset. These interventions involved the inclusion of parental presence during various treatments, the initiation of preparation programs, and the effect of play activities in the hospital setting. Thus, it is clear that the

number of investigations documenting children's immediate and posthospital responses in the direction of psychological upset strongly suggest that hospitalization appears to be a traumatic event for some children.

The results of these research endeavours encouraged a number of changes in medical procedures, hospital practices, and even in the physical design of many hospitals (Saylor et al., 1987). More recent studies continue to identify specific factors contributing to in- and posthospitalization psychological upset such as the age of the child, immaturity of cognitive abilities that limit understanding of the necessity for various procedures, length of hospitalization, and the severity of the illness. (Peterson, Mori, & Carter, 1985; Peterson & Toler, 1986).

Hall (1987), however, while encouraged by such changes, suggests that many areas still have not been addressed. He contends that medical personnel need to rethink the cultural and traditional models of medicine and nursing to establish positive and active roles for the hospitalized child and for parents. He also questions why changes have taken so long to occur since research studies on child hospitalization have consistently documented negative impacts on children's psychosocial functioning. Hall (1987) suggests that the answer to this question will be found through examination of the dominance and endurance of attitudes grounded in the structure of hospital organizations.

While previous research has investigated the types of

behavioural problems children experience both during and posthospitalization, few studies have attempted to identify factors that might differentiate children who experience adjustment difficulties during the posthospitalization phase from children who experience few, if any, difficulties.

Drotar (1981) voiced a similar criticism of the research conducted on the psychological effects of chronic illness in children. He suggested that research focusing on the differences between chronically ill children and healthy children has been counterproductive because such research should be addressing the differences within chronically ill children, and should attempt to identify factors that may predict satisfactory adjustment. Drotar recommended that future research would benefit from the use of a coping model similar to the one used by Cohen and Lazarus (1973), with a focus not only on individual differences but on intervention strategies geared toward facilitation of healthy behavioural adjustment. Thus, an investigation of variables that may impact on children's behavioural adjustment following brief hospitalization is warranted. In the present study, it is hypothesized that a number of these variables will predict posthospitalization behavioural adjustment difficulties in children consequent to day surgery.

A Theory of the Child "In Context"

Thomas, Chess, and Birch (1968), along with other researchers on temperament characteristics, proposed that

temperament characteristics may explain why certain children respond in a predictable manner and other children respond in an unpredictable manner. Temperament, according to Thomas et al. (1968), is defined as an individual's characteristic style of response, and refers to an individual's characteristic tempo, rhythmicity, adaptability, energy expenditure, mood, and focus of attention, independent of the content of any specific behaviour. Rutter (1982) proposed that children differ in their temperament characteristics and such characteristics can be measured reliably. Although no particular temperament characteristic or set of characteristics have been reliably identified as causal factors in the development of a maladaptive behavioural style, certain characteristics may place a child at risk for the development of maladaptive responses (Carey, 1985).

Temperament characteristics have been used to predict children's differential responses in a variety of situations; such as, infants' reactions to separation and then reunion with their mother (Ainsworth, 1979; Ainsworth & Bell, 1974, Ainsworth, Blehar, Waters, & Wall, 1978). As well, temperament characteristics have been used successfully to predict changes in children's behaviour after the death of a sibling (Dunn, 1980; Dunn & Kendrick, 1980) and to predict children's responses to divorce (Heatherington, Cox, & Cox, 1979; 1982). Significant relations have been found between certain temperament characteristics in children and the development of psychiatric disorders (Dunn, 1980; Rutter, 1977). Recent studies (Carey,

1985; Dickie, Schroeder, Van Noord, & Cushman, 1987; Peterson et al., 1985) have recommended that temperament characteristics be considered as only one part of a multifaceted approach when attempting to explain or to predict the utilization of maladaptive behaviours.

Researchers have suggested that temperament and its interaction with environmental factors may offer a more plausible and accurate explanation of response adaptation than investigations of either of these variables singularly. This interactionist model, or goodness-of-fit model, suggests that the individual be considered "in context" (Garber, 1984; Lerner, 1984; Palermo, 1982; Thomas & Chess, 1977). Context refers to those external characteristics that are part of the individual's daily living situation and that have a significant impact on an individual's life. The parent-child relationship and the spousal relationship are predominant contextual factors in a child's life. While temperament characteristics have been used alone to predict outcome in certain situations, temperament characteristics, together with environmental characteristics, may permit improved identification of maladaptive response patterns in children before they experience a potentially traumatic event. Such identification would provide valuable information for the development of intervention strategies aimed at the prevention of maladaptive responses and the facilitation of the development of adaptive responses; thus, addressing the concerns put forth by Drotar (1981).

Environmental characteristics, in reference to the child in context, refer to those parenting variables which define the mother-child relationship in terms of a stressful or non-stressful relationship, and to mothers' perceptions of adequacy, and degree of satisfaction with the dual role of mother and spouse, which are frequently cited as contributors to the quality of the mother-child relationship. Thus, in the present study, maternal perceptions of satisfaction and competency in these roles and their relation to children's posthospital adjustment are investigated.

For the present study, temperament variables and environmental variables were used to predict children at risk for the development of posthospital adjustment difficulties. The temperament characteristics used were those assessed by the Behavioral Style Questionnaire (BSQ; McDevitt & Carey, 1978) and the environmental characteristics are those assessed by the Parenting Stress Index (PSI; Abidin, 1982). Pre- and posthospital behaviours were assessed by an adapted version of the Vernon Posthospital Behavior Questionnaire (PHBQ; Vernon et al., 1965). It was hypothesized that temperament characteristics together with environmental characteristics of the mother-child relationship would predict children experiencing posthospital adjustment difficulties.

Organization of the Literature Review

The first chapter reviews the literature on children's responses to hospitalization. Although the present study

investigates predictors of behavioural maladjustment consequent to day surgery, a review of the literature on long-term hospitalization is presented to provide a historical framework of the developments which encouraged the shift from long- to short-term or day hospitalization and to enhance the understanding of factors which may continue to impact negatively on children's posthospital adjustment. Prediction of variables affecting children's behavioural adjustment consequent to day hospitalization may indeed be relevant to longer confinements: only future research can evaluate this assumption. The review of the hospitalization literature concludes with hypotheses proposing variables which may differentiate children experiencing posthospital behavioural maladjustment consequent to day surgery from children experiencing no such difficulties. The second chapter discusses the role of temperament and its relation to children's behavioural adjustment. The child "in context" theory of temperament or the goodness-of-fit model is presented. Also in this chapter the interaction of child temperament characteristics, with characteristics of the parent-child relationship, is discussed with reference to the impact this variable may have in contributing to posthospital adjustment difficulties in children consequent to brief hospitalization. The chapter concludes with a presentation of the hypotheses. A detailed description of the participants, the research instruments and data collection procedures is presented in the third chapter. The fourth chapter provides a presentation of

the results of the analyses, and the final chapter concludes the study with a discussion of the results, the limitations of the study, and suggestions for future research endeavours.

CHAPTER 1

Review of the Literature

Children's Responses to Hospitalization

The psychological effects of hospitalization on children has been researched extensively during the past several decades. This research has identified a number of sociodemographic, and intra and interpersonal factors (Thompson, 1985) purported to place hospitalized children at risk for the development of psychological upset (Vernon et al., 1965) while in hospital and after hospitalization. Vernon et al. (1965) referred to psychological upset to describe a multidimensional phenomenon representative of behavioural, subjective, and physiological reactions of children to medical interventions, and hospitalization. In the present study the term behavioural maladjustment was used to refer to children's posthospital adjustment difficulties which, for some children, could persist for several months. Specific factors such as the age and/or sex of the child, separation from the mother, severity of the illness or the procedure, children's perceptions of the reason for their hospitalization or outpatient medical treatment, and lack of familiarity with the hospital environment have been identified as contributors affecting positive posthospital adjustment (Beuf, 1979; Peterson et al., 1985; Peterson & Toler, 1986; Robinson & Clarke, 1980).

Following long-term hospitalization, clinically significant behavioural maladjustments have been reported, with children

manifesting regressive toileting and feeding behaviours, aggressive or withdrawn behaviours, increased dependence, night terrors, fear of strangers and novel situations, negative fantasy formation, and hyperactive behaviour (Aho & Erickson, 1985; Ferguson, 1979; Vernon & Schulman, 1964). In what is considered a classic review of the literature, Vernon, Foley, Sipowicz & Schulman (1965) concluded that separation from mother and lack of familiarity with surroundings were clearly related to posthospitalization distress. In a more recent review, Peterson et al. (1985) indicated that separation from the mother, age and sex of the child, perceived lack of control, prior negative experiences, and absence of information were significant variables in the development of posthospitalization behavioural adjustment difficulties. Separation from the mother, however, has been identified as being of highest risk and has also been cited in the etiology of many of the regressive, aggressive, and withdrawal behaviours mentioned previously.

In order to provide a logical presentation of the review of the literature on hospitalization, sociodemographic data pertaining to the effect of age and/or sex on children's posthospital adjustment behaviours are presented first. Interpersonal factors specifically, separation anxiety, emotional aspects of parents, and quality of the parent-child relationship as it affects posthospital adjustment are presented second. Intrapersonal data such as lack of familiarity with the hospital setting, learned helplessness, perceptions and fears of medical

interventions and specific personality factors are discussed next. Factors affecting the hospital experience which include information on the effects of previous hospitalization, the duration of the hospitalization, and the impact of prehospitalization preparatory programs conclude the literature review of child hospitalization.

Sociodemographic Factors

Age differences.

A number of research studies have found age to be significantly related to children's posthospital adjustment (Aho & Erickson, 1985; Castell, 1970; Erikson, 1963; Hyson, 1983; Peterson et al., 1985; Robertson, 1973; Vernon, Schulman, & Foley, 1966). Vernon et al. (1965) and Rutter (1983) indicated that children between 6 months and 3 to 4 years of age appeared to be vulnerable during hospitalization, and older children or children younger than 6 months manifested little posthospital behavioural maladjustment. In another study by Vernon et al. (1966) children between 6 months to 4 years of age manifested more behavioural adjustment difficulties one week after discharge. A second study by Vernon, Foley and Schulman (1967) investigated the relation of age, birth order and separation to children's in- and posthospital responses. Thirty-two children between the ages of 2 years and 5 years, 11 months were admitted to the hospital for tonsillectomies. Thirty children returned home the same day and 2 children returned home the following day.

Vernon et al. (1967) examined the effect of maternal presence and maternal absence during anaesthesia induction. The Posthospital Behaviour Questionnaire (Vernon et al., 1966) was used to assess the effects of separation. Age differences in mood during the initial phase of induction indicated that children between 2 and 3 years of age demonstrated more upset than 4 and 5 year old children. Further, age differences on a sleep anxiety factor approached significance, with younger children obtaining a mean of 9.9 and older children obtaining a mean of 9.0. However, Vernon et al. (1967) found no relation between birth order and posthospital adjustment difficulties.

A more recent study, however, found age to be unrelated to posthospital behavioural adjustment difficulties (Field, Alpert, Vega-Lahr, Goldstein, & Perry, 1988). Field et al. (1988) investigated children's coping styles with a sample of 56 children between 4 and 10 years of age who were hospitalized for minor surgery (61% orthopaedic surgery; 39% cardiac catheterization). Mothers and their children were interviewed on the day of admission. At that time mothers also completed a child history form, a number of independent measures assessing children's coping style, and the PHBQ (Vernon et al., 1966). Analyses of the data indicated that age was not significantly correlated with any of the dependent measures including the PHBQ. Field et al. (1988) suggested that this finding may be related to the restricted age range of the subjects as 80% were between 6 and 8 years of age.

Schaffer (1958) and Robinson and Clarke (1980) nevertheless, proposed that particular ages were associated with specific behavioural adjustment difficulties. Shaffer (1958) investigated 25 healthy infants below the age of 12 months admitted to the hospital for elective surgery. Reactions were found to vary with age; children 28 weeks and younger showed little differentiation to people, whereas children from 28 to 51 weeks of age demonstrated clinging to mother and hostility toward strangers. In another study, Wolfer and Visintainer (1975) investigated the effects of age on children's posthospital adjustment. They studied 163 children between 3 and 12 years of age who had been randomly assigned to one of five treatment conditions. They reported that independent of treatment conditions, children below 7 years of age experienced greater upset and demonstrated less cooperative behaviours than children who were older than 7 years.

Bowlby (1973) concluded that children between 2 years 6 months to 3 years of age appeared to suffer from separation anxiety, whereas children between 3 and 5 years of age demonstrated an increased tolerance to separation from the primary caregiver. After 5 years of age, few children appeared to be adversely affected by brief separations. These results lead to the suggestion that even brief hospital admissions before 5 years of age should be avoided, except in cases of extreme need, and that mothers should be permitted to remain with the hospitalized child (Robertson, 1974).

Kerr (1979) found that children between 3 and 6 years of

age appeared to interpret hospitalization as punishment for bad behaviour. Also, for children between 3 to 6 years of age, anxiety was heightened by the immaturity of intellectual functioning, thereby limiting an understanding of hospital procedures. Anxiety was still a factor for children between the ages of 6 to 12 years even though their more mature cognitive functioning enabled them to better comprehend the procedures. The anxiety factor in the 6 to 12 year old age group appeared to be associated with fears of body mutilation, while younger children were concerned with fears centring around actual loss of body parts (Kerr, 1979).

With the exception of a few studies, the data appear to consistently identify the preschool age group as the children most likely to experience behavioural adjustment difficulties consequent to a hospital experience (Thompson, 1985). Thompson (1985) however, cautions against a broad acceptance of the results concerning age and vulnerability to posthospital upset. His concern is that investigations which include a considerable age range (i.e., infancy or toddler period through school years) may not utilize appropriate instruments sensitive to posthospital behavioural adjustment difficulties within a developmental framework. It is possible that certain measures may indicate psychological difficulties when in fact, developmentally, the observed behaviour is indicative of a natural process of change.

The present study assessed children's responses to day surgery, therefore it was hypothesized that separation anxiety

was not expected to be an influential factor as children spent only a few hours in the hospital, thus, it was hypothesized that age would not have an effect on children's posthospital adjustment. Further, many of the studies reporting a significant relation between age and posthospital adjustment investigated this variable with children admitted to the hospital for a minimum of two days and longer. The review of the literature continues with an examination of the impact of gender on children's posthospital adjustment behaviour.

Sex differences.

Few sex differences have been found to be related to children's responses to hospitalization (Thompson, 1985). Studies investigating the relation between sex and children's posthospital adjustment, or medical procedures not requiring hospitalization have reported non-significant relations (Field et al., 1988; Sipowicz & Vernon, 1965; Vernon et al., 1966; Wolfer & Visintainer, 1975). A small number of studies, however, have reported sex differences.

Dearden (1970) observed and interviewed thirty-six 4 year old children and their mothers 1 month before admission to the hospital for elective tonsillectomies. She also assessed the children's posthospital behaviour and again interviewed mothers at 2 weeks, 2 months, and 6 months after discharge. Dearden (1970) reported that boys displayed higher levels of disturbed behaviour than did girls during the posthospitalization period.

Aisenberg, Wolff, Rosenthal, and Nadas (1973) reported differences in the types of aggression engaged in by boys and girls after cardiac catheterization; boys scored higher in physical aggression than girls and girls scored higher than males on verbal aggression. It is clear that more research on the existence of sex differences is required before firm conclusions can be made.

The majority of research studies have reported a non-significant relation between sex and posthospital behavioural maladjustment. Thus, in the present study, it was hypothesized that sex would not differentiate children experiencing posthospital behaviour adjustment difficulties from those not experiencing such difficulties.

Interpersonal Factors

Separation anxiety.

One of the first attempts to investigate the effects of infant separation from the mother figure was by Spitz (1946). He demonstrated that institutionalized infants who lacked mothering, human contact, and who were left to lie in their cribs for prolonged periods, manifested not only delayed physical development and growth, but also severe affective disturbances. These disturbances included weight loss due to anorexia, apathy and withdrawal, and initially, constant crying which ceased only after a prolonged period of time. For some infants, these disturbances persisted for long periods of time. For treatment,

staff were assigned to the task of simply holding these infants, thus providing tactile stimulation through human contact. Infants who received this attention began to gain weight and minor illnesses frequently subsided. While such infants had experienced prolonged separation from the mother, shorter separations also appear to be detrimental to the development of some infants.

Bowlby (1969) indicated that hospitalizations as brief as 3 days could cause severe anxiety and that this anxiety could facilitate the development of regressive behaviours. Behaviours such as bed wetting, night terrors, hostility and aggression toward the mother, as well as clinging behaviours could last for days, and, in some instances, for several months even after brief hospitalization. According to Bowlby, the child exhibits ambivalence toward the caretaker because of the child's need for love and security. The child's perceived desertion by the mother causes confusion and anger. It was believed that these regressive behaviours developed due to separation of the child from the primary caregiver during the critical period of the attachment process (Bowlby, 1969). This attachment or bonding process between mother and child (or permanent mother-substitute) begins in early infancy and continues its development during the first 3 to 5 years of life (Bowlby, 1951). Bowlby suggested that interference with the development of this intimate and continuous relationship between child and caregiver could eventuate in later disturbances. During infancy, the infant perceives the mother as

the sole provider of need fulfilment which encompasses not only hunger needs, but also security and safety needs (Erikson, 1963). Thus, the hospital experience, without the protective and comforting arms of mother, placed the young child in a vulnerable position.

Hospitalized infants and toddlers can experience an actual mourning and grieving process similar to the actual loss through death of a loved one (Bowlby, 1953; 1969; Robertson, 1973). This grieving process is characterized by three distinct phases or stages: protest, despair, and detachment. Each of these stages is identified by specific behaviours that illustrate the degree to which the child has accepted the new environment in the absence of the mother figure. During the first two stages, protest and despair, the child engages in crying and restless behaviours and refuses comfort from hospital staff. The child is seen looking frequently toward the door indicating the child may be searching for mother's return. If the mother is re-introduced at this time, the child will ignore her but will eventually, cautiously approach. The child may whimper for a few minutes after her departure, but will soon return to the previously withdrawn state. This period has been equated with an actual mourning process (Robertson, 1973). During the detachment stage, the infant appears to willingly accept comfort and food from hospital staff and may engage in play with others. The child appears happy and accepting; however, physical contact is not sought. The child appears to have accepted the new environment

and is no longer observed looking toward the door for mother's entrance. Robertson (1973) suggested that the child's perception was that the mother figure would not return.

This apparent accepting and contented attitude lulled medical personnel into believing that the child had adjusted to the hospital experience. The fallacy of this perception became apparent during the posthospitalization period when mothers voiced concerns regarding changes in their child's behaviour once the child returned home (Robertson, 1974). Further, Nagera (1978) suggested that when children were ill, experienced pain, were frightened, or hurt, they demonstrated an inability to tolerate separations from the mother. In such circumstances, children manifested regressive behaviours.

Clearly, behavioural maladjustments appear to have a carry over effect from the hospital into the home. This carry over effect was examined in the present study by measuring children's behavioural maladjustments before and after the hospital experience.

Further research on both short- and long-term hospitalization of children concluded that, in numerous instances, behavioural maladjustments were evident only after discharge (Douglas, 1975; Ferguson, 1979; Shore & Goldston, 1978; Wallinga, 1975). The length of hospitalization in the majority of these investigations ranged from 3 to 8 days and the age of the subjects ranged from 2 to 12 years of age. These authors reported the occurrence of a broad spectrum of symptomatology

during the posthospitalization period. The most common of these were: eating problems in the direction of under or over eating; sleep disturbances characterized by insomnia, nightmares, or phobias of the dark; enuresis; faecal soiling; regression to previous levels of training and social functioning; tics; depression and anxiety; terror of hospitals and hospital personnel; death fears; mute autistic regression to uncommunicative states; frightened withdrawal from contact with people; exaggerated body concerns or actual delusions about body functions; and hysterical symptoms such as aphonia after tonsillectomies. Estimations of the incidence of these disturbances varied considerably, with some authors reporting that 10% to 35% of hospitalized children manifested behavioural problems once they returned home (Jessner, Jessner, Blom, & Waldfogel, 1952; Prugh et al., 1953). Cassell (1965) reported that 92% of children in her studies experienced at least slight behavioural adjustment difficulties after a period of hospitalization. Hunt (1974) and Wolff (1969), as well as those investigators emphasizing separation anxiety as a casual factor in the development of such behavioural disturbances (Barowsky, 1978; Bowlby, 1969; Spitz, 1965), felt certain that maternal separation was the main contributing factor. This conviction led the United Nations, in their 1959 formulation of the Declaration of the Rights of the Child, to state:

"Whereas the child, by reason of his physical and mental immaturity needs special safe guards and care,

the child of tender years shall not, save in exceptional circumstances, be separated from his mother."

This declaration encouraged changes in hospital policies as did the conclusions of one of the few empirical studies conducted at that time (Vernon, Schulman, & Foley, 1966). This team of researchers investigated the emotional and psychological effects of hospitalization on children's posthospital adjustment behaviour. The study involved 212 boys and 175 girls ranging from 1 month to 16 years of age, with a mean age of 5.7 years, and a standard deviation of 4.3. The mean duration of hospitalization was 8.8 days, with a standard deviation of 8.5, thus the hospitalization period included both short- and long-term hospitalization. Mothers rated their child's posthospital adjustment on the PHBQ (Vernon et al, 1966). The results of this study supported past findings that separation anxiety was an important factor contributing to posthospital maladjustment distress.

Developmentally, children younger than 5 years of age are emotionally and physically dependent on mother's presence. Children within this age group can tolerate brief absences (2 to 3 days) from mother. Separations of longer duration, which can be required due to hospitalization, can precipitate the development of maladaptive behaviours (Bowlby, 1953; Robertson, 1953). A hospital stay as short as 3 days, however, can have negative effects; such as, intensive and prolonged crying, active

rejection of hospital personnel, and apathy and withdrawal behaviours (Bowlby, 1953; Robertson, 1953). Thus, while separation anxiety was clearly implicated as a factor contributing to posthospitalization behavioural maladjustment, it was equally clear that separation anxiety could not explain posthospital maladjustment in children for whom separation from the mother was not a factor. Increased visiting and rooming-in facilities permitted mothers to stay with their children, thus supposedly alleviating the effects of separation anxiety . Studies of children's posthospital adjustment, when mothers are permitted to room-in with their children, have demonstrated that posthospital behavioural maladjustment remains a problem for some children (Hall, 1978; Kerr, 1979; Peterson et al., 1985; Saylor et al., 1987; Willis, Elliott, & Jay, 1982).

Separation anxiety, while a primary factor for children younger than 5 years of age, is no longer viewed as solely responsible for the myriad of posthospital adjustment difficulties in children. The present study investigated children's posthospital behavioural adjustment consequent to day surgery, where separation from the mother occurs only while the child is undergoing the actual procedure. Therefore, separation anxiety was not a principal factor for investigation in the present study. The literature review of interpersonal factors which may contribute to children's posthospital adjustment difficulties continues with a review of several studies which have investigated the impact of maternal anxiety on children's

posthospital adjustment.

Emotional status of parents.

Investigations of the relation between parental anxiety levels and children's behavioural adjustment, both in- and during the posthospitalization period have examined this variable in a number of settings (e.g., dental treatment, outpatient medical care, and hospitalization). Dental studies have produced some interesting results. Some investigators reported significant, positive relations between parental anxiety and children's upset responses (Johnson & Baldwin, 1968; 1969; Wright & Alpern, 1971). Further, a number of researchers reported that interventions (Johnson & Machen, 1973) or prior dental experiences appeared to reduce this relation (Klorman, Michael, Hilpert, & Sveen, 1979).

Studies of outpatient medical treatment also demonstrated significant relations between parental anxiety levels and children's reactions to treatment (Heffernan & Azarnoff, 1971; Thompson, 1985).

A study by Vardaro (1978) utilized physiological measures to assess the level of anxiety in children and their mothers. Vardaro investigated 18 children between the ages of 36 to 66 months of age who were scheduled for hernia repair. In order to assess anxiety levels, mothers were required to collect 24 hour urine samples for themselves and their children before entering the hospital. Mothers were also required to complete the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Luchene,

1970) and a questionnaire assessing their child's prehospital status. Urine samples were measured for the amount of 17-hydroxycorticosteroid (17-OHCS) which is a hormone secreted by the adrenal cortex when an individual experiences stressful situations. Positive correlations between the amount of secreted hormone and their scores on the STAI were found, and these two maternal measures were correlated with the children's 17-OHCS sample. However, neither of the maternal or child measures were correlated with the prehospital questionnaire. Vardaro's contention that maternal anxiety had a significant effect on children's emotional responses to the hospital situation is not warranted by a single correlational result.

In another study Goslin (1979) investigated the effect of crisis intervention in reducing anxiety occasioned by an emergency admission for gastroenteritis. The 40 subjects between 18 months and 6 years of age were randomly assigned to a control and experimental group. The experimental group was read a story about a child who was admitted to the hospital with the same diagnosis that they had received. The story was designed to address fears and misperceptions in pre- and school children. Physiological measures including pulse, respirations, and temperature were obtained for both groups of children before and after the medical intervention. Mothers were required to complete the State-Trait Anxiety Inventory as well as the Posthospital Behavior Questionnaire (Vernon et al., 1966). Analyses of the data revealed that the experimental group had

significantly lower temperatures than the control group the evening following medical care. No other physiological or posthospital behavioural differences were found. Goslin (1979), however, reported a significant relation between maternal state anxiety and inhospital physiological arousal of their children.

A similar investigation of children's emotional responses to illness and hospitalization and their relation to mothers' State-Trait anxiety was completed by Sides (1977). One hundred and ninety children between 5 weeks and 16 years of age were admitted to hospital for a variety of conditions. Mothers were required to complete the PHBQ assessing their child's behaviour 2 weeks posthospitalization. Mothers were also required to complete the STAI which was hypothesized to predict children's posthospital upset 2 weeks after discharge. The results of the PHBQ indicated that 120 children (63.2%) manifested behavioural adjustment difficulties lasting at least 2 weeks following discharge from the hospital; 48 children (25.3%) experienced no behavioural maladjustment; and 22 children (11.6) exhibited an improvement in behaviour. Sides (1977) also reported a significant correlation between mothers' state anxiety and children's behavioural upset. Thus these two studies appeared to indicate a relation between maternal situational anxiety and children's posthospital behavioural adjustment difficulties.

Investigations of parental anxiety and its impact on children's response to hospitalization have not reported consistent and conclusive evidence of a significant relation

between these two variables as is indicated in a study by Schulman, Foley, Vernon, and Allen (1967). They reported a non-significant relation between mothers' anxiety and the responses of their children during anaesthesia induction. Brown (1979) reported that children whose mothers were highly anxious concerning their child's admission to hospital exhibited withdrawal behaviours. Dearden (1970) suggested that either high or low levels of parental anxiety may impact negatively on children's behavioural adjustment during and after hospitalization. She interviewed and observed thirty-six 4 year old children admitted to the hospital for tonsillectomies. The children were observed before admission and their mothers were interviewed during this same period. Posthospital assessments were completed at 2 weeks, 2 months, and again at 6 months. Dearden reported that 29 children exhibited an increase in behavioural difficulties during the posthospitalization period, and that 10 of these children displayed the highest level of behavioural adjustment difficulties at the 6 month posttest period. She also reported that 7 children experienced high levels of difficulties both before and after hospitalization. She suggested that high levels of anxiety at the pretest period may predispose these children or contribute to an increased vulnerability to behavioural maladjustment during the hospital experience. Dearden (1970) also proposed that the relation between parental anxiety and children's behavioural maladjustment may be U shaped with high or low levels of parental anxiety

contributing to increased behavioural adjustment difficulties following hospitalization.

Thus, there seems to be some tentative support suggesting that maternal anxiety can affect children's posthospital adjustment. However, data in this area are somewhat limited, thus further research is required before definitive conclusions can be derived. The present study investigated the effect of maternal satisfaction with the dual role of mother and wife, and mothers' sense of competency with these roles in relation to children's posthospital maladjustment. The present study hypothesized that maternal stress in these areas would predict children's posthospital behavioural maladjustment. A detailed analyses of these variables are presented in the section discussing the mother-child relationship as assessed by the Parenting Stress Index (Abidin, 1982).

Parent-child interactions.

Few studies have investigated the effect of the quality of the mother-child relationship and the role of maternal perceptions of competency on children's posthospital responses. A number of studies, however, have examined different styles of parental discipline, as well as styles or patterns of parent-child interactions, specifically within the context of the child's response to various dental or medical settings. These studies have concentrated primarily on two areas; style of parental discipline and the type of interactions between parents

and children.

Thompson (1985) reported that two types of disciplinary styles appeared to be associated with children's emotional distress; permissive parents and those who primarily utilized punishment. Zabin and Melamed (1980) investigated the relation between parents' style of discipline and children's anxiety. Questionnaires were mailed to the parents of 60 children who had previously participated in a research study investigating children's behaviour during hospitalization for minor surgery (Melamed & Siegel, 1975). Zabin and Melamed (1980) reported a significant relation between parents' use of positive reinforcement and lower levels of anxiety in children. Children who received this style of discipline appeared to demonstrate lower anxiety levels than children who were accustomed to being disciplined through the use of punishment or force. In the Dearden study (1970) reported previously, boys who were more upset by the hospital experience had permissive parents. However, boys whose parents adopted a more restrictive and harsher form of discipline appeared to experience fewer maladjustment behaviours concerning the hospital experience than the permissive sample. Girls appeared to be unaffected by the hospital experience if their parents were permissive. (It should be noted here that the Dearden study (1970) is one of the few studies to find sex differences.) In another study (Shade-Zeldow, 1976), children of mothers who encouraged dependent behaviour displayed an increase in regressive behaviours while

confined to the hospital. These studies also appear to indicate that the type of discipline used by parents can affect children's in- and posthospital adjustment, with harsh forms of discipline more likely to influence the development of children's posthospitalization maladjustment behaviour.

Limited data exist examining parent-child interactions and how the type of interaction may impact on children's response to hospitalization. Brown (1979) analyzed the content of maternal interviews and reported that she identified three specific patterns of interactions between parents and children. She termed these interactions as initiation, subordination, and proximity. Initiation permits the child to control his/her activities; subordination refers to parental control over most activities; and proximity in which parents permit the child some input into his/her activities. Brown (1979), using a principal components analyses of children's inhospital behaviour identified three specific response patterns: withdrawal - in which the child refrains from both contact and conversation with others; immobility - in which the child prefers to remain in his/her hospital room; and distress behaviour - in which the child displays upset or physiological disturbance.

Brown (1979) examined the relation between the above inhospital behaviours and the three parent-child interaction factors. She reported that high scores on any of the inhospital behaviours were related to children who were rated low on initiation in the home. Brown (1979) further reported that

children who were rated as high on proximity, combined with low initiation, displayed more behavioural distress during hospitalization than the other groups of children. She also found that children who used immobility in the hospital setting were rated as low both in proximity and initiation. There was also an association between children who demonstrated distress behaviours in the hospital and who were rated high on proximity in the home.

Thus, these studies, although limited in number, appear to suggest that the type of parental discipline used in the home and the type of family interaction patterns may be associated with children's maladjustment responses to hospitalization. Further research in these areas would provide more definitive conclusions. The literature review continues with the focus shifting to child intrapersonal factors which have been suggested to impact on children's posthospital adjustment.

Intrapersonal Factors

Lack of familiarity and consistency of environment.

While research on the impact of the unfamiliarity of the hospital setting on children's behavioural adjustment is rather sparse; a number of researchers have suggested that this variable may contribute to children's in- and posthospital behavioural maladjustment (Brown & Semple, 1970; Frailberg, 1959; Janis, 1958; Robinson & Clarke, 1980). Brown and Semple (1970) observed that children younger than 5 years of age, when confronted with

unfamiliar surroundings, displayed a significant decrease in motor, perceptual, and verbal behaviours, and an increase in global gazing and freezing behaviours. It is interesting to note that these behaviours are similar to a number of behaviours which have been associated with separation anxiety.

Anthony, Koupernick, and Chiland (1978) suggested that the hospital experience, due to its unfamiliar environment, could place certain children at risk for the development of behavioural maladjustment difficulties both during and posthospitalization. They suggested that the development of object constancy is necessary in order for healthy adaptation to occur. Infants and toddlers learn that the mother figure along with the familiar home environment are objects that are consistent and dependable. The mother figure becomes associated with familiar rituals and routines and the child begins to organize his/her world (Anthony et al., 1978). As this process unfolds, sameness and familiarity of environment and events, along with the now familiar mother figure, are critical. During maturation, children's ability to tolerate change increases.

Major disruptions of regular routines and/or familiar environments may occasion feelings of insecurity, confusion, and stress. Children learn adaptation techniques through reliance on familiar objects and settings. Successful adaptation responses are dependent on children's ability to extract familiar aspects of novel situations from their prior experience (Erikson, 1963). If the child is unable to recognize familiar aspects of the new

situation, the child is less likely to adapt in a healthy manner, and may respond to the novel situation by withdrawing from the situation, denying the situation, or fighting the situation (Anthony et al., 1978; Piaget, 1960).

Similarly, according to Kagan (1989), important individual differences are observed in an individual's initial response to unfamiliar or challenging situations. A challenging situation may be an event which is perceived as threatening or non-threatening. Difficulties arise from the individual's lack of familiarity with the novel event and the fact that the person has no immediate coping responses available based on previous experience. Kagan observed that some children and adults may respond initially by becoming quiet and restrained while they attempt to assess the situation and their coping abilities before taking any action. Others, however, may react spontaneously, as though the differences between the familiar and new situations are of negligible psychological consequence.

Sameness and familiarity of environment and events, along with the now familiar mother figure, are critical to a child's development of trust and security (Erikson, 1963). Since the young child's concept of time and space is directly related to familiar routines and objects (Robinson & Clark, 1980), the unfamiliar hospital environment with unfamiliar people may be perceived as intimidating or threatening. In the hospital milieu, the child may feel powerless to effect or change the situation and may attempt to please and placate the unfamiliar

adults.

This description of children's responses to unfamiliar situations bear marked similarities to Bowlby's (1953) description of children's separation anxiety reactions during and posthospitalization. These similarities intimate that separation anxiety involves an unfamiliarity component. It is conceivable that reactions which have purported to be resultant from separation anxiety may in fact be due to lack of familiarity with the hospital milieu. Research studies investigating day surgery or day hospitalization units would provide valuable information by addressing the impact of unfamiliarity.

The introduction of preorientation programs in some hospitals attempts to address this lack of familiarity by introducing the child to the hospital environment before the actual admission. While the child may remember the hospital environment, frequently different personnel are present at the time of admission. In the present study, a preorientation program was available to all parents and children to familiarize them to the hospital environment. The program consisted of a tour of the day surgery unit and the recovery room. Once the tour concluded, the children were offered refreshments and invited to ask questions about the upcoming surgery. Unfortunately, the program was not structured to ensure that on admission the children would encounter the same personnel. The present study provided for an analysis of differences between children who attended the preorientation program and those who

did not participate in this program. Many children still had to contend with unfamiliar persons and for some children this situation could place the child at risk for the development of adjustment difficulties.

Other intrapersonal factors which may be associated with children's responses to the unfamiliar hospital situation are learned helplessness and perceived loss of control.

Learned helplessness and perceived loss of control.

Unfamiliar routines and perceived loss of control may place children at risk for the development of behavioural difficulties and may stimulate a response akin to that suggested by Seligman's (1975) model of learned helplessness. This model of learned helplessness appears to complement theories concerning unfamiliarity. When children are confronted by strange or novel situations, past coping strategies may prove ineffective. Crying, refusing to eat, struggling against procedures, or succumbing to the ministrations of others fail to achieve the desired outcome. As the child begins to realize that familiar coping strategies are ineffectual, learned helplessness, characterized by a sense of futility and feelings of powerlessness, may ensue. Learned helplessness frequently leads to perceptions that the situation is beyond the individual's control.

Skolnick (1979), in discussing perceived control believes that controllable stress or the perception of controllable stress

may actually be beneficial for a child's development. She suggests that self-esteem and competence issues may depend on a sense of perceived control over events. The hospital experience may threaten this sense of control and conceivably may generate psychological confusion in children who are just beginning to develop a sense of mastery over their environment. Historically, medical professionals were reluctant to explain procedures to children or to parents especially when the impending procedures were painful in the belief that this would somehow make the experience easier for both child and parent. Minimal information was perceived by physicians to reduce anxiety, but research findings of the past three decades have demonstrated that knowledge of impending procedures may provide a sense of perceived control, thus permitting mobilization of previously successful adaptive responses. The actual ability to control impending events or situations as well as the perception of control are associated with coping responses. Thus, studies investigating children's coping strategies are presented in the discussion on specific personality characteristics and children's response to hospitalization. Following is a presentation of children's perceptions and fears concerning hospitalization and medical interventions.

Perceptions and fears of medical/surgical interventions.

The child's feelings about his/her body provides an important basis for how the child will eventually develop a

perception of their self-worth. Body integrity is a critical issue for children between 3 and 6 years of age and fantasies and fears concerning bodily damage frequently occupy their thinking. Frailberg (1959) suggested that the child had developed a heightened sense of body value because it is the home of a new found, more powerful self, which the child fears may be lost if the body is intruded upon. According to Frailberg, the child's wholeness as a person appears to be closely tied to the completeness and integrity of his/her body.

Willis et al. (1982) suggested that fears and fantasies can escalate when children know that surgery is pending. As well, fears concerning bodily harm may become more realistic to children at this developmental level when they are admitted to the hospital (Prugh, 1967).

Children also tend to hold the concept that illness or hospitalization is resultant from some type of misdeed or misbehaviour (Beverly, 1936; Brewster, 1982; Gellert, 1961; Peters, 1978). Peters (1978) interviewed 24 hospitalized boys and girls between 8 and 10 years of age in an effort to investigate children's concepts of illness and hospitalization. Children were required to view six pictures concerning illness and to make-up stories about each of these pictures. Content analyses were performed to identify the causal agent of the illness, the intention of the causal agent, and the act or action responsible for the illness.

Sixty percent of the children stated that the sick person

was responsible for his/her own illness. Significant sex differences were found and indicated that girls felt the illness was due to the sick person's own actions, whereas boys attributed the illness to external factors. Peters (1978) indicated that the results of this study supported the suggestion that children believe that illness is resultant from bad or disobedient behaviours. In addition, Peters (1978) reported that younger children were more likely than older children to attribute treatment as punishment for misdeeds. This finding should be accepted with caution as the age range and sample size were somewhat limited and additional research addressing these two issues would provide more substantive evidence to support the differences found in this study.

Brewster (1982) investigated 50 chronically ill and hospitalized children between 5 and 12 years of age. The results indicated that in general, children younger than 7 years of age viewed illness and treatment as punishment for misbehaviour. Again, acceptance of these results warrants caution due to the small sample size in relation to the age range. Pidgeon (1967), concerned with children's perceptions of confinement in an isolation unit, interviewed 50 children between 3 and 17 years of age. Pidgeon (1967) reported that only 33% of the children attributed their confinement in the unit as punishment for misdeeds. Thus, this study does not support the findings of the research by Brewster (1982) or by Peters (1978). The same criticism that has already been directed at the previous studies

is also relevant to the study by Pidgeon (1967).

Children's fears concerning hospitalization and illness have been investigated by a number of researchers. Several of these researchers have indicated that certain organs are invested with emotional significance and that certain conditions (e.g., inguinal herniorrhaphy) evoke emotional fears (Adamson, Hershberg, & Shane, 1976; Finch, & Crowe, 1976; Langford, 1961). Manipulation of such body organs as eyes or genitals and procedures to assess heart and brain functions may place some children in severe emotional distress. Blumberg (1977) spoke about the fear of loss of body parts associated with such operations as tonsillectomies, circumcisions and other body altering procedures. For some children, exaggerated concerns, occasioned by misunderstanding of procedures, stage of developmental maturity, and extent of bodily changes can lead to depressive reactions (Anthony, 1968; Finch et al., 1976).

Beuf (1979) emphasized the role of symbol utilization in children's response to hospitalization. The young child, in developing coping strategies, relies heavily on symbols to make sense of the world. At a stage of development when the capacity for abstraction is limited, the child employs symbols to express feelings. Although adults may not view such procedures as a spinal tap or an enema as an invasion of self, because they understand the medical necessity for such procedures, children have not yet developed the sophisticated thinking processes to make such an abstraction. At this stage of development,

youngsters may view the above procedures as actual assaults on their person which they are powerless to prevent. Symbolically, these events may represent a loss of a part of the body.

A 1985 study (Aho & Erickson) investigated the effects of age, sex, and previous hospitalization on the medical fears of children using a sample of 150 girls and 141 boys from grades 1, 4, and 7. The total sample consisted of 105 children who had been hospitalized at least once and 186 children who had never been hospitalized. All children completed the Children's Medical Fears Questionnaire (Aho, 1984). The researchers concluded that medical fears were at least partially related to developmental level, and that the fears most often expressed included items associated with the possible loss of body parts and operations. Significant differences were found for gender and grade with the mean frequency score higher for girls than for boys. Duncan post-hoc analyses suggested that mean frequency scores were significantly higher for the 4th and 7th graders than the scores of the 1st graders, but the first two were not significantly different from each other. Gender appeared to differentiate boys and girls in the 4th and 7th grades in the quantity and the intensity of expressed medical fears, with girls reporting more fears and more intense fears than boys.

Generally, girls appeared more concerned with having a large scar and of appearing different to their peers. Aho and Erickson (1985) found no significant relation between previous hospitalization and frequency or intensity of expressed fears;

however, the group without a previous hospital experience obtained higher intensity scores than the children who had been previously hospitalized. The findings of a nonsignificant relation between previous hospitalization and the frequency or intensity of fears, although similar to some other research on anxiety and the experience of recent hospitalization (Brodie, 1974), may be, in part, due to the rather broad definition of the hospitalization variable (Aho & Erickson, 1985). The authors suggested that recency of the illness, length of the illness, and the reason for the hospitalization, in addition to the child's perception of the experience, are factors that merit inclusion in future studies. The present study addresses a number of suggestions recommended by Aho and Erickson (1985) by controlling for previous hospitalization and the recency of such hospitalization, as well as the severity of the medical condition requiring hospitalization.

A rather interesting finding from the study by Aho and Erickson (1985) was that the 1st graders reported the smallest number of fears which is contrary to what other research on children's fears has generally found. A possible explanation offered by the authors suggested that this finding may be related to the younger children's need to appear brave or that they may have reacted to the group situation more than the older children. Support for this explanation came from the fact that these younger children compared their answers to those of their peers even when requested not to do so.

In conclusion, Aho and Erickson mentioned that one of the items which children most frequently mentioned was fear of parents worrying about them. The authors suggest future research might investigate the relation between children's perceptions of parental worrying and parents' actual worries and the impact this variable may have on children's responses to their illness. The present study investigates the child in context and the mother-child relationship which is anticipated to provide valuable information on mother-child interactions, the mother-child relationship, and their effect on children's posthospital behavioural adjustment. Following is a presentation of personality characteristics which have been suggested to affect children's posthospital adjustment.

Personality characteristics and coping responses.

Thompson (1985) stated that while a number of personality variables and their relation to children's in- and posthospital responses have been examined, research in this area remains relatively sparse. The studies that have been reported appear to suffer from vague definitions of personality factors by incorporating a variety of concepts subsumed under personality characteristics. Temperament characteristics, defense mechanisms, anxiety responses, field dependence/independence, locus of control, and self-concept serve as examples of some of the concepts included in studies on personality characteristics (Thompson, 1985). While these variables may indeed be considered

as personality characteristics, difficulties arise when researchers indicate that they are investigating personality characteristics but fail to specify which characteristics are under investigation. Thus, it appears that a number of personality characteristics under investigation have not been operationally defined. This has resulted in serious difficulties when attempting to evaluate exactly what has been examined and what still remains to be done. Further, these same studies utilize very small sample size, thus it is difficult to generalize the findings. The review of the literature in this area will briefly present a small number of investigations on temperament characteristics, anxiety responses, and their effect on children's hospital adjustment.

Rose (cited in Thompson, 1985) investigated the effects of hospitalization on children's coping responses and their relation to two temperament characteristics, flexibility and rhythmicity. Rose observed 32 behavioural responses of 14 children between 18 months and 7 years of age who were admitted for cardiac catheterization. Behavioural observations occurred prior to hospitalization, as well as during and posthospitalization. Rose reported that 15 of the 32 behaviours selected for observation changed significantly during the hospital experience. These changes encompassed such in-hospital behaviours as (a) increased time spent looking and exploring; (b) a decrease in speech and attempts to control the situation; and (c) an increase in crying behaviour, sadness, and emotionality. Rose hypothesized that

behavioural changes were resultant from children's attempts to cope with the experience, and thus, the behaviours would be of an extremely short duration. While the results indicated support for this hypothesis, it is suggested that the small sample size and broad age range make acceptance of these findings somewhat suspect. Rose reported that the temperament characteristics of flexibility and rhythmicity were unrelated to the style of coping responses used by the children. (This is one of few studies to investigate temperament characteristics and their relation to children's responses to hospitalization.) The present study investigated the effect of temperament characteristics as predictors of behavioural maladjustment in children consequent to day surgery. The temperament characteristics investigated in the present study are those identified by Thomas, Chess, Birch, Hertzog, and Korn (1963).

Burnstein and Meichenbaum (1979) investigated the relation between children's play, anxiety, level of defensiveness, and children's posthospital adjustment. Assessments of 20 children between 4 and 9 years of age were completed in the child's home prior to hospitalization, the evening of admission prior to minor surgery, the following day, and again in the home one week following discharge. A questionnaire designed to assess level of defensiveness (Wallach & Kogan, 1965) was used during the first home assessment. Self-reported anxiety was assessed using an unpublished battery by Gilmore (1966). Anxiety assessments were obtained at each of the three assessment periods. As well,

children were permitted to select medical toys (stress-related) or nonmedical toys (non-stress-related). Children's preferred choice of play materials was established by observations of the time spent playing with medical toys during the three assessment phases.

The researchers noted a tendency for children who selected stress-related toys prior to hospitalization to experience lower levels of anxiety after hospitalization. They also noted a negative relation between level of defensiveness and the amount of play with hospital toys at the pretest period. Level of defensiveness was found to be positively related to posthospital adjustment. Burnstein and Meichenbaum (1979) suggested that there may be two distinct groups of children who use different responses to stressful situations. Children who experience minimal anxiety after hospitalization rate low on defensiveness in the prehospital period, and are found to actively engage in play with stress-related toys during this same period. The remaining children rate high on defensiveness, refrain from playing with stress-related toys, and experience high levels of anxiety following discharge.

A follow-up study was initiated 7 months following discharge in an effort to further understand the differences between these two groups of children. However, although the findings are interesting, the problem of sample size ($n = 4$ for each of two groups) again poses difficulties in the generalization of the results. Clearly the area of personality characteristics is an

important consideration in evaluating factors affecting children's behavioural maladjustment while in the hospital and following discharge. Further research is necessary addressing the limitations of the studies conducted to date in order to substantiate past findings and to provide more information concerning the relation between various personality characteristics and children's responses to the hospital experience.

In contrast to the sparse number of studies devoted to personality characteristics, a rather extensive body of research exists concerning various preparation techniques and their effect on reducing both in- and posthospital behavioural adjustment difficulties. A discussion of this literature follows and concludes the review of the literature on children's hospitalization.

Hospitalization Experience Factors

Prior hospitalization and duration of hospitalization.

Rutter (1972) indicated that there was strong evidence linking hospitalization in early childhood and acute emotional distress which can persist for several months once the child returned home. Further, Rutter (1972) suggested that posthospital adjustment difficulties may be associated with family discord and separation anxiety. Chronic family difficulties are related to children's behavioural disorders and, when family difficulties are accounted for, no association

remains between short-term separations and later behavioural disorders in children (Rutter, 1971). Research findings reported by Douglas (1975) indicated that a single hospitalization of short duration (1 week or less) was not associated with behavioural difficulties in later life. However, Douglas reported a relation between prolonged or repeated hospitalizations in early childhood and behavioural disturbance in later life. This later finding stimulated further research investigations addressing the impact of early childhood hospitalizations, length of hospital stays, and number of admissions, on the development of behavioural difficulties later in life.

Quinton and Rutter (1976) documented a number of methodological deficiencies in the Douglas study (1975). They were concerned that data were missing on a substantial proportion of his population, and they expressed serious reservations that the findings from the Douglas study were derived from data collected a generation ago. Thus, in an attempt to replicate Douglas' findings, Quinton and Rutter (1976) had teachers rate children's school behaviour by using a questionnaire designed to identify children with emotional or behavioural difficulties at school. Children were classified into two groups (i.e., deviant and non-deviant) dependent on the scores they received on the questionnaire. Additional information on children's behavioural functioning was obtained from detailed interviews with mothers. These interviews also extracted information on family relations,

interaction patterns, and medical and psychiatric histories of both children and parents. The finding that a single hospital admission lasting a week or less was not associated with an increased risk of later emotional or behavioural disturbance was confirmed. Quinton & Rutter, (1976), however, confirmed that repeated hospitalizations appeared to be associated with disturbances in later childhood.

Lavigne and Burns (1981) reviewed the literature on children's hospitalization and concluded that there were strong indications supporting a relation between the number of hospitalizations before the age of 5 years and poor long-term adjustment. More recently, Rae, Worchel, Upchurch, Sanner, and Daniel (1989) found no significant differences between number of previous hospitalizations and the psychosocial adjustment of hospitalized children. Children were selected if they met the following criteria: (a) They had no evidence of mental impairment or communication difficulties, (b) they were between 5 and 10 years of age, (c) the planned hospitalization was at least 3 days, (d) they had no more than four prior admissions, and (e) they had never had contact with a mental health professional. Thus, the selection criteria included children who had never been hospitalized as well as children who had experienced as many as four prior admissions. A large portion of the research on factors hypothesized to affect posthospital behavioural adjustment have usually excluded children who had prior hospitalizations or who had been hospitalized within the past

year.

Bowlby (1969) and Robertson (1973) suggested that admissions as brief as 3 days could result in severe anxiety reactions during the in- and posthospital periods. Thus, there appears to be some evidence indicating that repeated hospitalization has an effect on childrens' posthospital adjustment. However, the evidence supporting a relation between short-term hospitalization and the development of posthospital adjustment difficulties is inconclusive. It is of some interest that studies conducted before the mid seventies and those conducted after this time period report conflicting results concerning the impact of previous hospitalization on children's posthospital behaviour. It is suggested that changes in hospital procedures and policies in the past two decades may explain the contradictory results. A final area of research that has yet to be discussed concerns the effectiveness of various preparation techniques in reducing children's behavioural maladjustment difficulties consequent to hospitalization.

Preparation programs.

It has been widely accepted that hospitalization is a significant psychological event in childhood (Frank, 1978) which can impact on a children's behavioural adjustment while in hospital and following hospitalization. This finding has facilitated the development and implementation of new policies encouraging extended visiting, rooming-in facilities, increased

parental participation in the care of their hospitalized child, and where appropriate, changes in medical procedures and techniques. Concerns about the effects of separation anxiety, the age of the child, and length of hospitalization were addressed by permitting longer visiting hours, and many hospitals encouraged parents to sleep over, thus providing the presence of the primary caregiver. The idea that psychological preparation prior to hospitalization may be beneficial for children has been generally accepted by many health professionals (Meng, 1930). What remains controversial is the type or types of preparation that are the most effective in alleviating behavioural adjustment difficulties resultant from hospitalization.

A number of preparation programs were implemented to familiarize children with the hospital environment before the admission occurred, and other programs were designed to be initiated when the child arrived at the hospital but before intervention occurred. Some of these former programs utilize pre-admission psychiatric interviews, books explaining various procedures, films, puppet shows, and pre-admission parties designed to familiarize the child and parent with hospital equipment and procedures. The latter programs, for the most part, have an instruction component in which parents and children are taught various techniques designed to reduce stress or anxiety reactions in hospitalized children and their parents. Broad acceptance of these programs is hindered by a lack of agreement as to which interventions if any, promote the

healthiest adjustment to hospitalization.

Robertson (1973) suggested that children under 4 years of age derive little benefit from pre-admission preparation. They are still too immature in thinking and abstraction to grasp the concepts and, as such, come away from such programs with little appreciation of the relation between such programs and themselves. However, Ferguson (1979) observed that 3 to 4 year old children who viewed a peer-modelling film, manifested a decrease in posthospitalization behavioural problems. Ferguson (1979) investigated two methods of preparing 3 to 7 year old children for minor elective surgery (e.g. tonsillectomy, or tonsillectomy and adenoidectomy). One method involved a home visit by a nurse, and the second method used a filmed modelling sequence which was viewed on admission. Data were collected on 82 children who were randomly assigned to one of four treatment conditions: (a) children who received the regular admission procedure and who also viewed a nonmedical-related film, (b) children who experienced the regular admission procedure and also viewed a hospital-related peer-modelling film, (c) children who were visited in their home by a nurse prior to admission and viewed a nonmedical-related film, and (d) children who received a home visit from a nurse prior to admission and viewed a hospital-related peer-modelling film. All children received admission information from the same nurse.

A number of measures were used to evaluate children's adjustment to hospitalization. These measures assessed

children's anxiety and fears concerning hospitalization, and consisted of self-report and physiological measures. Children's posthospital behavioural adjustment was measured by the Posthospital Behavior Questionnaire (PHBQ; Vernon et al., 1966) which was completed by mothers 7 to 10 days after discharge. The Mood Adjective Check List (Radloff & Helmreich, 1968) was completed by mothers 7 to 10 days after the child's surgery. Results indicated that the home visit appeared to be associated with a decrease in maternal anxiety both during and after discharge. The home visit was also associated with a decrease in posthospital maladaptive responses especially in children in the 6 to 7 year age range. Whereas 3 and 4 year old children reported more hospital-specific anxiety than did 6 and 7 year old children, the former group also evidenced a decrease in posthospital maladaptive behaviours. These behaviours in younger children appeared to be reduced by the peer-modelling film. Thus, this latter result is in direct contrast to Robertson (1973) who felt that children under four were too young to benefit from preparation.

In another study Vernon (1973) investigated the use of modelling to modify children's response to a potentially threatening situation. Thirty-eight children between 4 and 9 years of age were admitted to the hospital for a variety of minor elective surgeries (e.g. tonsillectomies, herniorrhaphies, miscellaneous surgery). Assignment of subjects was accomplished by random assignment of all children scheduled for surgery on the

same day. Children assigned to the experimental group viewed a film of 4 children reacting calmly to anaesthesia induction. The children saw the film alone or with 2 or 3 other children 30 to 60 minutes prior to surgery. Subjects who viewed the modelling film appeared to be less upset during the wait outside the operating room and they were also less upset once they went into the room. Results of posthospital responses indicated no significant differences between the two groups during the first week after discharge. However, at the fourth week following discharge Vernon (1973) reported a significant difference on PHBQ scores between children who viewed the peer-modelling film and children who did not see the film.

Whereas the above studies have examined the effects of preparation, specifically film modelling, other studies investigated the effectiveness of puppet play in reducing children's behavioural upset (Cassell, 1965; Lende, 1971). Cassell (1965) investigated the responses of 40 children between 3 and 11 years of age admitted for cardiac catheterization. Equal numbers of children were randomly assigned to the control and experimental groups. Children in the experimental group watched a therapist demonstrate the catheterization procedure by using miniature models, puppets, and toy medical instruments. Children's questions were answered. These children also engaged in a second play session the morning of their discharge. Children in the control group received no prior instructions. Children's pre- and posthospital adjustment were assessed by

using a modified version of the PHBQ (Vernon et al., 1966). Parents completed this questionnaire prior to their child's prehospitalization period and again at 6 days and 30 days posthospitalization. Cassell (1965) reported no significant differences between the two groups on the PHBQ. However, she did report that the experimental group appeared more willing than the control group to return to the hospital for further treatment. Cassell did not propose any explanation of why the PHBQ failed to identify group differences. It is suggested that the sample size may not have been sufficiently large enough to detect significant differences.

An interesting study by Lende (1971) found that although the type of preparation was unrelated to posthospital behavioural adjustment difficulties, there was a significant relation between children's knowledge of surgery and posthospital behavioural upset. Lende (1971) examined the effect of four types of preparation on the posthospital responses of 72 children between 4 and 6 years of age. The four types of preparation were; (a) a puppet play group, (b) a book group, (c) a discussion group, and (d) no preparation, but children in this group spend the same amount of time as children in the other group talking with the researcher. Behavioural upset was found in the majority of subjects from 10 days to 2 weeks after discharge for tonsillectomies and adenoidectomies. Thus, type of preparation was not found to be a significant factor in children's posthospital reactions. Lende (1971) attributed the lack of

significant group differences to the fact that the children received appropriate preparation from their parents.

Many hospitals used a combination of modelling, play, and film viewing in their preorientation programs, and a small number of hospitals included an additional component designed to assist both parent and child during and after hospitalization. This additional component involved teaching the parent to act as therapist and assist their child in relaxing and in developing mental imagery. This coping technique is geared to minimize anxiety in both the parent and child. Peterson and Shigetomi (1981) compared the effectiveness of this coping technique with filmed modelling, and with filmed modelling and minimal preparation, in reducing children's adverse reactions to minor surgery. Results from the sample of 66 children between 2.5 and 10.5 years of age indicated that the children who had received a combination of coping techniques and modelling demonstrated better adjustment to the hospital experience than children who had received coping or modelling alone. The parents of the children who had received the coping technique reported less anxiety than the parents of children in the other conditions. Further, a one year follow-up of the parents who were still available revealed that 30% of these parents had used the coping techniques in other situations (Peterson & Shigetomi, 1982). (Unfortunately, although this study assessed parents' usage of the coping techniques one year later, this study did not assess children's posthospital adjustment.)

The results of this study are interesting in light of the few studies conducted to date which demonstrate an information seeking disposition in children. Peterson and Toler (1986) in reporting the paucity of studies in this area, used the scores from the Coping Strategies Interview (Siegel, 1981) to assign an information seeking score to children scheduled for elective surgery. The Coping Strategies Interview is considered to be a primary measure of information seeking as a coping style. Six types of information were collected from 26 girls and 33 boys between 5 to 11 years of age. This information included demographic data, observational validation measures, stress response measures, physiological and self-report measures, and the Coping Strategies Interview. Peterson & Toler (1986) found that the degree of information seeking was strongly related to the actual amount of information the child obtained prior to admission. The degree of information seeking was also related to parental reports of their child's usual interest in and receptivity to information and to past successes with aversive medical procedures. It was found that children with high information seeking scores were rated as less upset during the postsurgical phase than children who had lower information seeking scores. Thus, this study appears to confirm the existence of a high information seeking disposition in some children. Perhaps tentative conclusions can be drawn suggesting that information may provide a child with the perception of being able to control, if not the environment, at least one's responses

to environmental events.

Some facilities have not only implemented various prehospitalization programs, but have also introduced day surgery and day treatment facilities. These units serve to reduce actual hospital admissions by providing care on a day basis. Surgical cases of a minor nature are handled in such units and the child remains with mother except during the actual surgery. Unfortunately, there appears to be little research into the effectiveness of these day units as concerns post-hospitalization adjustment difficulties. A possible explanation for the apparent lack of research on the effects of day surgery may be due to the assumption that posthospital adjustment difficulties were addressed by providing the presence of the primary caregiver and that preorientation programs familiarized the child with the hospital environment, thus helping to reduce adjustment difficulties during the hospital stay.

Abrams (1982) is one of the few researchers who has investigated the effect of preparation on children scheduled for day surgery. Sixty children between 4 and 11 years of age were randomly assigned to one of three treatment conditions. The day before surgery two groups viewed the same 6 minute slide presentation of hospital scenes, but each group heard a different narration. One tape discussed procedures and activities each child would encounter during day surgery. The second tape emphasized the sensations the children would experience. In the third condition, the children were not shown any preparation

programs. Observations were conducted on children's behaviours before and during anaesthesia induction and following surgery, in order to ascertain the prevalence of resistance behaviours.

Resistance behaviours are overt behaviours which are indicative of anxiety, stress, or poor coping strategies. The Posthospital Behavior Questionnaire (Vernon et al., 1966) was completed over the telephone by parents, 2 days after the surgical intervention. Resistance behaviours were found to occur with insufficient frequency to permit statistical analysis. Abrams (1982) suggested that the data imply that children who viewed either of the slide presentations appeared less upset than children who received no preparation. Parental responses on the PHBQ indicated that nearly all children had returned to their prehospitalization adjustment behaviours by the second day after discharge. It is suggested that this result could be due to the short duration between hospitalization and measurement of posthospitalization responses because most studies investigating the effects of long- or short-term hospitalization have found posthospital behavioural adjustment difficulties three days following discharge. More data needs to be collected before definitive conclusions can be made.

In the present study, it is hypothesized that age will not be related to posthospital adjustment difficulties in children consequent to day surgery. Although age has been shown to affect children's posthospital adjustment (Aho & Erickson, 1985; Castell, 1970; Erikson, 1963; Kerr, 1979; Peterson et al., 1985),

these studies have shown that the effect of age is largely related to separation anxiety. Since the present study examined day hospitalization, separation anxiety was not expected to be an influential factor, thus it was hypothesized that age was not expected to be a factor in the prediction of behavioural difficulties consequent to day hospitalization. Gender differences regarding the development of posthospitalization difficulties have not been widely supported in the hospitalization literature. Vernon et al. (1966) found that gender did not appear to differentiate children who developed posthospital behavioural difficulties from those who experienced no such problems. Aho and Erickson (1985), however, found that girls expressed more fears and concerns about body disfigurement than did boys. This is a finding that has not as yet, been replicated. Thus, in the present study, it was hypothesized that gender would not be related to children's posthospital adjustment difficulties. The literature review continues with the focus shifting from a general review of the factors affecting children's responses to hospitalization to a more detailed review of specific factors hypothesized to predict children's posthospital adjustment. The specific factors are children's temperament characteristics and characteristic of the mother-child relationship.

CHAPTER II

Introduction to Temperament and the Child-In-Context

Research studies on the effects of both long- and short-term hospitalization of children have examined factors external to the child, such as the impact of various procedures and policies which frequently restricted parental involvement in the care of the child. These external factors were viewed as contributing to behavioural difficulties for some children, during hospitalization and after discharge. Few studies in this area have focused on internal child characteristics as contributors to adjustment difficulties consequent to day surgery. Even fewer studies have investigated the child's context, specifically the mother-child relationship, as a factor in the development of posthospital adjustment difficulties consequent to day surgery. The present study investigates the child-in-context by examining internal child variables, namely child temperament characteristics, and external environmental characteristics, namely the mother-child relationship. These internal and external variables are used to predict posthospital behavioural difficulties in children consequent to day surgery (i.e., tonsillectomies). The internal child characteristics investigated in the present study are the temperament characteristics proposed by Thomas, Chess, and Birch (1968). The mother-child variables are those identified by Abidin (1982) in

his investigation of the impact of stress within the parent-child relationship.

The literature review begins with a discussion of temperament by presenting a description of the first major longitudinal study on temperament, widely known as the New York Longitudinal Study (NYLS). Due to the findings of this study, numerous research investigations in temperament characteristics have followed. Thus, the NYLS is presented with rather extensive attention given to the initial subject pool, the method of item scoring, and the derivation of the temperament categories and constellations. This detailed description is provided as many researchers have used the temperament criteria from the NYLS in investigations of temperament characteristics in a wide variety of situations. Since the publication of the findings from the NYLS, controversy has arisen as to the actual number of temperament characteristics found by other researchers using the NYLS criteria; criticisms have been voiced as to the validity of the behavioural criteria used to classify particular behaviours as representative of a particular temperament; and questions have been posed concerning whether temperament characteristics are genetic or influenced by external variables. The majority, if not all of these investigations, have utilized the original NYLS nine dimensions and have proceeded from that point to either modify, expand, or delete various behaviours and temperament characteristics in attempts to define new categories.

The review of temperament proceeds with a presentation of

studies which either support the NYLS findings or offer alternative temperament categories. A number of studies which have used temperament characteristics to predict outcome in various situations are presented to support the use of temperament characteristics in the present study to predict posthospital adjustment difficulties after day surgery. The review continues with a presentation of the importance of considering the child-in-context and reviews the research of Abidin and others on variables which impact on the quality of the mother-child relationship and the effect of this relationship on children's behaviour. Hypotheses are presented concerning the child-in-context and specific characteristics of the mother-child relationship which may impact on children's posthospitalization behavioural adjustment consequent to day surgery.

Historical Development of Temperament Characteristics

The New York Longitudinal Study.

Thomas, Chess, Birch, Hertzog, and Korn (1963) initiated one of the first major longitudinal studies on temperament. The NYLS began in 1956 with the primary goal being the identification of characteristics of individuality in behaviour during the first few months of a child's life. The researchers were concerned also with examining the extent to which such characteristics persist and impact on later psychological development. The NYLS included 138 children from 85 families. Children were included from the first few months of life with the intent of following

these children to young adulthood. The collection of data was cumulative and extended over a six year period in order to obtain the requisite number of children. Only five children were lost from the initial sample over a 12 year period, thus data were collected on a total of 133 subjects (96%). Forty percent of the mothers and 60% of the fathers had obtained college and postgraduate degrees and only 9% of mothers and 8% of fathers had no college education. The families were representative of the middle and upper middle socioeconomic groups. Religious affiliation was predominantly Jewish (78%), 15% were Protestant, and 7% were Catholic.

The primary source of information during the infant stage was derived from parental reports. As the children grew older, information was obtained from teachers and through direct observations in the school setting. Psychometric testing at three, six, and nine years of age was also completed. For the initial NYLS sample, a direct interview format was utilized with parents and children separately, when children were between 16 and 17 years of age. Academic transcripts were also included to provide additional information on the consistency of children's performance. The interview and observational data were obtained through a factual descriptive reporting technique. Observations of actual behaviours, as well as information from parent-teacher interviews, required a description of the how or the content of a particular behaviour; that is, what the child actually did, as opposed to the why of such behaviour. Although inferences about

behaviours might provide interesting clues, this could only be presumptive, therefore it was mandatory that a descriptive behavioural analyses was followed. In order to analyze the massive amounts of data gathered in the initial NYLS, Thomas et al. (1963) utilized an inductive content analysis of the behaviour protocols.

The interview protocols for the first 22 children studied were subjected to a content analysis. Through this content analysis, nine categories of functioning were scored consistently for each of the 22 protocols. The spread of the distribution of scores in each of the nine categories was sufficient to enable differentiation among the subjects within each category. Through this content analysis nine categories assessing individuality in behavioural styles were adopted. A brief description of these categories follows:

- 1) Activity Level - describes mobility during such routines as bathing, eating, playing, etc., as well as the sleep-wake cycle, crawling, walking, etc.
- 2) Rhythmicity (regularity) - refers to the predictability or lack of predictability in time of any function.
- 3) Approach-Withdrawal - refers to the characteristic response to any new stimulus.
- 4) Adaptability - describes the ease with which responses are modified in the desired direction.
- 5) Threshold of Responsiveness - this is the level of stimulation

intensity required to evoke a discernable response.

- 6) Intensity of Reaction - refers to the energy level of a response.
- 7) Quality of Mood - refers to the amount of crying, pleasant behaviour, etc.
- 8) Distractibility - refers to the effectiveness of extraneous environmental stimuli in interfering with ongoing behaviour.
- 9) Attention Span and Persistence - attention span refers to the length of time engaged in an activity and persistence refers to the ability to continue the same activity while faced with obstacles.

Once the above categories were identified, a three-point scoring method was adopted which used the polar extremes and the middle level. Thomas et al. (1963) initially used a five-point scale but the reliabilities for the middle categories were low. Every behavioural protocol was scored on the three-point scale for each of the nine categories independently and a specific item sum for each category was obtained. Each protocol, therefore, was scored nine times. This scoring method was used on the remaining 80 subjects (only subjects who had attained two years of age were used in the above analysis at this point in time) and all children were classified according to their characteristic mode of functioning.

Thomas et al. (1963), concerned about the reliability of the scoring techniques, compared the results of two independent judges who scored each of the 22 protocols. They had two

additional judges score the same protocols at a later date, and found the interscorer reliability was at the 90% level for both comparisons. Intrascorer reliability was examined by submitting the 22 protocols to the original scorers three months later; the intrascorer reliability was also at the 90% level. The validity of parental reports was also assessed. Because of the nature of adaptability and rhythmicity, independent observations were not possible, as these two categories represented events occurring over prolonged periods of time. The remaining seven categories, however, were assessed through direct observations by two observers.

Each direct observation lasted approximately two to three hours and the observations were each independent of the other. Comparisons of the direct observations with the parental reports were in agreement at the .01 level of confidence. A similar level of confidence (.05) was established for the independent direct observations of the two observers. Thomas et al. (1963) concluded that the assessments of the reliability and validity of the data obtained through parental interviews indicated that this interview data accurately reflected the children's behaviour. Further, the high level of intra- and interscorer reliability suggested that the scoring method was appropriate and accurate. Eventually all 133 child protocols were scored, as well as the parental interviews. During this period, 42 of the 133 children were identified as having behavioural disturbances (Thomas, Chess, & Birch, 1968) and were classified as members of a

clinical sample.

This classification was made on the basis of parental reports, clinical diagnostic procedures, and psychiatric confirmation of the presence of significant behavioural disturbance. It was found that children presenting with such behavioural disturbances appeared to have similar scores on a number of temperament characteristics. Children not presenting with significant behavioural symptoms appeared to share similar patterns of scores with each other on various temperament characteristics. These patterns were the first statistical evidence that children may display similar temperament characteristics and that children experiencing clinically significant behavioural disturbances manifested different patterns of temperament characteristics from children who did not display clinical symptomatology. Further, there was some evidence to indicate that children diagnosed with clinical symptoms could be identified by the scores they obtained on the temperament characteristics. Thomas et al. (1968) conducted more extensive analyses in an effort to identify consistent and specific patterns of behaviour. Comparisons of protocols for all children for the first five years of life were made using a weighted score model. Using the three-point scale, one of the extreme scale positions was represented by 0, the other extreme position by 2, and the middle position by 1. The number of items scored in each category was multiplied by the weighted value (0, 1, or 2) and the products were summed and divided by the total

number of scored items in each category.

This method illustrated that the distribution of the scores had sufficient spread to permit differentiation of temperament categories among subjects for eight of the nine categories represented. (Distractibility had a markedly different distribution.) Varimax rotation factor analysis of the nine categories of temperament, for each of the first five years of life, yielded three factors which appeared behaviourally meaningful in relation to the items which clustered under each of the factors. The results of these factor analyses established three behaviour groupings classified as temperament constellations and enabled the classification of the clinical and nonclinical subjects into one of these three constellations. It must be noted, however, that the Difficult Child constellation, which is described below, does not imply a clinical diagnosis of significant behavioural disturbance. Rather, children who qualify for membership in this category appear to be more at risk for serious behavioural disturbance. A brief description of the temperament constellations follows:

The "Easy Child"

- These children display high adaptability to change and positive approach responses to new events and situations. Mood intensity ranges from mild to moderate and is predominately positive. The development of regular sleep-wake cycles and feeding routines are easily accomplished. These children accept

the introduction of new foods, readily respond positively to strangers, and generally accept new rules with little difficulty. Parents and teachers usually describe these children as a joy. (comprised 40% of the sample).

The "Difficult Child"

- These children are identified by non or slow adaptability to change or novel situations. Mood expression is usually intense and frequently negative. Marked irregularity in sleep and feeding schedules, prolonged adjustment periods to new routines, as well as low frustration tolerance, characterize these children as having difficulty in adapting to and handling most types of change. Violent tantrums are not uncommon when these children experience frustration. Typically, these children are described by mothers, teachers, and others as difficult children (comprised 10% of the sample).

The "Slow to Warm Up Child"

- These children display a combination of negative responses of mild intensity and slow adaptability to novel situations. Reactions are in the direction of mild intensity and can be positive or negative. They display less irregularity of biological functions than children in the difficult group. Given the time needed to adapt to new situations, these children are usually able to react positively to such events. (comprised 15% of the sample).

These three constellations of functional significance comprised a total of 65% of the sample. Thomas et al. (1968) explained that the remaining children could not be identified by any one particular constellation, but exhibited characteristics of the three constellations. It must be emphasized that the three constellations represent variations within normal limits. Psychopathology is not indicated by high or low extremes; rather, such extremes simply indicate the range of behavioural styles displayed by normal children. A second longitudinal study was initiated in 1961 by the NYLS group to provide a contrasting cultural and socioeconomic sample.

This study was comprised of 95 Puerto Rican children and their parents. Eighty-six percent of this sample lived in low-income public housing projects. The Puerto Rican sample was followed longitudinally from early infancy and the same method of data collection and analyses used in the NYLS was adopted with this sample. Analyses of the data from this sample provided a cross-cultural comparison with the subjects from the initial NYLS. This comparison revealed that identification of temperament characteristics and subsequent membership in the three temperament constellations were similar to the results from the NYLS.

An additional longitudinal study using premature infants was initiated to provide data concerning the relation of prenatal and perinatal factors to temperament (Hertzog, 1974). This study used 68 premature infants in which 55% of boys (16 out of 29) and

36% of girls (14 out of 39) were identified as exhibiting neurological impairment at five years of age. This study utilized both the interview form of the NYLS and the item-scoring method for the nine temperament categories. Hertzog (1974) found that the distribution curves of the weighted scores for the premature subjects were analogous to those found in the NYLS sample. Since premature infants can be vulnerable to brain trauma during the birth process, the absence of differences in the distribution curve with this sample was quite remarkable (Thomas & Chess, 1977). Longitudinal studies of children presenting with mild mental retardation (Chess & Hassibi, 1970) and congenital rubella (Chess, Korn, & Fernandez, 1971) were conducted to provide additional comparative samples to the original NYLS sample. The 52 children in the mental retardation sample were followed from 5 years of age to 11 years of age and the congenital rubella sample consisting of 243 children were followed from 2 years to 4 years of age. These special groups provided an analysis of temperament characteristics in children with physical, neurological and intellectual handicaps. Data were obtained on the NYLS temperament characteristics and scored according to the NYLS protocols. Although the signs of the Difficult Child appeared more frequently in the mental retardation and rubella groups, the pattern of the results was not significantly different from the NYLS sample. Identification of all nine categories was possible for every child at various age levels and in all populations represented by the NYLS.

Graham, Rutter, and George (1973) studied 60 children between 3 and 7 years of age and concluded that their study supported the validity of the theoretical framework established by the investigators of the NYLS. Graham et al. (1973) added an additional characteristic termed fastidiousness. Thus, the above studies appear to confirm the findings of the NYLS in so far as the identification of temperament characteristics and the specific clustering of items which form the three temperament constellations. Thomas et al. (1968) suggested that these temperament constellations or patterns of behavioural responses could influence the reactions of others toward the child. Previously, mothers had been viewed as largely responsible for emotional problems experienced by their children because the infant was viewed not as a participant, but solely as a recipient of what mother had to give. While environmental influences and parenting practices may account for certain variations, such influences are unable to explain all variations of child behaviour. Thomas et al. (1963), in recognizing the impact of parents and other environmental variables, emphasized that the child may be responsible for some of the external cues he/she receives. In analyses of the data at various points in time, Thomas et al. (1963; 1968; 1977) found ample evidence to support their view that the child with a preponderance of certain temperament characteristics can be a powerful force influencing the quality of the mother's interaction with her child. Mothers, having been primed for numerous years that their parenting

practices and style of interaction with their child could facilitate the development of behavioural disorders, felt guilty and responsible for perceived incompetencies in dealing with problem children.

The NYLS, from as early as 1968, demonstrated that the difficult child constellation displayed by some children fostered and encouraged an increased sense of incompetence in mothers who had doubts concerning their role as mother and spouse. Unfortunately, it was not until more recently that serious consideration was paid to the influence of the quality of the parent-child relationship, and specifically mother's sense of competence in her role as spouse and mother. Abidin's investigations (1982) indicated that this sense of competency or lack of competency could have a significant impact on the quality of the mother-child relationship. This impact could be positive or negative and could influence the development of behavioural difficulties in certain children. The present study examines characteristics of the mother-child relationship and child temperament characteristics in the prediction of behavioural difficulties in children consequent to day surgery. More definitive evidence concerning a direct and consistent relation between parenting, environmental influences, and specific personality dynamics in any given child is needed. The contribution, therefore, of the child and the child's interaction with the environment may indicate that development may be substantially affected by the nature of the child as an organism.

As stated earlier, temperament characteristics interact with the environment and may be responsible, to a large extent, for the external responses they elicit. This interactionist approach warrants a consideration of temperament and its relation to the individual's motives, abilities, and external events. It is this interaction which produces patterns of functioning and various behavioural consequences, as well as the adoption of new or recurrent characteristics. Thomas et al. (1968) cautioned against viewing temperament as the complete picture responsible for one's style of functioning. They emphasized that in order to offer a viable view of the human species it is necessary to include temperament in any personality theory.

Genetic component.

The results of the NYLS stimulated research interest in the number of temperament categories, the type of behaviours that could be identified, as well as interest in the origins of temperament. In attempting to address the issue of whether temperament has a genetic component, Thomas and Chess used the classic twin study method, as have several other investigators (Buss & Plomin, 1975; Plomin & Rowe, 1977; Rutter, Korn, & Birch, 1963; Torgersen, cited in Thomas & Chess, 1977).

In a twin study, Torgersen (cited in Thomas & Chess, 1977) identified 34 pairs of twins as monozygotic, 16 pairs as dizygotic, and 3 pairs as of uncertain zygosity. All medical records, demographic information, and behavioural histories were

compiled for each pair of twins. As well, Torgersen used the nine temperament categories identified by the NYLS for obtaining temperament protocols. The rationale for the twin study method was that, if temperament had a genetic component, monozygotic twins should display less differences for a particular trait than dizygotic twins. The results showed that at 2 months of age, statistically significant differences between the two groups existed for regularity, threshold, and intensity. Two months was too young to enable scoring on persistence and the other five categories were not significant. Further analyses at 9 months of age showed significant differences for all nine categories. Moreover, monozygotic pairs exhibited a marked decrease in intra-pair differences and dizygotic twins showed a tendency toward increased differences. Torgersen concluded that temperament had a strong genetic component.

The NYLS used a smaller sample of 34 pairs of which 3 twin pairs were monozygotic, 5 were dizygotic and 26 pairs were siblings (Rutter, Korn, & Birch, 1963). Monozygotic pairs should display less differences than sibling pairs. The results indicated no preponderant genetic basis for any of the three groups, although activity level, approach- withdrawal and adaptability showed the strongest evidence for a genetic basis. There was less evidence for threshold, intensity and mood. Rhythmicity appeared unrelated to a genetic component. The authors indicated, however, that the small sample size might have affected the findings.

In a twin study, Plomin and Rowe (1977) developed a scale to measure temperament characteristics by merging some of the temperament dimensions examined in a study by Buss and Plomin (1975) and some of the temperament dimensions of the NYLS. They identified six categories: sociability, emotionality, activity, attention span/persistence, soothability, and reaction to food. This twin study reported support for a genetic component for all traits except reaction to food.

Thomas and Chess (1977) indicated that the results from the study of the Puerto Rican sample, compared to children in the initial NYLS sample, showed marked differences for rhythmicity and intensity, and marginal significance for activity level, mood and threshold; however, there were no significant differences for the remaining four temperament categories. Thomas and Chess (1977) remarked that these results were interesting in light of the dissimilarities in parental attitudes and child rearing practices between the two samples. They further suggested that if parental attitudes and behaviours were solely responsible for the shaping of temperament characteristics in children, differences would have been more pronounced. Thus, this study would appear to substantiate a relatively strong genetic component for four temperament categories, and at least marginal support for three others.

Buss and Plomin (1975) developed a scale to measure temperament characteristics based on five criteria they perceived necessary for the identification of temperament traits: genetic

component, stability during development, presence in adults, adaptiveness, and the presence of characteristics in animal forebears. Traits meeting this selection criteria would be considered temperament traits. The four traits chosen by Buss and Plomin (1975) have previously been studied as personality traits and, as such, are not entirely new concepts. Buss and Plomin (1975), however, suggested that the novelty in utilizing these constructs was the establishment of selection criteria.

According to the authors, four traits satisfied the necessary criteria and are as follows: emotionality, activity, sociability, and impulsiveness. Through factor analysis, 20 items were subsequently selected with 5 items assigned to each of the four temperaments categories. Buss and Plomin (1975) contended that these four temperament categories and the behaviours manifested within the four categories bore little similarity to the nine categories identified by Thomas et al. (1968). In addition, they suggested (1975) that their criteria for inclusion of a trait as a temperament, of which inheritability was the most important, lent more credibility to their temperament categories as the NYLS group did not provide a rationale for the behaviours that they included, and which subsequently derived the temperament categories.

It could be argued that multiple observations of behaviours which appear over time, cross-culturally, and across parenting practices would provide support for the validity of the behaviours investigated by the NYLS group. Numerous studies have

used the NYLS questionnaire and the BSQ. A large number of studies investigating temperament characteristics have developed other scales to assess these characteristics. The majority of investigators, however, have utilized the NYLS or BSQ questionnaires as the basis for their measure. Thus, it appears that many researchers, while not confirming the nine dimensions of temperament, still find the overall measure valid for assessing temperament characteristics.

Presently, few researchers appear concerned with the genetic origins of temperament, perhaps due, in part, to the inconsistent results that have been reported. As yet, no definitive conclusions can be drawn which support or refute a genetic origin for temperament characteristics.

Measurement issues.

Numerous studies have used the NYLS questionnaire and the BSQ. The BSQ, which is used in the present study, was developed by McDevit and Carey (1978) and was based on the NYLS questionnaire; thus these authors support the nine dimensions of temperament suggested by Thomas et al. (1963). Studies investigating temperament characteristics have developed other scales to assess temperament characteristics and the majority of these have utilized the NYLS or BSQ questionnaires as the basis for their measure. Thus, it appears that many researchers, while not confirming the nine dimensions of temperament, still find the overall measure valid for assessing temperament characteristics.

The present study utilized the BSQ because it is one of the few available measures for investigating temperament characteristics of children during the middle childhood period and because this measure has been used successfully to predict outcome in various situations.

It is acknowledged that statistically sound measurement instruments must be developed and utilized to permit acceptance of research findings as credible. Since measurement can be one of the most important tools of research and factor analysis is most frequently utilized to assess the reliability and validity of questionnaires, the rationale for not investigating the factorial validity of the BSQ in the present study follows.

First, a robust factor analysis requires large numbers of subjects in relation to the number of items under investigation. An acceptable ratio is 10 subjects per item. Since the present study utilized the BSQ which consists of 100 items and 57 subjects comprised the sample for the present study, factor analysis was not appropriate. Second, a number of researchers have factor analyzed the BSQ (which is based on the NYLS) and have derived variable numbers of factors ranging from three to nine. Finally, since a relatively large number of researchers have used the factors identified by the NYLS and the intention of the present study was concerned with prediction and not measurement development, factor analysis was not undertaken. This rationale does not imply that the measurement of temperament characteristics would not benefit from further analyses. In

fact, the stand is taken that measurement of these characteristics should indeed continue to be investigated.

Research in the area of temperament during the past two decades has resulted in a number of methodological improvements in measurement techniques. Further, there has been an encouraging movement away from viewing children as members of a particular temperament constellation towards viewing individual temperament characteristics and how they impact with environmental characteristics to predict outcome in a variety of situations. Since it is possible, however, to misunderstand what is meant by temperament, clarification is necessary before proceeding with the literature review on temperament.

Definitions, and functional significance.

Gordon Allport, in 1961, referred to temperament as "...the characteristic phenomena of an individual's nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all the peculiarities of fluctuation and intensity of mood; these being phenomena regarded as dependent on constitutional make-up and therefore largely hereditary in origin" (p. 34).

Thomas et al. (1968) have shown that temperament characteristics are identifiable as early as two months of age. Their definition states temperament to be ".....a phenomenological term which describes or refers to the characteristic tempo, rhythmicity, adaptability, energy

expenditure, mood and focus of attention of a child, independently of the content of any specific behavior" (p. 4). Temperament, as previously mentioned, refers to the how of behaviour or the way an individual behaves, rather than the why or the content of behaviour. Since the child responds in an interactionist capacity and is open to environmental influences, so too is temperament. Temperament is not always a significant variable in the ontogenesis and course of behaviour disorders; however, temperament should be considered along with other available information for each individual case (Buss & Plomin, 1975: 1984; Chess & Thomas, 1986; Kagan, 1989). Various temperament characteristics combined with particular environmental influences may place a child more at risk for the development of a behaviour problem. This is the view supported in the present study. It is hypothesized that children with particular temperament characteristics, when combined with particular characteristics of the mother-child relationship, may be at risk for the development of behavioural difficulties consequent to day surgery.

In attempting to explain the significance of various temperament characteristics and their role in the development of maladjustment behavioural difficulties, Thomas et al. (1968) and a number of other researchers have moved toward a consonance-dissonance model or degree of goodness-of-fit. A discussion of this model and how it relates to temperament, environment, and the development of maladaptive behavioural responses follows.

Consonance-dissonance or goodness-of-fit model.

Such a model implies that behaviour has a goodness-of-fit with environmental demands when these demands are consonant or in agreement with the individual's expectations, beliefs, and capabilities. For the young child, each day is a new challenge filled with novel situations to conquer, practical tasks to learn, as well as the discovery of effective methods to deal with the environment. The child is reinforced for some behaviours, learns to modify others, and adopt new ones. As was earlier shown, temperament should be viewed in interaction with the individual's abilities, motives and external environmental events. This interaction results in certain behavioural outcomes, which in turn interact with recurring environmental events. Kagan phrased it another way. He suggested that "the consequences of an event are dependent upon the structural readiness of the organism" (cited in Garnezy & Rutter, 1983, p.192). Chess and Thomas (1986) have suggested that new behaviours or attributes at various developmental stages may be previous learning patterns, but in a new form. This is a common assumption. They suggest that these new behaviours may, however, actually constitute the emergence of qualitatively new psychological characteristics. They state that such a concept may indicate that the developmental process is subjected to discontinuities, as well as continuities.

Such discontinuities may result in discrepancies between what the child's potentials or capabilities are at a particular

time and what the environmental demands are. These discrepancies can be equated with a poorness of fit. The environment demands more than the child is capable of at the time and, thus, distorted development and maladaptive functioning may occur. The child's limited capacities place the child in a position of dissonance with the environment. Such dissonance places the child in a stress situation and since limited capacities prevent appropriate responses, the response is unsuitable for the particular situation. On the other hand, goodness-of-fit does not imply an absence of stress. Stress is an inevitable concomitant of the developmental process and has both positive and negative connotations (Chess & Thomas, 1986). These stressors, if consonant with the child's potentials and capabilities, are constructive and will not result in maladaptive behaviours. Excessive stress, occasioned by a poorness of fit between environmental demands and the child's capabilities at a particular time, predisposes the child to develop maladaptive behaviour patterns.

Stress for children is manifested in a number of ways. They cry, whine or scream, and cling to their parents. Appetite may diminish and they may become tense and fearful. If they are ill, they may resist medical treatment and medications. An increase in regressive or compulsive behaviour may be manifested and they may engage in hostile and destructive behaviour, both toward their environment and themselves (Nagera, 1978). Humphrey (1988) indicates that coping with stress poses unique difficulties for

children. Certain acceptable or permissible responses by adults as they cope with various stressors are either not available to children, or constitute behaviours by the child that are not acceptable by adult standards. This being the case, a child may attempt to respond to stress in a manner that is acceptable to the significant adults in the child's life, but which may not be the child's most effective manner in adapting to the stressful event or situation. Thus, due to parental expectations, the child may adopt coping mechanisms which may result in maladaptive responses. These responses, if evoked often enough, and over a period of time, can become actual behavioural response patterns anytime the child feels threatened. Thomas et al. (1968; 1977) state that no particular temperament characteristic by itself results in the development of behaviour disorders.

In the initial stages of temperament research, investigators identified children displaying the difficult child constellation as the group most at risk to develop maladaptive behaviours. In recent years there has been a shift toward looking at temperament characteristics individually rather than as constellations. The rationale for this shift is that some children may possess a particular temperament characteristic, which when combined with particular environmental factors, may place these children at risk for the development of maladaptive behaviours. Maladaptive behaviour results from interactions which constitute a poor fit between a child's individual style of functioning and particular features of the environment.

Many researchers, while recognizing the importance of the goodness-of-fit model, however, continue to assess temperament characteristics alone (Lerner, 1983). It has been suggested by Lerner and Lerner (1983) that much of the research in temperament continues to remain focused on: (1) the psychometric stability of one or more temperament characteristics or (2) the evaluation of individual temperament characteristics and the long-term predictive ability of these characteristics in relation to healthy or maladaptive psychological functioning. Bates, in 1980, contended that researchers who continue to investigate temperament characteristics alone continue to promote the idea of temperament as a within-the-person concept. This continued adherence to investigations of temperament attributes without consideration of the context of the individual fails to recognize that "temperament only has meaning for the person as a consequence of the impact it has on the physical and social context" (Lerner & Lerner, 1983, p.206). The Lerner's also suggest that research studies, which investigate temperament without consideration of the individual in context, provide little information as to the meaning of temperament in various situations nor are these investigations able to adequately predict or explain the functional significance of temperament scores. Further, such investigations cannot or more importantly should not attempt to relate temperament scores to psychosocial functioning.

As stated earlier, the present study investigates the child-

in-context and defines the child-in-context or the child's environment in terms of the mother-child relationship, as this relationship is a dominant factor in young children's lives. Thus, if the child perceives the hospital environment as threatening and the child's temperament characteristics are in the direction of slow or non-adaptable, low approach, and easily frustrated, the child may be susceptible to behavioural adjustment difficulty. If, however, the mother-child relationship is also under stress due to the mother's perceived incompetencies as mother and spouse, the child is in a higher risk category for the development of behavioural maladjustment difficulties consequent to the hospital experience.

Interestingly Frank (1978), in assessing the effectiveness of a weekly therapy group session for hospitalized children, emphasized that a child's ability to adjust to the myriad of new experiences encountered in the hospital was dependent on a number of factors. He stated that, apart from the child's medical condition, healthy adaptation was resultant from the child's past successes and failures in stressful situations, the child's normal style of resolving inner conflicts, and the quality of the environmental supports from family members. Thus, Frank recognized the importance of the child-in-context as a factor in a child's ability to adapt to a stressful event.

The present study utilizes the child-in-context theory by investigating the internal child temperament characteristics and those variables which are dominant in the young child's life,

namely the mother-child relationship. These external variables form, in large part, the child's context. A number of other researchers are also promoting the child-in-context theory and a review of some of these investigations are presented along with studies that have used temperament characteristics to successfully predict outcome in a variety of situations or contexts. Before these studies are reviewed, however, another area concerning temperament that has been the subject of considerable debate revolves around the issues of the consistency or the stability of temperament characteristics.

In the temperament literature both consistency and stability are used interchangeably to refer to the persistence or endurance of temperament characteristics over time. Contradictory arguments have emerged over which temperament characteristics remain stable and which ones are subject to change. This is not surprising in light of the controversies regarding genetic origins, number of temperament characteristics, as well as whether the measures used to assess temperament characteristics meet acceptable reliability and validity criteria.

The purpose of the following critique is simply to provide the reader with a broader information base from which to draw reasonable conclusions regarding the merit of utilizing a temperament framework when attempting to explain behavioural difficulties in a number of diverse situations including posthospitalization. The present author, however, contends that the issue of stability of temperament characteristics provides

little information if one utilizes a child-in-context orientation. This orientation necessitates investigating the internal child and external environmental characteristics that impinge on the child's present situation. Thus, if a particular characteristic is stable or not is of importance only if that characteristic is present and exerts some influence on the course of a child's development at a particular point in time. This view is, in fact, similar to that of Chess and Thomas (1986).

Stability/consistency of temperament characteristics.

In discussing the consistency of temperament characteristics, Chess and Thomas (1986) suggest that it is contrary to a commitment to an interactionist model to promote the notion that temperament characteristics remain stable. An interactionist model views individual development in terms of a constantly changing and evolving process of organism-environment interactions. They further suggest that if intellectual abilities, adaptive patterns, value systems, and coping mechanism change over time, temperament should follow a similar course of change. Strelau (cited in Kohnstamm, 1986) discussed the concept of stability as almost non existent in humans, simply because the human organism is in constant change and this change is resultant from environmental factors which are subject to ongoing changes due to the human factor. The interactionist viewpoint accepts and expects change in development. The difficulty, for those who expect stability to be a necessary component for assessing the

validity of a temperament characteristic, arises when stability is referred to in a literal sense; that is, no change at all (Strelau, 1986). Strelau suggests that the notion of stability or consistency can have several meanings: 1) undetectable or unrecognizable changes from one point of time to another with little consensus as to the time intervals one should use to measure stability; 2) stability in comparison to other behaviours; temperament characteristics may appear more stable when compared to other behaviours, but that does not mean temperament does not also change; and 3) stability may be viewed in terms of only slight differences in temperament characteristics when measured within the same individuals at different periods of time. This latter meaning is similar to the Chess and Thomas (1986) viewpoint which suggests that temperament characteristics can be functionally significant at one point in time and not at another.

As a result of research investigations from the NYLS and subsequent studies using the NYLS subjects, Chess and Thomas (1986) identified five patterns of consistency concerning temperament characteristics: 1) clear-cut consistency; 2) consistency in some temperament characteristics at one period of time and consistency in other characteristics at other times; 3) distortion in the expression of temperament by other factors, such as psychodynamic patterns; 4) consistency in temperament but changes in the quality of temperament-environment interactions; and 5) a change in a prominent temperament characteristic. Such

patterns or combination of patterns may be manifested by any individual at any point in time. Further, the permutations and combinations of such patterns may lead to the belief that a particular temperament characteristic no longer exists. A particular characteristic may be important during a specific age related developmental phase, but not at another. Various characteristics can be expressed in a qualitatively different manner than previously expressed. As was mentioned earlier, the interactionist nature of temperament characteristics indicate, that while they may influence environmental responses, environmental changes and social demands can moderate their particular mode or intensity of expression.

A child, who at a particular age may have used withdrawal behaviour in a particular situation, may learn to approach similar situations in a qualitatively different manner at a later age period. Such a child or adult would, however, not likely ever approach novel situations eagerly and without caution. While overtly the child may appear calm, internal structures may still be subjected to stress. Similarly, a child who always experienced a high degree of internal stress when confronted by large groups, would probably rarely feel comfortable as an adult in similar situations. The qualitative difference would appear in the behavioural strategies utilized to deal in an effective manner with such events, at various age periods. Therefore, it is doubtful that a particular temperament characteristic ever entirely disappears. It may be more appropriate to state that it

may become dormant, or its mode of expression changes. A particular set of environmental and social demands may serve to reactivate the dormant characteristic. It is clear, moreover, that temperament does not follow a stable course and recent studies in temperament are suggesting that the three temperament patterns identified from the NYLS should be reconsidered.

Further, since only 65% of children can be classified into one of three categories, it is more profitable to investigate the role of individual temperament characteristics and their combinations with other temperament and environmental characteristics in the development of particular response patterns. In the present study, the temperament characteristics delineated by Thomas et al. (1963; 1968; 1977) will be used to predict behavioural difficulties consequent to day hospitalization. Further, in keeping with the findings of a number of researchers in the area of temperament (Buss & Plomin, 1975; Chess & Thomas, 1986; Thomas et al., 1968), who have not found relations between age or gender and temperament characteristics, it is hypothesized that neither age nor gender will be related to children's scores on temperament characteristics. The interactionist model or the child-in-context approach would appear to be a most effective method in attempting to explain why particular responses patterns are utilized. More specifically, the child-in-context model may provide important information concerning the adoption of maladaptive behavioural responses in specific situations. This

model has been used successfully to predict outcome in a variety of situations and is the model that is used in the present study. A presentation of a number of research studies which have successfully predicted outcome and those which have not successfully predicted outcome follows.

Child and Environment

The child-in-context.

Thomas et al. (1963; 1968; 1977), early in their research on temperament characteristics, emphasized the reciprocal nature of the child and the environment. Internal and external characteristics, each impacting on the other, can affect response patterns which in turn can impact positively or negatively on behavioural adjustment. In 1968 these researchers began promoting investigations of the child-in-context. This view promoted investigating the child and the immediate and dominant features of the child's environment to determine which factors influenced the development of adjustment difficulties. They also established a number of temperament characteristics which appeared to predict certain children's responses in a number of situations. Until recently, the majority of investigations have been concerned with prediction of school performance, prediction of psychiatric problems as the child matured, or other outcomes by investigating the impact of the child's temperament on his/her environment.

Recently, researchers have begun to examine the child's

context in an effort to predict behavioural responses. The present study investigates the child-in-context by including characteristics of the mother-child relationship as a significant factor in the development of posthospital behavioural adjustment difficulties consequent to day hospitalization.

A goodness-of-fit model has been a useful approach in studies dealing with prediction of outcome. Research with adults has demonstrated that the degree of fit between personality characteristics and the demands of the work place predict mental and physical health (French, Rodgers, & Cobb, 1974). This same model has shown that, in adolescence, the fit of personality characteristics and demands of high school covaries with a feeling of school alienation and involvement and misbehaviour in the school setting (Kulka, 1979; Kulka, Klingel, & Mann, 1980). Sorell and Nowak (1981) found that for children, the extent of fit with societal attitudes regarding physical attractiveness covaries with personal, interpersonal, and school behaviour in the academic setting. Recent studies investigating child temperament characteristics and goodness-of-fit have successfully predicted outcome in a number of situations.

The relation between child temperament characteristics in the school setting, academic performance, and teachers' perceptions of children's behaviour has received a moderate amount of attention and research in this area is ongoing. Presently, there is considerable evidence to support the contention that temperament characteristics demonstrate important

individual differences in the school setting and that certain temperament characteristics are predictive of academic performance.

Lerner, Lerner, and Zabinski (1985) tested the goodness-of-fit model and its predictive ability when child temperament characteristics were combined with contextual demands. Specifically, these researchers investigated the relation of a goodness-of-fit between children's temperament, teachers' demands, and children's scholastic accomplishments. The subjects were 194 fourth-grade students from nine different schools. The mean age of the students was 10 years of age. Child temperament was assessed by the Dimensions of Temperament Survey (DOTS) (Lerner, Palermo, Spiro, & Nesselroade, 1982) which is a self-report questionnaire assessing five temperament attributes: activity level, rhythmicity, attention span/distractibility, adaptability/approach-withdrawal, and reactivity (which pertains to threshold and intensity of response as well as activity level). Teachers' expectations/demands pertaining to students' behavioural style were evaluated by a form of the DOTS which was constructed from the original DOTS measure. The teachers' form consists of the original 34-item questionnaire in which all items were rephrased to relate to teachers' expectations regarding their students. Further, students' academic performance was evaluated by obtaining their scores on four measures generally used within the school system to assess both reading ability and basic school skills.

The results of this study indicated that teachers' expectations/demands were similar across all classes; however, there was considerable variability among students' self-report measures (the DOTS). Teachers' expectations were in the direction of low activity, high attention span, high adaptability, approach, and rhythmicity, and low reactivity. Further, teachers' ratings of students were predictive of concurrent scores on achievement measures. The data analyses indicated that child temperament characteristics are related to teachers' judgements of academic abilities and to actual student scores on standard achievement tests. Although the variance accounted for was low, Lerner et al. (1982) attributed this to the questions on the DOTS which ask for responses across contexts, rather than for specific-contextual situations. In summary, the findings from this study indicated that the two temperament characteristics of activity level and adaptability were predictive of objective measures of achievement.

Lerner (1983), in an earlier study with eighth-graders, found that students whose temperaments closely matched teachers' demands received more favourable ratings of adjustment and ability, achieved higher grades, had more positive peer relations, and more positive self-esteem than did students whose temperaments appeared less well matched with both teacher expectations and/or peer demands. Keogh (cited in Lerner & Lerner, 1986) suggests that teachers' perceptions of children's temperament characteristics are of considerable importance

because such perceptions may influence teachers' decisions and actions concerning perceived characteristics in particular children. Brophy (1983) proposed that temperament characteristics may contribute to teachers' actions. In this respect, a study by Keogh and Burnstein (1985) demonstrated that children's temperament was related to the amount and quality of teacher-student interactions. This study used handicapped and nonhandicapped preschoolers. Although the sample size was small (nine subjects from each group), the six-week observational study found that teachers had more frequent interactions with children who displayed positive temperament characteristics and who were not handicapped. This pattern, however, was just the opposite for the handicapped subjects. That is teachers tended to interact more frequently with handicapped children who displayed negative temperament patterns.

Martin, Nagle, and Paget (1983), in an observational study, found that classroom behaviours were significantly related to teachers' ratings of temperament characteristics; such as activity, adaptability, distractibility, and persistence. These dimensions have been found to be related to a task attention factor which has been found to be very powerful in research on temperament in the school setting (Keogh, Major-Kingsley, Omori-Gordon, & Reid, 1982; Keogh, Pullis, & Cadwell, 1982; Martin et al., 1983). These studies demonstrated that adaptability was correlated with certain behaviours. The researchers suggested that teachers tended to focus on time-on-task (child self-

directed behaviour) and out-of-seat behaviour (perceived as inappropriate behaviour) in making decisions concerning a child's adaptive functioning. As research in the school setting continues, there is growing evidence suggesting that teachers' perceptions of their students' temperaments are grounded, to a certain extent, by actual behaviours. Further, temperament characteristics, both positive or negative, may influence teacher-student interactions. Thus, there is growing evidence to support the interactionist model and to suggest that the goodness-of-fit concept is an important consideration in teacher-student relationships and in academic performance. Other areas of research have investigated the utility of the goodness-of-fit model in relation to child temperament characteristics and their effect on the quality of the mother-child relationship.

Maternal characteristics.

A number of studies have examined maternal characteristics, most often focusing on maternal depression and its effect on the mother-child relationship. Other maternal characteristics such as the physical and emotional health of the mother, her sense of competency in the dual role of wife and mother, and the quality of the spousal relationship, have been shown to influence the quality of the mother-child relationship. Most investigations have looked at one or possibly two maternal characteristics at a time, and have shown their association to the child's

temperament, or to mothers' perceptions of negative child behaviours, and the impact of these relations on the quality of the mother-child relationship. The present study attempts to provide a more comprehensive view of the influence of maternal characteristics due to the inclusion of the Parent domain of the PSI which assesses maternal characteristics and maternal perceptions of her relationship with her child.

The present study adheres to the child-in-context theoretical framework and, as such, encompasses the goodness-of-fit model. Thus, the nine child temperament characteristics employed by Thomas and Chess (1968; 1977) and the six child and seven maternal characteristics used by Abidin (1983) were investigated. These variables were examined as to their power in predicting posthospital behavioural adjustment consequent to day surgery. The following is a brief review of several recent studies which have investigated certain maternal characteristics namely depression, social isolation, the spousal support system, and the physical and emotional health of the mother as factors contributing to the quality of the mother-child relationship. Several of these studies have used child temperament measures or other behavioural assessment instruments to assess the effect of maternal characteristics on children's behaviour. Most of these investigations can be viewed in the context of the goodness-of-fit model or child-in-context model though few have stated that this was the model employed.

Van Tassel (1985) investigated the influence of child and

environmental characteristics on sleep disturbances in infants during the first two years of life. Child variables were assessed by the Carey Toddler Temperament Scale (Fullard, McDevitt, & Carey, 1982), and the environmental variable was the degree of maternal depression which was assessed by the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The results indicated that the child temperament characteristics of mood and adaptability were highly correlated with maternal depression. The higher the maternal depression score, the more likely mothers were to report negative mood in their infants. Also, high depression scores were associated with mothers' perceptions that their infants were less adaptable than other infants. Thus, it appears that maternal depression plays a significant role in maternal perceptions of infants' behaviour. The reverse, however, could also be argued. That is, considering the reciprocal nature of temperament-environment interactions, negative mood may facilitate the development of depression in mothers who perceive that their child's negative mood may be resultant from their perceived sense of incompetence in mothering.

Webster-Stratton and Hammond (1988) assessed the degree of depression reported by mothers on the Parenting Stress Index (Abidin, 1983) and the effect such depression had on the mother-child relationship. They concluded that mothers who were moderately to severely depressed, perceived their children as having significantly more behavioural problems than did non-

depressed mothers. The depressed mothers reported problems in the area of attachment and they also felt restricted in their roles as wife and mother, experienced a decreased sense of competence, felt socially isolated and reported more physical and emotional health problems than non-depressed mothers. This study concluded that certain maternal characteristics impacted on mothers' perceptions concerning their children's behaviour. Further, it was clear that mothers' perceptions of their children's behaviour were not always in agreement with teachers' perceptions or with the assessments of trained observers. Nevertheless, how mothers perceive their children may influence, either positively or negatively, the quality of the relationship they have with them. As well, maternal attitudes toward parenting, and degree of satisfaction both in the role of wife and mother, and the quality of the spousal relationship can influence the quality of the mother-child relationship.

Little attention, however, has been directed to assessments of women's feelings and attitudes toward the maternal role, even though there is evidence to suggest that there is a decrease in marital adjustment during the transition to parenthood (Belsky, Lang, & Rovine, 1985). Goldberg and Easterbrooks (1984) concluded that mothers' reactions to their 20 month old infants were different according to the degree of marital adjustment, with more positive interactions associated with higher adjustments. These findings are not new. As early as 1979, Lamb, Chase-Lansdale, and Owen suggested that satisfaction in the

dual role of wife and mother was associated with a sense of self-fulfilment and increased self-esteem. They suggested that these qualities promote an increase in sensitivity in mothers. Further, this sensitivity leads to a heightened responsiveness to their child's needs. Lamb et al. (1979) emphasized that such sensitivity and responsiveness were important for the development of a high quality mother-child relationship.

In more recent studies, Lerner and Galambos (1985) demonstrated that a woman's lack of satisfaction in the maternal role could lead to eventual rejection of the child. Lancaster, Prior, and Adler (1989) explain that the dual roles of wife and mother may affect a woman's identity. Dissatisfaction with either of these roles may result in negative consequences concerning a woman's psychological health. Lancaster et al. (1989) investigated the relation of maternal characteristics and child temperament variables on maternal ratings of child behaviour. They studied 100 mothers between 24 and 45 years of age with a mean age of 29 years. The study included 60 male children and 40 female children with a mean age of 45 months. Mothers rated their child's behaviour on the Behar Preschool Behavior Questionnaire (PBQ; Behar, 1977; Behar & Stringfield, 1974). Mothers' ratings of their child's temperament were obtained by using a shortened form of the Thomas and Chess Child Temperament Questionnaire (CTQ; 1977) which was adapted for Australian families (Prior, Sanson, Carroll, & Oberklaid, in press). They also assessed the quality of the mother-child

relationship, maternal psychological health, and maternal self-esteem.

The results of this study showed that maternal psychological health, marital adjustment, and confidence in the dual role of wife and mother, as well as three of the nine child temperament variables, (i.e., activity, mood, and intensity), were significantly correlated with the total Behar Preschool Behavior Questionnaire scores. Confidence in the role of wife and mother was significantly correlated with the three behaviour subscales of the PBQ: anxious-fearful, hostile-aggressive, and hyperactive-distractible behaviour. Marital adjustment was significantly correlated with hostile-aggressive and anxiety behaviours, but maternal psychological health was correlated with only hostile-aggressive behaviour. They also found that confidence in dual role and maternal psychological health were significantly correlated with the child temperament characteristics of activity and mood. Thus the child temperament characteristics of activity and mood were significantly negatively correlated with both negative child behaviours, and with the maternal characteristics of confidence in the dual role of wife and mother, and maternal psychological health.

Although this study is one of the few studies to combine a number of maternal characteristics, there is consistent similarity among the associations found between investigations of individual maternal characteristics and ratings of child behaviour (Bates & Bayles, 1982; Emery & O'Leary, 1982;

Fergusson, Horwood, & Shannon, 1984; Friedlander, Weiss, & Traylor, 1986). That is, mothers who experience depression, decreased or low feelings of competence in the dual role of wife and mother, and marital adjustment difficulties appear to perceive their children as engaging in more problem behaviours than mothers who are not experiencing such feelings. Thus, while the findings from these studies suggest that mothers' perceptions of their children's behaviours were related to particular maternal characteristics, it is important to understand that perceptions, even if they are not accurate, can affect how mothers interact with their children. Similar conclusions regarding the importance of maternal perceptions and their effect on parenting have been found in a recent study by Holden, Willis, and Foltz (1989).

This team of researchers investigated the efficiency of the Child Abuse Potential Inventory (CAP; Milner, 1986) and the Parenting Stress Index (PSI; Abidin, 1983) in differentiating between two groups of parents; those referred because of abuse or neglect, and those referred for other reasons. The researchers found that the former group (referred to as at risk parents) reported higher levels of distress and unhappiness than the other group. The at risk mothers also reported higher levels of total parenting stress. Specifically, sense of competence, relationship with spouse, and psychological health were significantly correlated with child mood. Whether their children actually displayed more negative mood than other children was

difficult to assess as no observations of children were compiled. These researchers suggested that maternal characteristics such as decreased sense of competency and unsatisfactory relationships with spouse may have contributed to the development of negative mood in their children, or that the high stress scores contributed to misperceptions concerning their children's actual behaviour. Unfortunately, Holden et al. (1989) were unable to assess the direction of the relation, but it was clear that mothers' perceptions of negative behaviour affected the mother-child relationship.

While these studies were designed to specifically assess the influence of maternal characteristics on maternal ratings of child behaviour, the researchers consistently identified a number of maternal characteristics which influenced the quality of the mother-child relationship. Lancaster et al. (1989) expressed some concern that few researchers have investigated a combination of maternal characteristics to assess their influence or contribution to the quality of the mother-child relationship or how the combination of such variables impact on children's behaviour. The present study addresses their concern by utilizing three child temperament characteristics, as well as six child and seven maternal characteristics from the Parenting Stress Index (Abidin, 1983) to predict children's responses consequent to day hospitalization. Investigations of the child-in-context, that is those studies mentioned above which have examined child and maternal characteristics, have been

predominantly concerned with the effect of maternal depression on the quality of the mother-child relationship. There are, however, a number of studies that have investigated the spousal relationship, sense of competency in the dual role of wife and mother, and degree of marital satisfaction as variables which may impact on the quality of the mother-child relationship. These studies are included because the variables cited above form part of the Parent Domain area assessed by the Parenting Stress Index (Abidin, 1983).

The amount of warmth and degree of support in the spousal relationship have been used successfully to predict toddlers social competence (Dickie, Schroeder, Van Noord, & Cushman, 1987). This team of researchers observed 25 couples and their two year old toddlers both in the home situation and in the laboratory. Children's temperament was assessed by parental ratings on the Toddler Temperament Questionnaire (Fullard, McDevitt, & Carey, 1979). It was found that the spousal relationship most strongly predicted toddlers orientation toward peers and social competence within the laboratory setting. Interestingly, infant temperament was the most important predictor of social orientation toward mother and away from peers and strangers. Toddlers who were slow to adapt, withdrawn, intense, and who displayed negative mood, were more oriented toward mothers in the laboratory setting. This association did not appear to hold for the home setting; thus, the researchers cautioned against generalizing across contexts. Kagan (1980)

also suggested the necessity of investigating situation specific stressors rather than generalizations from one context to another.

Warmth and degree of support in the spousal relationship has also been linked to the degree of stress perceived within the parent-child system. Roberts (1989) states that there are relatively few studies which focus on factors that influence parenting. He further stressed that most of the research on stress and social networks has focused on parents and children in maltreating families. Thus, it is unclear whether the results from these studies hold for families in which adequate parenting and low levels of stress exist. In order to address this concern, families characterized by adequate parenting were used to investigate parents' stressful life events and social networks and their effect on the parent-child relationship and children's competence in preschool (Roberts, 1989). The results from this study indicated that warmth variables, which were defined as responsiveness between parents and responsiveness of mother and father toward the child, were the most important predictors of general competence in children. Similar to the maltreatment literature, stress was associated with lower levels of warmth. Only two categories of stress, however, were associated with decreased warmth. For mothers and fathers the association was with the stress due to loss, whereas for mothers the association was with the stress of disappointments. While no consistent relations were found between support from spouse and

parent-child interactions, decreased maternal warmth was found when fathers had an active social network outside the home. It was unclear, however, whether decreased maternal warmth resulted from paternal involvement outside the home or whether paternal involvement in activities unrelated to the home were in response to a lack of maternal affection. It was interesting that consistent relations were not found between spousal support and parent-child interactions.

Maternal social networks consisted of relatives and friends, but paternal social networks most frequently were comprised of friends only. Mothers obtained support and help with child rearing from kin and used both friends and relatives as confidants. Fathers, however, confided almost exclusively in friends. Thus, the presence of maternal relatives was positively related to parent-child interactions and child outcomes, whereas the involvement of paternal relatives was frequently problematic. Fathers reported they received little emotional support from relatives and child care by paternal kin had negative correlations with children's competence. This study provides important information with regard to mothers' reliance on support from extended family members and from friends. Feelings of social isolation reported by mothers have been associated with negative mother-child interactions. The above studies appear to suggest that the quality and the degree of support systems available to the mother may mitigate mothers' perceptions concerning the amount of problem behaviours displayed by their

children. Further, if mothers feel strong support from significant others, this may mediate negative associations in mother-child interactions when spousal support is lacking.

Mouton and Tuma (1988) showed that maternal dissatisfaction, specifically in the spousal relationship, contributed to negative mother-child interactions. In a study designed to assess stress, locus of control, and role satisfaction in clinic referred and control mothers, the researchers found that lack of spousal support and a decreased sense of parenting competency were related to mothers' sensitivity and responsivity to negative child behaviours. Clinic mothers perceived their children as displaying a higher frequency of common childhood behaviour problems than did non-clinic mothers. Clinic mothers also viewed these behaviour problems as more problematic than control mothers. Mothers who exhibited high levels of stress reported dissatisfaction in the spousal relationship and felt a general lack of competence in the parenting role. The results of this study also demonstrated that the high stress levels reported by clinic mothers were a function of both characteristics of their children and dimensions of functioning as determined by the PSI.

While previous studies have suggested that clinic mothers' difficulties are related to atypical child behaviours (Mash & Johnston, 1983a; 1983b), Mouton and Tuma (1988) suggest that such problems appear to be related to both parent and child characteristics. Maternal variables affect child behaviour (Forehand, Wells, McMahon, Griest, & Rogers, 1982; Furey &

Forehand, 1984) and child variables affect maternal behaviour (Maccoby & Martin, 1983; Patterson, 1980). It appears that the mother-child relationship is a reciprocal one and that difficult relationships may be related to a poor fit between parenting satisfaction, sense of competency, and child behaviour.

Thus, in the present study it is hypothesized that characteristics of the mother-child relationship will predict children's posthospital behavioural adjustment difficulties. The characteristics of the parent-child relationship will be those assessed by the Parenting Stress Index (Abidin, 1983). It is also hypothesized that age of the child will not be related to scores on the Child or Parent Domains of the PSI. Similarly, it is hypothesized that gender will not be predictive of differences in Child and Parent Domain scores.

Summary

The literature review on the hospitalization of children has identified a number of variables which contribute to behavioural adjustment difficulties consequent to a hospital experience. This review demonstrated that, with the exception of separation anxiety (Peterson et al., 1985; Robertson, 1973), there is little consensus as to other factors which influence maladaptive behaviours in children following long- or short-term hospitalization. The age of the child, fears and fantasies of body mutilation, perceived loss of control, the child's coping style, and the mother-child relationship have been suggested to

impact on children's behavioural difficulties consequent to hospitalization (Kerr, 1979; Peterson et al., 1985; Saylor et al., 1987).

Research in this area is complicated by the finding that not all children experience negative consequences from hospitalization and no studies to date have attempted to identify variables which might differentiate children who will experience behavioural maladjustments from children who appear unaffected by the experience. Further, much of the research on the effects of hospitalization on children has investigated the problem by utilizing either a subject specific or situation specific approach; that is, variables related to the child or to the hospital environment have been proposed to contribute to children's behavioural difficulties consequent to hospitalization. This approach has encouraged numerous changes within the hospital setting, such as permitting the parent to remain with the hospitalized child. The development of day surgery and day treatment facilities enable a child to return home without experiencing a separation from the familiar home environment. Recent studies have shown, however, that some children continue to experience posthospital behavioural difficulties even after such a brief stay (Aho & Erickson, 1985; Lumley, Abeles, Melamed, Pistone, & Johnson, 1990). Thus, the present study attempts to address this issue by investigating the child-in-context.

The child-in-context approach refers to internal child and

external environmental factors that influence behavioural outcomes. The research of Thomas and Chess on temperament characteristics (1963; 1968; 1977; 1986), as well as the numerous investigations that followed, have suggested that the investigation of temperament characteristics is a viable method for differentiating children who respond in an expected fashion from those deviating from the norm. Further, it has been shown that certain temperament characteristics may place a child at risk for the development of maladaptive responses. The review of the temperament literature has shown that temperament characteristics and their interaction with the environment can provide a more accurate explanation of response adaptation than investigations of either temperament or environment alone. Further, recent investigations of temperament have used a goodness-of-fit model to explain or predict both positive and negative behavioural outcomes (Chess & Thomas, 1986; Lerner & Lerner, 1983).

The present study combines both the child-in-context and goodness-of-fit theoretical frameworks to assess children's behavioural difficulties consequent to day surgery. The nine temperament characteristics proposed by Thomas et al. (1963) and the six child and seven parental characteristics proposed by Abidin (1983) encompass both the internal characteristics of the child and the characteristics of the mother-child relationship. It is felt that the mother-child relationship provides a large degree of the child's context.

Present Study

The present study was designed to investigate and predict children's posthospital behavioural maladjustment consequent to day surgery. Temperament characteristics and characteristics of the mother-child relationship were used to predict behavioural difficulties consequent to day surgery.

In order to assess the effects of hospitalization on children's behavioural adjustment, children's behaviour was assessed before hospitalization and at specific periods of time after hospitalization. Research investigations on children's hospitalization have frequently assessed children's behaviour without benefit of a prehospital behaviour measurement. The majority of studies have investigated changes from one posttest time to another. The most widely used instrument assessing children's posthospital behaviour is the Vernon Post Hospital Behavior Questionnaire (Vernon et al., 1966). This measure, as its name implies, assesses posthospital behaviour, and since few prehospital measures exist, it was decided, with the authorization of Vernon, to administer this measure before hospitalization and at three periods in time after hospitalization. In order to use this instrument before hospitalization, the response format was changed from a relative format to an absolute format. Descriptions of the original measure and the new measure are presented in Appendix A and B, respectively.

Research Hypotheses and Theoretical Rationale

The first hypothesis states that age will not be related to children's scores on the PHBQ at the pre- or at any of the three posttest periods. Although the literature on hospitalization has found age to be a significant factor in the development of posthospital behavioural difficulties, separation anxiety has been cited as contributing to such age related behavioural difficulties. Since the present study investigates day hospitalization, separation anxiety is not expected to be a significant factor thus, age is not expected to impact on children's posthospitalization behavioural difficulties. Further, since the literature on temperament has not found age to be related to the manifestations of temperament characteristics, it is hypothesized that age will not be related to children's scores on temperament characteristics. It is further hypothesized that age will not be related to scores on the measure of stress in the mother-child relationship.

The second hypothesis states that gender will not be related to children's scores on the PHBQ at the pre- or at any of the posttest periods. While Aho and Erickson (1985) found girls expressed significantly more concerns than males regarding hospital fears and concerns of body disfigurement, few studies on hospitalization have identified similar gender differences. Thus, it is expected that male and female children will not differ on posthospitalization behavioural adjustment difficulties. Similarly, investigators in temperament have not

found gender to be significant in the development of temperament characteristics; thus, in the present study male and female children are not expected to differ on scores on temperament characteristics. Further, gender differences are not expected on children's scores on the measure of stress in the mother-child relationship.

Several studies have indicated that children can cope adequately with a stressful event if they are familiar with various aspects of the situation or if they perceive that they have some control over the environment. However, when children encounter a stressful event that is unfamiliar, or an event which results in a perceived loss of control, adjustment difficulties may occur. For some children, such adjustment difficulties may be short lived if they are permitted sufficient time to make sense of the situation, or if they are able to draw on past experiences which may provide some similarities with the new situation. Preorientation programs are designed to familiarize children with the hospital and various procedures. Peterson and Ridley-Johnson (1980), however, suggested that some children may derive little benefit from such programs as not all children prefer prior information concerning a potentially stressful event.

Thus, the third hypothesis states that children who attend and children who do not attend the preorientation program will not differ on scores on the PHBQ at any of the three posttest periods.

Hospitalization is a stressful event. The results from some studies suggest that admissions of less than 3 days are not associated with behavioural difficulties after discharge; however, few studies have investigated the impact of day surgery. The present study investigates day surgery and it is suggested that this event impacts on children's posthospital adjustment. Thus, the fourth hypothesis states that significantly more behavioural difficulties will be present at the 3 day posthospitalization period than at the prehospitalization period or at the 3 week or 2 month posthospitalization periods. Although fewer difficulties are expected to be present at the 3 week posthospitalization period, it is predicted that children's scores on the 3 week posttest PHBQ will still be significantly higher than scores on the pretest PHBQ. It is possible that some behavioural difficulties will be present at the 2 month posthospitalization period, however, it is hypothesized that children's scores at the 2 month posthospitalization period will not significantly differ from their scores at the prehospitalization period.

The fifth hypothesis states that the temperament characteristics proposed by Thomas et al. (1963; 1968) will predict posthospitalization behavioural difficulties. It was further hypothesized that the inclusion of the mother-child variable (total stress) will add to the predictive power beyond that afforded by the temperament characteristics alone. Recent findings emphasize that neither temperament nor environment

characteristics alone are sufficient predictors of outcome. Thus, an investigation of the influence of temperament characteristics, as well as the influence of characteristics of the child's environment, is necessary to provide a clearer picture. The present study attempts to provide some new insight into children's behavioural difficulties consequent to day surgery by investigating the child-in-context and the predictive power of some of the variables that comprise this context. The value of research aimed at increasing our knowledge of the predictors of behavioural outcome is that such research may permit interventions to occur.

CHAPTER III

Method

Subjects

Children were recruited from the practice of four E.N.T. paediatricians utilizing the day surgery facility at the Children's Hospital of Eastern Ontario. Children were considered for inclusion if they were English-speaking, between the ages of 3 years 6 months and 10 years, and scheduled for tonsillectomies. Further, children were included if they had not had a hospital experience within the past 12 months and if they had not had a major surgical intervention at any time. Initially 135 mothers were approached to request their participation. Data consisted of mothers' ratings on pre- and posttest questionnaires. One hundred and ten mothers or 81.4% agreed to participate in the study. Eleven children were subsequently dropped from the study because surgery was cancelled by the physician. Four mothers refused to continue with the study after the first posttest period and two mothers failed to return any posttest questionnaires. An additional six children were dropped because the researcher was unable to contact them due to the families moving without leaving a forwarding address.

The resulting sample of 87 children consisted of 37 females and 50 males with a mean age of 71.7 months. Unilingual English children accounted for 90.8% of the sample. Of the remainder, 6.8% were bilingual English-French and 2.4% were English with

another language. Information on previous hospitalization confirmed that 54% of the children had never had a prior hospital experience. Of the remaining children, 39.2% experienced a minor hospital event, between 1 and 3 years of age, for which they were not admitted (e.g., elevated temperature, flu, etc.), and 6.8% experienced a previous hospital admission for a non-surgical procedure between 4 and 6 years of age. Of the 46% of children who had a previous hospital experience, only 2.35% of these children had experienced a surgical intervention and this was in the form of stitches. Due to the surgical nature of this intervention, albeit a minor one, these two children were not included in the study. The hospital provided an optional prehospitalization orientation program in which 72.4% of the children participated. The marital status of the mothers of the children were distributed as follows; 90.8% were married, 4.5% were divorced or separated, 1.1% were single parents, and 3.6% declined to reveal their marital status. The level of parental education represented consisted of 2.3% of mothers and 10.3% of fathers with less than a high school education; 43.7% of mothers and 31% of fathers with high school diplomas; 20.7% of mothers and 11.5% of fathers with technical diplomas; 23% of mothers and 26.4% of fathers with undergraduate degrees; 6.8% of mothers and 8.2% of fathers with masters degrees or higher; 3.5% of mothers declined to provide this information and 12.6% of mothers declined to provide this information for their husbands. Level of education was divided among five categories with one

representing parents with less than high school and five representing parents with a master's degree or higher. The number of subjects varied for each of the three posttest periods ($N = 87$; $N = 82$; $N = 67$). Complete data were available for 57 of these subjects. Several reasons are suggested for the above differences. A number of mothers appeared to have some difficulty completing the two versions of the posttest measure. Since the Vernon PostHospital Questionnaire (Vernon et al., 1966) had been used only as a relative measure in which parents compared present behaviour with past behaviour without benefit of a baseline measure, it was decided to provide an absolute measure assessing prehospital behaviour. This absolute measure was included in the pretest data package and also in each of the posttest packages. However, the inclusion of both of these measures in each of the posttest periods appeared to be confusing for a number of mothers, although explicit information was provided concerning the order and importance of completing both questionnaires. Due to the difficulties of completion of both absolute and relative measures and since a prehospitalization measure was of particular interest, the absolute measure was used in the present study. Thus, the relative measure was excluded from subsequent analyses.

Other reasons for incomplete data follow. On occasion, mothers forgot to fill out questionnaires even though they were reminded to do so three days before the required completion date. The final difficulty that occurred was the misplacement of

questionnaires by parents. Time requirements did not permit a re-mailing to these parents. Complete data on the temperament measure (BSQ), the measure of stress within the parent-child relationship (PSI), and the measure assessing behavioural difficulties (PHBQ) at the pre- and at the three post-hospitalization periods were available for 57 subjects. Thus, all analyses were performed on this sample of 57 subjects.

To examine whether subjects who completed the study ($N = 57$) differed significantly from those subjects not completing the study ($N = 87 - 57 = 30$), t-tests for independent samples were conducted using the subject's present age, subjects age at the time of previous hospitalization (if a previous hospitalization had occurred), educational level of parents, as well as the scores for the three temperament characteristics, the six PSI child subscales, the five PSI parent subscales, and the PSI total score. These analyses indicated no significant differences (see Table 1).

Procedure

The ethics committee of the Childrens' Hospital of Eastern Ontario approved the method of subject participation and the informed consent form. Once this approval was obtained, the four paediatricians involved in the study spoke to the mothers of all children that were being scheduled for tonsillectomies. Those mothers who expressed a willingness to participate were contacted by the researcher by telephone and the type of participation,

Table 1

T-Tests for Differences between Subjects Completing the Study and those Not Completing the Study

Variables	Group 1		Group 2		t
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Age	72.70	20.48	69.90	22.61	.59
Prev. hosp.	1.12	1.40	.93	1.64	.56
Education-Mother	2.82	1.07	2.53	1.31	1.12
Education-Father	2.63	1.48	2.40	1.67	.66
Temperament					
Mood	3.21	.80	3.32	.91	-.58
Adapt	2.57	.66	2.58	.87	-.04
Approach	3.17	.94	3.19	.77	-.07
PSI					
Child domain	97.00	21.03	99.60	21.13	-.55
Parent domain	90.70	22.58	95.23	18.75	-.94
Total stress	187.70	39.47	194.83	35.84	-.83

Note. Group 1 (n=57) completed the study, whereas Group 2 (n=30) did not complete the study.

along with the time required to complete the study, was explained to them. If they agreed to participate (81.4%), all necessary items were mailed to them 6 weeks before the scheduled surgery. Mothers received an introductory letter (see Appendix C), an informed consent form (see Appendix D), an interview questionnaire (see Appendix E), and the prehospital questionnaires which consisted of the Behavioral Style Questionnaire, the Parenting Stress Index, and the Absolute Vernon Hospital Questionnaires. The study package also included three sealed envelopes, which contained the posttest questionnaires, with instructions on the front of each envelope informing the mothers when each was to be opened. Pre-addressed and postage paid return envelopes were provided for all pre- and posttest materials.

Once the prehospital data were returned (3 weeks before surgery), the interview questionnaire was reviewed to ensure that all necessary information had been given and to screen subjects who did not meet the inclusion criteria. In this instance, mothers were recontacted, thanked for their participation, and given the reasons why their continued participation was no longer required. Informed consents were checked to ensure that they had been signed. Once this preliminary information was provided, subjects were assigned a number and placed on a schedule ensuring that mothers would be contacted by telephone at the appropriate posthospitalization times to remind them to complete the posthospital questionnaires. In the case of the 3 day post-

hospital data, mothers were contacted the first day post-hospitalization and reminded to complete the questionnaire on the third posthospitalization day and to mail this envelope. For both the 3 week and 2 month posttest data, mothers were telephoned 3 days prior to the necessary completion date and reminded to complete and mail the appropriate questionnaires. At this time the mothers were thanked for their cooperation. Mothers requesting information about the outcome of the study were informed that they would receive this information when the study was completed.

Measures

The Behavioral Style Questionnaire.

The Behavioral Style Questionnaire (BSQ) (see Appendix F) was completed by the mothers of the subjects at the pretest period and provides a measure of temperament in children. The BSQ, constructed by McDevitt and Carey (1978), was based on the original New York Longitudinal Study (NYLS) temperament questionnaire developed by Thomas et al. (1963). The BSQ was designed to assess temperament in children from 3 to 7 years of age and was standardized on a sample of 350 children. The 175 boys and 175 girls were drawn from the private paediatric practice of the second author of the study. Ages ranged from 3 years to 7 years 4 months and, while all levels of socioeconomic status were represented, there were a high proportion of parents with college degrees (55% fathers, 41% mothers). The findings from this study resulted in the exclusion of eight items of the original BSQ (McDevitt & Carey, 1978) due to low correlations with designated categories. This revised version of the BSQ had a final item pool of 100 items. Item format is in statement form

and the items describe various behaviours of children in a variety of every day situations. Parents are required to rate their child on a six point scale ranging from hardly ever (1) to almost always (6). The BSQ takes approximately 25 minutes to complete.

The BSQ is a standardized test which consists of the nine dimensions of temperament derived from the NYLS (Thomas et al., 1963). These dimensions are activity, rhythmicity, approach-withdrawal, adaptability, mood, intensity, distractibility, persistence, and threshold. Internal consistency of items within each dimension was calculated using the K-R 20 formula for split-half reliabilities. These reliabilities (on the total sample $N = 350$) ranged from .47 to .80. Threshold and rhythmicity were found to have the lowest reliabilites (.47 and .48, respectively). McDevitt and Carey (1978) offered two plausible explanations for these low reliabilities. They suggested that the variety of functions included within these two categories may be more diverse and unrelated than those included in the other categories, or sensory threshold and biological rhythm may be more unevenly affected by environmental interactions than other temperament characteristics such as activity or intensity. The BSQ has a high test-retest reliability ($n = 53$, at an interval of approximately one month), with coefficients for the nine dimensions ranging from .67 to .94. The BSQ and the NYLS have received considerable attention by other researchers regarding psychometric properties and number of dimensions. Many of the criticisms of the BSQ and the Infant Temperament Questionnaire (ITQ), as well as the Parent Temperament Questionnaire (PTQ), have come from researchers who disagree with the conclusions of Thomas et al. (1963) that there are nine dimensions of

temperament. Thus, the BSQ and other temperament questionnaires that are based on the nine dimensions have been the subject of considerable controversy. To date, there is little consensus as to the number of temperament dimensions, although numerous studies have factor analyzed either the original nine dimensions of the NYLS or various abbreviated or adapted versions of this measure.

Buss and Plomin (1984) factor analyzed an abbreviated version of the BSQ (82 of the 100 items) using data from the Colorado Adoption Project (Plomin & DeFries, 1983). Two hundred 4-year-old adopted and nonadopted children were used and mothers' ratings on the BSQ were submitted to principal-components varimax rotation factor analysis, giving a subject to item ratio of 2.5:1. On the basis of the factor analytic findings, Buss and Plomin concluded that only two of the original nine BSQ dimensions were confirmed, distractibility and persistence. In another study (Korner, Zeanah, Linden, Berkowitz, Kraemer, & Agras, 1985), the BSQ was completed by 44 mothers and 6 fathers of children between 4 years 6 months and 8 years 6 months of age. Factorial support was demonstrated for only three of the nine dimensions (subject to item ratio for the factor analysis was .5:1). Activity, the first factor, retained items from the original BSQ dimensions of intensity, mood, and threshold. The second factor, adaptability, included items from the original dimensions of persistence and distractibility. Approach/withdrawal, the third factor, included items from the original dimensions of activity, persistence, and threshold.

The results of another factor analysis of the BSQ were reported by Matheny and Wilson (1987) who used the BSQ as one of several measures investigating children's adjustment to first

grade. The mothers of 80 children (44 girls, 36 boys) representing 40 pairs of twins completed the BSQ. Factor analysis of the BSQ supported a three factor model (subject to item ratio was .8:1). The first factor, mood, was comprised of items from the original dimensions of mood, adaptability, and approach. The second factor, labelled distractibility, included items from the original dimensions of threshold and intensity. The third factor, activity, consisted of items from both the original dimensions of activity and attention-persistence. Lerner, Palermo, Spiro, and Nesselroade (1982) used three age groups of subjects ($\bar{M}$ age = 3.97 years, N = 161; $\bar{M}$ age = 10.77 years, N = 508; $\bar{M}$ age = 20.75 years, N = 717) to develop the Dimensions of Temperament Survey (DOTS) based on the NYLS. Factor analysis resulted in a final item selection of 34 items and a five factor structure. The five factors are as follows: activity; rhythmicity; attention span/distractibility which also included items from attention, persistence, and distractibility; adaptability-approach/withdrawal; and reactivity, which consisted of items from intensity of reaction, threshold, and activity. Lerner et al. (1982) caution that their measure is different from other temperament measures because it was designed as a life-span measure. As such, it may be useful in accounting for a portion of the variance in individual-context interactions reflecting continuity for a large portion of the early stages of life-span development. They further suggest that the five factors accounted for by the DOTS are not a representative sample of all potential dimensions of temperament.

In the present study, factor analysis of the BSQ was not performed for several of the reasons mentioned in the literature review and, specifically, because a number of researchers have

successfully used the BSQ. Further, conclusive evidence has yet to emerge which refutes the nine dimensions proposed by Thomas et al. (1963; 1977) and, finally robust factor analysis requires a ratio of 10 subjects for each item included in the analysis. Internal consistency, however, was assessed by Cronbach's alpha reliability coefficients for each of the nine scales of the BSQ. The reliability coefficients were .33, .42, .62, .63, .68, .69, .72, .76, and .81. The criterion for inclusion was based on an alpha coefficient of .70 or higher. Three temperament dimensions met this criterion: mood, adaptability, and approach. The number of items per dimension were 12, 12, and 11 items, respectively. These three temperament dimensions were the scales used in subsequent analyses. It should be noted that these temperament scales are scored in the negative direction (McDevitt & Carey, 1978).

The fact that three temperament dimensions of the BSQ were retained, based on their adequate alpha coefficients of internal consistency, is not dissimilar to the results of other studies which have factor analysed the BSQ. These factor analytic studies have identified between two and five temperament factors, with a maximum of 34 items being retained. In the present study, three temperament dimensions were retained and they included 35 items.

It is suggested, from the results of the present study and factor analytic studies, that the three temperament scales used in the present study adequately represent the construct of temperament.

The Parenting Stress Index.

The Parenting Stress Index (PSI) (see Appendix G), which consists of separate Child and Parent domains, was completed by

the mothers of the subjects at the pretest period. The PSI is a screening and diagnostic tool which provides a measure of stress in the parent-child system and in the spousal relationship (Abidin, 1983). The PSI, developed by Abidin (1982), originally consisted of 150 items. This initial version of the PSI was standardized on a sample of 208 mothers with children below 3 years of age. The children were from the well-clinic of a private paediatric group practice. Further revisions of the PSI lead to Form 5 which was standardized on a sample of 534 mothers from the above practice. The mean age of the mothers was 28 years and all mothers had a minimum of one child younger than 3 years of age. Forty percent of mothers were employed with a median annual family income between \$15,000 and \$20,000.

The currently used form, Form 6, was revised to facilitate hand scoring and to reduce the overall length of the questionnaire to 101 items. Form 6 also includes an optional 19 item Life Stress Scale. This current version of the PSI consists of statements designed to assess a mother's perception of how her child perceives her, how she perceives her child's daily functioning in a variety of commonly occurring events, and how the mother perceives various aspects of both the parent and spousal relationship. Mothers are required to rate their responses on a 5 point scale ranging from strongly agree (1) to strongly disagree (5). The PSI takes approximately 20 to 25 minutes to complete.

The PSI (Form 6) consists of 13 subscales which are related to the two domains mentioned previously. The Child domain has 47 items divided among six subscales. These subscales are adaptability, acceptability, demandingness, mood, distractibility, and reinforces parent. The Parent domain

consists of 54 items divided among seven subscales: depression, parent attachment, restriction of role, sense of competence, social isolation, relationship with spouse, and parent health. An optional 19 item Life Stress Scale was added and comprises the Life Stress domain. For Form 6, items were retained or deleted by obtaining correlations between each item and each domain scale. The correlations provided information on the consistency between the item and the given domain and also demonstrated the ability of the items to discriminate among persons differing in the degree of attributes measured by the three domains. Correlations between each item and the subscales were also obtained. These correlations formed the basis for retention of items on some subscales and the deletion from other scales (Loyd & Abidin, 1985). Alpha reliability coefficients for internal consistency were obtained for each subscale, each domain, and the total score, and were based on the responses of the 534 subjects mentioned previously. The coefficients ranged from .62 to .70 for the subscales of the Child domain and from .55 to .80 for the subscales of the Parent domain. The reliability coefficients for the two domains are .89, and .93, respectively. The reliability coefficient for the total stress score is .95.

The stability of the PSI subscales was established by four separate studies that assessed test-retest reliability (Abidin, 1983; Burke, 1978; Hamilton, 1980; Zakreski, 1983). Burke (1978) used one of the early versions of the PSI with a sample of 15 mothers who were seen in a well-care paediatric clinic. Mothers completed the PSI again, 3 weeks after the initial administration. A significant relation was found for the scores across the three week interval. Spearman rank-order coefficients for the Child and Parent domains were .82 and .71, respectively.

A study by Hamilton (1980) investigating the relation of stress, coping, and quality of mother-infant attachment found that test-retest reliability coefficients for one year were similar to those obtained by Burke (1978). Hamilton (1980) readministered the PSI to a sample of 37 mothers a year after they had completed the initial PSI. The reliability coefficients were .55 for the Child domain and .70 for the Parent domain. Thus, it would appear that these studies indicate strong test-retest reliability for the PSI. The present study utilized the Child and Parent domains at the pretest period and only the optional 19 item Life Stress scale was used as a pre-post measure to assess whether the subjects had experienced any major life-stress changes during the course of the research study.

Factorial validity of the PSI was demonstrated by three factor analyses (Loyd & Abidin, 1985). Loyd and Abidin (1985) used the data from Abidin's sample of 534 mothers as the data base for these factor analytic analyses. This sample consisted of mothers of children who were referred to the clinic and mothers of children one would expect to see in a well clinic. The age of the children in the sample ranged from one month to 19 years, with a mean age of 14 months and a standard deviation of 23.2 months. The first analysis was done using the responses to the 47 items comprising the Child domain. These data were subjected to principal components analysis with varimax rotation. A six factor solution accounted for 41.0% of the variance. The second factor analysis was performed on the data derived from the responses of the subjects to the 54 items of the Parent domain. Principal components factor analysis with varimax rotation was performed and a seven factor solution was found which accounted for 44.0% of the variance. The third principal components factor

analysis with varimax rotation was performed on the data which were obtained from the scores for each subject on the 13 subscales. A two factor solution was found and accounted for 58% of the variance. Loyd and Abidin (1985) suggested that the pattern of these factor loadings demonstrated that the Child and Parent domains were tapping two distinct traits.

While a number of studies have investigated the relation of the PSI and other measures such as the Child Abuse Potential Inventory (CAP; Milner, 1986), few studies have factor analyzed the PSI. A number of reasons are suggested for this. The factorial analyses undertaken by the developers of the PSI have demonstrated robust factors. Further, although the PSI is now being widely used, it is still a relatively new measure. It is anticipated that the PSI will be subjected to further factor analyses as research with this measure continues.

For the present study internal consistency was measured by means of Cronbach alpha reliability coefficients for each of the six Child and seven Parent subscales. An alpha coefficient of .70 or higher was used as the basis for the inclusion of a subscale in further analyses. All six subscales of the Child domain met this criterion (.70 to .77). For the Parent domain, five of the seven subscales met the criterion. Alpha reliability coefficients for the seven subscales were .38, .68, .81, .81, .81, .84, and .86. Thus six Child subscales and five Parent subscales were retained. The six Child subscales were summed to obtain a Child domain score and the five Parent subscales were summed to obtain a Parent domain score. The alpha reliability coefficients for internal consistency for these two domains were .91 and .94, respectively. In order to examine the correlation between the Child and Parent domain scores, a Pearson correlation

coefficient was calculated and a correlation of .64 was obtained. Abidin reported a similar correlation of .61 between the two domains. Although the Child and Parent domains may be tapping somewhat distinct traits, a correlation of this magnitude suggests there is some overlap between these two domains. Thus, a total stress score was obtained by summing the two domain scores. The alpha reliability coefficient for internal consistency for the total stress score was .95, which is the same as the reliability coefficient observed by Abidin (1983) for the total stress score. In the present study, due to subject to variable concerns, the total stress score will be used in further analyses.

The Vernon Posthospital Behavior Questionnaire.

The Vernon Posthospital Behavior Questionnaire (PHBQ); Vernon, Schulman, & Foley, 1966) is a 27-item questionnaire (see Appendix A) designed to assess changes in children's posthospital behaviour reactions. The initial PHBQ consisted of 28 items, but Vernon et al. (1966) found inconsistencies in parental interpretation of item 16, thus this item was dropped from the final version of the measure. The PHBQ was standardized on a sample of 387 children who ranged in age from 1 month to 16 years, with a mean age of 5.68 years. The mean length of hospitalization was 8.8 days. The sample comprised 212 boys and 175 girls of which 228 children or 59% had experienced a previous hospitalization. The 27 items of the PHBQ describe negative behavioural changes demonstrated by children after a hospital experience and are the behaviours that have been frequently cited in literature on hospitalized children (Beller & Neubauer, 1959; Jessner et al., 1952; Schaffer, & Callender, 1959). Mothers are

required to compare their child's behaviour before hospitalization to their child's behaviour during the first week after hospitalization. Mothers rate their child's behaviour on a five point scale ranging from much less than before (1) to much more than before (5). The PHBQ takes approximately 10 minutes to complete.

Factorial validity of the PHBQ was demonstrated by Vernon et al. (1966) by entering the data into principal axis factor analysis with varimax rotation. This analysis supported a six factor model: general anxiety and regression, separation anxiety, anxiety about sleep, eating disturbance, aggression toward authority, and apathy-withdrawal. Factor analysis resulted in a further reduction of four items due to either factor loadings below .3 or loadings of .5 or higher on more than one factor, providing a final item pool of 23 items.

Test-retest reliability of the PHBQ was demonstrated by Cassell (1965). Although Cassell (1965) used a slightly different version of the PHBQ (two fewer items and only three response alternatives) than did Vernon et al. (1966), the results demonstrated a moderate degree of stability one month after the initial assessment. Cassell used 37 subjects ranging in age from 3 to 11 years. Parents were required to rate their child's behaviour at three days and again at one month post-hospitalization. The total scores for these two administrations were positively correlated ($r = .65$, $p < .001$), thus demonstrating moderate test-retest reliability of the PHBQ at one month posthospitalization. Support for the content validity of the PHBQ was demonstrated by Vernon, Schulman, and Foley (1966). Vernon et al. (1966) compared the responses of the mothers of 20 children hospitalized for tonsillectomies to psychiatric

interviews. Moderate correlations were found ($r = .47$, $p < .05$) between the behaviours described and the interview results.

Few measures are available which assess hospital-specific reactions thus, the PHBQ has been widely used (Ferguson, 1979; Field et al., 1988; Visintainer & Wolfer, 1975). The PHBQ was primarily designed to assess children's posthospital behaviour. Few studies have assessed children's prehospital behaviour and even fewer have assessed prehospital behaviour while the child was still at home. Studies using the PHBQ that have assessed prehospital behaviours have done so after the child had been admitted to the hospital. This type of assessment may not provide the most accurate responses by mothers as they have to contend with the fears occasioned by the admission and, thus, they may not be able to fully concentrate on behaviour assessments with the added strain of the admission. In order to predict children's posthospital behaviour in the present study, the PHBQ was completed by mothers 3 weeks before the child's admission to the hospital. Children's posthospital behaviour was assessed at 3 days, 3 weeks, and 2 months. (The instructions to the parent regarding the time period to consider in filling out each of the posttests are found in Appendices H, I, and J, respectively).

In order to use the PHBQ before hospitalization, authorization was obtained from Vernon (personal communication, July, 1989) to change the response format from a relative to an absolute format. The absolute PHBQ had a response format which ranged from almost never (1) to almost always (5). As stated earlier, since a prehospital behaviour assessment was of interest in the present study and due to some confusion on the part of parents concerning the completion of both the absolute and

relative versions, the relative PHBQ was excluded from further analyses. The internal consistency of the absolute PHBQ was assessed by obtaining Cronbach alpha reliability coefficients at the pre- and at the 3 day, 3 week, and 2 month posttest periods. The alpha reliability coefficients were .75, .87, .83, and .89, respectively. The inclusion criterion was an alpha coefficient of .70 or higher. Thus, the pre- and the three posttest measures were included in further analyses.

Variable Selection and Analyses

In the present study, temperament characteristics and characteristics of the parent-child relationship are used to predict children's behavioural difficulties consequent to day hospitalization. The statistical analysis utilized was hierarchical multiple regression, with the temperament variables entered in the first block and the parent-child variable entered in the second block.

The predictor variables retained for subsequent analyses were those variables that met the criterion of an alpha reliability coefficient for internal consistency of .70. Three temperament, six Child PSI, and five Parent PSI variables met this criterion. Their alpha reliability coefficients are presented in Table 2. Thus, 14 predictor variables were considered for entry in the hierarchical multiple regressions (HMRs). "Approximately 15 subjects per predictor variable are necessary for a reliable equation" (Stevens, 1986, p.58). In order to approximate the above requirement for a sample of 57 subjects, variable reduction was required. Thus, the three temperament variables were retained along with the total stress

Table 2

Alpha Reliability Coefficients for Internal Consistency for the
Present Study and for Normative Studies

Variables	Present Study	Normative Studies
Temperament		
Mood	.76	.66
Adapt	.72	.72
Approach	.81	.80
PSI		
Child domain		
Distractibility	.70	.62
Reinforces parent	.71	.70
Mood	.77	.66
Accepting	.74	.63
Adaptability	.73	.66
Demanding	.71	.62
Parent domain		
Sense of competence	.81	.74
Restriction of role	.84	.79
Relationship with spouse	.81	.70
Depression	.86	.80
Sense of isolation	.81	.73
Total Child domain	.91	.93
Total Parent domain	.94	.89
Total stress	.95	.95
Pretest	.75	
3 day	.87	.82
3 week	.83	
2 month	.89	

score on the PSI rather than the individual subscale or domain scores of the PSI. Abidin (1983) considered the total score to be of primary importance in the determination of parenting systems "at risk for the development of dysfunctional parenting behaviours or behavior problems in the child involved" (Abidin, 1983, p.28). The six Child PSI subscales were summed to give a Child Domain score, and the five Parent PSI subscales were summed to give a total Parent Domain score. The alpha reliability coefficients for internal consistency for these two domains were .91 and .94, respectively.

As previously stated a Pearson correlation coefficient of .64 was obtained between the Child and the Parent Domains. Thus, a correlation coefficient of this magnitude, indicates that it is appropriate to use the total score resultant from summing these two domains. The total stress score, which is a measure of stress within the parent-child system, was obtained by summing the Child and Parent Domain scores. The alpha reliability coefficient for internal consistency of this total score was .95. This total stress score was entered in the second block of the HMR. For the present study, the power of the test was regarded as the most important consideration in providing an unbiased analyses of the predictive power of the predictor variables.

The criterion measure for behavioural difficulties was the PHBQ and this measure was used before hospitalization and as a posttest at 3 days, 3 weeks, and 2 months posthospitalization. It is reiterated that the purpose of the present study was to ascertain whether temperament characteristics would predict posthospital behaviour and whether the addition of environmental characteristics (PSI) would increase the predictive power. Thus, this study was not designed to assess individual changes from the

pretest time of testing to the three posttest times of testing. There were a number of considerations in making the decision not to statistically measure change scores.

Firstly, Willett (1989) stated that if the variable measuring change does not retain the same psychological meaning over the various times of data collection - it is not meaningful to discuss change. In the present study eating disturbance for example, was expected to be significant at the three day posttest period but not at other points in time. Similarly, anxiety was expected to be significant at the pretest time of testing but not at any of the posttest times of testing. Thus, measuring the magnitude of change within subjects for variables that are expected to have more or less psychological impact would provide limited value. Secondly, Vernon discusses the PHBQ in terms of a total score delineating a cut-off point above which subjects are considered to demonstrate maladaptive responses to the hospital experience. Cronbach and Furby (1970) discussed change scores as "primarily a way of singling out individuals who have changed more or less than expected". Conceptually, Vernon has not defined the magnitude of change "expected" from a hospital experience.

Thus, in the present study four separate hierarchical multiple regressions were conducted in order to assess whether the three temperament predictor variables of mood, approach, and adaptability would predict behavioural difficulties. Equally important was to determine if the addition of the total stress predictor variable improved the prediction of behavioural difficulties beyond that afforded by the temperament variables at each of the four points in time.

CHAPTER IV

Results

Hypothesis 1 - Age differences

Descriptive statistics and normative data for all variables are presented in Table 3. The first hypothesis stated that age would not be significantly correlated with scores on the Vernon Hospital Questionnaire (PHBQ) at the pre- or the three posttest periods. It was also hypothesized that age would not be significantly correlated with temperament scores on the Behavioral Style Questionnaire (BSQ). Further, age was not expected to be significantly correlated with scores on the Parenting Stress Index (PSI). The hypotheses concerning age were examined by obtaining Pearson correlation coefficients between children's age and each of the variables mentioned above. This information is summarized in Table 4. Examination of these correlations indicated that age was not significantly correlated with children's scores on the pre- or posttest PHBQ, the BSQ, or the Parenting Stress Index (PSI).

Hypothesis 2 - Sex differences

The second hypothesis stated that gender would not significantly differentiate children based on their scores on the PHBQ at the pre- or the three posttest periods. Gender would also not significantly differentiate children based on their scores on the BSQ, nor on their scores on the PSI. Examination of the t-test results indicated that there were no significant

Table 3

Means and Standard Deviations for Predictor and Criterion Variables for the Present Study and Normative Studies

Variables	Present Study		Normative Studies	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Temperament				
Mood	3.21	.79	3.31	.68
Adapt	2.57	.66	2.55	.72
Approach	3.17	.94	2.99	.94
PSI				
Child domain	97.00	21.03	98.40	19.20
Parent domain	90.70	22.58	122.70	24.60
Total stress	187.70	39.47	221.10	38.90
PHBQ				
Pretest	41.21	8.87		
3 day	44.16	12.69		
3 week	38.25	9.48		
2 month	38.11	10.69		

Note. Present study: $n = 57$. Normative studies: Temperament $n = 350$, PSI $n = 534$.

Table 4

Pearson Product Moment Correlation Coefficient for Age and
Predictor and Criterion Variables

Variables	Age
Temperament	
Mood	.02
Adapt	.26
Approach	.26
PSI	
Total stress	.18
PHBQ	
Pretest	-.08
3 day	-.12
3 week	-.16
2 month	-.10

differences between girls and boys on their scores on the PHBQ pre- or posttests, temperament characteristics, or total stress (see Table 5).

Hypothesis 3 - Preorientation program

The third hypothesis stated that children who attended the preorientation program would not differ significantly on the pre- or posttest scores from children who did not attend the preorientation program. T-tests for independent groups were conducted on the scores at the pre- and three posttest periods. These results indicated that there were no significant differences between the groups at either the pre- or the three posttest periods (see Table 6).

Hypothesis 4 - Behavioural difficulties

The fourth hypothesis was concerned with the extent of behavioural difficulties consequent to day surgery. Specifically, this hypothesis stated that children's scores on the PHBQ at the 3 day posthospitalization period would be significantly different from scores at the prehospitalization period and from scores at the 3 week and 2 month posthospitalization periods. It was also hypothesized that children's scores on the PHBQ at the 3 week posthospitalization period would be significantly different from scores at the prehospitalization period. Although children's scores on the PHBQ at the 2 month posthospitalization period were expected to differ from children's scores at the prehospitalization period, the difference was not expected to be significant.

Table 5

T-Test for Independent Groups Assessing Gender Differences for
Criterion and Predictor Variables

Variables	Females		Males		t
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Temperament					
Mood	3.33	.13	3.12	.16	.97
Adapt	2.70	.71	2.48	.62	1.18
Approach	3.21	.19	3.14	.17	.26
Total stress	187.08	36.94	188.19	41.92	-.10
PHBQ					
Pretest	42.68	8.92	40.06	8.88	1.11
3 day	46.52	14.70	42.31	10.75	1.25
3 week	38.70	10.13	36.57	7.18	.76
2 month	38.98	11.41	35.43	7.83	1.08

Note. Females n = 25 and males n = 32.

Table 6

T-Tests for Independent Groups between Subjects Who Attend the Preorientation Program and Those Not Attending the Program

	Attend		Not-Attend		<u>t</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
PHBQ					
Pretest	42.07	9.51	38.57	6.05	1.29
3 day	45.14	13.66	41.14	8.84	1.02
3 week	38.70	10.13	36.57	7.18	.76
2 month	38.98	11.41	35.43	7.83	1.08

Note. Attend n = 43 and not-attend n = 14.

Repeated measures analysis of variance using BMDP2V was conducted on the total score of the Vernon Hospital Questionnaire at the pre- and three posttest periods.

The results of these analysis indicated a significant main effect for time of testing, $F(3, 168) = 8.88$, $p < .01$. Post hoc analyses indicated that scores on the PHBQ at the 3 day posttest period were significantly higher than scores at either the 3 week or 2 month posttest periods, Scheffé, $p < .01$.

Repeated measures analyses of variance were also conducted on each of the six subscales of the PHBQ at each of the four testing periods. The results of these analyses indicated a significant main effect for time of testing for four subscales of the PHBQ: (1) general anxiety, $F(3, 168) = 5.53$, $p < .05$; (2) eating difficulties, $F(3, 168) = 31.40$, $p < .001$; (3) separation anxiety, $F(3, 168) = 4.16$, $p < .05$; and (4) apathy, $F(3, 168) = 4.24$, $p < .05$.

For the general anxiety subscale, post hoc analyses indicated that scores at the 3 day posttest period were significantly higher than scores at either the 3 week or 2 month posttest periods, Scheffé, $p < .05$. For the eating disturbance subscale, post hoc analyses indicated that scores at the 3 day posttest period were significantly higher than scores at either the 3 week or the 2 month posttest periods, Scheffé, $p < .01$. Interestingly, for the eating disturbance subscale, children's scores at the pretest period were significantly higher than scores at the 2 month posttest period, Scheffé, $p < .01$.

For the separation anxiety subscale, post hoc analyses indicated that children's scores at the 3 day posttest period were significantly higher than scores at the 2 month posttest period, Scheffé, $p < .05$.

For the apathy subscale, post hoc analyses indicated that scores at the 3 day posttest period, were significantly higher than scores at the 2 month posttest period, Scheffé, $p < .05$. Table 7 presents a summary of these findings. Thus, these results supported the hypothesis that scores on the PHBQ at the 3 day posttest period would be significantly higher than scores on the PHBQ at either the 3 week or the 2 month posttest periods. This finding suggests that children do experience behavioural adjustment difficulties at the 3 day posthospitalization period. However, the hypothesis that stated that scores on the PHBQ would be significantly higher at the 3 day posttest period than scores at the pretest period was not supported, as there were no significant differences between the scores of the PHBQ at the pretest and at the 3 day posttest period. Possible explanations for this finding are presented in the discussion section. Further, the hypothesis that stated that scores on the PHBQ would be significantly higher at the 3 week posttest period than scores at the pretest period was not supported. However, the results did support the hypothesis that children's scores on the PHBQ at the 2 month posttest period would not differ significantly from scores on the PHBQ at the pretest period.

Although hypotheses concerning the type of behavioural difficulties were not offered, the results indicated that children experience a significant increase in general anxiety, separation anxiety, eating disturbances, and apathetic behaviours during various stages of the posthospitalization period.

Hypothesis 5 - Predictors of behavioural difficulties

The fifth hypothesis stated that temperament characteristics would predict behavioural difficulties consequent to day

Table 7

Means and Standard Deviations for the Subscales of the PHBQ at the Pre- and Three Posttest Periods

Scales	Pretest		Posttest					
			3 day		3 week		2 month	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Gen. anx.	8.70	2.08	9.56 ^{ab}	3.21	8.25 ^a	1.93	8.23 ^b	2.39
Sep. anx.	6.67	1.99	7.30 ^c	3.21	6.47	2.43	6.18 ^c	2.12
Sleep anx.	6.68	3.02	6.02	2.68	6.37	3.28	6.32	3.00
Eat disturb.	6.42 ^{de}	2.45	8.42 ^{de}	3.40	5.42 ^e	2.22	5.07 ^d	1.98
Ap. withdraw	8.81	2.91	9.04 ^{fg}	3.17	7.77 ^f	2.31	8.21 ^g	2.97
Aggression	3.93	1.46	3.82	1.76	3.96	1.61	4.11	1.72

Note. Means indicated by the same notation differ significantly from each other and do not differ significantly from the other mean scores.

surgery. It was further hypothesized that the inclusion of the variable assessing stress in the mother-child relationship (total stress) would increase the power of prediction beyond that afforded by the temperament characteristics alone. Specifically, the total stress variable would result in a significant increase in prediction of behavioural difficulties consequent to day surgery than temperament predictors alone.

Hierarchical multiple regressions (HMRs) were conducted in order to assess whether the three temperament characteristics of mood, approach, and adaptability would predict behavioural difficulties and to determine if the addition of the total stress variable improved the prediction of behavioural difficulties beyond that afforded by the temperament variables. The HMRs were conducted using SPSSX Regression at the pretest and at each of the three posttest periods entering the three temperament predictor variables in the first block and entering the total stress variable in the second block.

Evaluation of the assumptions for hierarchical multiple regression of normality, linearity, homoscedasticity of residuals, and multicollinearity was conducted. Initial HMRs were run at the four points in time to produce plots of residuals against predicted scores. Based on the distribution of residuals, histograms of each of the four predictor variables and the criterion variable at each of the four points in time were examined. Results of the evaluation of the assumptions led to a transformation of some of the variables to reduce skewness in their distributions. Significant levels of skewness were observed only in the three posthospitalization criterion variables ($Z = 4.52, 2.87, 3.25$, respectively) which were in excess of the criterion Z value of ± 2.58 (Tabachnick & Fidell,

1983, p.79). Initially, square root transformations were performed on these three measures. A significant level of skewness remained for the 3 day criterion variable ($Z = 3.24$); therefore, a logarithmic transformation was performed which resulted in an acceptable level of skewness ($Z = 1.89$). Thus, a square root transformation was necessary for the 3 day posttest scores and logarithmic transformations were conducted on the 3 week and the 2 month posttest scores. These three transformed criterion variables were used in subsequent analyses.

The data were examined for outliers and influential cases. Outliers on the criterion variable were assessed by examining the standardized residuals (Cook & Weisberg, 1982), whereas outliers on the predictor variables were assessed by Mahalanobis distance (Barnett & Lewis, 1978). One subject had a standardized residual at the 2 month posthospitalization period which exceeded the critical value ($4.12 > 3.54$). Cook's distance was used to assess the presence of influential cases (Cook & Weisberg, 1982) and no influential cases were identified. Thus, all subjects were retained for subsequent analyses.

Multicollinearity among the variables entered into the subsequent hierarchical multiple regression was examined. All variables entered the equation without violating tolerance. A correlation matrix among the predictor variables and the criterion variable is presented (see Table 8). An additional assessment of multicollinearity among the independent variables on all other independent variables in the equation was performed. The R 's for these regressions were .22, .30, .41, .44, indicating that multicollinearity (.90 and above) was not present (Berry & Feldman, 1985). Thus, the assumptions of normality, linearity, homoscedasticity of residuals, and non-multicollinearity were

Table 8

Pearson Product Moment Correlation Matrix of Predictor and Criterion Variables Entered in the Hierarchical Multiple Regression Equations

Variables	1	2	3	4	5	6	7	8
Predictors								
Temperament								
Mood	1.00	.49	.26	.48	.47	.25	.33	.42
Adapt		1.00	.37	.57	.45	.42	.43	.37
Approach			1.00	.44	.40	.21	.25	.29
Total stress				1.00	.55	.48	.54	.52
Criterion								
Pretest					1.00	.49	.61	.59
3 day						1.00	.66	.43
3 week							1.00	.54
2 month								1.00

met.

Subsequent HMRS were conducted at each of the four points in time with the three temperament predictor variables of mood, adaptability, and approach entered in the first block and the total stress variable entered in the second block. The results of the HMRS are presented in Tables 9 to 12 and include the standardized Betas for the predictors, the zero-order correlation coefficients and the SR_i coefficients indicating the particular effect of each variable. These analyses were conducted on the 57 subjects; thus, providing a 14:1 ratio of subjects to predictor variables. For the pretest period, the results of the HMRS were significant after the first block, with the three temperament predictor variables accounting for 34% of the variance in behavioural difficulties, $R^2 = .34$, $F(3, 53) = 8.92$, $p < .001$. Mood was a significant predictor ($p < .05$), whereas adaptability and approach were not significant predictors. Children who were rated as more negative in mood displayed more behavioural difficulties. In the second block, total stress was entered into the equation and resulted in a significant increment in R^2 , $R^2_{\text{change}} = .05$, $F(4, 52) = 4.53$, $p < .05$. Total stress was found to be a significant predictor ($p < .05$), with higher stress scores related to more behavioural difficulties. The total R^2 indicated that 39% of the variance in behavioural difficulties was accounted for with total stress in the equation.

For the 3 day posttest period, the results of the HMR were significant after the first block, with the three temperament predictor variables accounting for 18% of the variance in behavioural difficulties, $R^2 = .18$, $F(3, 53) = 3.98$, $p < .05$. Adapt was a significant predictor ($p < .05$), with children who were rated as slow to adapt displaying more behavioural

Table 9

Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at the Prehospitalization Period

Predictors	Beta	R	<u>SRi</u>	<u>F</u>
Block 1				
Mood	.30	.47	.26	2.36*
Adapt	.20	.45	.17	1.53
Approach	.24	.40	.22	2.00
Total R ² = .34	Adj. R ² = .30		<u>F</u> = 8.92**	
Block 2				
Temperament				
Mood	.23	.47	.19	1.79
Adapt	.09	.45	.07	.66
Approach	.17	.40	.15	1.39
PSI				
Total stress	.30	.55	.23	2.13*
Total R ² = .39	Adj. R ² = .34	<u>F</u> Change = 4.53		F = 8.27**

*p<.05, **p<.001

Table 10

Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at Three Days Posthospitalization

Predictors	Beta	R	<u>SRi</u>	<u>F</u>
Block 1				
Temperament				
Mood	.05	.25	.04	.35
Adapt	.38	.42	.32	2.52*
Approach	.05	.21	.05	.40
Total R ² = .18	Adj. R ² = .14			<u>F</u> = 3.98*
Block 2				
Temperament				
Mood	-.04	.25	.03	-.26
Adapt	.24	.42	.18	1.55
Approach	-.04	.21	.03	-.26
PSI				
Total stress	.37	.47	.28	2.35*
Total R ² = .26	Adj. R ² = .21	<u>F</u> Change = 5.53*		<u>F</u> = 4.63**

*p<.05, **p<.01

Table 11

Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at Three Weeks Posthospitalization

Predictors	Beta	R	<u>SRi</u>	<u>F</u>
Block 1				
Temperament				
Mood	.15	.33	.13	1.08
Adapt	.32	.43	.26	2.16*
Approach	.09	.25	.08	.69
Total R ² = .21	Adj. R ² = .17		<u>F</u> = 4.69**	
Block 2				
Temperament				
Mood	.05	.33	.04	.36
Adapt	.16	.43	.12	1.05
Approach	-.01	.25	-.01	-.11
PSI				
Total stress	.43	.54	.32	2.86**
Total R ² = .32	Adj. R ² = .26		<u>F</u> Change = 8.12**	<u>F</u> = 6.02***

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 12

Results of Hierarchical Multiple Regression Analysis of Behavioural Difficulties at Two Months Posthospitalization

Predictors	Beta	<u>R</u>	<u>SRi</u>	<u>F</u>
Block 1				
Temperament				
Mood	.16	.37	.13	2.15*
Adapt	.30	.42	.26	1.09
Approach	.15	.29	.14	1.18
Total R ² = .23	Adj. R ² = .18		<u>F</u> = 5.23**	
Block 2				
Temperament				
Mood	.02	.37	.01	.12
Adapt	.21	.42	.18	1.52
Approach	.06	.29	.05	.48
PSI				
Total stress	.38	.52	.29	2.47*
Total R ² = .31	Adj. R ² = .26	<u>F</u> Change = 6.12*		<u>F</u> = 5.83***

* $p < .05$, ** $p < .01$, *** $p < .001$.

difficulties. Mood and approach were not significant predictors at this point in time. In the second block, total stress was entered into the equation and resulted in a significant increment in R^2 , $R^2_{\text{change}} = .08$, $F(4, 52) = 5.53$, $p < .05$. Total stress was again found to be a significant predictor ($p < .05$), with higher stress scores related to more behavioural difficulties. The total R^2 indicated that 26% of the variance in behavioural difficulties at the 3 day posttest period was accounted for with total stress in the equation.

For the 3 week posttest period, the results of the HMR were significant after the first block with the three temperament predictor variables accounting for 21% of the variance in behavioural difficulties, $R^2 = .21$, $F(3, 53) = 4.69$, $p < .01$. Adapt was again found to be a significant predictor ($p < .05$), indicating that children who were slow to adapt (high scores) displayed more behavioural difficulties. Mood and approach were not significant predictors. In the second block, total stress was entered into the equation and resulted in a significant increment in R^2 , $R^2_{\text{change}} = .11$, $F(4, 52) = 8.12$, $p < .01$. Total stress was found to be a significant predictor ($p < .05$), with higher scores related to more behavioural difficulties. The total R^2 indicated that 32% of the variance in behavioural difficulties at the 3 week posttest period was accounted for with total stress in the equation.

For the 2 month posttest period, the results of the HMR were significant after the first block, with the three temperament variables in the equation accounting for 23% of the variance in behavioural difficulties, $R^2 = .23$, $F(3, 53) = 5.23$, $p < .01$. Mood was found to be a significant predictor ($p < .05$), thus children who are rated as more negative in mood displayed more

behavioural difficulties. Adapt and approach were not found to be significant predictors. In the second block, total stress was entered into the equation and resulted in a significant increment in R^2 , $R^2_{\text{change}} = .08$, $F(4, 52) = 6.12$, $p < .05$. Total stress was found to be a significant predictor ($p < .05$), with higher scores related to more behavioural difficulties. The total R^2 indicated that 31% of the variance in behavioural difficulties at the 2 month posttest period was accounted for with total stress in the equation.

Assessing the Accuracy of the Prediction

The predictive accuracy of the sample regression equation was assessed. "Approximately 15 subjects per predictor variable are needed for a reliable equation, that is, for an equation that will cross-validate with little loss in predictive power" (Stevens, 1986, p.58). If the present sample of 57 subjects was randomly divided into a derivation sample and a validation sample, the resultant samples would consist of 29 and 28 subjects. Since there are four predictor variables, this would result in a 7:1 ratio of subjects to predictor variables. Considering the above subject to predictor variable ratio, a judicious approach to assessing the predictive accuracy of the sample regression equation is the jackknife procedure. "For multiple regressions the jackknife works as follows. First, calculate a set of regression coefficients using all but one of the observations. Use these to predict the n th observation's y

value, recording the value of the prediction. Now, put that observation back in the sample, remove a different one, and recalculate the regressions coefficients using these new values to predict the y value of the new holdout, again recording the prediction. Continue this process until all n members of the sample have served as the holdout, then calculate $ry\hat{y}$ and $s^2y-\hat{y}$. The reason why this method is valid is because each prediction is based on data that are independent of the data being predicted. The advantage of this method over splitting the sample into halves and cross-validating is that the weights are estimated each time with $n-1$ observations instead of $n/2$, and the accuracy statistics are based on all n 's. In cross-validation, they are based on only $n/2$ " (Cliff, 1987, p.191).

For the sample regression equation obtained at the prehospitalization period, the jackknife procedure provided the following statistics: $rr\hat{y} = .52$, $R^2y\hat{y} = .27$, $s^2y-\hat{y}(S.E.) = 7.65$, which are compared to statistics from the sample regression equation to assess the amount of shrinkage in predictive power: Multiple $R = .62$, $R^2 = .39$, $S.E. = 7.19$. Thus, there is little shrinkage which indicates that the regression equation provides an accurate prediction.

For the sample regression equation at the 3 day posthospitalization period, the jackknife procedure provided the following statistics: $ry\hat{y} = .34$, $R^2y\hat{y} = .11$, $s^2y-\hat{y}(S.E.) = .12$, which are compared to statistics from the sample regression equation at the 3 day posthospitalization period to assess the

amount of shrinkage in predictive power: Multiple $R = .51$, $R^2 = .26$, S.E. = .10. Again, shrinkage is non significant, thus the predictive power can be considered to be an accurate statistic for the sample size.

For the 3 week posthospitalization period, the jackknife procedure provided the following statistics: $ry\hat{y} = .45$, $R^2y\hat{y} = .20$, $s^2y-\hat{y}(S.E.) = .67$, and are compared to statistics from the sample regression equation at the 3 week posthospitalization period to assess the amount of shrinkage in predictive power: Multiple $R = .56$, $R^2 = .32$, S.E. = .64.

For the 2 month posthospitalization period, the jackknife procedure provided the following statistics: $ry\hat{y} = .42$, $R^2y\hat{y} = .17$, $s^2y-\hat{y}(S.E.) = .76$. These statistics are compared to the 2 month sample regression equation to assess the amount of shrinkage in predictive power: Multiple $R = .56$, $R^2 = .31$, S.E. = .71. Thus, for the 3 week and 2 month posthospital data, shrinkage is not significant. Therefore, the regression equations can be considered to provide an accurate prediction. The results of the jackknife hierarchial multiple regressions substantiate the validity of the findings with a sample size of 57 subjects. Thus, the amount of variance accounted for in each of the multiple regressions equations is not biased by the sample size.

CHAPTER V

Discussion

Re-statement of the Purpose of the Study

The results of the present study indicate that children experience behavioural maladjustment difficulties at the 3 day posthospitalization period. Rutter (1983), indicated that, while there is a rather vast body of information concerning the effects on children of chronic or prolonged stressors, relatively little is known about the effects of acute stressors in children. The present study provides some valuable information as to the effects of acute stressful life events on children, specifically the effects of day surgery. Thus, the present study begins to address Rutter's criticism regarding the paucity of information of the effect of acute stressful life events on children.

The finding that children experience adjustment difficulties at 3 days posthospitalization is an important one. To date, many health professionals have assumed that the development of day care facilities and orientation programs in the pre-hospitalization phase alleviated children's post-hospitalization adjustment difficulties. As such, few studies have investigated children's responses to day surgery. Most of the literature on short-term hospitalization has been confined to assessments of the effectiveness of the various types of preorientation programs in reducing children's in-hospital difficulties. The vast

majority of these studies have used post-test assessments and have investigated children's post-hospitalization behavioural responses at 3 days and again at 2 or 3 weeks post-hospitalization. That is, investigations of children's posthospitalization behavioural difficulties have been concerned with the relatively immediate effects of the hospital experience and have not thoroughly investigated whether some children may experience difficulties beyond the 3 week period. The present study addresses these concerns by assessing children's scores on the Posthospital Behaviour Questionnaire (PHBQ) before hospitalization and again at 3 days, 3 weeks, and 2 months after hospitalization.

Investigations of both short- and long-term hospitalization have focused on the external variables inherent in hospital policies and procedures as factors contributing to the development of children's in- and posthospital difficulties. Little consideration has been given to internal aspects of the child and few if any studies on child hospitalization have considered external factors of the child's regular context, specifically the mother-child relationship. The present study utilized a goodness-of-fit model to assess the relation between internal child temperament characteristics and the external environmental characteristics of the mother-child relationship as factors contributing to posthospitalization difficulties consequent to day surgery. Thus, the present study provides a more comprehensive approach to understanding children's post-

hospitalization behavioural difficulties.

Discussion of Hypotheses

Age differences.

The first hypothesis which stated that age would not be significantly correlated with children's scores at the pretest and three posttest periods was supported. This finding is in contrast with the findings from studies on long-term hospitalization which have found age to be related to the development of behavioural difficulties after a period of hospitalization (Aho & Erickson, 1985; Peterson et al., 1985). Research studies which have found age to be a significant factor in the development of in- and posthospital adjustment difficulties have investigated the significance of age in relation to the length of the hospital stay. Age has been found to have a significant impact on infants and toddlers who experience a hospitalization longer than a few days due to separation anxiety (Bowlby, 1953; 1973; Vernon et al., 1966). As separation anxiety was considered to be significantly related to behavioural difficulties, it was suggested (Robertson, 1974) that precluding serious illnesses, children should not be admitted to hospital before 5 years of age.

Since the present study assessed behavioural difficulties consequent to day surgery, separation from the primary caregiver occurred only during anaesthesia induction and the actual surgical procedure; thus, separation anxiety was not expected to

be a significant factor.

There are, however, a number of studies which have investigated age in relation to fears concerning bodily harm and the loss of body parts. These studies (Aho & Erickson, 1985; Willis et al., 1982) demonstrated that age or developmental level is associated with medical fears and/or fantasies involving loss of body parts or distortion of the physical self-image. Aho and Erickson (1985) used a children's medical fears questionnaire and found that certain fears were associated with different developmental ages. Such fears could contribute to children's in- and posthospital adjustment difficulties. Children between 3 and 6 years of age appear to experience anxiety over the loss of body parts or view hospitalization as a punishment for bad behaviour. Children who experience such feelings may develop regressive behaviours once they have returned home (Kerr, 1979). Kerr (1979) also stated that children between 6 and 12 years of age experience anxiety concerning mutilation of body parts when confronted with a surgical intervention.

Children in the present study were between 3 years 6 months of age to 10 years of age; thus, according to the literature, there should have been a negative relation between age and posttest scores. This relation was not found; thus, age related behavioural difficulties may only be relevant for longer hospital stays. However, although children's medical fears were not examined in this study, it is suggested that such fears are anxiety provoking, and as such, would contribute to scores on the

PHBQ at the pretest period. Since such fears have been found to be related to developmental level, previous findings would suggest that age would be a significant factor for either short- or long-term hospitalization; however, this was not supported in the present study. Future research investigations on children's reactions to brief hospitalization should consider investigating children's fears in relation to both pre- and post-hospitalization, as well as children's fears concerning surgery and body distortion. Besides a simple assessment of these fears, the effect of long- versus short-term hospitalization on children's fears could be investigated. Further, the relation of age to such fears and the examination of possible gender differences would add substantially to the rather small body of research in the area of children's fears.

It was also hypothesized that age would not be significantly correlated with temperament scores. This hypothesis was supported. This result was expected because few studies have demonstrated a relation between age and temperament characteristics. Buss and Plomin (1984) suggested that there may be a relation between age and their temperament characteristics of activity and emotionality; however, their position is not well substantiated.

Age was not found to be significantly correlated with scores on the Parenting Stress Index (PSI) thus, this hypothesis was supported. This finding may indicate that mothers' ratings of their children's behaviour and their perceptions of the

relationship they have with their children is not associated with any particular developmental level. Specifically, satisfying relationships were not attributed to a particular age (Abidin, 1983; Lafiosca, 1981) . Similarly, parent-child relationships that were stressful were also unrelated to age.

Gender differences.

The second hypothesis stated that gender would not differentiate children on either pre- or posttest PHBQ scores, temperament scores, or scores on the PSI. This hypothesis was supported. Few studies have found differences between boys and girls on measures assessing posthospitalization behavioural difficulties. Similarly, in the area of temperament, boys and girls have not been found to differ on temperament scores (Chess & Thomas, 1986; Thomas et al., 1963; 1968;), nor have gender differences been reported for PSI scores.

Preorientation program.

A number of studies have investigated the effectiveness of preorientation programs in reducing behavioural difficulties consequent to a hospital experience; however, evidence as to their effectiveness is inconclusive. Thus, hypothesis three stated that children who attended and children who did not attend the preorientation program would not significantly differ on their scores at the 3 day, 3 week, or 2 month posttest periods. This hypothesis was supported. Significant differences were not

found between the two groups of children on post-hospitalization scores for any of the three points in time. Children attended the preorientation program from 2 to 6 weeks before the impending surgical event. Perhaps if it had been possible to provide this program during the week immediately prior to hospitalization, there would be significant differences between children who participated in the program and those who did not participate. It is suggested that the time between the actual hospitalization and the preorientation program may be too long; thus, any benefits from attending this program may be lost due to the amount of time between the two events. Perhaps there is an optimum time between the two events which determines the effectiveness of such programs. While the present researcher is unaware of research investigations that have studied the effect of the length of time between participation in a preorientation program and hospitalization and the effectiveness of these programs in reducing anxiety or other concerns about the hospitalization, this would be a worthwhile avenue to pursue.

Another possible explanation why the preorientation program appeared not to have an impact on children's posthospital adjustment may be tentatively suggested by the findings of Peterson and Toler's (1986) research on information seeking or information avoidance in children. Although there is relatively little research in this area with children, the finding that children do appear to be similar to adults (i.e., they actively seek or avoid information) suggests that efforts be directed

toward ascertaining a child's preferred style of information acquisition. Preorientation programs are designed to provide the same level of information to all children; consequently, some children may benefit from receiving this information (information seekers), whereas other children may experience increased anxiety (information avoiders). In the present study, it is possible that the subjects included both information seekers and avoiders; thus, contributing to the lack of effect of the preorientation program. It is clear that a substantial body of research assessing an information seeking or avoiding dimension in children has yet to be developed and is an area that may provide valuable contributions toward furthering our understanding of children's coping styles.

Lastly, the results indicating that there were no significant differences between children who attended and children who did not attend the preorientation program may have been due to an inadequate sample size. Thus, three statistical power analyses was performed setting power at .80, probability at .05, and expected effect size at .10, .30, and .50, which represents small, medium, and large effects, respectively, (Cohen, 1977). The results of these analyses indicated that a sample of 783 subjects is required when a small effect is expected in order to detect a significant difference between children attending and those not attending the preorientation program. Similarly, a medium effect, which is an acceptable convention (Cohen, 1977), would require a sample of 84 subjects,

and a large effect would require a sample of 28 subjects.

The present study used 57 subjects, which, according to the results of the statistical power analyses, is not large enough to detect moderate effect sizes 80% of the time when they really do exist. As a result, a strong test of the hypothesis was not possible. In order to provide a robust test of this hypothesis a minimal sample of 84 subjects would be required. Some researchers have suggested that preorientation programs are effective in reducing the occurrence of adjustment difficulties consequent to hospitalization. Other investigators have suggested that preorientation programs do not appear to reduce adjustment difficulties. Thus, the results are inconsistent. It is suggested that this inconsistency may be resultant from the fact that very few studies in this area have used sample sizes which satisfactorily meet the requirements of power analysis. Accordingly, future investigators would do well to consider much larger sample sizes in order to assess the effectiveness of preorientation programs in alleviating children's adjustment difficulties.

Posthospitalization behaviour.

A number of interesting results concerning children's pre- and posthospital PHBQ scores were found. The fourth hypothesis stated that children's scores on the PHBQ would be significantly higher at the 3 day posttest period than at the pretest or at the 3 week and 2 month posttest periods. This hypothesis was

partially supported. The results indicated that children's scores on the PHBQ at the 3 day posthospitalization period were significantly higher than their PHBQ scores at either the 3 week or 2 month posttest periods. Thus, in the present study, it is apparent that children are experiencing significantly more behavioural adjustment difficulties at the 3 day posttest period than at the 3 week or 2 month posttest periods. However, the 3 day posthospitalization PHBQ scores were not significantly different from the PHBQ pretest scores, which indicated that the pretest scores were higher than expected. In order to try to understand the reason for the higher than expected pretest scores, the 19 optional-item Life Stress Scale was examined. A t-test for differences between life stress scores before hospitalization and 2 months after hospitalization was conducted. The results indicated that the pre-hospital life stress scores were significantly higher than the 2 month life stress scores, $t(56) = 5.27, p < .001$. It is somewhat puzzling as to why the present sample experienced a significantly higher life stress score than one would expect given a sample of this size. This finding, however, may explain why the pretest scores were not significantly different from the 3 day posttest scores.

To further our understanding, analysis of variance for repeated measures were conducted on the six subscales of the PHBQ at each of the four points in time. Four of the six subscales were significant; general anxiety, separation anxiety, eating disturbance, and apathy. In a further attempt to understand why

the pre- and 3 day posttest scores were not significantly different, post hoc analyses were conducted on these four subscales at the four points in time. The finding that scores on the general anxiety subscale for the 3 day posttest period were significantly higher than scores at either the 3 week or 2 month posttest period was not expected. This is an interesting finding as one would expect this subscale to be significantly higher at the pretest period than at any other point in time, including the 3 day posttest period, as it would be logical to assume that children would experience anxiety concerning the pending surgery. General anxiety, however, appears to be a significant factor after the surgical event has occurred, suggesting perhaps, some type of delayed reaction. The literature concerning children's fears may provide some insights as to why the anxiety scores were highest at the three day posttest period.

As stated earlier, Aho & Erickson (1985) found children's medical fears to be related to age or developmental level. Age was not found to be correlated with PHBQ pre- or posttest scores in the present study and, although children's medical fears were not directly assessed, it is suggested that such fears were anxiety provoking. This may explain the high general anxiety scores at the 3 day posttest period. Perhaps children have difficulty conceptualizing what surgery actually means; thus, they are not anxious about what they cannot understand. The surgical event may only become relevant after the fact. This implies that once the surgical event has occurred, children may

become concerned about what has been removed from their body and what effect this lost part will have on their body image. While this is a hypothetical position, studies investigating children's fears should consider utilizing a pre-post design. Piaget (1960) discussed children's cognitive capacities and related these cognitive capacities to various developmental stages. His formulations concerning concrete versus formal operations and children's ability to conceptualize are important considerations in assessments of children's perceptions concerning unfamiliar events (Thomas & Chess, 1977). Children at the concrete operations stage may perceive a situation or event as non threatening when the event has not been experienced. In the present study, most of the children would be at the concrete operations stage and as such their perceptions may shift predominantly after they have experienced the event. It is suggested that assessments of children's fears concerning hospitalization should occur before and after hospitalization in order to ascertain whether changes in their perceptions occur due to the hospitalization experience. If it is found that children appear to experience negative perceptions after a hospital experience, intervention strategies aimed at correcting such perceptions could be utilized.

It was hypothesized that separation anxiety would not be a significant factor for children admitted to the hospital for less than one day; however, post hoc analysis indicated that children's PHBQ scores on the separation anxiety subscale at the

3 day posttest period were significantly higher than at the 2 month posttest period. This finding was unexpected, as children were separated from the primary caregiver only during the actual surgical event. If separation anxiety was expected to affect children's posthospital adjustment, it would be expected that scores on this subscale would be higher at the 3 day posttest period than at any other point in time. As this was indeed the case, it is not easily understood why separation anxiety would be a factor when there was no prolonged separation. Examination of the items in the separation anxiety scale indicated that of the five items that comprise this subscale scale, three of the five items could refer to general anxiety (i.e., "Does your child seem to get upset when someone mentions doctors or hospitals; does your child have bad dreams at night and wake up and cry?). Each of these items could refer to general anxiety or could be behaviours engaged in by a demanding or generally insecure child. Thus, it is suggested that these items do not refer exclusively to a separation anxiety factor.

Post hoc analysis indicated that children's PHBQ scores on the eating disturbance subscale were significantly higher at the 3 day posttest period than any other point in time and the pretest scores were higher than the 2 month posttest scores. These findings are not surprising as the nature of the surgery (tonsillectomy) would suggest that eating behaviours would be adversely affected. Further, the finding that the pretest scores were significantly higher than the 2 month posttest scores is

also not unexpected. Children who require tonsillectomies usually experience repeated episodes of colds and sore throats; thus, eating behaviours could be adversely affected by such maladies. Further, tonsillectomy procedures involve a moderate degree of discomfort, again, affecting eating habits. Thus children may experience a prolonged period both pre- and postoperatively, before eating behaviours assume more normal patterns.

The final subscale of the PHBQ to be discussed is the apathy subscale. Children's scores on this subscale at the 3 day posttest period were significantly higher than scores at the 3 week posttest period. Simply, it is suggested that the significant differences in scores may be due to a requisite recovery period due to the surgical event.

Thus, in summary, the results suggest that at the 3 day postsurgery time, children are experiencing behavioural adjustment difficulties. While the significant findings for the eating disturbance subscale may be related to the type of surgery, this explanation (type of surgery) cannot explain the significant findings concerning children's scores on the general anxiety, separation anxiety, and apathy subscales. Further research is required, in which a number of different types of surgical interventions are investigated, in order to verify the findings in the present study concerning the effect of day surgery on children's posthospitalization behavioural scores.

However, many of the studies on day surgery have included

tonsillectomies, adenoidectomies, hernia repairs, myringotomies, cardiac catheterizations, and various orthopaedic surgeries. All of these surgical interventions are considered to be minor surgical events. The amount of time spent under general anaesthesia, the length of time required to finish the procedure, and the course of recovery are similar (Field et al., 1988).

In addition, because of the short duration of confinement and recovery, pain is not an influential factor. Thus the findings from the present study can be generalized to other day surgical or day hospitalization procedures. However, it would be inappropriate to generalize the findings from this study to any procedures requiring hospitalization until future studies have replicated the findings on an inpatient population.

Prediction of posthospitalization behavioural difficulties.

The final hypotheses, which were concerned with the predictive power of temperament characteristics and the predictive power of characteristics within the mother-child system for behavioural adjustment difficulties, were supported and provide further justification for using the child-in-context approach. The finding that the addition of the total stress variable, which represents the mother-child relationship, and as such, the child-in-context, significantly increased prediction of behavioural difficulties at the pre- and at each of the three post-test periods underlines the importance of the mother-child relationship and the goodness-of-fit model.

As explained in the results section, hierarchical multiple regressions (HMRs) were conducted by entering the three temperament variables of mood, adapt, and approach in the first block, and then entering the total stress variable in the second block. It was hypothesized that the three temperament variables would predict behavioural adjustment difficulties consequent to day surgery. It was further hypothesized that the inclusion of the total stress variable in the second block of the HMRs would increase the predictive power beyond that afforded by the temperament characteristics alone.

The results of the HMRs indicated that the three temperament characteristics significantly predicted behaviour problems at the pre- and at each of the three posttest periods. Further, the temperament characteristic of mood was a significant predictor at both the pre- and the 2 month posttest periods. At the 3 day and the 3 week posttest periods, the temperament characteristic of adapt was a significant predictor of behavioural difficulties.

In the second block of the HMRs, the total stress variable was added to the prediction equation. The total stress variable, which assess both the Child and Parent domains from the PSI, provided an increase in predictive power at the pre-test period and at each of the three posttest periods. Since this variable has functional significance in the child's daily context, it is reasonable to assume that this variable would provide increased predictive power. Thus, the hypotheses concerning the predictive power of temperament characteristics and of the total stress

variable for behavioural adjustment difficulties were supported.

It is of some interest that different temperament characteristics were predictive at different points in time. The child-in-context theoretical framework may provide an answer. It is possible that during the prehospital period, the mother-child relationship was experiencing some stress as has already been indicated by the higher than expected life stress scores at the pretest period. It is suggested that the additional stressor of the hospital experience, which changed the immediate context, impacted on some children's ability to adapt to this new stressor. This may explain why the temperament variable of adaptability predicted children's posthospital adjustment difficulties at both the 3 day and 3 week posttest periods, but not at the pre- or 2 month posttest periods. Once the hospital experience assumed less prominence with the passage of time, the quality of the mother-child relationship again dominated the child's context. This is supported by the finding that the mood variable was predictive at the pretest period and again at the 2 month posttest period.

In discussing the consistency of temperament characteristics in relation to the goodness-of-fit or child-in-context theoretical rationales, Chess and Thomas (1986) and others (Thomas et al., 1963; 1968; 1977) have emphasized that one would expect different temperament characteristics to gain more prominence at different points in the individual's life. They state that the process is susceptible to discontinuities and such

discontinuities may place the child in a position of dissonance between environmental expectations and the child's capabilities at that particular time. Certain temperament characteristics may be of more importance depending on the individual's context and these same characteristics may assume a less important role when the context changes.

The present study appears to substantiate this point of view. The temperament characteristic of approach appears to assume a less important role as it did not contribute to the prediction of behavioural difficulties at the pretest, nor did it contribute to the prediction at either of the three posttest periods. The temperament characteristic of approach according to Thomas et al. (1963; 1968; 1977) is related to the child's characteristic response to new stimuli which usually involves encounters with new persons. The child may approach or withdraw from these new events or encounters depending on his/her usual style of responding. However, the child's usual mode of approach may be altered or modified by environmental or societal demands and other temperament characteristics may dominate the child's mode of responding; such characteristics may assume prominence for a period of time.

In the present study, adapt predicted children's behavioural difficulties in the first block of the HMRS at the 3 day and 3 week posttest periods; that is, slowness in adapting was related to behavioural difficulties. Thomas et al. (1968; 1977) describe the temperament characteristic of adaptability in terms of the

ease with which children adapt to novel events or in terms of the slowness in adapting to such events. Certain children may be able to adapt or adjust to most situations if they are permitted the necessary amount of time to make sense of the new event.

When this time is not available, such children can exhibit behavioural difficulties because they are not able to order their world. It is suggested that for these children, day surgery or day hospitalization may not be beneficial because the process occurs too quickly; they do not have the necessary time to make sense of the event or to match it to a familiar pattern.

Piaget (1960) suggest that learning is a component or consequence of sophisticated patterns of action and thinking. Novel patterns have their foundations in older, previously learned behaviours. Various stages of development are sequential and new behavioural patterns or thinking generalizes to other aspects of reality, although there may be some time delay for this process to occur. The child attempts to generalize old behaviours to a multitude of situations and modifies them in an effort to adapt to the new aspects of his/her situation. This modification is termed accommodation and the process of patterns of action and thinking are termed schema. A stimulus arouses a schema which has been developed through similar or familiar experiences. If similarities are indeed found, the new experience is assimilated into that schema and the child is able to link the new with the old. Some new situations can be so foreign for some children that they are unable to find a match with an existing schema.

For other children, their context at that time may prevent them from having the necessary time to process the new event and find an existing schema. This latter situation could occur in children who experience stress within the mother-child relationship and are, thus, unable to cope with additional stressors.

In either case, the child is unable to accommodate or modify the new reality. When this occurs the child's usual style of adaptive functioning is subjected to an inability to meet the demands of the new situation. Thus, the child, unable to meet the demands of the situation may be at risk for the development of behavioural difficulties because the child is unable to impact or control the environment. It is suggested that the perception of lack of control over the immediate aspects of the environment which appear threatening to the child, determines which temperament characteristics predominate at any point in time. Thus, in the present study, the novel event of the hospital experience may have resulted in some children experiencing a loss of control, which then affected their ability to respond to or cope with the situation. The child, however, must find some way of coping with the event; thus, the temperament characteristic of adaptability is seen to predict behavioural difficulties at 3 days and again at 3 weeks posthospitalization. After this point in time, the child has, most likely, regained a perceived sense of control over the events in his/her life due to the familiarity of their home environment. Thus, the child's regular context

assumes priority.

This view that the child's regular context assumes priority in time receives some support in the present study; in that, the temperament characteristic of child mood predicts behavioural difficulties at the prehospitalization period and again at the 2 month posthospital period. Thus, the results of the HMRs support a child-in-context model.

Other researchers have reported mood and adaptability to be predictive of a variety of outcomes. Van Tassel (1985) found that the temperament characteristics of child mood and adaptability were highly correlated with maternal depression. Specifically, negative mood and slow adaptability were related to maternal depression. In another study, Lancaster et al. (1989) investigated the relation between child temperament variables and maternal characteristics on maternal ratings of child behaviour. These researchers concluded that child mood was predictive of mother's psychological health and of her sense of competence in her dual role of wife and mother. That is, negative mood in children predicted mother's perceptions of poor psychological health, as well as a lack of confidence in her dual role of wife and mother.

In the present study, the total stress variable, which assesses the child's context, added to the prediction of behavioural difficulties at all four points in time. This variable assesses aspects of maternal perceptions of her child and her dual role as wife and mother. As such, maternal

perceptions can affect the way the mother interacts with her child and, by extension, the style of interaction that they have with each other. The type of interaction can contribute to the degree of stress within the mother-child system.

In other research, children's adjustment to stressors have been related to the mental and/or physical health of the mother, quality of support systems, and the spousal relationship (Longfellow & Belle, 1984). These researchers used the above variables to successfully predict children's ability to adjust to a number of different stressors. They found that maternal mental and physical health were predictive of a satisfying mother-child relationship. Mothers' lack of emotional and physical health were stressors that had a significant negative impact on children's adjustment. Longfellow and Belle (1984) found that supportive relationships act as an important buffer between stress and children's behavioural difficulties. Thus, they concluded that the emotional well being of the primary caregiver was important for a child's healthy development and ability to adapt or adjust to new situations. They emphasized the importance of viewing children's adjustment or reaction to stressors in the context of the family situation. Another study (Crnic, Greenberg, Robinson, & Ragozin, 1984) found that mothers' perceived stress and lack of supportive adult relationships were significant predictors of both maternal attitudes and the quality of the mother-child relationship.

These findings provide some support for the influence of

maternal satisfaction as a factor determining the quality of the parent-child relationship and also the impact of maternal satisfaction on children's adjustment difficulties. The present study used the total stress variable of the Parenting Stress Index rather than the subscales assessing individual child and parent characteristics. The total stress score was used in order to maintain an adequate subject to variable ratio (14:1), thus providing a reliable multiple regression equation.

Abidin (1983) recommends using the total stress variable to identify parent-child relationships which may be at risk for the development of behavioural difficulties in children. High scores on the Child domain represents aspects of the child which make parenting difficult. Children who obtain high scores usually experience difficulty adjusting to most changes in daily routines (Abidin, 1983). These children can also be excessively demanding, aggressive, and are frequently moody. Such children can make the parenting task difficult and unrewarding. Parents of such children can be seen to be operating from a position of stress; in that, they may feel inadequate in being able to satisfy their child's needs. Thus, there is stress within the mother-child system. The child-in-context theoretical framework suggests that the child can impact on the environment and the environment can impact on the child.

The present study demonstrates the merit of using temperament characteristics and the child-in-context to predict children's posthospital adjustment difficulties consequent to day

surgery. It has been shown that, while temperament characteristics alone can predict adjustment difficulties consequent to a brief surgical intervention, the addition of the child-in-context variable, which was represented by the total stress variable and comprises aspects of the mother-child relationship, increased significantly the power of prediction. Further, the temperament characteristics of mood and adaptability appear to be significant predictors of children's adjustment difficulties at the pre- and at each of the three posttest periods.

These findings suggest that it may be feasible to develop a prehospital assessment measure consisting of the items from the mood and adaptability sections of the Behavioral Style Questionnaire (McDevit et al., 1978) and of items from the Child and Parent domains of the Parenting Stress Index (Abidin, 1983). This measure could be utilized to (1) identify a child's coping style and (2) identify parenting systems which may be at risk for the development of behavioural difficulties in children consequent to a brief hospitalization.

The results of several investigations (Peterson et al., 1985; Peterson & Shigetomi, 1981; 1982; Peterson & Toler, 1986) found that children's coping styles regarding the hospital experience were an important determinant of their ability to adapt to this event without experiencing maladaptive behaviours. They found that some children preferred to receive as much information as possible, while other children attempted to avoid

most efforts to provide them with information concerning the hospital experience. This latter group of children avoided, repressed, and used distraction techniques to prevent receiving information. This being the case, these authors concluded that preorientation programs offered by the majority of hospitals may in fact be detrimental to children who are termed information avoiders. The results of the present study support the above view in that, there were no significant differences for the PHBQ posttest scores between children who attended the program and those who did not attend the program. It is also suggested that identification of children's coping style is an important consideration in the development of programs designed to decrease anxiety or stress.

Further, Carey (1985) emphasized that children's individual or temperament differences may have a greater impact on a child than on an adult, simply because the adult may be better equipped to effect changes in his/her context than the child. Carey specifically refers to changes that assist adaptive functioning and states that clinicians should increase their knowledge about the importance and consequences of differences which place the child at risk for maladaptive functioning. Increased information to parents concerning a child's style of adaptive functioning increases parents understanding of the reasons behind maladaptive behaviour. Such information can alleviate stress within the parent-child system especially if the parent feels incompetent in the parenting role and, as such, feels responsible for the

child's maladaptive functioning. Carey (1985) suggests that the identification of temperament characteristics provides an organized picture of children's behaviour and this picture can enable the clinician/parent to impact positively on the temperament-environment interaction. The results of the present study suggest that identification of predictors of behavioural difficulties consequent to day surgery provides a means of identifying children at risk for the development of such behavioural difficulties.

Supplemental Analyses

What is needed is a brief but accurate measure, which could be used by hospital personnel to identify potential at risk children, before an actual admission occurred. Such a measure would enable appropriate intervention strategies designed to reduce the risk of the development of behavioural difficulties consequent to day hospitalization. In an attempt to address this issue, supplemental analyses were conducted in which the three significant predictor variables from the HMRS were utilized to identify children who would be expected to be at risk for behavioural difficulties. Subjects whose scores were one standard deviation above the mean on either a temperament variable (mood or adapt) or on the total stress variable were classified as the at risk group. All other subjects formed the second group. T-tests for independent groups were then conducted on the pre- and posttest PHBQ scores. Mood and total stress were

used to group children at the pre- and 2 month posttest periods, whereas adapt and total stress were used to group children at the 3 day and 3 week posttest periods. The results are presented in Table 13 and indicate that when the mood, adapt, and total stress scales are utilized to identify at risk children, the identified at risk children do display more behavioural difficulties than the non risk children. The results of the present study indicate that a brief and accurate measure can be used to identify at risk children, specifically children at risk for behavioural difficulties consequent to a brief hospitalization.

The finding that the parent-child relationship adds to the prediction of children's adjustment difficulties consequent to the hospital experience emphasizes the importance of the goodness-of-fit model. Eyberg and Robinson (1982) suggest that it is possible to alter the interaction patterns between parent and child to effect an increased ability of family members to relate to each other and thus change dysfunctional behaviours both in the child and within the parenting system. It should be possible then to effect changes within the parent-child system when such systems negatively impact on children's behaviour consequent to day hospitalization. Specifically, the identification of characteristics that constitute a poor fit between parent and child or parent and parent would permit the development of strategies geared toward making the fit more compatible.

The value of research into temperament characteristics lies

in its contribution to the management of maladaptive behavioural adjustment difficulties.

Limitations of the Present Study

The present study would have provided more information concerning the predictive power of temperament characteristics and of the predictive power of the individual subscales of the Child and Parent domains of the Parenting Stress Index if a larger sample size had been available. Although a sample size of 57 subjects over four data collection points was sufficient for the present study, a larger sample size would have permitted a number of additional analyses. As well, a larger sample size would have permitted a factor analysis of the Behavioral Style Questionnaire (McDevit & Carey, 1978). A factor analysis would provide further support or lack of support for the nine dimensions of temperament. The present study utilized only those temperament characteristics that met the stringent reliability coefficient criteria of .70. The controversy regarding the actual number of temperament categories is far from being settled and much more research on the temperament measures in use needs to be done before this controversy is resolved. There has been a shift away from classification of children into one of three temperament categories and toward investigating individual temperament characteristics. The present study identified three temperament characteristics and the position is taken that although these three do represent temperament, they are not

representative of all possible dimensions of temperament. The actual number of temperament dimensions has not been firmly established, however, temperament is not considered to be a unitary concept. Few researchers would agree with an all or nothing definition of temperament just as few researchers agree on an actual number of characteristics that define temperament. The temperament area is influx and there are no clear, definitive conclusions concerning all the characteristics representing this construct. Thus, it is important for future research to continue investigations on the temperament measures and to provide eventually, a measure which satisfies most psychometric properties.

As to the child-in-context model a larger sample size would have permitted entering the subscales of both the Child and Parent domains into the hierarchical multiple regression equations. The present study was able to demonstrate the predictive power of the total stress variable and was thus able to show that the parent-child system can significantly predict posthospital adjustment difficulties. This finding provides new information on children's responses to short-term hospitalization. However, with a larger sample size, it may be possible to identify specific child and parent behaviours which contribute to successful adaptive responses and to identify which

Table 13

Supplemental Analyses T-Tests for Predictor Variables for Pre-
and Posttest Data

	Risk		No Risk		
Variables	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>
Adapt					
3 day	53.27	15.85	40.90	9.64	3.56*
3 week	44.87	10.66	35.88	7.88	3.44*
Mood					
Pretest	47.89	8.98	38.12	6.99	4.47*
2 month	48.72	9.69	35.05	9.80	3.48*

* $p < .001$

Note. Risk group: adapt $n = 15$, mood $n = 18$. No risk group:
adapt $n = 42$, mood $n = 39$.

aspects contribute to maladaptive behavioural functioning. The incorporation of a larger sample is necessary in order to provide the above information.

Finally, future research on children hospitalized for day surgery should include assessments of children's medical fears, thus providing more information as to factors which may mitigate children's healthy post-hospitalization adjustment.

Concluding Comments

This study provides a valuable contribution to the body of literature on the hospitalization of children for day surgery. It has been assumed that the majority of children would experience few if any effects from such short-term hospitalization. This assumption has been responsible, to a large extent, for the paucity of research in the area of short-term or day hospitalization. Most research in this area has been concerned with the evaluation of preorientation programs and assessments of their effectiveness in the prevention of in- or posthospitalization behavioural adjustment difficulties. Further, because the research findings on the effects of long-term hospitalization had implicated separation anxiety to be a causal factor in the development of both in- and posthospitalization difficulties, it was assumed that children would not experience adjustment difficulties if separation from the primary caregiver was not a factor. The present study has shown this assumption to be incorrect. Children do experience

posthospital adjustment difficulties at the 3 day post-hospitalization period. The present study demonstrated that the use of temperament characteristics and characteristics of the mother-child relationship is a viable method with which to begin to identify the sources of difficulty; however, more research in this area needs to be undertaken. It is hoped that this present study will be responsible for stimulating further research endeavours in this area.

REFERENCES

- Abidin, R. (1982). Parenting stress and the utilization of pediatric services. Children's Health Care, Fall.
- Abidin, R. (1983). Parenting Stress Index -- Manual. Charlottesville, VA: Pediatric Psychology Press.
- Abrams, L. (1982). Resistance behaviors and teaching media for children in day surgery. AORN Journal, 35, 244-258.
- Adamson, J., Hershberg, D., & Shane, F. (1976). The psychic significance of parts of the body in surgery. In J. G. Howells (Ed.), Modern perspectives in the psychiatric aspects of surgery (pp. 20-47). New York: Brunner/Mazel.
- Aho, A. (1984). Effects of grade, gender and hospitalization on children's medical fears. Unpublished doctoral dissertation, Virginia Commonwealth University.
- Aho, A., & Erickson, M. (1985). Effects of grade, gender and hospitalization on children's medical fears. Developmental and Behavioral Pediatrics, 6(3), 146-153.
- Ainsworth, M. (1979). Infant-mother attachment. American Psychologist, 34, 932-937.
- Ainsworth, M., & Bell, S. (1974). Mother - child interaction and the development of competence. In K. Connolly & J. Brunner (Eds.), The growth of competence (pp. 77-118). New York: Academic Press.
- Ainsworth, M., Blehar, M., Waters, C., & Wall, S. (1978). Patterns of attachment: A psychological study of the strange situation. Hillsdale, NJ: Earlbaum Associates.
- Ainsenberg, R. B., Wolff, P. H., Rosenthal, A., & Nadas, A. S. (1973) Psychological impact of cardiac catheterization. Pediatrics, 51, 1051-1059.
- Allport, G. (1961). Pattern and growth in personality. New York: Holt, Rinehart & Winston Inc.
- Anthony, J. (1968). The child's discovery of his body. Physical Therapy, 48, 1109.

- Anthony, E. J., Koupernik, C., & Chiland, C. (1978). The child in his family: Vulnerable children. New York: Wiley.
- Barnett, V., & Lewis, T. (1978). Outliers in statistical data. In J. Stevens (Ed.), Applied multivariate statistics for the social sciences (p. 91). New Jersey: Lawrence Erlbaum.
- Barowsky, E. I. (1978). Young children's perceptions and reactions to hospitalization. In E. Gellert (Ed.), Psychosocial aspects of pediatric care (pp. 37-49). New York: Grune and Stratton.
- Bates, J., & Bayles, K. (1982). Meanings in parent questionnaires: Meta-analysis of mothers' perceptions from age 6 months to 3 years. Paper presented at the biennial meeting of the Society for Research in Child Development, Detroit.
- Bates, J. E. (1980). The concept of difficult temperament. Merrill-Palmer Quarterly, 26, 299-319.
- Beck, A., Ward, C., Mendelson M., Mock, J., & Exbaugh, J. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.
- Behar, L. (1977). The preschool behavior questionnaire. Journal of Abnormal Child Psychology, 5, 265-275.
- Behar, L., & Stringfield, S. (1974). The behavior rating scale for the preschool child. Developmental Psychology, 10, 601-610.
- Beller, E. K., & Neubauer, P. B. (1959). Patterning of symptoms in early childhood. Paper presented at the American Psychiatric Association, Philadelphia.
- Belsky, J., Lang, M., & Rovine, M. (1985). Stability and change in marriage across the transition to parenthood: A second study. Journal of Marriage and the Family, 47, 855-865.
- Berry, W., & Feldman, D. (1985). Multiple regression in practice. Beverly Hills, CA: Sage Publications.
- Beuf, A. H. (1979). Biting off the bracelet: a study of children in hospital. Pennsylvania: University of Pennsylvania Press.
- Beverly, B. I. (1936). The effects of illness upon emotional development. Journal of Pediatrics, 8, 533-543.

- Blumberg, M. L. (1977). Depression in children on a general paediatric service. Paper presented at the thirteenth national scientific meeting of the Association for the Advancement of Psychotherapy, Toronto.
- Bowlby, J. (1951). Maternal care and mental health. Geneva: World Health Organization.
- Bowlby, J. (1953). Child care and the growth of love. Harmondsworth: Pelican Books.
- Bowlby, J. (1969). Attachment and loss. Volume 1. Attachment. New York: Basic Books.
- Bowlby, J. (1973). Attachment and loss. Volume 2. Separation. New York: Basic Books.
- Brewster, A. B. (1982). Chronically ill hospitalized children's concepts of their illness. Pediatrics, 69, 355-362.
- Brodie, S. (1974). Views of healthy children toward illness. American Journal of Public Health, 64, 1156-1158.
- Brophy, J. (1983). Research on the self-fulfilling prophesy and teacher expectations. Journal of Educational Psychology, 75 (5), 631-661.
- Brown, B. (1979). Beyond separation: Some new evidence on the impact of brief hospitalization on young children. In D. Hall & M. Stacey (Eds.), Beyond separation: Further studies of children in hospital. London: Routledge & Keegan Paul.
- Brown, R. D., & Semple, L. (1970). Effects of unfamiliarity on the overt verbalization and preconceptual motor behavior of nursery school children. British Journal of Educational Psychology, 40, 291.
- Burke, W. T. (1978). The development of a technique for assessing the stresses experienced by parents of young children. Unpublished doctoral dissertation, University of Virginia.
- Burnstein, S., & Meichenbaum, D. (1979). The work of worrying in children undergoing surgery. Journal of Abnormal Child Psychology, 7, 121-132.
- Buss, A., & Plomin, R. (1975). A temperament theory of personality development. New York: Wiley.

- Buss, A., & Plomin, R. (1984). Temperament: early developing personality traits. New Jersey: Lawrence Erlbaum.
- Canada Health Statistics, 1987-1988. Personal Communication, (May 1990).
- Carey, W. (1985). Temperament and increased weight gain in infants. Developmental and Behavioral Pediatrics, 6(3), 128-131.
- Carey, W., Fox, M., & McDevitt, S. (1977). Temperament as a factor in early school adjustment. Pediatrics, 60, 621-624.
- Cassell, S. (1965). Effect of brief puppet therapy upon the emotional responses of children undergoing cardiac catheterization. Journal of Consulting and Clinical Psychology, 29(1), 1-8.
- Castell, R. (1970). Effect of familiar and unfamiliar environments on proximity behaviour of young children. Journal of Child Psychology, 9, 342.
- Chess, S., & Hassibi, M. (1970). Behavior deviations in mentally retarded children. Journal of the American Academy of Child Psychiatry, 9, 282-297.
- Chess, S., Korn, S., & Fernandez, P. (1971). Psychiatric disorders of children with congenital rubella. New York: Brunner/Mazel.
- Chess, S., & Thomas, A. (1986). Temperament in clinical practice. New York: Guilford Press.
- Cliff, N. (1987). Analyzing multivariate data. New York: Harcourt Press.
- Cohen, D., & Lazarus, A. (1973). Active coping processes, coping dispositions and recovery from surgery. Psychosomatic Medicine, 35, 375-389.
- Cohen, J. (1977). Statistical power analysis for the behavioral sciences (rev. ed.). New York: Academic Press.
- Cohen, J., & Cohen, P. (1975). Applied multiple regression/Correlational analysis for the behavioral sciences. New York: Lawrence Erlbaum Associates.

- Cook, R., & Weisberg, S. (1982). Residuals and influences in regression. In J. Stevens (Ed.), Applied multivariate statistics for the social sciences (p. 118). New Jersey: Lawrence Erlbaum.
- Crnic, K. A., Greenberg, H. T., Robinson, N. M., & Ragozin, A. S. (1984). Maternal stress and social supports: effects on the mother-infant relationship from birth to eighteen months. American Journal of Orthopsychiatry, 54(2), 224-235.
- Cronbach, L. J., & Furby, L. (1970). How should we measure "change" - or should we? Psychological Bulletin, 74, 68-80.
- Dearden, R. (1970). The psychiatric aspects of the case study sample. In M. Stacey (Ed.), Hospitals, children and their families: The report of a pilot study (pp. 55-84). London: Routledge & Keegan Paul.
- Dickie, J., Schroeder, C., Van Noord, M., & Cushman, D. (1987). Temperament and family functioning as predictors of toddler social competence. Paper presented at the April 1987 biennial meeting of the Society for Research in Child Development, Baltimore.
- Douglas, J. W. B. (1975). Early hospital admissions and later disturbances of behaviour and learning. Developmental Medicine and Child Neurology, 17, 456-480.
- Drotar, D. (1981). Psychological perspectives in chronic illness. Journal of Pediatric Psychology, 6, 211-228.
- Dunn, J. (1980). Individual differences in temperament. In Rutter, M. (Ed.), Scientific foundations of developmental psychiatry (pp. 101-109). London: Heinemann Medical Books.
- Dunn, J., & Kendrick, C. (1980). Studying temperament and parent-child interaction: Comparison of interview and direct observation. Developmental Medicine and Child Neurology, 22, 484-496.
- Emery, R. E., & O'Leary, K. D. (1982). Children's perceptions of marital discord and behavior problems of boys and girls. Journal of Abnormal Child Psychology, 10, 11-24.
- Erikson, E. (1963). Childhood and society (2nd ed.). New York: Norton.
- Eyberg, S., & Robinson, E. (1982). Parent-child interaction training: Effects on family functioning. Journal of Clinical Child Psychology, 11(2), 130-137.

- Ferguson, B. F. (1979). Preparing young children for hospitalization: a comparison of two methods. Pediatrics, 64(5), 656-664.
- Fergusson, D. M., Horwood, L. J., & Shannon, F. T. (1984). Relationship of family life events, maternal depression, and child-rearing problems. Pediatrics, 73, 773-776.
- Field, T., Alpert, B., Vega-Lahr, N., Goldstein, S., & Perry, S. (1988). Hospitalization stress in children: Sensitizer and repressor coping styles. Health Psychology, 7(5), 433-445.
- Finch, S., & Crowe, P. (1976). Psychiatric aspects of children undergoing surgery. In J. Howells (Ed.), Modern perspectives in the psychiatric aspects of surgery (pp. 659-670). New York: Brunner/Mazel.
- Forehand, R., Wells, K. C., McMahon, R. J., Griest, D., & Rogers, T. (1982). Maternal perceptions of maladjustment in clinic referred children: an extension of earlier research. Journal of Behavioral Assessment, 4, 145-151.
- Frailberg, S. (1959). The magic year. New York: Charles Scribner & Sons.
- Frank, J. L. (1978). A weekly group meeting for children on a pediatric ward: therapeutic and practical functions. International Journal of Psychiatry in Medicine, 8(3), 267-283.
- French, J., Rodgers, W., & Cobb, S. (1974). Adjustment as person-environment fit. In G. Coelho, D. Hamburg, & J. Adams (Eds.), Coping and adaptation (pp. 316-333). New York: Basic Books.
- Friedlander, S., Weiss, K., & Traylor, J. (1986). Assessing the influence of maternal depression on the validity of The Child Behavior Checklist. Journal of Abnormal Child Psychology, 14, 123-133.
- Fullard, W., McDevitt, S., & Carey, W. (1979). The Toddler Temperament Scale. Unpublished test form. University, Philadelphia.
- Fullard, W., McDevitt, S., & Carey, W. (1982). Assessing temperament in one to three year old children. Journal of Pediatric Psychology, 9(2), 205-217.
- Furey, W. H., & Forehand, R. (1984). Maternal satisfaction with clinic-referred children: assessment by use of a single subject methodology. Journal of Behavioral Assessment, 5, 345-355.

- Garber, J. (1984). Classification of childhood psychopathology: A developmental perspective. Child Development, 55, 30-48.
- Gellert, E. (1961). Children's concepts about bodily illness. Paper presented at the meeting of the American Psychological Association, New York.
- Gilmore, J. B. (1966). The role of anxiety and cognitive factors children's play behavior. Child Development, 37, 397-416.
- Goldberg, W. A., & Easterbrooks, M. A. (1984). Role of marital quality in toddler development. Developmental Psychology, 20, 504-514.
- Goslin, E. R. (1979). The effects of crisis intervention therapy in reducing anxiety in emergency hospitalization of preschool children. Dissertation Abstracts International, 40, 3394-B (University Microfilms No. 80-01099)
- Graham, P., Rutter, M., & George, S. (1973). Temperamental characteristics as predictors of behavior disorders in children. American Journal of Orthopsychiatry, 43, 328-339.
- Hall, D. (1978). Bedside blues: the impact of social research on the hospital treatment of sick children. Journal of Advanced Nursing, 3, 25-37.
- Hall, D. (1987). Social and psychological care before and during hospitalization. Social Science & Medicine, 25(6), 721-732.
- Hamilton, E. B. (1980). The relationship of maternal patterns of stress, coping, and support to quality of early infant-mother attachment. Unpublished doctoral dissertation, University of Virginia, Institute of Clinical Psychology.
- Heffernan, M., & Azarnoff, P. (1971). Factors in reducing children's anxiety about clinic visits. HSMHA Health Reports, 86, 1131-1135.
- Hertzog, M. (1974). Neurologic findings in prematurely born infants at school age. In M. Rofls, & A. Thomas (Eds.), Proceedings of the Fifth Conference of the Society for Life History Research (pp. 42-52). Minneapolis: University of Minnesota Press.
- Hetherington, E., Cox, M., & Cox, R. (1979). Play and social interaction in children following divorce. Journal of Social Issues, 35, 26-49.
- Hetherington, E., Cox, M., & Cox, R. (1982). Effects of divorce on parents and children. In M. Lamb (Ed.), Nontraditional

- families (pp. 233-288). Hillsdale, NJ: Lawrence Erlbaum.
- Holden, E., Willis, D., & Foltz, L. (1989). Child abuse potential and parenting stress: relationships in maltreating parents. Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1(1), 64-67.
- Humphrey, J. H. (1988). Children and stress: theoretical perspectives and recent research. New York: AMS Press.
- Hunt, A.D. (1974). On the hospitalization of children: An historical approach. Pediatrics, 54(5), 542-546.
- Hyson, M. C. (1983). Going to the doctor: A developmental study of stress and coping. Journal of Child Psychology and Psychiatry, 24, 247-259.
- Janis, I. L. (1958). Psychological stress. New York: Wiley.
- Jessner, L., Blom, G., & Waldfogel, S. (1952). Emotional implications of tonsillectomy and adenoidectomy in children. Psychoanalytic Study of Children, 7, 126-169.
- Johnson, R., & Baldwin, D. C. (1968). Relationship of maternal anxiety to the behavior of young children undergoing dental extraction. Journal of Dental Research, 47, 801-805.
- Johnson, R., & Baldwin, D. C. (1969). Maternal anxiety and child behavior. Journal of Dentistry for Children, 36, 13-18.
- Johnson, R., & Machen, J. B. (1973). Behavior modification techniques and maternal anxiety. Journal of Dentistry for Children, 40, 272-276.
- Kagan, J. (1980). Family experience and the child's development. In S. Chess, & A. Thomas (Eds.), Annual progress in child psychiatry and child development (pp.21-30). New York: Brunner/Mazel.
- Kagan, J. (1983). Stress, coping and development early in the opening years of life. In N. Garnezy, & M. Rutter (Eds.), Stress, coping and development in children (pp. 191-216). New York: McGraw-Hill.
- Kagan, J. (1989). Unstable ideas: temperament, cognition and self. London: Howard University Press.
- Keogh, B. (1986). Temperament and schooling: meaning of "goodness of fit"? In J. V. Lerner, & R. M. Lerner (Eds.), Temperament and social interaction during infancy and childhood (pp. 89-108). San Francisco: Jossey Bass.

- Keogh, B., & Burnstein, N. (1985). The relationship of temperament to pre-school children's interactions with peers and teachers. Unpublished report, Graduate School of Education, University of California, Los Angeles.
- Keogh, B., Major-Kingsley, S., Omori-Gordon, H., & Reid, H. (1982). A system of marker variables for the field of learning disabilities. New York: Syracuse University Press.
- Keogh, B., Pullis, M., & Cadwell, J. (1982). A short form of the teacher temperament questionnaire. Journal of Educational Measurement, 19(4), 323-329.
- Kerr, N. J. (1979). The effect of hospitalization on the developmental tasks of childhood. Nursing Forum, 18(2), 108-130.
- Klorman, R., Michael, R., Hilpert, P. L. & Sveen, O. B. (1979). A further assessment of predictors of the child's behavior in dental treatment. Journal of Dental Research, 58, 2338-2343.
- Korner, A., Zeanah, C., Linden, J., Berkowitz, R., Kraemer, H., & Agras, W. (1985). The relation between neonatal and later activity and temperament. Child Development, 56, 38-42.
- Kulka, R. (1979). Interaction as person-environment fit. In L. Kahle (Ed.), New directions for methodology of behavioral science, no. 2. Methods for studying person-situation interactions (pp. 55-71). San Francisco: Jossey-Bass.
- Kulka, R., Klingel, D., & Mann, D. (1980). School crime and disruption as a function of student-school fit: an empirical assessment. Journal of Youth and Adolescence, 9, 353-369.
- Lafiosca, T. (1981). The relationship of parent stress to anxiety, approval, motivation and children's behavior problems. Unpublished doctoral dissertation, University of Virginia, Institute of Clinical Psychology.
- Lamb, M. E., Chase-Lansdale, L., & Owen, M.T. (1979). The changing American family and its implications for infant social development: The sample case of maternal employment. In M. Lewis, & L. A. Rosenblum (Eds.), The child and its family (pp.267-291). New York: Plenum Press.
- Lancaster, S., Prior, M., & Adler, R. (1989). Child behaviour ratings: the influence of maternal characteristics and child temperament. Journal of Child Psychology and Psychiatry and Allied Disciplines, 30(1), 137-149.

- Langford, W. S. (1961). The child in the pediatric hospital: adaptation to illness and hospitalization. Paper presented at the annual meeting of the Committee for Child Psychiatry, New York.
- Lavigne, J. V. & Burns, W. J. (1981). Pediatric psychology: An introduction for pediatricians and psychologists. New York: Grune & Stratton.
- Lazarus, A. J. (1981). The stress and coping paradigm. In C. Eisdorfer, D. Cohen, A. Kleinman, & P. Maxim (Eds.), Models for clinical psychopathology (pp. 177-214). New York: Seminar Press.
- Lende, E. W. (1971). The effect of preparation on children's response to tonsillectomy and adenoidectomy surgery. Dissertation Abstracts International, 32, 3642-B. (University Microfilms No. 72-1440)
- Lerner, J. (1983). The role of temperament in psychosocial adaptation in early adolescence: A test of a "goodness of fit" model. Journal of Genetic Psychology, 143, 149-157.
- Lerner, J. (1984). The import of temperament for psychosocial functioning: Tests of a goodness of fit model. Merrill-Palmer Quarterly, 30(2), 177-188.
- Lerner, J., & Galambos, N. (1985). Maternal role satisfaction, mother-child interaction, and child temperament: a process model. Developmental Psychology, 21(6), 1157-1164.
- Lerner, J. V., & Lerner, R. M. (1983). Temperament and adaptation across life: Theoretical and empirical issues. In P. B. Baltes, & O. G. Brim Jr. (Eds.), Life-Span development and behavior (pp. 197-231). New York: Academic Press.
- Lerner, J., Lerner, R., & Zabski, S. (1985). Temperament and elementary school children's actual and rated academic performance: A test of a "goodness-of-fit" model. Journal of Child Psychology and Psychiatry and Allied Disciplines, 26(1), 125-136.
- Lerner, R., Palermo, M., Spiro, A., & Nesselroade, J. (1982). Assessing the dimensions of temperamental individuality across the life-span: The dimensions of temperament survey (DOTS). Child Development, 53, 149-159.
- Longfellow, C., & Belle, D. (1984). Stressful environments and their impact on children. In J. H. Humphrey (Ed.), Children and stress: theoretical perspectives and recent research. New York: AMS Press.

- Loyd, B., & Abidin, R. (1985). Revision of the Parenting Stress Index. Journal of Pediatric Psychology, 10(2), 169-177.
- Lumley, M., Abeles, L., Melamed, B., Pistone, L., & Johnson, J. (1990). Coping outcomes in children undergoing stressful medical procedures: The role of child-environment variables. Behavioral Assessment, 12, 223-238.
- Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: parent-child interaction. In P. H. Mussen (Ed.), Handbook of child psychology: (Vol. 4), socialization, personality and social development (pp. 1-102). New York: Wiley.
- Martin, R., Nagle, R., & Paget, K. (1983). Relationships between temperament and classroom behavior, teacher attitudes, and academic achievement. Journal of Psychoeducational Assessment, 1(4), 379-386.
- Mash, E., and Johnston, C. (1983a). Parental perceptions of child behavior problems, parenting self-esteem and mothers' reported stress in younger and older hyperactive and normal children. Journal of Consulting and Clinical Psychology, 51(1), 86-99.
- Mash, E., & Johnston, C. (1983b). Sibling interactions of hyperactive and normal children and their relationship to reports of maternal stress and self-esteem. Journal of Clinical Child Psychology, 12(1), 91-99.
- Matheny, A., & Wilson, R. (1987). Temperament and first-grade adjustment: Contributions from mother's and teacher's ratings. Paper presented at the meeting of the Society for Research in Child Development, Baltimore.
- McDevitt, S. C., & Carey, W. B. (1978). The measurement of temperament in 3-7 year old children. Journal of Child Psychology and Psychiatry and Allied Disciplines, 19, 245-253.
- Melamed, B. G., & Siegel, L. J. (1975). Reduction of anxiety in children facing hospitalization and surgery by use of filmed modeling. Journal of Consulting and Clinical Psychology, 43, 511-521.
- Meng, A. (1980). Parents' and children's reactions toward impending hospitalization for surgery. Maternal-Child Nursing Journal, Summer 1980, 83-98.
- Milner, J. S. (1986). The child abuse potential inventory: Manual (2nd. ed.). Webster, NC: Psyctec.

- Mouton, P., & Tuma, J. (1988). Stress, locus of control, and role satisfaction in clinic and control mothers. Journal of Clinical Child Psychology, 17(3), 217-224.
- Nagera, H. (1978). Children's reactions to hospitalization and illness. Child Psychiatry and Human Development, 9, 3-19.
- Palermo, M. (1982). Child temperament and contextual demands: A test of the goodness-of-fit model. Unpublished doctoral dissertation, Pennsylvania State University, Pennsylvania.
- Patterson, G. (1980). Mothers: The unacknowledged victims. Monographs of the Society for Research in Child Development, 186, 1-63.
- Peters, B. M. (1978). School-age children's beliefs about the causality of illness: A review of the literature. Maternal-Child Nursing Journal, 7, 143-154.
- Peterson, L., Mori, L., & Carter, P. (1985). The role of the family in children's responses to stressful medical procedures. Journal of Clinical Child Psychology, 14(2), 98-104.
- Peterson, L., & Ridley-Johnson, J. (1980). Pediatric hospital response to survey on prehospital preparation for children. Journal of Pediatric Psychology, 5, 1-7.
- Peterson, L., & Shigetomi, C. (1981). The use of coping techniques to minimize anxiety in hospitalized children. Behavior Therapy, 12, 1-14.
- Peterson, L., & Shigetomi, C. (1982). One-year follow-up of elective surgery child patients receiving preoperative preparation. Journal of Pediatric Psychology, 7(1), 43-48.
- Peterson, L., & Toler, S. (1986). An information seeking disposition in child surgery patients. Health Psychology, 5(4), 343-358.
- Pidgeon, V.A. (1967) Children's concepts of the rationale of isolation technic. In ANA clinical sessions, 1966, San Francisco (pp. 21-27). New York: Appelton - Century - Crofts.
- Piaget, J. (1960). The child's conception of the world. New Jersey: Littlefield, Adams & Co.
- Plomin, R., & DeFries, J. (1983). The Colorado adoption project. Child Development, 54, 276-289.

- Plomin, R., & Rowe, D. (1977). A twin study of temperament in young children. Journal of Psychology, 97, 107-113.
- Prior, M., Sanson, A., Carroll, R., & Oberklaid, F. (in press). Social class influences on temperament ratings of pre-school children. Merrill-Palmer Quarterly.
- Prugh, D. G. (1967). Emotional aspects of the hospitalization. In M. Shore (Ed.), Red is the color of hurting (pp. 16-26). Maryland: National Institute of Mental Health.
- Prugh, D. G., Staub, E. M., Sands, H. H., Kirschbaum, R. M., & Lenihan, E. A. (1953). A study of the emotional reactions of children and families to hospitalization and illness. American Journal of Orthopsychiatry, 23, 70-106.
- Quinton, D., & Rutter, M. (1976). Early hospital admissions and later disturbances of behaviour: An attempted replication of Douglas' findings. Developmental Medicine and Child Neurology, 18, 447-459.
- Radloff, R., & Helmreich, R. (1979). Groups under stress: Psychological research in sealab II. In Ferguson, F., Preparing young children for hospitalization: A comparison of two methods. Pediatrics, 64(5), 1979.
- Rae, W. A., Worchel, F. F., Upchurch, J., Sanner, J. H., & Daniel, C. A. (1989). The psychosocial impact of play on hospitalized children. Journal of Pediatric Psychology, 14(4), 617-627.
- Roberts, W. (1989). Parents' stressful life events and social networks: Relations with parenting and children's competence. Canadian Journal of Behavioral Science, 21(2), 132-146.
- Robertson, J. (1953). Some responses of young children to loss of maternal care. Nursing Times, April.
- Robertson, J. (1973). Young children in hospital. London: Tavistock Publications.
- Robertson, J. (1974). Hospitals and children: A parent's eye-view. New York: International University Press.
- Robinson, G. C., & Clarke, H. F. (1980). The hospital care of children: A review of contemporary issues. New York: Oxford Press.
- Rose, M. H. (1985). The effects of hospitalization on the coping behaviors of children. In Thompson, R. Psychosocial research on pediatric hospitalization and health care (pp. 21, 22, 25, 50, 56). Illinois: Charles C. Thomas.

- Rutter, M. (1977). Individual differences. In Rutter, M., & L. Harsov (Eds.), Child psychiatry: Modern approaches (pp. 3-21). Oxford: Blackwell Scientific.
- Rutter, M. (1982). Temperament: Concepts, issues and problems. In R. Porter, & G. Collins (Eds.), Temperament differences in infants and young children (pp. 1-14). Ciba Foundation Symposium, 1989. London: Pitman.
- Rutter, M. (1983). Stress, coping and development: Some issues and some questions. Journal of Child Psychology and Psychiatry, 22, 323-356.
- Rutter, M., Korn, S., & Birch, H. (1963). Genetic and environmental factors in the development of primary reaction patterns. British Journal of Clinical Social Psychology, 2, 161.
- Saylor, C., Pallmeyer, T., Finch, A., Eason, L., Trieber, F., & Folger, C. (1987). Predictors of psychological distress in hospitalized pediatric patients. Journal of the American Academy of Child and Adolescent Psychiatry, 26(2), 232-236.
- Schaffer, H. (1958). Objective observations on personality development in early infancy. British Journal of Medical Psychology, 31, 174-183.
- Schaffer, H., & Callender, W. (1959). Psychological effects of hospitalization in infancy. Pediatrics, 24(2), 528-539.
- Schulman, J. L., Foley, J. M., Vernon, D.T.A., & Allen, D. (1967). A study of the effect of the mother's presence during anaesthesia induction. Pediatrics, 39, 111-114.
- Seligman, M. E. (1975). Helplessness: On depression, development and death. San Francisco: W. H. Freeman & Company.
- Shade-Zeldow, Y. (1977). The effects of hospitalization on pediatric patients. Dissertation Abstracts International, 37, 5376-B. (University Microfilms No. 77-7526)
- Shipley, R. H., Butt, J. H., Horowitz, B., & Farbry, J. E. (1978). Preparation for a stressful medical procedure: effect of amount of stimulus preexposure and coping style. Journal of Consulting and Clinical Psychology, 46, 499-507.
- Sides, J. P. (1978). Emotional responses of children to physical illness and hospitalization. Dissertation Abstracts International, 38, 917-B. (University Microfilms No. 77-16832)

- Sipowicz, R. R., & Vernon, D. T. A. (1965). Psychological responses of children to hospitalization. American Journal of Diseases of Children, 109, 228-231.
- Skolnick, A. (1979). The myth of the vulnerable child. In A. H. Beuf (Ed.), Biting off the bracelet: a study of children in hospital. Pennsylvania: University of Pennsylvania Press.
- Shore, M., & Goldston, S. E. (1978). Mental health aspects of pediatric care. In P. Magrab (Ed.), Psychological management of pediatric problems (pp. 15-31). Baltimore: University Park Press.
- Sorell, G., & Nowak, C. (1981). The role of physical attractiveness as a contributor to individual development. In R. Lerner, & N. Busch-Rossnagel (Eds.), Individuals as producers of their development: A life-span perspective (pp. 389-446). New York: Academic Press.
- Spielberger, C. D., Gorsuch, R. L., & Luchene, R.E. (1970). Test manual for the state-trait anxiety inventory. Palo Alto: Consulting Psychologists Press.
- Spitz, R. (1946). Hospitalism: A follow-up report. The psychoanalytic study of the child. New York: International Universities Press.
- Spitz, R. (1965). The first year of life. New York: International Universities Press.
- Stevens, J. (1986). Applied multivariate statistics for the social sciences. Hillsdale, NJ: Lawrence Erlbaums.
- Strelau, J. (1986). Do biological mechanisms determine the specificity of temperament? In Kohnstamm, G. (Ed.), Temperament discussed: Temperament and development in infancy and childhood (pp. 73-82). Lisse: Swets Publishing Service.
- Tabachnick, B. G., & Fidell, L.S. (1983). Using multivariate statistics. New York: Harper & Row.
- The Platt Report. (1959). The welfare of children in hospitals. Ministry of Health (Central Health Services Council). HMSO.
- Thomas, A., & Chess, S. (1977). Temperament and development. New York: Brunner/Mazel.
- Thomas, A., Chess, S., & Birch, H. (1968). Temperament and behavior disorders in children. New York: New York University Press.

- Thomas, A., Chess, S., Birch, H., Hertzog, M., & Korn, S. (1963). Behavioral individuality in early childhood. New York: New York University Press.
- Thompson, R. H. (1985). An investigation of factors related to five-year-old children's psychological upset during an outpatient physical examination. In Thompson, R. H., Psychosocial research on pediatric hospitalization and health care (pp. 16, 44, 49, 54, 86, 87, 93, 94, 247, 330). Illinois: Charles C. Thomas.
- Thompson, R. H. (1985). Psychosocial research on pediatric hospitalization and health care. Illinois: Charles C. Thomas.
- Torgersen, A. (1977). Temperament differences in infants: Their cause as shown through twin studies. In A. Thomas, & S. Chess, (Eds.) Temperament and development (pp. 132-135). New York: Brunner/Mazel.
- Van Tassel, E. (1985). The relative influence of child and environmental characteristics on sleep disturbances in the first and second years of life. Journal of Developmental and Behavioral Pediatrics, 6(2), 81-86.
- Vardaro, J. A. (1978). Preadmission anxiety and mother-child relationships. Journal of the Association for the Care of Children in Hospitals, 7, 8-15.
- Vernon, D. T. A. (1973). Use of modelling to modify children's responses to a natural, potentially stressful situation. Journal of Applied Psychology, 58, 351-356.
- Vernon, D. T., Foley, J. M., Sipowicz, R. R., & Schulman, J. L. (1965). The psychological responses of children to hospitalization and illness: A review of the literature. Springfield, IL: Charles C. Thomas.
- Vernon, D. T. A., Foley, J. M., & Schulman, J. L. (1967). Effects of mother-child separation and birth order on young children's responses to two potentially stressful experiences. Journal of Personality and Social Psychology, 5, 162-174.
- Vernon, D. T., & Schulman, J. L. (1964). Hospitalization as a source of psychological benefit to children. Pediatrics, 34, 694-696.
- Vernon, D., Schulman, J., & Foley, J. (1966). Changes in children's behavior after hospitalization. American Journal of Diseases of Children, 111, 581-593.

- Visintainer, M., & Wolfer, J. (1975). Psychological preparation for surgery pediatric patients: The effects on children's and parents' stress responses and adjustment. Pediatrics, 56, 187-202.
- Wallach, M. A., & Kogan, N. (1965). Modes of thinking in young children. New York: Holt, Rinehart, & Winston.
- Wallinga, J. V. (1975). Comprehensive mental health planning in a children's hospital. Minnesota Medicine, 12, 911-914.
- Webster-Stratton, C., & Hammond, M. (1988). Maternal depression and its relationship to life stress, perceptions of child behavior problems, parenting behaviours, and child conduct problems. Journal of Abnormal Child Psychology, 16(3), 299-315.
- Werry, J. (1979). Family therapy: Behavioral approaches. Journal of the American Academy of Child Psychiatry, 18, 91-102.
- Willet, J. B. (1989). Questions and answers in the measurement of change. Review of Research in Education, 15, 345-422.
- Willis, D., Elliott, C., & Jay, S. (1982). Psychological effects of physical illness and its concomitants. In J. M. Tuma (Ed.), Handbook for the practice of pediatric psychology (pp. 28-66). New York: Wiley.
- Wolfer, J. A., & Visintainer, M. A. (1975). Pediatric surgical patients' and parents' stress responses and adjustment. Nursing Research, 24, 244-255.
- Wolff, S. (1969). Children under stress. London: Pelican Books.
- Wright, J. Z., & Alpern, G. D. (1971). Variables influencing children's cooperative behavior at the first dental visit. Journal of Dentistry for Children, 38, 60-64.
- Zabin, M. A., & Melamed, B. G. (1980). Relationship between parental discipline and children's ability to cope with stress. Journal of Behavioral Assessment, 2, 17-38.
- Zakreski, J. (1983). Prematurity and the single parent: Effects of cumulative stress on child development. Unpublished doctoral dissertation, University of Virginia, Institute of Clinical Psychology.

APPENDIX A
CHILD BEHAVIOUR QUESTIONNAIRE

DATE: _____

CHILD'S NAME: _____

Please answer EACH of the following questions concerning your child's behaviour. Answer these questions by COMPARING your child's behaviour in the last three days since your child's surgery to your child's behaviour during the four to six weeks before going to the hospital. The headings at the top of each page describe the ratings to you. Just circle the number that BEST describes your child's behaviour in the last three days since surgery compared to your child's behaviour during the four to six weeks before going to the hospital. Be sure to answer ALL the questions.

Please remember to place this questionnaire in the stamped envelope provided and mail it as soon as possible.

Your continued participation in this study is most appreciated.

THANK YOU

APPENDIX A (continued)CHILD BEHAVIOUR QUESTIONNAIRE

	MUCH LESS THAN BEFORE	LESS THAN BEFORE	SAME AS BEFORE	MORE THAN BEFORE	MUCH MORE THAN BEFORE
	1	2	3	4	5
1. Does your child make a fuss about going to bed at night?	1	2	3	4	5
2. Does your child make a fuss about eating?	1	2	3	4	5
3. Does your child spend time just sitting or lying and doing nothing?	1	2	3	4	5
4. Does your child need a pacifier?	1	2	3	4	5
5. Does your child seem to be afraid of leaving the house with you?	1	2	3	4	5
6. Is your child uninterested in what goes on around him?	1	2	3	4	5
7. Does your child wet the bed at night?	1	2	3	4	5
8. Does your child bite his fingernails?	1	2	3	4	5
9. Does your child get upset when you leave him alone for a few minutes?	1	2	3	4	5
10. Does your child need a lot of help doing things?	1	2	3	4	5
11. Is it difficult to get your child interested in doing things (like playing games, with toys and so on)?	1	2	3	4	5

APPENDIX A (continued)

	MUCH LESS THAN BEFORE	LESS THAN BEFORE	SAME AS BEFORE	MORE THAN BEFORE	MUCH MORE THAN BEFORE
	1	2	3	4	5
12. Does your child seem to avoid or be afraid of new things?	1	2	3	4	5
13. Does your child have difficulty making up his mind?	1	2	3	4	5
14. Does your child have temper tantrums?	1	2	3	4	5
15. Is it difficult to get your child to talk to you?	1	2	3	4	5
16. Does your child quarrel or fight with brothers or sisters (leave blank if no brothers or sisters)?	1	2	3	4	5
17. Does your child seem to get upset when someone mentions doctors or hospitals?	1	2	3	4	5
18. Does your child follow you everywhere around the house?	1	2	3	4	5
19. Does your child spend time trying to get or hold your attention?	1	2	3	4	5
20. Is your child afraid of the dark?	1	2	3	4	5
21. Does your child have bad dreams at night or wake up and cry?	1	2	3	4	5
22. Is your child irregular in his bowel movements?	1	2	3	4	5

APPENDIX A (continued)

	MUCH LESS THAN BEFORE	LESS THAN BEFORE	SAME AS BEFORE	MORE THAN BEFORE	MUCH MORE THAN BEFORE
	1	2	3	4	5
23. Does your child have trouble getting to sleep at night?	1	2	3	4	5
24. Does your child seem to be shy around strangers?	1	2	3	4	5
25. Does your child have a poor appetite?	1	2	3	4	5
26. Does your child tend to disobey you?	1	2	3	4	5
27. Does your child break toys or other objects?	1	2	3	4	5
28. Does your child suck his fingers or thumbs?	1	2	3	4	5

APPENDIX B
CHILD BEHAVIOUR QUESTIONNAIRE

DATE: _____

CHILD'S NAME: _____

PLEASE DO THIS QUESTIONNAIRE FIRST

Please answer EACH of the following questions concerning your child's behaviour. Answer these questions by basing your ratings on your child's recent and current behaviour in the last four to six weeks. Be sure to answer ALL the questions.

Please remember to place this questionnaire in the stamped envelope provided and mail it as soon as possible.

Your continued participation in this study is most appreciated.

THANK YOU

APPENDIX B (continued)

CHILD BEHAVIOUR QUESTIONNAIRE

	ALMOST NEVER	ONCE IN AWHILE	SOME- TIMES	OFTEN	ALMOST ALWAYS
	1	2	3	4	5
1. Does your child make a fuss about going to bed at night?	1	2	3	4	5
2. Does your child make a fuss about eating?	1	2	3	4	5
3. Does your child spend time just sitting or lying and doing nothing?	1	2	3	4	5
4. Does your child need a pacifier?	1	2	3	4	5
5. Does your child seem to be afraid of leaving the house with you?	1	2	3	4	5
6. Is your child uninterested in what goes on around him?	1	2	3	4	5
7. Does your child wet the bed at night?	1	2	3	4	5
8. Does your child bite his fingernails?	1	2	3	4	5
9. Does your child get upset when you leave him alone for a few minutes?	1	2	3	4	5
10. Does your child need a lot of help doing things?	1	2	3	4	5
11. Is it difficult to get your child interested in doing things (like playing games, with toys and so on)?	1	2	3	4	5

APPENDIX B (continued)

	ALMOST NEVER	ONCE IN AWHILE	SOME- TIMES	OFTEN	ALMOST ALWAYS
	1	2	3	4	5
12. Does your child seem to avoid or be afraid of new things?	1	2	3	4	5
13. Does your child have difficulty making up his mind?	1	2	3	4	5
14. Does your child have temper tantrums?	1	2	3	4	5
15. Is it difficult to get your child to talk to you?	1	2	3	4	5
16. Does your child quarrel or fight with brothers or sisters (leave blank if no brothers or sisters)?	1	2	3	4	5
17. Does your child seem to get upset when someone mentions doctors or hospitals?	1	2	3	4	5
18. Does your child follow you everywhere around the house?	1	2	3	4	5
19. Does your child spend time trying to get or hold your attention?	1	2	3	4	5
20. Is your child afraid of the dark?	1	2	3	4	5
21. Does your child have bad dreams at night or wake up and cry?	1	2	3	4	5
22. Is your child irregular in his bowel movements?	1	2	3	4	5
23. Does your child have trouble getting to sleep at night?	1	2	3	4	5

APPENDIX B (continued)

	ALMOST NEVER	ONCE IN AWHILE	SOME- TIMES	OFTEN	ALMOST ALWAYS
	1	2	3	4	5
24. Does your child seem to be shy around strangers?	1	2	3	4	5
25. Does your child have a poor appetite?	1	2	3	4	5
26. Does your child tend to disobey you ?	1	2	3	4	5
27. Does your child break toys	1	2	3	4	5
28. Does your child suck his fingers or thumbs?	1	2	3	4	5

APPENDIX C

DEAR MOTHER,

This letter is to review with you the project entitled, "One Day Hospitalization" which you agreed to participate in, the day I spoke to you on the telephone.

Presently, we are looking at day surgery in an effort to further understand how children experience this occurrence. We appreciate your willingness to assist us in this endeavour.

As was explained to you on the telephone, we are asking you to fill out a variety of questionnaires over a two (2) month period. Your entire participation as a parent involves four stages over this two month period. This package of questionnaires you have just received contains the questionnaires you will need for the first, second, and third phase of the study. The fourth and final set of questionnaires will be mailed to you at a later date and before the two (2) month completion time.

You will have noticed that in this package of questionnaires you have just received, there are three sealed envelopes. On the front of these envelopes you will find instructions explaining when you are to open these envelopes. Inside each of these envelopes you will find the necessary questionnaires along with a stamped, addressed envelope you are to use to mail back these questionnaires. We will also phone you to remind you to complete the appropriate questionnaires.

We greatly appreciate your co-operation and sincerely thank you for your participation. Once the entire project has been completed and all the information analyzed, we will again contact you, if you so desire, to give you information concerning how your child experienced the surgical event in relation to other children who also had minor day surgery. Please remember that until the first set of questionnaires have been completed, and mailed to us, we will not know if your entire participation will be necessary. In this event, we will telephone you.

Office no. 231-6875
University of Ottawa
Psychology Department.

Sincerely,

Sandra Larmour

APPENDIX DCONSENT FORM

ONE DAY HOSPITALIZATION

I _____, consent to take part in a study, the purpose of which is to investigate how children react to brief hospitalization. Mrs. Larmour, who will be conducting the study, is the principal investigator, and she can be reached at her office at the University of Ottawa, 231-6875. The principal investigator has explained that my participation involves the completion of a series of questionnaires concerning my child's behaviour before and after my child has minor surgery. I understand that there is no risk to me or my child by participating in this study.

I understand that any benefit which may derive from this study will be indirect. That is, my child will benefit indirectly by helping to further understanding of how children respond to brief hospitalization.

I also understand that I may withdraw from the study at any time, even after signing this form, and that this will in no way affect the regular care that my child will receive. Any information collected about me and my child during this study will be kept confidential. Further, if the results are published, my name or my child's name will not be identified in any way.

_____ Name of Mother	_____ Signature	_____ Date
-------------------------	--------------------	---------------

_____ Name of Child		_____ Date
------------------------	--	---------------

_____ Name of Witness	_____ Signature	_____ Date
--------------------------	--------------------	---------------

I have explained the nature of the study to the parent and believe the parent has understood it.

_____ Name of Investigator	_____ Signature	_____ Date
-------------------------------	--------------------	---------------

APPENDIX EINTERVIEW QUESTIONS

1. What is your name (mother) _____
 2. What is your child's name? _____
 3. How old is _____?
 4. What is _____ date of birth? _____
 5. Has _____ ever been in hospital before? _____
 6. When? _____ What for? _____
 7. Do you have other children? _____
 8. What are their names? _____; _____; _____;
 _____; _____; _____;
 9. What are their date of birth? _____: _____;
 _____; _____; _____;
 10. Have any of these children been in hospital before? _____
 11. When? _____ What for? _____

- (be sure to include child's name)
12. Does _____ go to a daycare or nursery school? _____
 13. How long has _____ been going there? _____
 14. What is your nationality? _____
 Your husband's? _____
 15. What language is spoken at home? _____
 16. What is your occupation? _____
 Full Time _____ Part Time _____
 17. Describe it briefly. _____
 18. What is your husband's occupation? _____
 Full Time _____ Part Time _____
 19. Describe it briefly. _____
 20. How many years of education do you have (from grade one) _____
 21. How many years of education does your husband have (from grade one) _____
 22. What is your last degree or diploma obtained? _____
 23. Your husband's? _____
 24. Will your child be attending an orientation program at the hospital before surgery? _____

APPENDIX FBEHAVIORAL STYLE QUESTIONNAIRE

Child's Name _____ Sex _____
Date of Child's Birth _____ Present Age _____
month day year
Rater's Name (mother) _____
Relationship to Child _____
Date of Rating _____
month day year

RATING INFORMATION

1. Please base your ratings on the child's recent and current behaviour (the last four to six weeks).
 2. Consider only your own impressions and observations of the child.
 3. Rate each question independently. Do not purposely attempt to present a consistent picture of the child.
 4. Use extreme ratings where appropriate. Avoid rating only near the middle of the scale.
 5. Rate each item quickly. If you cannot decide, skip the item and come back to it later.
 6. Rate each item. Circle the number of any item that you are unable to answer due to lack of information or any item that does not apply to your child.
- Please remember to return this questionnaire as soon as possible. Your participation is most appreciated.

APPENDIX F (continued)

USING THE SCALE SHOWN BELOW, PLEASE MARK AN "X" IN THE SPACE THAT TELLS HOW OFTEN THE CHILD'S RECENT AND CURRENT BEHAVIOUR HAS BEEN LIKE THE BEHAVIOUR DESCRIBED BY EACH ITEM.

ALMOST NEVER	RARELY	USUALLY DOES NOT	USUALLY DOES	FREQUENTLY	ALMOST ALWAYS
1	2	3	4	5	6
1. The child is moody for more than a few minutes when corrected or disciplined.			almost never	1; 2; 3; 4; 5; 6	almost always
2. The child seems not to hear when involved in a favourite activity.			almost never	1; 2; 3; 4; 5; 6	almost always
3. The child can be coaxed out of a forbidden activity.			almost never	1; 2; 3; 4; 5; 6	almost always
4. The child runs ahead when walking with the parent.			almost never	1; 2; 3; 4; 5; 6	almost always
5. The child laughs or smiles when playing.			almost never	1; 2; 3; 4; 5; 6	almost always
6. The child moves slowly when working on a special project or activity.			almost never	1; 2; 3; 4; 5; 6	almost always
7. The child responds intensely to disapproval.			almost never	1; 2; 3; 4; 5; 6	almost always
8. The child needs a period of adjustment to get used to changes in school or at home.			almost never	1; 2; 3; 4; 5; 6	almost always
9. The child enjoys games that involve running and jumping.			almost never	1; 2; 3; 4; 5; 6	almost always
10. The child is slow to adjust to changes in household rules.			almost never	1; 2; 3; 4; 5; 6	almost always
11. The child has bowel movements at about the same time each day.			almost never	1; 2; 3; 4; 5; 6	almost always

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
12. The child is willing to try new things.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
13. The child sits calmly while watching TV or listening to music.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
14. The child leaves or wants to leave the table during meals.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
15. Changes in plans bother the child.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
16. The child notices minor changes in mother's dress or appearance (clothing, hairstyle, etc.)			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
17. The child does not acknowledge a call to come in if involved in something.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
18. The child responds to mild disapproval by the parent (a frown or shake of the head).			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
19. The child settles arguments with playmates within a few minutes.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
20. The child shows strong reaction to things, both positive and negative.			almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always		
21. The child had trouble leaving the mother the first three days when he/she entered school.			almost _____; _____; _____; _____; _____; _____ almos never 1 2 3 4 5 6 always		

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
22. The child picks up the nuances or subtleties of parental explanations (example: implied meanings).			almost never	1; 2; 3; 4; 5; 6	almost always
23. The child falls asleep as soon as he/she is put to bed.			almost never	1; 2; 3; 4; 5; 6	almost always
24. The child moves about actively when he/she explores new places.			almost never	1; 2; 3; 4; 5; 6	almost always
25. The child likes to go to new places rather than familiar ones.			almost never	1; 2; 3; 4; 5; 6	almost always
26. The child sits quietly while waiting.			almost never	1; 2; 3; 4; 5; 6	almost always
27. The child spends over an hour reading a book or looking at pictures.			almost never	1; 2; 3; 4; 5; 6	almost always
28. The child learns new things at his/her level quickly and easily.			almost never	1; 2; 3; 4; 5; 6	almost always
29. The child smiles or laughs when he/she meets new visitors at home.			almost never	1; 2; 3; 4; 5; 6	almost always
30. The child is easily excited by praise.			almost never	1; 2; 3; 4; 5; 6	almost always
31. The child is outgoing with strangers.			almost never	1; 2; 3; 4; 5; 6	almost always
32. The child fidgets when he/she has to stay still.			almost never	1; 2; 3; 4; 5; 6	almost always
33. The child says that he/she is bored with his/her toys and games.			almost never	1; 2; 3; 4; 5; 6	almost always

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
34. The child is annoyed at interrupting play to comply with a parental request.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
35. The child practices an activity until he/she masters it.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
36. The child eats at about the same amount at supper from day to day.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
37. Unusual noises (sirens, thunder, etc.) interrupt the child's behaviour.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
38. The child complains when tired.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
39. The child loses interest in a new toy or game the same day.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
40. The child becomes engrossed in an interesting activity for one half hour or more.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
41. The child cries intensely when hurt.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
42. The child reacts strongly to kidding or light-hearted comments.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
43. The child approaches children his/her age that he/she doesn't know.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
44. The child plays quietly with his/her toys and games.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always
45. The child is outwardly expressive of his/her emotions.			almost never	____i____i____i____i____i____	1 2 3 4 5 6 almost always

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
46. The child is enthusiastic when he/she masters an activity and wants to show everyone.			almost never	1; 2; 3; 4; 5; 6	almost always
47. The child is sleepy at his/her bedtime.			almost never	1; 2; 3; 4; 5; 6	almost always
48. The child stops an activity because something else catches his/her attention.			almost never	1; 2; 3; 4; 5; 6	almost always
49. The child is hungry at dinner time.			almost never	1; 2; 3; 4; 5; 6	almost always
50. The child holds back until sure of himself/herself.			almost never	1; 2; 3; 4; 5; 6	almost always
51. The child looks up when someone walks past the doorway.			almost never	1; 2; 3; 4; 5; 6	almost always
52. The child becomes upset if he/she misses a regular television program.			almost never	1; 2; 3; 4; 5; 6	almost always
53. The child reacts strongly to disappointment.			almost never	1; 2; 3; 4; 5; 6	almost always
54. The child accepts new foods within one or two tries.			almost never	1; 2; 3; 4; 5; 6	almost always
55. The child has difficulty getting used to new situations.			almost never	1; 2; 3; 4; 5; 6	almost always
56. The child will avoid misbehaviour if punished firmly once or twice.			almost never	1; 2; 3; 4; 5; 6	almost always
57. The child is sensitive to noises (telephone, doorbell) and looks up right away.			almost never	1; 2; 3; 4; 5; 6	almost always
58. The child prefers active outdoor play to quiet play inside.			almost never	1; 2; 3; 4; 5; 6	almost always

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
59. The child dislikes milk or other drinks if not ice cold.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
60. The child notices differences or changes in the consistency of food.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
61. The child adjusts easily to changes in his/her routine.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
62. The child eats about the same amount at breakfast from day to day.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
63. The child seems to take setbacks in stride.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
64. The child cries or whines when frustrated.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
65. The child repeats behaviour for which he/she has previously been punished.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
66. The child looks up from playing when the telephone rings.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
67. The child is willing to try new food.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
68. The child needs encouragement before he/she will try new things.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
69. The child cries or whines when ill with a cold or upset stomach.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
70. The child runs to get where he/she wants to go.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
71. The child's attention drifts away or lapses when listening to parental instructions.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6					
73. The child is reluctant to give up when trying to do a difficult task.			almost never	1	2	3	4	5	6	almost always
74. The child reacts to mild approval from the parent (a nod or smile).			almost never	1	2	3	4	5	6	almost always
75. The child requests "something to eat" between meals and regular snacks.			almost never	1	2	3	4	5	6	almost always
76. The child rushes to greet the parent or greets loudly after absence during the day.			almost never	1	2	3	4	5	6	almost always
77. The child looks up when he/she hears voices in the next room.			almost never	1	2	3	4	5	6	almost always
78. The child protests when denied a request by the parent.			almost never	1	2	3	4	5	6	almost always
79. The child ignores loud noises when reading or looking at pictures in a book.			almost never	1	2	3	4	5	6	almost always
80. The child dislikes a food that he/she had previously seemed to accept.			almost never	1	2	3	4	5	6	almost always
81. The child stops what he/she is doing and looks up when the parent enters the room.			almost never	1	2	3	4	5	6	almost always
82. The child cries for more than a few minutes when hurt.			almost never	1	2	3	4	5	6	almost always
83. The child watches a long (1 hour or more) TV program without getting up to do something else.			almost never	1	2	3	4	5	6	almost always

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
84. The child spontaneously wakes up at the usual time on weekends and holidays.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
85. The child responds to sounds or noises unrelated to his/her activity.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
86. The child avoids new guests or visitors.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
87. The child fidgets when a storey is being read to him/her.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
88. The child becomes upset cries over minor falls or bumps.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
89. The child interrupts an activity to listen to conversation around him/her.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
90. The child is unwilling to leave a play activity he/she has not completed.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
91. The child is able to fall asleep when there is conversation in a nearby room.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
92. The child becomes highly excited when presented a new toy or game.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
93. The child pays attention from start to finish when the parent tries to explain something to him/her.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always
94. The child speaks so quickly that it is sometimes difficult to understand him/her.				almost never	____;____;____;____;____;____ 1 2 3 4 5 6 always

APPENDIX F (continued)

ALMOST NEVER 1	RARELY 2	USUALLY DOES NOT 3	USUALLY DOES 4	FREQUENTLY 5	ALMOST ALWAYS 6
95. The child wants to leave the table during meals to answer the doorbell or phone.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
96. The child complains of events in school or with playmates that day.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
97. The child frowns when asked to do a chore by the parent.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
98. The child tends to hold back in new situations.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
99. The child laughs hard while watching television cartoons or comedy.	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				
100. The child has "offdays when he/she is cranky".	almost _____; _____; _____; _____; _____; _____ almost never 1 2 3 4 5 6 always				

APPENDIX GPARENTING INDEX

DATE: _____

SUB. NO.: _____

DEAR MOTHER,

In answering the following questions, please think about the child who will be going to the hospital to have his/her tonsils removed.

The questions on the following pages ask you to mark an answer which BEST describes your feelings. While you may not find an answer which exactly states your feelings, please mark the answer which comes closest to describing how you feel. **YOUR FIRST REACTION TO EACH QUESTION SHOULD BE YOUR ANSWER.**

Please mark the degree to which you agree or disagree with the following statements by filling in the number which best matches how you feel. If you are not sure, please fill in number 3.

1	2	3	4	5
Strongly	Agree	Not	Disagree	Strongly
agree		sure		disagree

Example: 1 2 3 4 5 My child cries easily. (If your child cries sometimes, you would blacken the circle with number 2.)

Please use the answer sheet provided, which is attached to the end of the questionnaire. You may remove this answer sheet to make it easier for you to fill in. Remember to include it in the envelope.

Please return this questionnaire in the envelope provided as soon as possible. Thank you for your participation.

APPENDIX G (continued)

1. When my child wants something, my child usually keeps trying to get it.
2. My child is so active it exhausts me.
3. My child appears disorganized and is easily distracted.
4. Compared to most, my child has more difficulty concentrating and paying attention.
5. My child will often stay occupied with a toy for more than 10 minutes.
6. My child wanders away more than I expected.
7. My child is much more active than I expected.
8. My child squirms and kicks a great deal when being dressed or bathed.
9. My child can be easily distracted from wanting something.
10. My child rarely does things for me that make me feel good.
11. Most times I feel that my child likes me and wants to be close to me.
12. Sometimes I feel my child doesn't like me and doesn't want to be close to me.
13. My child smiles at me much less than I expected.
14. When I do things for my child I get the feeling that my efforts are not appreciated very much.
15. Which statement best describes your child:
 1. almost always likes to play with me,
 2. sometimes likes to play with me,
 4. usually doesn't like to play with me,
 5. almost never likes to play with me.
16. My child cries and fusses:
 1. much less than I had expected,
 2. less than I expected,
 3. about as much as I expected,
 4. much more than I expected,
 5. it seems almost constant.

APPENDIX G (continued)

17. My child seems to cry or fuss more often than most children.
18. When playing, my child doesn't often giggle or laugh.
19. My child generally wakes up in a bad mood.
20. I feel that my child is very moody and easily upset.
21. My child looks a little different than I expected and it bothers me at times.
22. In some areas my child seems to have forgotten past learnings and has gone back to doing things characteristic of younger children.
23. My child doesn't seem to learn as quickly as most children.
24. My child doesn't seem to smile as much as most children.
25. My child does a few things which bother me a great deal.
26. My child is not able to do as much as I expected.
27. My child does not like to be cuddled or touched very much.
28. When my child came home from the hospital, I had doubtful feelings about my ability to handle being a parent.
29. Being a parent is harder than I thought it would be.
30. I feel capable and on top of things when I am caring for my child.
31. Compared to the average child, my child had a great deal of difficulty in getting used to changes in schedules or changes around the house.
32. My child reacts very strongly when something happens that my child doesn't like.
33. Leaving my child with a babysitter is usually a problem.
34. My child gets upset easily over the smallest things.
35. My child easily notices and overreacts to loud sounds and bright lights.
36. My child's sleeping or eating schedule was much harder to establish than I expected.
37. My child usually avoids a new toy for a while before beginning to play with it.
38. It takes a long time and it is very hard for my child to get used to new things.

APPENDIX G (continued)

39. My child doesn't seem comfortable when meeting strangers.
40. When upset my child is:
1. easy to calm down,
 2. harder to calm down than I expected,
 4. very difficult to calm down,
 5. nothing I do helps to calm my child.
41. I have found that getting my child to do something or stop doing something is:
1. much harder than I expected,
 2. somewhat harder than I expected,
 3. about as hard as I expected,
 4. somewhat easier than I expected,
 5. much easier than I expected.
42. Think carefully and count the number of things which your child does that bothers you. For example: dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. Please fill in the number of things you counted.
1. 1 - 3
 2. 4 - 5
 3. 6 - 7
 4. 8 - 9
 5. 10 +
43. When my child cries it usually lasts:
1. less than 2 minutes,
 2. 2 - 5 minutes,
 3. 5 - 10 minutes,
 4. 10 - 15 minutes
 5. more than 15 minutes
44. There are some things my child does that really bother me a lot.
45. My child has had more health problems than I expected.
46. As my child has grown older and become more independent, I find myself more worried that my child will get hurt or into trouble.
47. My child turned out to be more of a problem than I had expected.

APPENDIX G (continued)

48. My child seems to be much harder to care for than most.
49. My child is always hanging on me.
50. My child makes more demands on me than most children.
51. I can't make decisions without help.
52. I have had many more problems raising children than I expected.
53. I enjoy being a parent.
54. I feel that I am successful most of the time when I try to get my child to do or not do something.
55. Since I brought my last child home from the hospital, I find that I am not able to take care of this child as well as I thought I could. I need help.
56. I often have the feeling that I cannot handle things very well.
57. When I think about myself as a parent I believe:
 1. I can handle anything that happens,
 2. I can handle most things pretty well,
 3. sometimes I have doubts, but I find that I handle most things without any problems.
 4. I have some doubts about being able to handle things,
 5. I don't think I handle things very well at all.
58. I feel that I am:
 1. a very good parent,
 2. a better than average parent,
 3. an average parent,
 4. a person who has some trouble being a parent
 5. not very good at being a parent.
59. What were the highest levels in school or college you and the child's father/mother have completed?

Mother:

 1. 1 - 8th grade
 2. 9 - 12th grade
 3. Vocational or some college
 4. College graduate
 5. Graduate or professional school

APPENDIX G (continued)

60. Father:
1. 1 - 8th grade
 2. 9 - 12th grade
 3. Vocational or some college
 4. College graduate
5. Graduate or professional school
61. How easy is it for you to understand what your child wants or needs?
1. very easy
 2. easy
 3. somewhat difficult
 4. it is very hard
 5. I usually can't figure out what the problem is.
62. It takes a long time for parents to develop close, warm feelings for their children.
63. I expected to have closer and warmer feelings for my child than I do and this bothers me.
64. Sometimes my child does things that bother me just to be mean.
65. When I was young, I never felt comfortable holding or taking care of children.
66. My child knows I am his or her parent and wants me more than other people.
67. The number of children that I have now is too many.
68. Most of my life is spent doing things for my child.
69. I find myself giving up more of my life to meet my children's needs than I ever expected.
70. I feel trapped by my responsibilities as a parent.
71. I often feel that my child's needs control my life.
72. Since having this child I have been unable to do new and different things.
73. Since having a child I feel that I am almost never able to do things that I like to do.

APPENDIX G (continued)

74. It is hard to find a place in our home where I can go to be by myself.
75. When I think of the kind of parent I am, I often feel guilty or bad about myself.
76. I am unhappy with the last purchase of clothing I made for myself.
77. When my child misbehaves or fusses too much, I feel responsible, as if I didn't do something right.
78. I feel every time my child does something wrong it is really my fault.
79. I often feel guilty about the way I feel towards my child.
80. There are quite a few things that bother me about my life.
81. I felt sadder and more depressed than I expected after leaving the hospital with my baby.
82. I wind up feeling guilty when I get angry at my child and this bothers me.
83. After my child had been home from the hospital for about a month, I noticed that I was feeling more sad and depressed than I had expected.
84. Since having my child, my spouse (male/female friend) has not given me as much help and support as I expected.
85. Having a child has caused more problems than I expected in my relationship with my spouse (male/female friend).
86. Since having a child my spouse (or male/female friend) and I don't do as many things together.
87. Since having my child, my spouse (or male/female friend) and I don't spend as much time together as a family as I had expected.
88. Since having my last child, I have had less interest in sex.
89. Having a child seems to have increased the number of problems we have with in-laws and relatives.
90. Having children has been much more expensive than I had expected.
91. I feel alone and without friends.
92. When I go to a party I usually expect not to enjoy myself.

APPENDIX G (continued)

93. I am not as interested in people as I used to be.
94. I often have the feeling that other people my own age don't particularly like my company.
95. When I run into a problem taking care of my children I have a lot of people to whom I can talk to get help or advice.
96. Since having children I have a lot fewer chances to see my friends and to make new friends.
97. During the past six months I have been sicker than usual or have had more aches and pains than I normally do.
98. Physically, I feel good most of the time.
99. Having a child has caused changes in the way I sleep.
100. I don't enjoy things as I used to.
101. Since I've had my child:
 1. I have been sick a great deal
 2. I haven't felt as good
 4. I haven't noticed any change in my health
 5. I have been healthier

PLEASE COMPLETE THE ITEMS BELOW

During the last 12 months, have any of the following events occurred in your immediate family? Please circle any of the events that have happened in your family in the past 12 months.

102. Divorce
103. Marital Reconciliation
104. Marriage
105. Separation
106. Pregnancy
107. Other relative moved into household
108. Income increased substantially (20% or more)
109. Went deeply into debt

APPENDIX G (continued)

- 110. Moved to new location
- 111. Promotion at work
- 112. Income decreased substantially
- 113. Alcohol or drug problem
- 114. Death of close family friend
- 115. Began new job
- 116. Entered new school
- 117. Trouble with superiors at work
- 118. Trouble with teachers at school
- 119. Legal problems
- 120. Death of immediate family member

APPENDIX G (CONTINUED)

1 (1) (2) (3) (4) (5)	31 (1) (2) (3) (4) (5)	61 (1) (2) (3) (4) (5)	91 (1) (2) (3) (4) (5)
2 (1) (2) (3) (4) (5)	32 (1) (2) (3) (4) (5)	62 (1) (2) (3) (4) (5)	92 (1) (2) (3) (4) (5)
3 (1) (2) (3) (4) (5)	33 (1) (2) (3) (4) (5)	63 (1) (2) (3) (4) (5)	93 (1) (2) (3) (4) (5)
4 (1) (2) (3) (4) (5)	34 (1) (2) (3) (4) (5)	64 (1) (2) (3) (4) (5)	94 (1) (2) (3) (4) (5)
5 (1) (2) (3) (4) (5)	35 (1) (2) (3) (4) (5)	65 (1) (2) (3) (4) (5)	95 (1) (2) (3) (4) (5)
6 (1) (2) (3) (4) (5)	36 (1) (2) (3) (4) (5)	66 (1) (2) (3) (4) (5)	96 (1) (2) (3) (4) (5)
7 (1) (2) (3) (4) (5)	37 (1) (2) (3) (4) (5)	67 (1) (2) (3) (4) (5)	97 (1) (2) (3) (4) (5)
8 (1) (2) (3) (4) (5)	38 (1) (2) (3) (4) (5)	68 (1) (2) (3) (4) (5)	98 (1) (2) (3) (4) (5)
9 (1) (2) (3) (4) (5)	39 (1) (2) (3) (4) (5)	69 (1) (2) (3) (4) (5)	99 (1) (2) (3) (4) (5)
10 (1) (2) (3) (4) (5)	40 (1) (2) (3) (4) (5)	70 (1) (2) (3) (4) (5)	100 (1) (2) (3) (4) (5)
11 (1) (2) (3) (4) (5)	41 (1) (2) (3) (4) (5)	71 (1) (2) (3) (4) (5)	101 (1) (2) (3) (4) (5)
12 (1) (2) (3) (4) (5)	42 (1) (2) (3) (4) (5)	72 (1) (2) (3) (4) (5)	102 (1)
13 (1) (2) (3) (4) (5)	43 (1) (2) (3) (4) (5)	73 (1) (2) (3) (4) (5)	103 (1)
14 (1) (2) (3) (4) (5)	44 (1) (2) (3) (4) (5)	74 (1) (2) (3) (4) (5)	104 (1)
15 (1) (2) (3) (4) (5)	45 (1) (2) (3) (4) (5)	75 (1) (2) (3) (4) (5)	105 (1)
16 (1) (2) (3) (4) (5)	46 (1) (2) (3) (4) (5)	76 (1) (2) (3) (4) (5)	106 (1)
17 (1) (2) (3) (4) (5)	47 (1) (2) (3) (4) (5)	77 (1) (2) (3) (4) (5)	107 (1)
18 (1) (2) (3) (4) (5)	48 (1) (2) (3) (4) (5)	78 (1) (2) (3) (4) (5)	108 (1)
19 (1) (2) (3) (4) (5)	49 (1) (2) (3) (4) (5)	79 (1) (2) (3) (4) (5)	109 (1)
20 (1) (2) (3) (4) (5)	50 (1) (2) (3) (4) (5)	80 (1) (2) (3) (4) (5)	110 (1)
21 (1) (2) (3) (4) (5)	51 (1) (2) (3) (4) (5)	81 (1) (2) (3) (4) (5)	111 (1)
22 (1) (2) (3) (4) (5)	52 (1) (2) (3) (4) (5)	82 (1) (2) (3) (4) (5)	112 (1)
23 (1) (2) (3) (4) (5)	53 (1) (2) (3) (4) (5)	83 (1) (2) (3) (4) (5)	113 (1)
24 (1) (2) (3) (4) (5)	54 (1) (2) (3) (4) (5)	84 (1) (2) (3) (4) (5)	114 (1)
25 (1) (2) (3) (4) (5)	55 (1) (2) (3) (4) (5)	85 (1) (2) (3) (4) (5)	115 (1)
26 (1) (2) (3) (4) (5)	56 (1) (2) (3) (4) (5)	86 (1) (2) (3) (4) (5)	116 (1)
27 (1) (2) (3) (4) (5)	57 (1) (2) (3) (4) (5)	87 (1) (2) (3) (4) (5)	117 (1)
28 (1) (2) (3) (4) (5)	58 (1) (2) (3) (4) (5)	88 (1) (2) (3) (4) (5)	118 (1)
29 (1) (2) (3) (4) (5)	59 (1) (2) (3) (4) (5)	89 (1) (2) (3) (4) (5)	119 (1)
30 (1) (2) (3) (4) (5)	60 (1) (2) (3) (4) (5)	90 (1) (2) (3) (4) (5)	120 (1)

For office use only

Sub. no. _____

D.O.B. _____

APPENDIX HCHILD BEHAVIOR QUESTIONNAIRE
(3 DAYS POSTHOSPITALIZATION)

SUB. NO. _____

D.O.B. _____

DEAR MOTHER,

Please answer EACH of the following questions concerning your child's behaviour. You are to answer these questions by basing your ratings on your child's behaviour in the last three days since your child's surgery. The headings at the top of the page describe the rating's to you. Just circle the number that BEST describes your child'd behaviour in the last three days since surgery. Be sure to answer ALL the questions.

Please remember to place this questionnaire in the stamped envelope provided and mail it as soon as possible.

Your continued participation in this study is most appreciated.

THANK YOU

APPENDIX ICHILD BEHAVIOR QUESTIONNAIRE

(3 WEEKS POSTHOSPITALIZATION)

SUB. NO. _____

D.O.B. _____

DEAR MOTHER,

Please answer EACH of the following questions concerning your child's behaviour. You are to answer these questions by basing your ratings on your child's behaviour in the last week. The headings at the top of the page describe the rating's to you. Just circle the number that BEST describes your child'd behaviour in the last week. Be sure to answer ALL the questions.

Please remember to place this questionnaire in the stamped envelope provided and mail it as soon as possible.

Your continued participation in this study is most appreciated.

THANK YOU

APPENDIX JCHILD BEHAVIOR QUESTIONNAIRE

(2 MONTHS POSTHOSPITALIZATION)

SUB. NO. _____

D.O.B. _____

DEAR MOTHER,

Please answer EACH of the following questions concerning your child's behaviour. You are to answer these questions by basing your ratings on your child's behaviour in the last week. The headings at the top of the page describe the rating's to you. Just circle the number that BEST describes your child'd behaviour in the last week. Be sure to answer ALL the questions.

Please remember to place this questionnaire in the stamped envelope provided and mail it as soon as possible.

Your continued participation in this study is most appreciated.

THANK YOU

APPENDIX K
PARENTING INDEX

SUB. NO. _____

D.O.B _____

DATE: _____

DEAR MOTHER,

During the last 2 months, have any of the following events occurred to you, your husband, or your children? Please circle any of the following events that have happened in the last 2 months.

-
1. Divorce
 2. Marital Reconciliation
 3. Marriage
 4. Separation
 5. Pregnancy
 6. Other relative moved into household
 7. Income increased substantially (20% or more)
 8. Went deeply into debt
 9. Moved to new location
 10. Promotion at work
 11. Income decreased substantially
 12. Alcohol or drug problem
 13. Death of close family friend
 14. Began new job
 15. Entered new school

APPENDIX K (continued)

16. Trouble with superiors at work
17. Trouble with teachers at school
18. Legal problems
19. Death of immediate family member

Please return this questionnaire as soon as possible in the envelope provided.

THANK YOU FOR YOUR PARTICIPATION