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Marital Interaction of Couples with Children with Spina Bifida:
A Case-Control Study

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A Dissertation Submitted to the Graduate Faculty
Carleton University in Partial Fulfillment of the Requirements
for the Degree
Doctor of Philosophy (Psychology)

December 17, 1990

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ISBN 0-315-68849-1

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TABLE OF CONTENTS

	Page
ABSTRACT	vii
INTRODUCTION	1
Spina Bifida: Biological & Medical Aspects	2
Incidence	3
Etiology	4
Prenatal Diagnosis	5
Severity	5
Hydrocephalus	6
Orthopedic Abnormalities	7
Genitourinary Abnormalities	7
Bowel Incontinence	8
Rationale for Selecting Spina Bifida	8
Prevalence of Divorce in Couples with a Chronically Ill Child	9
Divorce Among Parents with Children with Spina Bifida	11
Marital Quality in Couples with Chronically Ill Children ..	12
Marital Quality in Couples with Children with Spina Bifida	18
Summary of Literature Review	20
Conceptual Model:	
1. Individual Psychological Functioning	22
2. Marital Sex-Role Congruency	23
Role Congruency as a Predictor of Marital Satisfaction	27
Assumptions	29
Rationale	30
3. Behaviour Exchange Model	32
Rationale	35
Severity of the Disease	35
Synopsis of the Conceptual Models & Hypotheses	37

	Page
METHOD	40
Subjects	40
Procedure	41
Description of Measurement Tools	
Dyadic Adjustment Scale	45
Marital Sex-Role Attitude Scale	47
Marital Role Strain Questionnaire	49
Centre for Epidemiological Studies Depression Scale ..	50
Personal Assessment of Intimacy in Relationships	51
Parenting Stress Index	51
Communication Skill Test	52
Derivation of Couple Scale	54
Variables Selected for Hypothesis Testing & Secondary Analyses	55
RESULTS	56
Sample Characteristics	56
Section 1: Preliminary Analyses	61
Initial Analyses Comparing the Two Groups	61
1. Marital Satisfaction: Dyadic Adjustment Scale	61
2. Parenting Stress Index	63
3. Centre for Epidemiological Studies Depression Scale	66
4. Role Strain Questionnaire	68
5. Marital Sex-Role Attitude Scale	68
6. Personal Assessment of Intimacy	72
7. Communication Skills Test	72
Section 2: Analyses of The Three Models	74
Model 1: Individual Psychological Functioning	76
Model 2: Marital Sex-Role Congruency	80
Model 3: Behaviour Exchange Model	83
Integrated Model	86
Section 3: Secondary Analyses	89
Subsection 1: Analyses of Spina Bifida Mother & Father Scores	89
1. Dyadic Adjustment Scale	90
2. Parenting Stress Index	90
3. Centre for Epidemiological Studies Depression Scale	90

	Page
4. Role Strain Questionnaire	94
5. Marital Sex-Role Attitude Scale	94
6. Personal Assessment of Intimacy	94
7. Communication Skills Test	94
Subsection 2: Analyses of Distressed Couples	99
1. Spina Bifida Couples	99
2. Control Couples	102
Comparison of Distressed Spina Bifida Couples & Control Couples	102
Subsection 3: Comparison of Parental Composition of Couple Scores	106
DISCUSSION	109
Preliminary Findings	110
Examination of the Proposed Models:	
Comparison of Spina Bifida and Control Couples	112
Prediction of Marital Quality Based Upon Psychological and Social Variables in Spina Bifida Couples	113
Paternal Depression and Marital Satisfaction in Couples with Children with Spina Bifida	116
Maternal Role Strain, Depression, & Marital Satisfaction ..	118
Role of Physical Severity in Marital Quality	119
Marital Distressed Risk Group	123
Family Income and Marital Quality	124
Limitations of Current Study	125
Conclusions and Implications of Current Study	127
REFERENCES	129
APPENDICES	146
Appendix A: Consent of Family Physician	146
Appendix B: Information to Participate Letter	147
Appendix C: Consent Form	149
Appendix D: Semi-structured Interview	151
Appendix E: Dyadic Adjustment Scale	152
Appendix F: Marital Sex-Role Scale	155
Appendix G: Marital Role Strain Questionnaire	157
Appendix H: Personal Assessment of Intimacy in Relationships	158
Appendix I: Parenting Stress Index	159
Appendix J: Centre for Epidemiological Studies Depression Scale	160
Appendix K: Marital Problem Inventory	161

LIST OF TABLES

TABLE	PAGE
1. Age distribution (years) of control children and children with spina bifida	57
2. Parent occupation, education, and family income	59
3. Descriptive statistics on additional socio-demographic variables	60
4. Descriptive statistics on the Dyadic Adjustment Scale	62
5. Descriptive statistics on the total and domain scores of the Parenting Stress Index	64
6. Descriptive statistics on the parent domain subscales of the Parenting Stress Index	65
7. Descriptive statistics and univariate F-tests on the child domain subscales of the Parenting Stress Index	67
8. Descriptive statistics on the strain subscales of the Role Strain Questionnaire	69
9. Descriptive statistics on the discrepancy subscales of the Role Strain Questionnaire	70
10. Descriptive statistics and univariate F-tests on the Marital Sex-Role Attitude Scale	71
11. Descriptive statistics for the Personal Assessment of Intimacy in Relationship Scale	73
12. Descriptive statistics for the Communication Skills Test	75
13. Descriptive statistics for variables in Model 1	77
14. Pearson correlations of variables in Model 1	78
15. Multiple regressions testing hypotheses 2 and 3	79
16. Descriptive statistics for variables in Model 2	81
17. Pearson correlations of variables in Model 2	82
18. Multiple regressions testing hypotheses 5 and 6	84
19. Descriptive statistics for variables in Model 3	85

TABLE	PAGE
20. Pearson correlations of variables in Model 3	87
21. Multiple regressions testing hypotheses 10	88
22. Descriptive statistics for each parent on the Dyadic Adjustment Scale	91
23. Descriptive statistics for each parent on the total and child scores of the Parenting Stress Index	92
24. Descriptive statistics for each parent on the parent domain subscales of the Parenting Stress Index	93
25. Descriptive statistics for each parent on the Role Strain Questionnaire	95
26. Descriptive statistics and univariate F-tests for each parent on the Marital Sex-Role Attitude Scale	96
27. Descriptive statistics for each parent on the Personal Assessment of Intimacy in Relationship Scale	97
28. Descriptive statistics for each parent on the Communication Skills Test	98
29. Comparison of socio-demographic variables for distressed and nondistressed couples with children with spina bifida	100
30. Comparison of study variables for distressed and nondistressed couples with children with spina bifida	101
31. Comparison of socio-demographic variables for distressed and nondistressed couples with healthy children	103
32. Comparison of study variables for distressed and nondistressed couples with healthy children	104
33. Comparison of socio-demographic variables for distressed couples with healthy children and children with spina bifida	105
34. Comparison of study variables for distressed couples with healthy children and children with spina bifida	107
35. Derivation of couple score based upon individual score	108

LIST OF FIGURES

FIGURE	PAGE
1. Association of Variables Predicting Model 1	24
2. Association of Variables Predicting Model 2	33
3. Association of Variables Predicting Model 3	36

ABSTRACT

The impact of childhood chronic illness on marital quality has received only limited attention. The research that does exist contains methodological and theoretical shortcomings. Poor designs, lack of control groups, use of unstandardized measures, and failure to control for confounding variables are to date common methodological problems. Furthermore, little theoretical basis has been used to study couples with children with a chronic illness. The purpose of this dissertation was to develop and examine a theoretical model that could account for some of the psychological, social, and disability-related factors that impact on marital quality.

Three models and an integrated model were developed. The first model was based on the impact of individual psychological functioning on marital quality. It was proposed that parenting stress and depression would moderate marital quality. In the second model, parental strain/discrepancies in marital role attitudes and behaviours would moderate marital quality. Intimacy and communication formed the basis of the third model. It was proposed that marital quality could be moderated by the couple's degree of intimacy and communicational style. The integrated model combined the three separate models. Finally, it was hypothesized that illness-related measures would not impact on marital quality.

Forty six couples with children with spina bifida were

compared to 46 couples with healthy children. The parents were matched on family income, sex, and age of the child. Parents of children with spina bifida were recruited at the Spina Bifida Clinic of the Children's Hospital of Eastern Ontario. Parents of healthy children were randomly selected from the medical charts of the hospital.

Data were collected during home visits that were arranged for all participating parents. Parents completed self-report measures of marital adjustment, parenting stress, intimacy, role attitudes and behaviours, and depression. The parents also participated in a 10 minute video-taping assessing communication style.

The analyses yielded partial support for the models. Maternal and paternal depression, maternal role strain, and degree of ambulation were found to moderate marital quality. A secondary analysis was conducted comparing couples based upon a clinically meaningful classification of maritally distressed versus non-distressed. Distressed couples with children with spina bifida had younger children with spina bifida as well as more children. They also reported less intimacy, more parenting stress, maternal depression, and parental role strain than non-distressed couples. In a comparison of distressed couples with healthy children and couples with children with spina bifida, the children with spina bifida were younger than

healthy children. No differences were noted on the psychosocial measures.

The findings of this dissertation should sensitize clinicians and researchers to the need to examine the impact of chronic conditions on father's psychological well-being, the importance of role behaviours, and the impact of moderate severity on marital quality. Furthermore, as with previous research, the impact of childhood chronic condition on maternal psychological functioning is again highlighted. Future research should examine in greater detail the interaction of factors affecting maternal and paternal psychological functioning on marital functioning. Finally, marital interventions should include in addition to emotional components, strategies addressing the more subtle moderating variables such as role strain.

ACKNOWLEDGEMENTS

If I were to be asked: which section of the dissertation did you find most difficult to prepare and write? - I would reply, the "acknowledgements". How does one acknowledge the contributions, the support, and the kindness received from friends, colleagues, and family in a few words?

I would first like to thank the members of my thesis prospectus and examination committees for their many helpful suggestions. These members included: Drs. R. Hoge, B. Jones, M. Sullivan, C. Gordon, and A. Brook. I would also like to acknowledge my external examiner Dr. Donald Routh who allowed me to experience a thesis examination as a positive event.

I would like to thank the Children's Hospital of Eastern Ontario Research Institute Foundation for their financial assistance. The library staff at CHEO was most helpful in obtaining many of the articles I required. I would also like to thank the staff of the Spina Bifida Clinic, in particular, Liz Coughtry, Shirley Yumanski, and Dr. John Schillinger for their support.

I would like to thank the members of the Department of Psychology at CHEO for their kindness and many years of support. I have been fortunate to have been part of the Department. It was a privilege to have worked for Dr. J. Goodman who was always nearby when needed. I am indebted to Dr. Ian Manion. Thank you Ian for providing much of the guidance during many parts of this thesis.

I would like to thank Mark Kelly, Maria Zoubek, and Anne

Kerridge for coding the data. Their work made mine much easier.

Dr. Tina Daniels, one of my two supervisors, is responsible for the completion of this thesis, at least the examination. Thank you Tina for all your time, your support, and your helpfulness.

I would like to thank the Department of Psychology at Carleton University for allowing me the opportunity to undertake this thesis. I especially grateful to Lynn Giff for all her help.

I would not be where I am today had it not been for one individual - my supervisor, my mentor, my friend - Dr. Patrick McGrath. I am unable to find the words to express my deepest gratitude for the opportunity to have trained under your supervision. All of my experiences have been warm and positive.

I would like to thank you family, my parents, and my parent-in-laws, for their love during difficult and happy times. I would also like to thank my brother, Gaetano, for providing numerous escapes from the stresses of this thesis.

Finally, I owe my sanity to my wife, Lizzie. Thank you for your patience, your understanding, and your love. This thesis is truly ours.

INTRODUCTION

Approximately 10 percent of children, from birth to 18 years of age, suffer from a chronic disease (Gortmaker & Sappenfield, 1984). While there is a substantial body of literature addressing the impact of chronic disease on the psychosocial functioning of children and families (e.g. Pless & Roghmann, 1971; Pless, Roghmann, & Haggerty, 1972; Kellerman, Zeltzer, Ellenberg, Dash, & Rigler, 1980; Cadman, Boyle, Szatmari, & Offord, 1987; Cappelli, McGrath, MacDonald, Fried, Boland, & Katsanis, 1988), few studies have examined the effects of childhood chronic disease on the parent's marital relationship (Sabbeth & Leventhal, 1984). In addition, the present state of the literature on marital adjustment of parents with a chronically ill child is marred by a variety of methodological shortcomings. Some of these include: lack of a control group, use of unstandardized measures, failure to control for confounding variables, and inadequate sample size (Benson & Gross, 1989; Sabbeth & Leventhal, 1984). The most significant problem appears to be a lack of theoretical foundation. In a review of the literature, Sabbeth and Leventhal (1984) concluded:

The underlying problem is that studies of marital adjustment to chronic childhood illness have been conducted in the absence of a theoretical framework. Problems in defining and measuring marital adjustment have not been addressed. Researchers have focused on divorce and marital adjustment in general. Areas of marital adjustment to chronic childhood illness other than divorce and distress have been virtually ignored. A theoretical framework would enable researchers to state why they have chosen a certain area of marital adjustment to study, what its relationship to other areas might be, and why they have chosen

to assess it in a particular way. Theory provides the rationale for the selection of one research instrument over another. (p. 767).

The existing literature, therefore, provides some detail on the outcome of the marital adjustment of couples with a chronically ill child, but does not shed any light on the process of these findings. The most fundamental question, what factors might account for the marital satisfaction of couples with a child having a chronic illness, has remained unanswered. The purpose of this thesis is, therefore, to provide a theoretical model that may account for the factors affecting the marital relationship of couples with chronically ill children. The model will be tested with a group of parents having children with spina bifida.

Spina Bifida: Biological & Medical Aspects

Spina bifida, derived from the Latin "spina" meaning spine and "bifida" meaning split or divided, is known to be the most prevalent central nervous system disorder in children and the second most common birth defect (Myers, 1984). The disorder results from the failure of the caudal part of the embryonic neural plate to close properly. This initial malfunctioning creates changes in the tissue and bone structures that follow. Nervous tissues develop on the dorsal surface unprotected by skin, connective tissues, bones, and although some regeneration of new tissues does occur, the destroyed nervous tissues are never repaired (Warkany, 1977).

The cleft of the spinal column may or may not show a visible protrusion of the meninges and spinal cord. When the protrusion

exists, the disorder is referred to as spina bifida cystica and has three subtypes: meningocele, myelomeningocele, and myelocele (Lavarack, 1980). In meningocele the protruded sac contains meninges which are surrounded by spina fluid. If the sac contains meninges, spinal fluid, and a portion of the spinal cord, myelomeningocele is diagnosed. Finally, in myelocele, the spinal neural tube remains completely open to the external surface and is covered only by epithelium.

In spina bifida occulta there is no protruding sac and the spinal cord and meninges remain within the vertebral canal (James & Lassman, 1981). This a relatively minor condition and is often symptomless. The skin which overlies the area of the lesion may be normal or may have a dimple, pigmentation, a patch of hair or lipoma (James & Lassman, 1981). Children diagnosed with spina bifida occulta lead normal, healthy lives and receive few medical interventions. This form of spina bifida was excluded from the present study.

Incidence

There is considerable geographical variation in the incidence of spina bifida (Hunter, 1984; Myers, 1984; Elwood & Elwood, 1980). Spina bifida occurs in approximately .94 per 1000 live births in Canada (Elwood & Elwood, 1980). In the Eastern Ontario and Western Quebec region, the incidence is approximately 1.08 per 1000 live births (Hunter, 1984). The disorder, however, has been reported to occur 13 times more frequently in spontaneously aborted fetuses than in term births (Myers, 1984). Of the three subtypes of spina bifida cystica, myelomeningocele

accounts for approximately 90 percent of children born with spina bifida.

A significant sex difference has been found in children born with spina bifida. Approximately fifty-eight percent of children born with spina bifida are female (Hunter, 1984; Elwood & Elwood, 1980).

Etiology

Although some researchers feel that spina bifida is inherited in a multifactorial, genetic and environmental, manner, the exact cause of spina bifida is yet to be determined (Myers, 1984; Elwood & Elwood, 1980). A positive family history does appear to be associated with the occurrence of spina bifida (Hunter, 1984). The risk of giving birth to second child increases to approximately 5.5% if one sibling is already affected, 13% if a parent and a siblings or two siblings are affected and 20.6% if three siblings also have the disorder (Brocklehurst, 1976).

Spina bifida also appears to be associated with lower socioeconomic status (Elwood & Elwood, 1980). This relationship may reflect differences in environmental factors such as sanitation, housing density, and nutrition between socioeconomic classes. Furthermore, Elwood and Elwood (1980) note that perhaps occupational hazards such as toxins in the work environment may account for differences in the prevalence of spina bifida by socioeconomic classes.

Prenatal Diagnosis

Several procedures can be employed to diagnose spina bifida prenatally. The most popular are ultrasonography and/or amniocentesis. The accuracy of ultrasound ultimately depends upon the skill and experience of the technical operator (Rogers, 1980). Measurements of the fetal skull, crown-rump length, and longitudinal and transverse scans of the fetal spine provide the necessary information to detect the disorder (Rogers, 1980). In amniocentesis, alpha-fetoprotein levels of the amniotic fluid help detect spina bifida. These levels are approximately 2 to 3 times higher in the affected amniotic fluid than in normal amniotic fluids (Rogers, 1980). The combination of ultrasonography and amniocentesis provides detection of spina bifida in 80-90% of all cases. However, since amniocentesis, which yields the most accurate detection data, is conducted in only high risk pregnancy mothers, 95% of children born with spina bifida are unexpected (Myers, 1984).

Severity

The severity of disease depends upon the neurological level of the lesions. These levels are popularly categorized into 5 different groups: cervical and upper thoracic (1%); lower thoracic (27%); upper lumbar (23%); lower lumbar and upper sacral (45%); lower sacral (4%) (Smith, 1980). Generally, the higher the lesions, the more severe the disorders assessed by mortality risk and secondary abnormalities. These abnormalities include hydrocephalus, as well as orthopedic, genitourinary, and bowel abnormalities.

Hydrocephalus

Hydrocephalus is an enlargement of the cranium caused by abnormally high levels of cerebrospinal fluid collecting within the cerebral ventricular system. In spina bifida, this type of abnormality is termed noncommunicative hydrocephalus since it is caused by an obstruction in the ventricular system. Seventy-two percent of children with spina bifida also have hydrocephalus which is either present at birth (26%), or develops within the first month after birth (77%) and rarely occurs after 6 months (4%) (Smith, 1980). Hydrocephalus is found in approximately 83% of children with lower thoracic and upper lumbar lesions and in 60% of children with lower lumbar, upper and lower sacral lesions (Smith, 1980).

Hydrocephalus is the most frequent cause of death in infants born with spina bifida and interferes with normal intellectual development. Children without hydrocephalus, or, with hydrocephalus that is so minimal that it does not require treatment, have normal intelligence (I.Q. greater than 85). Fifty percent of children with significant hydrocephalus will be intellectually impaired with I.Q. scores lower than 85 (Smith, 1980).

Recent developments in neurological surgery to control for hydrocephalus have significantly improved the prognosis (Myers, 1984). Treatment for hydrocephalus is conducted by inserting a ventriculoperitoneal shunt which drains the excess cerebrospinal fluid to the peritoneal cavity.

Orthopedic Abnormalities

The malfunction of the spinal cord results in a number of orthopedic abnormalities. Lesions which occur in the lower thoracic region cause the psoas major muscles to be paralyzed preventing any motor muscular activity in the legs (Smith, 1980). Quadricep muscles become paralyzed as a result of upper lumbar lesions and lesions which occur in the lower sacral level generally do not affect functioning of the legs but paralysis of bladder, bowel, and pelvic floor occurs (Smith, 1980). There is, however, much individual variability in which specific muscles are affected and whether problems are due to spasticity or flaccidity (Myers, 1984).

The mobility of the child can be enhanced through use of parapodiums and braces. Parapodiums are often used by children with severe disease whereas, braces commonly aid mobility for children with less severe disease (Myers, 1984).

Genitourinary Abnormalities

The most common cause of death for infants with spina bifida is hydrocephalus, while older children often die from renal disease (Myers, 1984). Only 7 percent of all children with spina bifida do not have any genitourinary abnormalities (Smith, 1980). Most problems (infections, incontinence, or retrograde high pressure problems) are caused by abnormal innervation of the bladder (Myers, 1984). Previous methods used to prevent the problems associated with renal functioning such as Crede's Method or diversion bags have, for the most part, been replaced by intermittent clean catheterization (Myers, 1984). The intermittent

clean catheterization procedure can be performed on infants easily and reliably by parents. Children as young as 4 years of age can be taught to self-catheterize (Myers, 1984).

Bowel Incontinence

Bowel incontinence occurs with the same frequency as bladder incontinence (Smith, 1980). The problem is caused by a lack of innervation in the pelvic floor muscles and/or a flaccid pelvic floor (Myers, 1984). Children can learn a certain amount of bowel control through regular toilet habits. Problems associated with bowel incontinence can be prevented by controlling for constipation and impaction through a proper diet (Myers, 1984).

Rationale for Selecting Spina Bifida for This Dissertation

Spina bifida shares many of the same characteristics of other chronic diseases. The disease can be life-threatening, requires constant medical supervision, and interferes with the child's and family's daily life. Like other chronic diseases, there is a significant burden of care placed upon the parents. Parents usually perform daily physical treatments for the child, prepare the child's meals in a specified manner, and assist the child in daily tasks.

One significant difference between spina bifida and other chronic diseases is the impact the disease has on marital and parenting functioning. As will be shown in the review of the literature, parents of children with spina bifida appear to have an increased risk of divorce and report elevated parenting stress and numerous marital problems. Children with this disorder,

therefore, appear to be particularly at risk for secondary psychological maladjustment.

Prevalence of Divorce in Couples with a Chronically Ill Child

Research on the marital adjustment of couples with children with a chronic disease has focused on two aspects of the relationship. Investigators have examined the marital stability or the divorce rates of these couples as well as marital quality. Marital quality has been assessed by evaluating the magnitude of marital difficulties measured by the couple's reports of marital satisfaction, adjustment, happiness, and communication. .

In general, the overall rates of divorce of couples with a chronically ill child have been comparable to national, state, or control group divorce rates. In the cystic fibrosis literature, based upon their clinic populations, Allan, Townley, and Phelan (1974) found a 14% divorce rate in 50 couples and Begleiter, Burry, and Harris (1976) reported a 15% divorce rate in 34 couples. These figures did not significantly differ from the American national rate (14%) during the same time period.

Lansky, Cairns, Hassanein, Wehr, and Lowman (1978) compared the divorce rate of couples with children diagnosed with cancer with the state divorce rate. They sent questionnaires to all 259 couples with children diagnosed with malignant neoplasms during 1968 to 1974 attending the University of Kansas Medical Center. One hundred and eighty-eight questionnaires were returned. Of the 71 couples not returning their questionnaires, marital status data were available on the medical charts of 28 couples, but no

information was known on the remaining 43 families. Lansky et al. (1978) compared the person-year divorce rate during the previous 7 years (number of divorces divided by the product of number of families and the number of years at risk for divorce) of their sample with the population rate of Kansas and Missouri. Based upon the 188 responses, they found a person-year divorce rate of 1.19% in the couples with a child with cancer compared to the 2.03% population rate. Although unable to compute the exact person-year rate of the additional 71 families, based upon the information available on the child's medical chart and inferences on existing data, Lansky et al. (1978) calculated an approximate person-year rate of 2.51% for all 259 cases. This figure did not significantly differ from the population statistic.

In a Canadian study, Finley, Putherbough, Cook, Netley, and Rowe (1979) compared their clinic population of children who had undergone surgery for tetralogy of Fallot (a congenital heart disease) to a sex, age, and family size matched control group of children having had appendectomy surgery. They found a 15% divorce/separation rates in couples with children with congenital heart disease compared to 12.5% divorce/separation of couples with healthy children. This was not a significant difference.

In a larger study of couples with children having congenital heart disease, Silbert, Newburger and Fyler (1982) conducted a follow-up study of all couples with children having congenital heart disease surviving to age 5 and a half years. They compared 438 such couples with 25 couples with children having spontaneously cured congenital heart disease, 26 couples with

children receiving catheterization in infancy but no longer displaying any heart disease, and the national divorce rate. They found a 12.1% divorce/separation rate over the 5 and a half years for the index couples compared to a 4.0% rate for the spontaneously cured children, and a 11.6% rate for the catheterized children. These differences were not significant. In addition, all three groups had a lower divorce rate than the national average (20.3%) during the same time period.

Divorce Among Parents with Children with Spina Bifida

In contrast to that of other chronic disease groups, the divorce rate in marriages of couples with children with spina bifida appears to be higher than that of either population and control group rates. Tew, Payne, and Laurence (1974) compared the divorce rates of 59 marriages at a 9 and a half year follow-up after birth with a control cohort of 58 marriages. The control group had been matched for domicile, social class, sex of the child, and family size. Tew et al. found that twice as many divorces had occurred over the 9 and half years amongst the spina bifida couples (11.9%) compared to control parents (5.2%).

Martin (1975) compared the divorce rates of their spina bifida clinic population of 34 couples with 59 couples of healthy children and 60 couples with children having juvenile diabetes. The divorce rate of spina bifida couples was found to be 26.6% compared to the control divorce rate of 17.7% and a divorce rate of 11.7% for the diabetes group.

Kazak and Wilcox (1984), in a study of 56 couples with children with spina bifida and a control group of 53 couples with

healthy children found a divorce rate of 18% in the spina bifida couples compared to 13% in the control group.

The results of these studies demonstrate that couples with children having spina bifida are at greater risk of divorce than couples with healthy children. It is, however, important to distinguish marital stability from marital quality. For example, Lewis and Spanier (1979) define marital stability as the "formal or informal status of a marriage as intact or nonintact" (p. 269) and marital quality as the "qualitative dimensions and evaluations of the marital relationship" (p. 269). As will be seen in the subsequent review of marital quality of couples with children with a chronic disease, even those couples whose marriages are stable experience significant marital problems.

Marital Quality in Couples with Chronically Ill Children

The difficulties experienced by couples with chronically ill children are evident in studies assessing marital functioning variables such as satisfaction, communication, emotional intimacy, parenting stress, and overall marital adjustment. Regardless of type of disease, couples with a chronically ill child generally report more marital problems than couples with healthy children.

In the cystic fibrosis literature, Turk (1964), Allan et al. (1974), and more recently Phillips, Bohannon, Gayton, and Friedman (1985), and, Cowen, Corey, Keenan, Arndt, and Levison (1985) have examined some particular aspects of marital functioning. Turk (1964) administered a questionnaire to 25 mothers and 3 fathers assessing individual and couples related

social and emotional difficulties and problems in communication. Parents reported a significant reduction in sexual relations and breakdown in communication since the birth of the affected child. In addition, Turk (1964) found parents to complain of feeling deprived of time and energy for leisure activities and time alone with the other spouse. Unfortunately, no data are reported on the number of parents who reported these problems.

Allan et al. (1974) individually interviewed 50 mothers and fathers of children with cystic fibrosis. They found one third of mothers reported marital tension and discord. Twenty percent of fathers reported to have had, or continue to experience, stress-related physical problems and periods of depression. In comparison, 50% of mothers were found to be either anxious and/or depressed which required periodic or continuous treatment. Many mothers attributed their depression and anxiety to marital tensions.

Phillips et al. (1985) conducted semi-structured interviews with 43 mothers and 27 fathers of children with cystic fibrosis. Parents were asked to rate problems as either minor (limited in frequency or scope) or major (frequent and intense). Phillips et al. (1985) found that 32% of mothers experienced marital problems as a result of their child's illness. However, 28% of mothers compared to only 3% of fathers reported major communication problems in their marriage. These problems, the authors concluded, were the result of fathers unwillingness to discuss their feelings with their wives.

In a case-control study of parents with preschool children with cystic fibrosis, Cowen et al. (1985) compared 41 mothers and

37 fathers of children with cystic fibrosis with 31 mothers and 25 fathers of healthy children on the Family Assessment Measure (Skinner, Steinhauer, & Santa-Barbara, 1983). The sample included all cystic fibrosis patients in the preschool age group with the exception of 10 families. No differences were found between the fathers' Family Assessment Measure scores, but mothers of children with cystic fibrosis had significantly lower Family Assessment Measure scores and reported greater difficulties in role performance than mothers of healthy children. Both mothers and fathers of children with cystic fibrosis reported higher social desirability and denial scores than control parents. This raises the possibility that the parents may be minimizing or normalizing their situation. As a result, the number of familial difficulties may be greater than actually reported.

Similar findings of marital difficulties have been reported for couples with children with cancer. Heffron, Bommelaere, and Masters (1976), in a sample of 18 of 24 mothers with recently diagnosed leukemia in their children, found many to report reduced marital satisfaction. Mothers complained that the husband "could disappear at work and frequently 'had' to work long hours" (p. 836). As a result, they felt solely responsible for the emotional care of the child, the family, and the marital relationship. Unfortunately, Heffron et al. (1976) did not present any data as these results were based solely upon clinical reports obtained in a parent support group.

In another study of couples with children with cancer, Barbarin, Hughes, and Chesler (1985) examined the marital adjustment of 55 couples randomly selected from the 265 couples

in the clinic population. Complete data were available, however, for only 32 couples. Using both a semi-structured interview and structured questionnaires, they found that 28% of these couples reported moderate to major marital problems. As in previous studies (e.g. Phillips et al., 1985; Heffron et al., 1976), 59% of mothers took sole responsibility for the care of the child compared to 34% of couples who shared responsibility. The authors found a nonsignificant trend in the correlation between mother's perception of marital quality and husband's involvement in the medical care of the child ($p < .10$).

Crain, Sussman, and Weil (1966) compared marital conflict, tension, and role agreement between parents of 54 diabetic children and 76 healthy controls. Crain et al. found parents of children with diabetes to report significantly greater tension and conflict than healthy controls. In addition, there was more role tension in the parents of diabetic children.

In one of the few studies which found no differences in marital distress between parents of chronically ill and healthy children, Vance, Fazan, Satterwhite, and Pless (1980) compared 36 couples of nephrotic children with 36 control matched on age and sex of child, family size, sibling order, age and sex of siblings, marital status, and socioeconomic status. Based upon a single interview question, 55.5% of controls reported parental friction compared to only 30.5% of parents with nephrotic children. In contrast, Reynolds, Gerralda, Jameson, & Postlethwaite (1988) compared their clinic population of parents of 22 children with chronic renal failure requiring haemodialysis

to 22 sex and age matched children with chronic renal failure not requiring dialysis and 22 healthy controls matched on sex, age, and socioeconomic status. Parents of nephrotic children reported more marital stress than parents of healthy children with the dialysis parents reporting the most stress. It should be noted that Vance et al. (1980) did not identify whether their sample of children required hemodialysis.

Several studies have compared marital quality and parental psychosocial functioning between chronic diseases. Cummings, Bayley, and Rie (1966) compared the responses of mothers of 60 mentally retarded children, 60 neurotic children, 60 chronically ill children (15 with rheumatic fever, 15 diabetic, 15 with cystic fibrosis, 15 other), and 60 healthy children. All children were between the ages of 4 to 13 years and were matched by sex. They found mothers of the chronically ill children reported significantly less self-esteem and less enjoyment of their children than either the control or mentally retarded group. As with Cowen et al. (1985), Cummings et al. (1966) also found mothers of chronically ill denied more of their feelings in comparison to other groups of mothers. In a second publication, Cummings (1976) presented the findings of the fathers from the earlier study. Fathers of chronically ill children reported more depressive feelings, lower sense of paternal competence, and less enjoyment of their children than fathers of healthy controls.

In another study of mothers of chronically ill children, Breslau, Staruch, and Mortimer (1982) assessed maternal distress and depression-anxiety in mothers of 369 chronically disabled children (77 cystic fibrosis, 118 cerebral palsy, 82 spina

bifida, 92 other) and 456 mothers of healthy control children. Breslau et al. found that mothers of chronically ill children reported more depression-anxiety than healthy controls ($p < .001$) but there were no differences between chronic disabilities. Similarly, mothers of chronically ill children reported more maternal distress than control mothers ($p < .0001$) but there were no differences among the types of childrens' disabilities.

Tavormina, Boll, Dunn, Luscomb, and Taylor (1981) compared 133 mothers and 93 fathers of 144 children with either cystic fibrosis, diabetes, asthma, or hearing-impairment on the Family Unit Inventory to established norms. They found parents of chronically ill children to report marital satisfaction scores, dyadic congruence, and dyadic compatibility scores comparable to norms of low adjusted dyads. In addition, couples reported their real adjustment scores to be significantly lower than their ideal scores. No differences were found among the chronic diseases.

Cairns and Lansky (1980) compared the marital stress of 38 couples with a child having cancer and 23 couples with a hemophiliac child. Couples completed the MMPI which was then scored using the Arnold Sign Indicator (Arnold, 1970). The Arnold Sign Indicator assesses marital discord by comparing husband's and wife's MMPI profiles and comparing patterns and discrepancies between spouses. Cairns and Lansky (1980) found 68% of cancer and 39% of hemophiliac parents to have Arnold Sign Indicators greater than 2 indicating significant marital distress. In comparison, only 4% of nondistressed couples in the normative group (Arnold, 1970) had scores greater than 2.

Marital Quality in Couples with Children with Spina Bifida

The spina bifida literature appears to replicate the findings of studies in other chronic diseases. Early clinical observation studies showed that marital relationships become emotionally strained (Hare, Laurence, Paynes, & Rawnsley, 1966; Richards & McIntosh, 1973) and parents reported intense feelings of guilt, depression, hopelessness, pessimism, and despair (Kolin, Scherzer, New & Garfield, 1971; Freeston, 1971). In general, mothers reported the most emotional and physical problems. For example, Walker, Thomas, and Russell (1971) in a study of 107 mothers and 86 fathers of 107 children with spina bifida found 53% of mothers compared to 10% of fathers reported feeling tired, worried, and depressed although 34% of fathers did complain of anxiety.

Similarly, Tew and Laurence (1973) measured the mental and physical health of 59 mothers of spina bifida children using the Malaise Inventory (Rutter, Tizard, & Whitmore, 1970). These mothers had higher stress score than mothers with children having psychiatric problems, brain disorders, and physical handicaps as reported in the normative sample from the Isle of Wight study (Rutter, et al., 1970). Dorner (1973, 1975) also using the Malaise Inventory with 70 mothers, found 32% to have marked depression compared to the 15% maternal depression rate in the Isle of Wight study (Rutter et al., 1970).

The few studies which present data on the marital quality of couples with children with spina bifida have yielded equivocal results. In a longitudinal prospective study, Tew et

al. (1974) compared 59 couples of children with spina bifida and a cohort of 58 couples with healthy children. The original sample was comprised of 146 subjects but during the 9 year period 87 children had died. Tew et al. (1974) conducted semi-structured interviews at half-year intervals but the study reported the marital harmony assessment soon after birth and at 9 years follow-up. Marital quality was assessed by semi-structured interview and graded on a 5 point scale: 1. satisfactory (harmonious relationship between spouses), 2. slight difficulties (marriage is satisfactory apart from minor difficulties), 3. recurrent difficulties (major differences of opinion which are not yet resolved), 4. severe difficulties (strong likelihood of divorce or separation), 5. broken marriage (divorce, separation, desertion). They found that at birth, 67% of spina bifida parents compared to 68% of controls had satisfactory marriages. At the 9 year follow-up, 46% of parents of children with spina bifida had recurrent or worse difficulties compared to only 15% of control parents. There was no relationship between the severity of the child's handicap, socioeconomic status, and marital distress.

In contrast, Spauling and Morgan (1986) and Kazak and her colleagues (Kazak, 1987; Kazak & Clark, 1986; Kazak & Marvin, 1984) have found contradictory results. Spauling & Morgan (1986) compared couples of 19 normal intelligence spina bifida children to couples of 19 healthy children matched on sex, age, intelligence, socioeconomic status, and race. As part of the overall assessment, couples completed the Dyadic Adjustment Scale (Spanier, 1976) as a measure of marital adjustment. No

differences were found between the two groups. However, the sample size was small and not necessarily representative of children with spina bifida. Only 19 of the possible 30 eligible subjects participated. It is, therefore, quite possible that those couples with poor adjustment refused to participate.

Kazak (Kazak, 1987; Kazak & Clark, 1986; Kazak & Marvin, 1984) also compared marital satisfaction using the Dyadic Adjustment Scale between a group of parents with children with spina bifida and a control group. Although Kazak presents her results in three different studies, they appear to be based upon the same original sample (Kazak & Marvin, 1984). Furthermore, although Kazak approached 56 spina bifida couples and 53 control couples with healthy children, since 10 of 56 spina bifida couples were divorced and 7 control couples were also divorced, the actual sample size was 46 spina bifida couples and 46 control couples. Kazak found no differences between the two groups on marital satisfaction measured by the Dyadic Adjustment Scale (Spanier, 1976). Mothers of children having spina bifida, however, reported more maternal parenting stress assessed by the Parenting Stress Index (Abidin, 1983). Severity of the disease and socioeconomic status were not related to either poor marital adjustment or elevated parental stress (Kazak & Clark, 1986).

Summary of Literature Review

Based upon the existing literature, childhood chronic disease appears to have a negative impact on parent's marital relationship. In general, one can conclude that: (1) couples with children with spina bifida appear to be at greater risk for

divorce than couples with healthy children; (2) couples with children with spina bifida experience more marital problems than couples with healthy children; (3) they experience more parenting stress than couples with healthy children; and, (4) within their relationship, mothers report more psychological problems than fathers.

Although the literature provides some indication of the outcome of childhood chronic illness on the marital relationship, it fails to identify the factors that may account for the marital quality of these couples (Sabbeth & Leventhal, 1984). To date, only one study has been published that attempts to develop a model examining factors within the marital relationship which could account for couple's marital quality. Kazak (Kazak & Marvin 1984; Kazak & Wilcox, 1984) has argued that a couple's social support networks could moderate the negative impact of childhood chronic illness. For example, Kazak & Marvin (1984) reported "clear differences between the groups in terms of total network size for both mothers and fathers. In each case, the social support networks of the parents of handicapped children were significantly smaller than those of the comparison group" (p. 74). Despite the published findings which appear to provide support for their hypotheses, closer examination of the results based upon Kazak's (1983) dissertation does not provide such clear evidence.

As already noted, the actual sample composition of Kazak's (1983) study is unclear. In particular, the spina bifida sample was comprised of more single parents than the control group. Kazak (1983) did not examine the relationship between social

support networks and single parent families. One may expect single parent families to have smaller social support networks than intact families. In addition, the sample composition may have been flawed by the number of first versus second marriages in the two groups. Kazak (1983) found within the spina bifida sample differences between first and second marriages with first marriages tending to have larger social networks than second marriages. Whether the differences between the two groups on the social network measures was due to marital history or chronic condition was not examined. Social support network measures may have been confounded by marital history with the possibility that, in general, second marriages have smaller support networks than first marriages.

The purpose of this dissertation was to develop a model that would identify some of the factors that affect the marital quality of couples with children with spina bifida. The factors to be included in the model are detailed in the subsequent sections.

Conceptual Model: 1. Individual Psychological Functioning

Three possible models for the study of marital quality in couples with children with spina bifida were tested in this thesis. In the first model, it was argued that the marital quality of couples would be predicted by the burden of care required to raise a child with a chronic disease, and the impact it has on the individual's psychological functioning.

Children with a chronic disease such as spina bifida require daily physical and medical therapeutic interventions which are

provided by the parents in order to sustain or improve their children's quality of life. Physician visits are frequent and hospitalization is often necessary to regulate the disease and control for any exacerbations. In general, parents must commit a substantial amount of time and energy to raise a child with a chronic disease. These factors, in part, account for the increased burden of care.

The effects of the increased burden of care on the quality of life of couples have been demonstrated in the literature. For example, Turk (1964) noted that couples experienced significant reductions in time and energy to spend with each other as a result of the amount of care required by the child. More recently, Kazak and Marvin (1984) have reported that parents with children with spina bifida reported significant parenting stress. Furthermore, the burden of care appears to have a more pronounced impact on the mothers (e.g. Breslau, et al., 1982; Barbarin et al., 1985; Walker et al., 1971; Kazak & Marvin, 1984). In particular, it has been demonstrated that mothers report significantly more parenting stress and depression than mothers of healthy children as well as more parenting stress and depression than fathers of either chronically ill or healthy children (Allan et al., 1974; Breslau et al., 1982; Walker et al., 1971; Tew & Laurence, 1973).

The relationship between marital quality and individual psychological functioning is presented in Figure 1. The model can be summarized as: the increased burden of care in couples with children with a chronic disease affects the marital quality

Figure 1

Association of Variables Predicting Model 1

of the couple's relationship by increasing maternal depression and the amount of parenting stress.

2. Marital Sex-Role Congruency

The second model for the study of marital quality in couples with children with spina bifida is based upon Scanzoni's theory of the marital structure of sex roles and equal partnership (Scanzoni, 1975; 1978; 1982). The structure of marriage has substantially changed over the last 200 years in Western Society. Scanzoni (1982) attributes many of these changes primarily to the feminist movement which empowered women to gain more power within the marital structure as they achieved more equality within the larger economic and political environments. As a result, there has been a gradual and direct change in the female status reflected in instrumental and expressive aspects of the spouses' roles. (Scanzoni, 1975, 1978, 1982). Instrumental roles, which are also referred to as socioeconomic roles, are those necessary to sustain the marriage as a social and economic unit such as child care, cooking, household repairs, employment, and decision-making. In contrast, expressive or affection roles, are related to the interpersonal relationship of the spouses such as understanding, communication, and acceptance. These roles are further subdivided into the instrumental and affection duties a spouse must perform, and the instrumental and affection rights a spouse is entitled to receive.

The majority of changes in the marital structure have come from the transition of wives' roles through four stages. Within

each stage, the instrumental and expressive duties and rights change to reflect the differences in roles. As property, the wife assumes many instrumental and expressive duties but few rights. Husbands, in this stage, also have many instrumental duties, but also have many instrumental rights, expressive rights, and few expressive duties. In the remaining three stages, women begin to acquire more instrumental and expressive rights, whereas, husbands' expressive duties increase. For example, as property status, the wife served the husband's sexual and affection needs but as a complement, the wife begins to demand more affection and sexual gratification from her husband. Yet, the wife still remains a complement to the husband and children serving his interests.

The status of junior partner provides the wife with more instrumental rights and reduces her number of instrumental duties. Within this group, wives are often employed providing additional economic resources for the family. However, the wife still remains only a junior partner since the majority of economic power remains within the husband's role. Equal partnership emerges when both husbands and wives share the same instrumental and expressive duties and rights, and both partners share in all aspects of socioeconomic and socioemotional needs of the relationship and family.

Most marriages are traditional or modern depending upon the role preferences of the spouses (Scanzoni, 1975, 1978). In the traditional role preference, the status of the wife is along the continuum of complement to junior partner. The husband is the major contributor to the socioeconomic stability of the family

whereas the wife is primarily responsible for care of the household and children (e.g. housewife, traditional mother role). The modern role preference, on the other hand, is characterized along the continuum of junior to equal partner. The traditional marriage is characterized by role differentiation between spouses whereas there is a higher degree of role interchangeability and role egalitarianism in the modern or contemporary marriage (Scanzoni, 1978).

Scanzoni and others (e.g. Frank, Anderson, & Rubinstein, 1980) have shown that there has been a gradual change in marital structure from the traditional to the modern marriage. The evidence to support this change has come from large longitudinal population surveys (Scanzoni, 1975, 1978). Marital conflict may occur, however, not as a result of the type of marital structure, but when couples' perceptions of the marital structure are not congruent with their expectations. If both spouses perceive and accept either a traditional or modern style of marriage, they will experience a higher degree of marital satisfaction as opposed to couples who expect either the traditional or modern structure but perceive the opposite.

Role Congruency as a Predictor of Marital Satisfaction

Various concepts have been used to describe the relationship between role perception and expectation. It has been referred to as role discrepancy (Burr, 1971, 1973), role fit (Lewis & Spanier, 1979), role conflict (Ort, 1950; Nye & Berardo, 1973), and self-role congruency (Luckey, 1960; Bowen & Orthner, 1983). In addition, the source of information such as behavioral or

attitudinal, and the type of role such as economical, sexual, recreational has also varied (e.g. Burr, 1973; Lewis & Spanier, 1979; Burr, Leigh, Day, & Constantine, 1979). Despite these differences, there are ample data demonstrating a positive relationship between marital satisfaction and role congruency (e.g. reviews by Burr et al, 1979; Lewis & Spanier, 1979; Rollins & Galligan, 1978). Burr et al. (1979) and Lewis and Spanier (1979) have included this finding as a major proposition in their theories of marital quality and stability. Based upon an interactionist theory of marital satisfaction, Burr et al. (1979) state as their first proposition: "the perceived quality of role enactment in a relationship influences the satisfaction individuals have in the relationship, and this is a positive, linear relationship" (p. 69). Similarly, Lewis and Spanier (1979) in their theory of marital quality and stability concluded, in part, "the greater the role fit, the greater the marital quality" (p. 284).

Recent studies provide some support for the use of Scanzoni's traditional and modern marital structure constructs in marital quality research. Bowen and Orthner (1983) examined the marital quality and role perceptions of 331 couples. Marital quality was assessed using a 27-item self-report measure, and a modified version of the Marital Sex-Role Attitude Scale (Scanzoni, 1975) was used to measure role perception. Bowen and Orthner (1983) found the least marital satisfaction in couples where the husband was traditional and the wife was modern compared to couples who were both congruent, or, the husband was

modern and the wife was traditional.

Marital quality was jeopardized only in the relationship of a traditional husband and modern wife and not in the relationship of a modern husband and traditional wife. Although this may appear as a contradiction to role congruency hypothesis, the results support Scanzoni's (1982) proposition that as women strive for equality in the marital structure, the most conflict will arise in situations where there is most resistance to change, that is, a modern wife and traditional husband. Bowen & Orthner (1983) concluded "that the greater difficulty that traditional husband and modern wife couples experience in the marital relationship is probably the result of the pressures from wives to change the role expectations of their traditional husbands and a reluctance on the part of men to change" (p. 228). Although the modern husband and traditional wife relationship is incongruous, the relationship allows the wife the freedom to maintain her traditional role or, if she wishes, to pursue a modern role. In other words, the modern husbands are not constrained by the traditional wives and do not believe they should constrain their wives.

In addition to Bowen and Orthner (1983) who demonstrated the relationship between marital quality and role congruency between spouses, Frank et al. (1980) have shown that each spouse's role congruency is also related to marital quality. Frank et al. (1980) compared 80 couples not receiving marital therapy, 50 couples in marital therapy, and 50 couples receiving sex-therapy on measures of role congruency. They collected data on each spouse's attitudinal perception of role egalitarianism and their

behavioural role perception. From their data they derived a role strain score which was the discrepancy between the spouse's perception of modern and traditional role and actual behaviour. Frank et al. (1980) found the couples in the marital therapy group to experience the most role strain followed by the sex-therapy couples. Furthermore, within each group of the dyads, the role strain was greatest for the wives in the marital therapy group.

Childhood Chronic Illness & Marital Sex-Roles: Assumptions

In order to use Scanzoni's marital sex-role theory, certain assumptions are necessary. The first assumption is that there is no relationship between marital satisfaction and the risk of having a child with spina bifida. Implicitly, this assumption holds that the marital satisfaction of couples with children with spina bifida and couples of healthy children are equivalent before the birth of the child. Data to support this assumption can be derived from Tew et al. (1974) who found satisfactory marital relationships in 67% of parents with children with spina bifida and 68% of parents of healthy children at the time of birth of the child. Explicitly, we assume that marital distress does not increase the risk of spina bifida. There are no data that suggest any possible link between marital distress and the risk of spina bifida.

The second assumption in the model states that the marital sex-role, traditional or modern, is independent of the child's physical status at birth. Explicitly, the risk of giving birth to a child with spina bifida is not related to the mother's role

preference. Implicitly, based upon the recent trends toward modern relationships (e.g Scanzoni, 1978, 1982), we assume that before the birth of the child, couples with a child with spina bifida were at the same continuum from traditional to modern marital structure as couples with healthy children.

Marital Sex-Roles: Rationale

The rationale for the second model is based in part from the premise of the first model. It was noted in the first model that couples with children with a chronic disease experience increased burden of care. Mothers often remain at home to care for the child well beyond infancy in order to cope with the commitment. The specialized care of the child may make it difficult for the mother to return to her previous employment. This contributes to the financial burden of the family. The fathers may, therefore, be faced with having to supplement the family's income through extra work.

Some of the marital problems of couples with children with spina bifida may be attributed to the basic changes that occur in the family. The marital role structure of the relationship changes as it accommodates the needs of the child. The mother adapts to the child's needs by assuming a more traditional role as she becomes either sole or major caregiver for the child and family (Barbarin et al., 1985; Cowen et al., 1985). Fathers compensate by assuming a more traditional role as a peripheral parent in the daily care of the child, and primarily responsible for the financial care of the child and family (Kazak & Marvin, 1984; Heffron et al., 1973).

The type of role changes characterizing parents of chronically ill children are similar to those found in the sex-role research conducted by Scanlon (1975, 1978, 1982). The role changes that occur in couples with children with a chronic disease create discrepant role perceptions between their ideal and actual role behaviours. These role changes, however, are probably most difficult for the mothers since they may not have been prepared to assume a traditional parenting role. In order to care for the child, the mothers may not be able to return to their careers. This may explain, in part, the increased emotional, physical, and parenting stress of mothers of children having a chronic disease (Breslau et al., 1982; Cummings et al., 1966; Dorner, 1973, 1975; Tew & Laurence, 1973; Walker et al., 1971). Furthermore, the studies of childhood chronic illness which have found poor dyadic congruence and compatibility between spouses (e.g. Cairns et al., 1966; Tavormina et al., 1981) are also attributed in our model to the incongruity of sex-role perception from a previous modern to the present traditional role.

Figure 2 summarizes the relationship between marital quality and marital sex-roles. The burden of care in raising a child with a chronic disease requires the mothers to assume more traditional roles than mothers with healthy children. This shift in roles may create marital sex-role strain. These factors subsequently affect the marital quality of the relationship.

Figure 2

Association of Variables Predicting Model 2

3. Behaviour Exchange Model

The third conceptual model is derived mostly from the behavioural exchange theory of marital satisfaction (Birchler, Weiss, & Vincent, 1975; Jacobson, Waldron, & Moore, 1980; Wills, Weiss, & Patterson, 1974). The model is based upon the premise that certain moderating variables which are found in the behavioural exchange theory can ameliorate or prevent some of the marital problems.

The behavioural exchange model used to study marital relationships is based upon the principles of the operant tradition and social exchange theory (Stuart, 1969; Jacobson & Margolin, 1979; Wills, Weiss & Patterson, 1974; Birchler, Weiss, & Vincent, 1975; Jacobson, Waldron, & Moore, 1980). Marriages that are highly satisfying are characterized by maximizing mutual rewards and minimizing costs, whereas minimal rewards and maximum costs are characteristics of distressed marriages (Margolin & Jacobson, 1981). The rewards and costs of the relationship are operationalized as those behaviours which are perceived as either reinforcers or pleasing behaviours, and, punishers or displeasing behaviours by the spouses (Wills et al., 1974; Bircher et al., 1975). The behaviours commonly used in the behaviour exchange theory have included instrumental and affective behaviours (e.g. Wills et al., 1974; Bircher et al., 1975; Jacobson et al., 1980; Jacobson, Follette, & McDonald, 1982) and verbal and nonverbal communication behaviours (e.g. Gottman, 1979, 1980; Markman, 1979, 1981; Margolin & Wampold, 1981).

According to behaviour exchange theory, there are a number

of differences in the interactional styles of distressed and nondistressed couples. Distressed couples are defined as couples who seek marital therapy and score beyond a cut-off score on standardized self-report measures of marital adjustment and satisfaction (e.g. Gottman, 1979). Based upon this distinction, researchers in the area of behaviour exchange have found that: 1. distressed couples emit more displeasing and fewer pleasing behaviours in their homes (Wills et al., 1975) and in laboratory environments (Gottman, 1979; Birchler et al., 1975); 2. distressed couples reciprocate more negative behaviours (e.g. Gottman, 1979, 1980; Margolin & Wampold, 1981), 3. distressed couples are more reactive to the negative behaviours than nondistressed couples (e.g. Margolin & Wampold, 1981; Jacobson et al., 1980, 1982); 4. distressed couples are less emotionally intimate than nondistressed couples (Schaefer & Olson, 1981); Waring, 1984; Wynne & Wynne, 1986); and, 5. nondistressed couples maintain a positive communication style compared to distressed couples who have a negative communication style characteristic of interaction (Olson & McCubbin, 1983; Baucom & Kaplan-Mehlman, 1984; Floyd & Markman, 1984; Floyd, O'Farrell, & Goldberg, 1987).

Behaviour Exchange Theory: Rationale

Studies of childhood chronic illness have shown that couples experience specific difficulties with poor communication (Turk, 1964; Phillips et al., 1985) and lack of intimacy (Richards & McIntosh, 1973; Heffron et al., 1973; Hare et al., 1966). In our final model, as illustrated in Figure 3, burden of care affects the relationship by interfering with communication and the

Figure 3

Association of Variables Predicting Model 3

couple's ability to maintain an intimate relationship (Sabbeth & Leventhal, 1984).

Severity of the Disease

In the each of three models, severity of disease has been excluded as a factor that may affect marital quality. Although severity of disease contributes to the psychological well-being of the child (e.g. Cadman et al., 1987; Cappelli et al., 1988), no association has been found between severity of disease and marital quality (Tew et al., 1974; Kazak & Marvin, 1984). Furthermore, Kazak and Marvin (1984) also found no association between disease severity and parenting stress. Despite these findings, disease severity will be measured and tested in each of three models as a possible moderating variable.

Synopsis of the Conceptual Models and Hypotheses

Three conceptual models to study marital quality and the factors that impact on the couple's relationship have been specified. In the first model, couples with a child having a chronic disease experience an increased burden of care in comparison to couples with healthy children. This increased burden of care causes parental stress and depression which impacts on marital quality. Furthermore, the marital quality may be predicted by mother's stress perceptions. Based upon this first model it was hypothesized:

1. Couples with children with spina bifida will report less marital satisfaction and more parenting stress and depression than couples with healthy children.

2. For spina bifida couples, the couples marital satisfaction will be predicted by the parenting stress and level of depression.

3. Disease severity will not moderate marital satisfaction after controlling for the effects of parenting stress and depression.

In our second model, the burden of care in raising a child with a chronic disease such as spina bifida forces parents to adjust their roles to accommodate the needs of the child. Parents assume more traditional marital sex-roles. The magnitude of discrepancy between parents' actual roles and their idealized roles will predict their perceptions of marital satisfaction and parenting and individual stress. It was hypothesized that:

4. Parents, in particular mothers with children with spina bifida, will report more traditional marital sex-roles and more sex-role strain/discrepancies than fathers or mothers with healthy children.

5. The spina bifida couples' marital satisfaction will be predicted by the magnitude of the mother's marital sex-role strain/discrepancy.

6. Disease severity will not moderate marital satisfaction after controlling for the effects of marital sex-roles.

In the final model, the burden of care affects the couple's communication and intimacy. Lack of positive communication and

intimacy are more prevalent in couples with children with a chronic disease than those with healthy children. Based upon this model, the following hypotheses were generated:

7. Couples with children with spina bifida will report less emotional intimacy, and be observed using more negative communication than couples with a healthy child.

8. The degree of emotional intimacy, and communication style will predict marital satisfaction in couples with children with spina bifida.

9. Disease severity will not moderate marital satisfaction after controlling for the effects of intimacy and communication.

In order to investigate whether a particular model provides a better understanding of the factors that may affect the marital quality of couples with child with spina bifida, a final analysis would be conducted using all the variables from the three models. Based upon this final analysis we hypothesized that:

10. Each block of variables from the three models can predict additional and unique information on the marital quality of couples with children with spina bifida.

METHOD

Subjects

Parents of children with spina bifida who attended the spina bifida clinic at the Children's Hospital of Eastern Ontario (CHEO) served as subjects in this study. Inclusion criteria for the study included: 1. the children with spina bifida were younger than 18 years of age; or, 2. subjects were married and living together. Couples were excluded if: 1. both spouses were not the biological parents of the child; 2. the child was diagnosed with spina bifida occulta; and, 3. the child had been diagnosed within the previous 12 months. In addition, in order to control for possible cultural differences, and since the instruments used in this study had been normed with an English-speaking population, non-Anglophone subjects were also excluded.

The sample size requirement was justified on the basis of hypothesis number 10 which was the most complex analysis. The sample size was sufficient to account for approximately 10% of the unique variance for each block of variables (individual psychological functioning, marital sex-role congruency, behaviour exchange model, and severity of disease) in hypothesis 10 based upon an alpha of .05 and a power of .80 (Cohen, 1977).

Fifty-five couples with children with spina bifida met the inclusion criteria and were subsequently asked to participate in the study. Forty six couples agreed to participate. Five couples refused (4 fathers and 1 mother did not wish to participate) and an additional 3 couples could not participate for other reasons

(recent death in the family; mother expecting a child at any time; family currently in the process of re-locating). A participation rate of 90.1 percent was obtained calculated on 5 refusals and a 85.2 percent participation rate was obtained when calculated on 8 subjects not able to participate.

The couples with children with spina bifida were matched to couples with a healthy child based on the sex and age of the child, and socioeconomic status based upon family income. Family income matching was conducted using Statistics Canada census tract data. With the exception of spina bifida diagnosis, the control couples also met the same inclusion and exclusion criteria of the spina bifida group. The healthy child control was obtained from the medical records of children who had attended CHEO for non-chronic disease purposes (e.g. acute respiratory infections, fractures). Permission to contact these families was obtained from their family physicians (Appendix A).

Ten control families refused to participate in the study. Most parents reported that either they were not interested or did not have time to participate in the study. A participation rate of 82.1% was obtained. The 10 families that did not agree to participate were replaced in order to maintain the sample size.

PROCEDURE

The study was approved by the Ethics Committee at the Children's Hospital of Eastern Ontario. At regular spina bifida clinic visits held every first, third, and fourth Wednesday of each month, the parent(s) of children with spina bifida were asked if they would be willing to participate in this research

study. Parents were approached consecutively until the required sample size was achieved.

The parent(s) were informed of the purpose of the study and the requirements for the study. The parent(s) were told that researchers from the Children's Hospital of Eastern Ontario, Ottawa Children's Treatment Centre, and Carleton University were conducting a study of couples with children with spina bifida. Parents were informed that the purpose of the study was to examine marital interaction and how parents cope with possible stresses of raising a child with spina bifida. Both parents were asked to participate in an assessment of marital interaction which would require completing some questionnaires and participating in a 10 minute video-taped problem-solving task. The assessment would be completed in approximately one to one and half hours. Parents were assured that all information collected would be held strictly confidential and that we were interested in group data and not individual scores. The video-tape used in the task was to be either destroyed at the end of the study or, if they wished, returned to their possession.

Parents were also informed that participation in the study would not in any way affect the child's care at either the Children's Hospital or the Treatment Centre. The results of the study could, however, help us to understand some of the difficulties that couples with children with a chronic disease may experience. The results could also guide us in developing programs that help some parents of children with spina bifida as well as other chronic disease cope in raising their child.

Finally, a home-visit was arranged at the convenience of

participating parents. The complete assessment was conducted during this visit.

Control subjects were mailed a letter requesting their participation in the study (Appendix B). The letter outlined the purpose of the study and the requirements from the subjects. Approximately one week after posting the letters, subjects were telephoned and asked to participate. The investigator attempted to determine the reasons for subjects choosing not to participate. A home visit was also scheduled for the control subjects at their convenience.

Before any aspect of the home assessment was conducted, subjects were warned that certain sensitive and personal questions would be asked. The couples were informed that it is difficult to avoid asking these questions when conducting an assessment of marital and parenting functioning. The instruments selected for this study were typical of most research projects in this field. Subjects were told that they did not have to answer any question they felt to be too sensitive and personal. They were re-assured that all information collected would be held strictly confidential and that our interests were in group data and not any one individual's responses.

Subjects were asked to sign an informed consent (Appendix C) and then a brief semi-structured demographic interview was conducted (Appendix D). Family income was collected by showing subjects separate cards with written amounts and asking them to choose the card which best identified their income.

Couples were then assessed on marital satisfaction using the

Dyadic Adjustment Scale (Appendix E) (Spanier, 1976); perception of marital sex-roles using the Marital Sex-Role Scale (Appendix F) (Scanzoni, 1975); perception of sex-role strain using Role Strain Questionnaire (Appendix G) (Frank et al., 1980); emotional intimacy was assessed using the Personal Assessment of Intimacy in Relationships (Appendix H) (Schaefer & Olson, 1981); parenting stress was measured using the Parenting Stress Index (Appendix I) (Abidin, 1983), and depression was assessed using Centre for Epidemiological Studies Depression Scale (Appendix J) (Radoff, 1977).

After completing the previous measures, the spouses were asked to complete the Marital Problem Inventory (Appendix K) (Floyd & Markman, 1984). The purpose of this inventory was to produce topics of conversation for the measurement of couples communication style. Couples were then asked to discuss some of their problems for approximately 10 minutes during which their interactions were audio and video-taped. This assessment served as the behavioural observation of negative and positive communication style. The Communication Skills Test (Floyd & Markman, 1984) was used to code the interaction. Three couples with children with spina bifida and three couples with healthy children did not participate in the video-tape of communication. No video-taping was conducted on a fourth spina bifida couple since the father had to leave to attend a work related emergency. Couples refused to be video-taped mostly because of shyness by either the mother or father; however, one couple with a spina bifida child felt that the video-tape would contribute no additional information beyond the questionnaires.

The home assessment phase for both groups was completed in approximately 1 and a half hours. Subjects were informed that the author would provide a copy of the final results if requested.

Finally, the physical measures of severity were obtained from the medical chart of the child. Three measures were collected: 1) level of lesion (cervical and upper thoracic, lower thoracic, lumbar, lower lumbar and upper sacral, and lower sacral); 2) shunted or not shunted; 3) degree of ambulation (wheelchair, braces, normal).

Description of Measurement Tools

1. Marital Satisfaction: Dyadic Adjustment Scale (DAS) (Spanier, 1976) (Appendix E)

Marital satisfaction was measured by the Dyadic Adjustment Scale (Spanier, 1976). The Dyadic Adjustment Scale (DAS) has some distinct advantages from other self-reports of marital adjustment (Spanier, 1979; Spanier & Cole, 1976). Clarity and precision have eluded the theoretical and operational definitions of marital adjustment (e.g. Hicks & Platt, 1970). Researchers employed various terms such as "happiness", "success", "satisfaction", and, "adjustment". Each of these terms has its own unique definition to describe spouses' impressions of their marital relationships. The ambiguity of these terms led some researchers to suggest elimination of the use of any of these terms (Lively, 1969). For example, the term "happiness" has been criticized because it fails to demonstrate the source of happiness, i.e. the marriage, other life events, or, personality

traits (Lively, 1969) and spouses don't often agree on the level of happiness (Lively, 1969). It has also been employed as both a criterion and a description of the marital relationship (Luckey, 1964). The DAS has circumvented some of these limitations by incorporating them within its framework. Spanier (1979) defined dyadic adjustment as "a process, the outcome of which is determined by the degree of troublesome dyadic differences, interpersonal tensions and personal anxiety, dyadic satisfaction, dyadic cohesion, and consensus on matters of importance to dyadic functioning" (p. 294). The DAS, therefore, operationalized adjustment as a multidimensional construct measured on a continuum and based upon both couple and individual variables. Marital adjustment is used as an umbrella-like term to describe four major components of the marital relationship: dyadic consensus, dyadic cohesion, dyadic satisfaction, and affectional expression (Spanier, 1976, 1979).

Although the DAS provides a more adequate description of adjustment and incorporates both marital and non-marital couples, the psychometric sophistication in the development and evaluation process best distinguishes the DAS from its predecessors (Spanier, 1976). The scale was constructed from the existing total pool of items found in the literature. Item reduction was based upon (a) elimination of duplicate items; (b) expert judge ratings on relevancy of items to marital adjustment; (c) administration of the items to a sample; and, (d) elimination of those items which had low variance, high skewness, or could not discriminate between divorced and intact relationships. Finally,

a factor analysis was conducted on the remaining item pool and items with low factor loadings were removed. The final version of the DAS contains 32 items measuring the dyadic cohesion, satisfaction, consensus, and affectional expression. A subsequent confirmatory factor analysis yielded similar dimensions (Spanier & Thompson, 1982).

The DAS has been evaluated on content, construct, and criterion-related validity (Spanier, 1976). Content validity was assumed since it was based upon existing marital relationship items and used expert judges to eliminate items not consistent with the definition of adjustment. Each of the 32 items and the total score can significantly discriminate between married and divorced subjects' supporting the scale's criterion-related validity (Spanier, 1976). Construct validity, assessed by the correlation between the DAS and the Locke-Wallace Marital Adjustment Scale, yielded correlation coefficients of .86 for married and .88 for divorced respondents (Spanier, 1976).

Internal consistency has been assessed as a measure of reliability. Employing Cronbach's Coefficient Alpha and the Kuder-Richardson Coefficient analyses, Spanier (1976) found a .96 median coefficient for the total and subscales of the DAS.

Overall, the DAS appears to be a reasonably accurate self-report measure of marital adjustment. The validity and internal consistency of the scale has been demonstrated and its utility as a basic tool in the assessment of marital distress has become increasingly accepted (Spanier & Filsinger, 1983).

2. Marital Sex-Role Attitude Scale (MSAS) (Scanzoni, 1975) (Appendix F)

Marital sex-roles was measured using Scanzoni's (1975) Marital Sex-Role Attitude Scale (MSAS). The MSAS is a 28 item self-report questionnaire asking respondents to rate each item on a 5 point Likert Scale ranging from strongly agree to strongly disagree. The items have been grouped a priori into 7 categories: (1) traditional-wife role (defined as the interests of husband and children are more important than those of the wife); (2) wife self-actualization (wife's interests are equal to the husband's and children); (3) problematic husband alterations ("one in which husband's interests remain basically superior to or more significant than those of the wife, but yet, there exists the live option of temporary incursion into the husband's interests for the sake of the wife's interest" p. 37); (4) institutionalized equality (husband and working wife have equal interests); (5) traditional-husband role (the husband's interests and authority are much more significant than the wife due to his sex); (6) religious-legitimation-of-the-mother role (defined as "the degree of sacredness attached to marital and familial patterns" (p. 45); and, (7) traditional-mother role (interests of children are superior to those of the mothers). The seven subscales can be further collapsed into 2 subscales: modern and traditional marital sex roles.

The MSAS has been assessed for criterion validity. For example, women who reported a high importance of career scored higher on "wife self-actualization" subscale than women who feel

careers are not personally important (Scanzoni, 1975). Scanzoni (1975) was able to demonstrate significant correlations between MSAS subscales and socioeconomic, demographic, and religious measures. Similar results were reported by Bowen and Orthner (1983) and Tomeh (1978). Furthermore, Scanzoni (1978) using the MSAS was able to demonstrate a trend in marriages toward modern sex-roles. Based upon a 5 year longitudinal study, Scanzoni (1978) found statistically significant changes in the scores on all MSAS subscales in the direction of modern marital structures. The MSAS appears to be internally consistent (alpha coefficients of the subscales ranging from .56 to .81) and stable over time (Scanzoni, 1978).

3. Marital Role Strain Questionnaire (Frank et al., 1980) (Appendix G)

Marital role strain was assessed using a 16 item questionnaire developed by Frank et al. (1980). The questionnaire asks each spouse to rate their attitude toward sex-role behaviours and subsequently to rate which spouse demonstrates the behaviours. The list of the behaviours were developed from an extensive review of the literature.

From the spouses' ratings, a role strain score is calculated for each parent based upon the discrepancy between ratings of attitudes and actual behavioural response ratings. In addition, two discrepancy scores for the couple were also obtained: 1. "should" discrepancy is calculated from comparing the discrepancy between parents on the should items; and 2. "actual" discrepancy is obtained from the comparison between parents responses on who

actually does the role behaviour. As part of a larger study, the Role Strain Questionnaire was administered to couples in marital therapy (n=50), sex therapy (n=50), and no therapy (n=80). The role strain score calculated from the questionnaire discriminated between these 3 groups. As would be theoretically expected, the marital therapy group reported the most role strain and the female's role strain was greater than the male's strain score providing support of construct validity.

4. Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977) (Appendix J)

The Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977) was employed to assess parental symptoms of depression. In contrast to other depression measures (e.g Beck Depression Inventory; Beck, 1967) which are used more extensively in the diagnosis or evaluation of severity of depression, the CES-D was designed to assess depressive symptomatology with an emphasis on affect or depressed mood. In the development of the measure, Radloff included existing symptoms for the following components: depressed mood, feelings of guilt, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance. The final version of the scale is comprised of 20 items. Subjects respond on a scale from 0 to 3 the frequency with which each occurred during the preceding week.

The scales' psychometric properties have been examined. Radloff (1977) in a series of studies was able to demonstrate the internal consistency (.85 in the general population) and

stability (correlations ranging from .32-.67 depending upon the number of life stressors occurring during the time interval between administrations). The discriminative, construct, and factor validity of the scale has been also established by comparing the measure to other clinical ratings of depression, comparing psychiatric and nondepressed samples, and comparing the factor structures between several samples (Radloff, 1977).

5. Personal Assessment of Intimacy in Relationships (PAIR) (Schaefer & Olson, 1981) (Appendix H)

The Personal Assessment of Intimacy in Relationships (PAIR) (Schaefer & Olson, 1981) is a 36 item self-report instrument assessing expected versus realized intimacy in 5 different domains: emotional, social, sexual, intellectual, and recreational. A sixth scale, conventionality, is also included as a measure of social desirability response bias. For purpose of this study only perceived intimacy was examined.

The PAIR scales convergent and discriminate validity has been demonstrated. The intimacy scales correlate positively with measures of marital satisfaction, cohesion, expressiveness. In contrast, they are negatively correlated with measures of conflict and control (Schaefer & Olson, 1981). The test-retest reliability of the PAIR has not been assessed but the six scales have internal-consistency coefficients of at least .70 (Schaefer & Olson, 1981).

6. Parenting Stress Index (PSI) (Abidin, 1983) (Appendix I)

The Parenting Stress Index (PSI) (Abidin, 1983) is a clinical and research self-report measure which can be used to

identify the sources and degree of parental stress. Although the PSI yields scores on 15 subscales, 3 domains, and 1 total score, for the purposes of this study, the total score and 3 domain scores (child characteristics, parental characteristics, and situation-demographic factors) were analyzed.

The PSI has been extensively used as a measure of parenting stress with healthy children (Abidin, 1983) and has also been used to assess parenting stress in parents of children with spina bifida (Kazak, 1986). Both reliability and validity of the PSI have been demonstrated. Alpha values of internal consistency range from .6 to .9, and test-retest coefficients range from .7 to .9 during a 3 to 4 week period, and .5 to .85 for a one year period (Abidin, 1983). The content, concurrent, construct, discriminant, and factorial validity of the PSI have also been clearly established (Abidin, 1983).

7. Communication Skill Test (CST) (Floyd & Markman, 1984)

As with most behavioural theories, observations in the behaviour exchange theory play an important role in the assessment of marital distress. Although there are some behavioural observation systems that are more popular (Marital Interaction Coding System (Weiss & Summers, 1983) and Gottman's (1979) Couples Interaction Coding System), the Communication Skill Test (CST) (Floyd & Markman, 1984) provides a behavioural observation measure that is economically and technically feasible and psychometrically reasonable.

The CST requires observers to rate video-tape recordings of 10 minute problem-solving couple interactions. Raters attend to

the verbal and nonverbal behaviours during a speaker's statement. Once the speaker has finished speaking, the observers rate the statement as very negative, negative, neutral, positive, or very positive on pre-established criteria. The CST, therefore, measures macro rather than micro behaviors.

The CST has been demonstrated to be a reliable measure of marital interaction (e.g. Floyd & Markman, 1984). The measure can discriminate between distressed and nondistressed couples (Floyd et al., 1987) and is sensitive to changes after marital therapy (Floyd & Markman, 1984; Markman, Floyd, Stanley, & Storaasli, 1988). Although the CST did not correlate with the Marital Interaction Coding System, this finding may be attributed to differences in behavioural coding units (Floyd & Markman, 1984; Floyd, personal communication, February, 1989). In contrast to the micro observational units used in the Marital Interaction Coding System, the CST employs macro units of analysis.

Two raters were trained on the CST for this study. The raters became familiar with the literature on behavioural measures of communication and then memorized the codes employed in the CST. Two interactions were sent to Dr. Frank Floyd at Michigan State University to be coded. These served as the training tapes and "gold standard" for our raters. The two raters coded the same video-tapes and compared their rating with Dr. Floyd's ratings. The discrepancies in codes were resolved through communication with Dr. Floyd.

The raters then independently coded 5 video-tapes. A kappa coefficient of .82 was obtained on the coding units which

suggests excellent inter-rater reliability. A coefficient of .90 calculated on the percent agreement/total was obtained on the chunking of interactions which also suggests excellent reliability. Each rater coded 10 separate video-tapes. This was followed by 5 video-tapes which were coded by both raters independently. This process was continued until all video-tapes were coded. The raters were blind to the groups. Since the reliability checks were done intermittently, drifting effect was therefore considered. There were three reliability checks. The kappa coefficients obtained were .80, .91, and .91, respectively. The percent agreement coefficients on chunking were .92, .93, and .94, respectively. These coefficients are all in the excellent range. No drifting effect was observed.

Derivation of Couple Score

A problem that arises in the data analysis is the choice of which unit of analysis, individual or couple, should be employed. Recent research has demonstrated that the best criteria in selecting a couples score is based upon the individual with lower score on the marital measure rather than total score or a mean score (Baucom & Mehlman, 1984). Baucom and Mehlman (1984) compared 3 unit of analysis models and found using the more distressed score from either the wife or husband on marital satisfaction and communication was the best predictor of whether the marriage remained intact. Therefore, computation of couple's score, when appropriate, was based upon Baucom and Mehlman (1984) "two-gender model".

Variables Selected for Hypothesis Testing and Secondary Analyses

Although the subscales on each of the measures were analysed in the preliminary and secondary analyses of data, only total scores and subscale total scores based upon either individual responses or the couple score were included in the testing of the hypotheses. The couple's score on the Dyadic Adjustment Scale was employed as the independent variable for marital satisfaction in the multiple regressions for each of the models. In the first model, the couple's score based upon the total score on the Parenting Stress Index as well as the Parent and Child Domain subscale total scores were selected as measures of parenting stress. Both mothers' and fathers' responses on the Centre for Epidemiological Studies Depression Scale were used for the measurement of depression. In the second model, the behavioural and attitudinal role measures included mothers' and fathers' total scores on role strain and role discrepancy from the Marital Role Strain Questionnaire, and their total score on the Marital Sex-Role Attitude Scale. The third model included the couple's total score on the Personal Assessment of Intimacy in Relationships as well as the couple's mean communication score based upon the Communication Skills Test.

RESULTS

The results are divided into 3 sections. The first section, Preliminary Analyses, is comprised of two subsections. The first subsection is titled Sample Characteristics which provides a description of the sample. In the second subsection, Initial Analyses Comparing the Two Groups, the parents' scores on each of the measures used in this study were compared between the groups.

The second section is titled Analysis of the Three Models. It contains the results of the hypothesis testing for each of the 3 models and the integrated model.

The third section, Secondary Analyses, is divided into 3 subsections. In the first subsection, Analyses of Spina Bifida Mother & Father Scores, the scores of mothers and fathers of children with spina bifida scores were compared. This is followed by the second subsection, Analyses of Distressed Couples. In this subsection, the results of the within and between comparisons of the two groups based upon a clinically meaningful marital distress classification are presented. The final subsection, Composition of Couple Score, examines which parental score was used to determine the couple score.

Sample Characteristics

Each group was comprised of parents of 22 male and 24 female children. The breakdown of the children's ages and sex for each group is presented in Table 1. A 2 x 2 analysis of variance (Group x Sex) on age revealed no significant differences between group ($F(1,88) < 1$, $p > .05$), sex ($F(1,88) < 1$, $p > .05$), or interaction ($F(1,88) < 1$, $p > .05$).

Table 1

Age Distribution (Years) of Control Children and Children with Spina Bifida

	Spina Bifida			Control		
	N=46			N=46		
	M.	SD.	Range	M.	SD.	Range
Males	7.2	4.5	1.1-15.4	7.5	4.5	1.5-15.9
Females	7.3	4.2	1.3-15.4	8.0	4.5	1.7-15.9

Comparisons between the groups on the remaining socio-demographic variables are presented in Tables 2 and 3. The two groups did not differ on the birth order of the child, number of siblings, religion, or years married. On the other hand, significant differences were found for parental occupation, education, and family income between the spina bifida group and control group.

Although there were no differences between mothers of healthy children and mothers of children with spina bifida on occupation, control fathers were more frequently represented in "white collar" occupational categories, whereas, fathers of children with spina bifida were more likely to be employed in "blue collar" job. Both mothers and fathers of healthy children also had higher levels of education than parents of children with spina bifida.

Despite our best effort to control for socio-economic status by using the measure of family income, a significant difference between the two groups was found using a non-parametric test ($U(46)=788.5$, $p<.05$) and a parametric t -test ($t=2.34$, $p=<.05$). The mean family income of the spina bifida family was 40 to 50 thousand dollars, whereas, it was 50 to 60 thousand dollars for the control families. Furthermore, the spina bifida families tended to be overrepresented in the lower range of family income, and control families more represented in the upper range.

Table 2 Parental Occupation, Education, and Family Income

	<u>Spina Bifida</u>		<u>Control</u>		Mann-Whitney U-Value
	n	%	n	%	
Mother Occupation					943.5
housewife	14	30	12	26	
skilled labour	2	19	8	17	
unskilled labour	8	17	3	6	
semi-professional	5	11	10	21	
professional	5	11	7	15	
self-employed	1	2	4	9	
part-time labour	3	6	1	2	
part-time professional	1	2	1	2	
Education					734.5 **
highschool	26	56	15	32	
some college	6	13	2	4	
college	3	6	9	20	
some university	2	4	4	9	
university	8	17	10	21	
post-graduate	1	2	6	13	
Father Occupation					943.5
unemployed	0	0	1	2	
skilled labour	11	24	11	24	
unskilled labour	13	28	2	4	
semi-professional	5	11	9	20	
professional	12	26	19	41	
self-employed	4	9	4	9	
part-time professional	1	2	0	0	
Education					769.0 **
highschool	24	52	13	28	
some college	5	11	1	2	
college	3	6	8	17	
some university	1	2	5	10	
university	9	19	12	26	
post-graduate	4	9	7	15	
Family Income \$ (000)					778.5 *
20-30	7	15	3	6	
30-40	12	26	9	19	
40-50	10	22	8	17	
50-60	7	15	8	17	
60-70	4	9	7	15	
70-80	4	9	1	2	
80 or more	2	4	10	22	

* p < .05

** p < .01

Table 3**Descriptive Statistics on Additional Socio-Demographic Variables**

	Spina Bifida		Control		t-value
	M.	SD.	M.	SD.	
Years Married	12.8	5.4	12.5	4.7	<1
Number of Siblings	1.0	.9	1.3	.8	1.85
Birth Order	1.6	.9	1.6	.7	<1

Section One: Preliminary Analyses

Initial Analyses Comparing the Two Groups

Two separate sets of analyses comparing the spina bifida and control couples were conducted on each of the study measures. The first analyses did not include family income, whereas, the second set of analyses employed family income as a co-variate. Furthermore, the total scores on the measures were analyzed using univariate F -test analyses of variance and the subscales of the various measures were examined with multivariate F -test analyses of variance in order to control for experiment wise error.

With the exception of the communication measures, complete data on the 46 parents per group are available for all measures. The sample size is 42 on the communication measures for the parents of children with spina bifida and 43 for the parents of healthy children.

1. Marital Satisfaction: Dyadic Adjustment Scale

No significant differences between the two groups were found on the couples' overall scores ($F(1,90)=<1$, $p>.05$), the mothers' total scores ($F(1,90)=<1$, $p>.05$), and the fathers' total scores ($F(1,90)=<1$, $p>.05$) for marital satisfaction. Family income entered as a co-variate failed to produce any changes in the results. Multivariate analyses on the subscales of the DAS also yielded no differences between the two groups on the mothers' scores ($F(4,87)=<1$, $p>.05$) or the fathers' scores ($F(4,87)=1.06$, $p>.05$). Family income was not a significant co-variate for either mothers' scores ($F(4,86)=<1$, $p>.05$) or fathers' scores ($F(4,86)=<1$, $p>.05$). The descriptive statistics on the DAS are presented in Table 4.

Table 4

Descriptive Statistics on the Dyadic Adjustment Scale

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Couple Score	107.9	12.5	108.5	14.3
Mother Scores				
Total	112.4	12.6	113.1	12.3
Consensus	50.0	6.1	49.6	5.6
Affection	9.1	2.2	8.9	2.0
Satisfaction	38.9	4.8	39.1	4.4
Cohesion	14.3	2.9	15.3	3.4
Father Scores				
Total	112.2	12.2	113.1	14.3
Consensus	49.0	5.5	48.7	6.1
Affection	8.7	1.9	8.8	2.1
Satisfaction	39.2	4.2	39.7	5.4
Cohesion	15.3	3.6	15.2	3.4

2. Parenting Stress Index

There were no differences between the two groups on the couples' PSI scores ($F(1,90)=<1$, $p>.05$). In addition, no differences were found between the two groups based upon the mother's total PSI score ($F(1,90)=<1$, $p>.05$) or father's total score ($F(1,90)=<1$, $p>.05$). Similarly, as can be seen in Table 5, no significant differences were found for mother's and father's scores on both the child and parent domains of the PSI. A second series of analyses of variance in which family income was entered as a co-variate did not yield any changes from the previous results. Further descriptive statistics on the PSI total and domain scores are presented in Table 5.

Multivariate analyses of variance were conducted on the parent domain PSI subscales separately for mothers' and fathers' scores. No significant differences between the two groups were found for either mothers' ($F(7,84)=1.14$, $p>.05$), or fathers' ($F(7,84)=1.98$, $p>.05$) scores. A second MANOVA which included the family income co-variate also produced no significant differences for mothers' ($F(7,83)=1.15$, $p>.05$) or fathers' ($F(7,83)=1.35$, $p>.05$) scores. The descriptive statistics are presented in Table 6.

On the other hand, multivariate analyses of variance comparing the two groups on the child domain subscales of the PSI did produce a significant finding for mothers' ($F(6,85)=4.81$, $p<.001$) and fathers' ($F(6,85)=4.06$, $p<.001$) scores. When family income was entered as a co-variate in a second MANOVA, the result remained the same (mothers $F(7,84)=4.92$, $p<.001$; fathers $F(7,84)=4.15$, $p<.001$). The descriptive and univariate statistics

Table 5

Descriptive Statistics on the Total and Domain Scores of the Parenting Stress Index

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Mother Scores				
Total PSI Index	228.9	37.1	222.7	30.7
Child Domain	102.5	18.2	100.3	16.5
Parent Domain	126.2	23.2	122.3	18.4
Father Scores				
Total PSI Index	221.0	36.7	219.0	33.7
Child Domain	104.7	19.3	101.6	19.3
Parent Domain	118.6	18.9	117.3	18.6

Table 6

Descriptive Statistics on the Parent Domain Subscales of the Parenting Stress Index

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Mother Scores				
Depression	21.1	5.1	20.1	4.1
Attachment	12.9	2.8	12.3	3.4
Role Restriction	17.1	4.7	17.5	4.3
Sense of Competence	31.2	5.6	28.9	5.8
Spouse Relationship	17.9	4.6	17.8	4.1
Health	11.8	3.5	12.0	3.1
Social Isolation	12.2	4.3	11.3	3.0
Father Scores				
Depression	18.9	4.3	18.6	4.5
Attachment	13.5	3.9	13.7	2.7
Role Restriction	15.5	3.7	16.0	3.6
Sense of Competence	30.2	5.7	27.2	5.8
Spouse Relationship	15.4	3.9	16.4	3.3
Health	11.0	3.6	11.2	3.1
Social Isolation	12.3	3.1	12.3	2.7

on the child domain subscales are presented in Table 7. It appears based upon the univariate analyses that mothers of children with spina bifida report more parenting stress as it relates to acceptability and demandingness, whereas mothers of healthy children report more child-mood related stress. Fathers of children with spina bifida also report more acceptability and demandingness stress than fathers with healthy children.

3. Centre for Epidemiological Studies of Depression Scale

Univariate analyses of variance comparing parental measures of depression between the two groups failed to yield any significant differences. Mothers of children with spina bifida reported similar levels of depression ($M=10.6$, $SD=9.2$) to mothers of healthy children ($M=9.0$, $SD=7.3$). Fathers of children with spina bifida also reported levels of depression ($M=7.0$, $SD=5.3$) comparable to those of fathers of healthy children ($M=8.0$, $SD=6.1$). The results of the significance testing did not change when family income was entered as a covariate.

A clinical cut-off score of 16 (Radloff, 1977) was then employed to dichotomize the parental scores into depressed and nondepressed groups. Although 11 (24%) mothers with children with spina bifida scored above the cut-off compared to only 6 (13%) control mothers, based upon a Chi-square analysis, this difference was not significant ($p>.05$). Furthermore, the percent of spina bifida mothers scoring above the cut-off did not differ from the population percentage (20%) reported by Radloff (1977).

Table 7

Descriptive Statistics and Univariate F-Tests on the Child Domain
Subscales of the Parenting Stress Index

	Spina Bifida		Control		
	M.	SD.	M.	SD.	F-Value
Mother Scores					
Adaptability	26.2	5.4	25.5	4.7	<1
Acceptability	14.2	4.1	12.3	3.7	5.20 *
Demandingness	20.7	5.1	18.3	4.0	6.43 **
Mood	9.1	3.1	10.7	3.1	6.04 **
Distractibility/ Hyperactivity	23.3	5.8	23.1	5.4	<1
Reinforcing	9.6	3.6	10.2	3.4	<1
Father Scores					
Adaptability	26.1	5.4	25.1	5.7	<1
Acceptability	14.4	4.1	12.8	3.7	3.91 *
Demandingness	20.8	5.7	17.6	4.5	8.93 **
Mood	9.4	3.2	10.5	3.4	2.42
Distractibility/ Hyperactivity	24.0	4.9	24.6	4.7	<1
Reinforcing	9.8	3.1	10.8	2.8	2.29

* $p < .05$

** $p < .01$

There was no significant difference on the proportion ($p>.05$) of fathers with children with spina bifida ($n=3$, 7%) and control fathers ($n=4$, 9%) scoring above the cut-off criteria.

4. Role Strain Questionnaire

Multivariate analyses of variance were conducted on the role strain and discrepancy subscales of the Role Strain Questionnaire. The descriptive statistics for role strain are presented in Table 8. The MANOVAs revealed no significant differences on the mothers' strain subscale scores ($F(8,85)=1.88$, $p>.05$), and fathers' strain subscale scores ($F(6,84)=1.00$, $p>.05$). When family income was entered as a co-variate, the results did not change for either mothers' ($F(6,84)=1.31$, $p>.05$) or fathers' ($F(6,83)=<1$, $p>.05$) scores.

As can be seen in Table 9, there were also no differences between the two groups for "should discrepancy" subscales ($F(6,85)=<1$, $p>.05$) and "actual discrepancy" subscales ($F(6,85)=1.02$, $p>.05$) of the Role Strain Questionnaire. A second MANOVA conducted on the discrepancy subscales which included family income as a co-variate failed to produce any differing results ("should discrepancy", $F(6,84)=1.31$, $p>.05$; "actual discrepancy" ($F(6,83)=<1$, $p>.05$).

5. Marital Sex-Role Attitude Scale

As can be seen in Table 10, no significant differences were found between the spina bifida and control groups on the mother's total score ($F(1,89)=<1$, $p>.05$) and father's total score ($F(1,89)=3.76$, $p>.05$) of the Marital Sex-Role Attitude Scale. A second ANOVA with the co-variate family income failed to produce any changes in this result.

Table 8

Descriptive Statistics on the Strain Subscales of the Role Strain Questionnaire

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Mother Scores				
Total Strain	1.15	1.09	1.27	1.28
Home Care Tasks	.28	.45	.28	.45
Family Decisions	.06	.25	.06	.25
Career	.32	.47	.17	.38
Child Responsibility	.04	.20	.15	.36
Outside Interests	.10	.31	.21	.41
Money Decisions	.08	.28	.02	.14
Father Scores				
Total Strain	1.00	1.07	1.20	1.15
Home Care Tasks	.10	.31	.24	.43
Family Decisions	.04	.20	.04	.21
Career	.28	.45	.17	.38
Child Responsibility	.08	.25	.11	.31
Outside Interests	.08	.28	.15	.36
Money Decisions	.06	.25	.02	.21

Table 9

Descriptive Statistics on the Discrepancy Subscales of the Role Strain Questionnaire

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Should Discrepancies				
Total	.48	.69	.39	.77
Home Care Tasks	.11	.31	.11	.31
Family Decisions	.02	.14	.02	.14
Career	.15	.36	.15	.36
Child Responsibility	.04	.21	.00	.00
Outside Interests	.02	.14	.00	.00
Money Decisions	.00	.00	.04	.21
Actual Discrepancies				
Total	1.07	1.04	1.49	1.13
Home Care Tasks	.22	.42	.32	.23
Family Decisions	.06	.25	.13	.34
Career	.11	.31	.17	.38
Child Responsibility	.11	.38	.17	.38
Outside Interests	.19	.40	.23	.48
Money Decisions	.13	.40	.08	.28

Table 10

Descriptive Statistics and Univariate F-Tests on the Marital Sex-
Role Attitude Scale

	Spina Bifida		Control		
	M.	SD.	M.	SD.	F-Value
Mother Scores					
Total	78.8	5.9	80.1	7.7	<1
Traditional Wife	30.8	5.7	31.3	5.6	<1
Wife Self-Actualize	8.8	2.0	9.0	3.4	<1
Problematic Husband	11.0	2.9	9.8	3.0	3.60
Institutional Equals	3.4	1.3	3.0	1.2	2.91
Traditional Husband	7.3	1.8	8.2	1.7	5.53 *
Religious Legitimate	5.0	2.2	6.1	2.5	4.40 *
Traditional Mother	12.3	3.4	12.6	3.7	<1
Father Scores					
Total	79.6	6.1	82.5	7.7	3.76
Traditional Wife	30.1	4.6	31.2	3.8	<1
Wife Self-Actualize	9.1	2.6	9.5	2.9	<1
Problematic Husband	9.8	2.8	10.5	3.2	1.10
Institutional Equals	3.2	1.2	3.7	1.5	2.34
Traditional Husband	7.1	1.8	7.2	1.7	<1
Religious Legitimate	5.5	2.4	6.3	2.5	2.17
Traditional Mother	13.9	3.5	13.9	3.2	<1

* $p < .05$

Multivariate analyses of variance on individual parent subscales yielded a significant difference for mothers' scores ($F(7,83)=2.58$, $p>.05$) but not fathers' scores ($F(7,84)<1$, $p>.05$). Examination of the mother's subscale univariate analyses in Table 10 shows that mothers of healthy children report higher scores on "traditional-husband" roles as well as "religious legitimization of the mother" role than mothers with children with spina bifida. When family income was entered as a co-variate, it did not affect the results for either mothers' ($F(6,82)=2.47$, $p>.05$) or fathers' scores ($F(6,83)<1$, $p>.05$).

6. Personal Assessment of Intimacy

There were no differences between the two groups on the mothers' total score ($F(1,89)<1$, $p>.05$), father's total score ($F(1,88)<1$, $p>.05$), and the couple's score ($F(1,89)<1$, $p>.05$) on the Personal Assessment of Intimacy. Multivariate analyses of variance also yielded no significant differences on the mothers' subscale scores ($F(6,85)<1$, $p>.05$), and fathers' subscale scores ($F(6,84)<1$, $p>.05$). Family income when entered as a co-variate did not affect the mothers' results ($F(6,84)=1.26$, $p>.05$) or fathers' findings ($F(6,83)<1$, $p>.05$). Additional descriptive statistics for intimacy are provided in Table 11.

7. Communication Skills Tests

The final measure employed in this study was the Communication Skills Test. Based upon multivariate analyses of variance, no significant differences were found on the mothers' scores ($F(6,78)<1$, $p>.05$), fathers' scores ($F(6,78)<1$, $p>.05$), and couple's score ($F(6,78)=1.58$, $p>.05$) between the two groups.

Table 11

Descriptive Statistics for the Personal Assessment of Intimacy In
Relationship Scale

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Mother Scores				
Total	317.9	66.3	329.4	65.4
Emotional	62.9	20.3	63.8	17.2
Social	65.2	16.3	67.1	16.9
Sexual	63.6	15.6	68.6	18.8
Intellectual	64.1	18.5	66.0	17.8
Recreational	61.9	15.4	63.7	15.2
Conventionality	52.6	18.4	59.1	19.8
Father Scores				
Total	329.8	55.7	336.0	77.1
Emotional	69.2	14.6	71.3	18.8
Social	66.5	15.0	68.3	18.8
Sexual	66.5	17.4	64.9	21.7
Intellectual	66.4	14.6	66.8	16.8
Recreational	61.1	16.1	64.4	17.8
Conventionality	61.6	17.2	64.1	20.2

The co-variate, family income, was again a non-significant factor in the mothers' scores ($F(6,77) < 1$, $p > .05$), the fathers' scores ($F(6,77) = 1.59$, $p > .05$), and the couples' scores ($F(6,77) = 1.47$, $p > .05$). Additional descriptive statistics for the two groups are provided in Table 12.

Section 2: Analyses of the Three Models

The three models were examined using 3 separate statistical analyses. The first analyses employed multivariate analysis of variance comparing the variables in the model between the two groups. This set of analyses tested hypotheses 1, 4, and 7. Since family income could affect the results, the multivariate analyses of variance were repeated with family income entered as a co-variate. In order to control for experiment wise error rate, a significant multivariate F-value had to be obtained before interpreting univariate significant findings.

The second set of analyses comprised of multiple regressions predicting the couple's marital adjustment score from the variables in the model excluding the physical status measures. These analyses tested hypotheses 2, 5, and 8.

The final analyses also employed multiple regressions predicting the couple's marital adjustment score from the variables in the model and including the physical status measures. This set of analyses examined hypotheses 3, 6, and 9. Family income would be entered into the regression only if it was found in the multivariate analyses of variance to confound the results.

For both sets of multiple regressions, a step-wise inclusion

Table 12

Descriptive Statistics for the Communication Skills Test

	Spina Bifida		Control	
	n=42		n=43	
	M.	SD.	M.	SD.
Mother				
Mean Total	3.33	.22	3.35	.55
Very Negative	.16	.66	.02	1.50
Negative	.66	2.08	.18	2.10
Neutral	12.88	6.07	12.32	5.38
Positive	6.45	4.69	7.65	4.45
Very Positive	.69	.92	1.09	1.52
Father				
Mean Total	3.29	.16	3.26	.52
Very Negative	.07	.26	1.88	11.89
Negative	.14	.41	.09	.29
Neutral	14.26	6.43	14.51	7.28
Positive	5.35	4.08	5.14	3.38
Very Positive	.55	1.17	1.44	2.36
Both Parents				
Mean Total	3.32	.13	3.43	.41
Very Negative	.24	.69	1.90	11.88
Negative	.81	2.14	.27	.73
Neutral	27.14	12.01	26.83	12.01
Positive	11.81	7.86	12.79	7.04
Very Positive	1.23	1.49	2.53	3.26

criteria was employed to enter the variables. This type of analysis would therefore yield the best predictors within each model.

Model 1:

Individual Psychological Functioning (Hypotheses 1,2, and 3).

Hypothesis number one stated that couples with children with spina bifida would report less marital satisfaction and more parenting stress and depression than couples with healthy children. A multivariate analysis of variance examining the couples' score on the Dyadic Adjustment Scale, parent and child domains of the Parenting Stress Index, and the depression score for parents yielded no significant differences between the groups ($F(5,86) < 1$, $p > .05$). When family income was also included in the analyses, it did not change the results ($F(5,85) < 1$, $p > .05$). Further descriptive statistics of the variables in the first hypothesis are presented in Table 13.

In the second hypothesis, it was argued that for spina bifida couples, the couples marital satisfaction would be predicted by the parenting stress and depression. The third hypothesis stated that disease severity would not moderate marital satisfaction after controlling for the effects of parenting stress and depression. The Pearson inter-correlations between the variables in Model 1 were computed and are presented in Table 14. Despite a number of significant correlations between marital adjustment and predictor variables, as can be seen in Table 15 only two variables were found to be significant predictors in the multiple regressions which examined the second and third hypothesis.

Table 13

Descriptive Statistics For Variables In Model 1

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Dyadic Adjustment	107.9	12.5	108.5	14.3
PSI Parent Domain	131.9	19.3	129.7	16.3
PSI Child Domain	111.4	17.3	108.9	17.1
Mother Depression	10.6	9.1	9.0	7.2
Father Depression	7.0	5.3	8.0	6.1

Table 14

Pearson Correlations of Variables In Model 1

	2	3	4	5	6	7	8
1. Dyadic Adjustment	.02	-.37**	-.37**	-.27*	-.19	-.35**	-.14
2. PSI Child Domain	-	.45***	.17	.16	-.07	-.30*	.06
3. PSI Parent Domain	-	-	.48***	.17	.07	.18	-.10
4. Mother Depression	-	-	-	.32**	.17	.19	.08
5. Father Depression	-	-	-	-	-.06	-.06	.01
6. Shunted	-	-	-	-	-	.51***	-.06
7. Ambulation	-	-	-	-	-	-	-.30*
8. Lesion	-	-	-	-	-	-	-

* p < .05

** p < .01

*** p < .001

Table 15

Multiple Regressions Testing Hypotheses 2 and 3

	R	R ²	R ² Adj.	R ² Chg.	F-Value
<hr/>					
Regression #1					
Mother Depression	.37	.14	.12	.14	7.13**
 Regression #2					
Mother Depression	.37	.14	.12	.14	7.13**
Ambulation	.46	.21	.18	.09	4.42*

* p < .05

** p < .01

The results of these regressions are presented in Table 15. The first regression (hypothesis #2) shows that maternal depression accounted for approximately 14% of variance ($F(1,44)=7.13$, $p<.01$). The remaining variables did not significantly account for any additional variance. The second regression (hypothesis #3), which included the three measures of physical functioning, found that level of ambulation contributed an additional 9% of variance which was significant ($F(2,43)$, $p<.05$). It appears, based upon the correlations, that increased maternal depression ($r=.32$) and increased level of ambulation ($r=-.30$) are associated with decreased marital satisfaction.

Model 2:

Marital Sex-Role Congruency (Hypotheses 4, 5, & 6)

In the fourth hypothesis, it was argued that parents and in particular mothers with children with spina bifida would report more traditional marital sex-roles and more sex-role strain/discrepancies than fathers and mothers with healthy children. The results of the multivariate analysis of variance, testing the fourth hypothesis failed to demonstrate any significant differences between the groups ($F(6,83)=1.27$, $p>.05$). Family income when entered as a co-variate did not affect the result ($F(6,82)=1.19$, $p>.05$). Additional descriptive statistics are presented in Table 16.

The Pearson correlations between the variables in hypothesis 5 and hypothesis 6 are presented in Table 17. In hypothesis number 5, it was argued that for spina bifida couples,

Table 16

Descriptive Statistics For Variables In Model 2

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Mother Strain	1.17	1.1	1.26	1.3
Father Strain	1.02	1.1	1.20	1.2
Should Discrepancy	.48	.7	.35	.7
Actual Discrepancy	1.08	1.0	1.48	1.1
Mother Role Attitude	78.8	5.9	80.2	7.7
Father Role Attitude	79.6	6.1	82.4	7.8

Table 17

Pearson Correlations of Variables In Model 2

	2	3	4	5	6	7	8	9	10
1. Dyadic Adjustment	-.33	.21	.19	-.22	.08	-.02	-.19	-.35+	-.14
2. Mother Strain	-	.47#	.48#	.59#	.17	.27*	-.22	-.05	.25*
3. Father Strain	-	-	.20	.33+	.10	.08	.05	-.06	-.06
4. Should Discrepancy	-	-	-	.23*	-.05	.10	-.26*	-.12	.39#
5. Actual Discrepancy	-	-	-	-	.26*	.14	-.08	.19	-.06
6. Mother Role Attitude	-	-	-	-	-	.27*	.27*	.17	-.20
7. Father Role Attitude	-	-	-	-	-	-	-.32+	-.15	-.13
8. Shunted	-	-	-	-	-	-	-	.51#	-.06
9. Ambulation	-	-	-	-	-	-	-	-	-.30*
10. Lesion	-	-	-	-	-	-	-	-	-

* $p < .05$ + $p < .01$ # $p < .001$

2 of/de 2

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marital satisfaction would be predicted by the magnitude of the mother's marital sex-role strain/discrepancies. The sixth hypothesis predicted that disease severity would not moderate marital satisfaction after controlling for the effects of marital sex-roles. The multiple regressions again yielded only two variables to predict marital adjustment. The results are presented in Table 18. The first multiple regression testing the fifth hypothesis found mother's role strain to predict marital adjustment accounting for 11% of the variance ($F(1,43)=5.11$, $p<.05$). In the second multiple regression, which entered the physical functioning measures, the degree of ambulation contributed an additional 13% of the variance ($F(1,43)=6.78$, $p<.01$). Examination of the simple correlations shows that increased marital strain ($r=-.33$) as well as increased ambulation ($r=-.30$) is associated with decreased marital satisfaction.

Model 3:

Behaviour Exchange Model (Hypotheses 7, 8, & 9)

A multivariate analysis of variance was conducted to test the seventh hypothesis. This hypothesis stated that couples with children with spina bifida would report less emotional intimacy, and be observed using more negative communication than couples with healthy children. There were no significant difference between the families with children with spina bifida and healthy children on the measures of intimacy and communication ($F(2,81)=1.64$, $p>.05$). Family income did not affect the results ($F(2,80)=1.62$, $p>.05$). Further descriptive statistics are presented in Table 19.

Table 18

Multiple Regression Testing Hypotheses 5 and 6

	R	R ²	R ² Adj.	R ² Chg.	F-Value
<hr/>					
Regression #1					
Mother Role Strain	.33	.11	.09	.11	5.11*
Regression #2					
Ambulation	.36	.13	.11	.13	6.78**
Mother Role Strain	.49	.24	.21	.11	6.35**

* p < .05

** p < .01

Table 19

Descriptive Statistics For Variables In Model 3

	Spina Bifida		Control	
	M.	SD.	M.	SD.
Perceived Intimacy	298.5	60.1	308.8	69.0
Communication Mean*	3.3	.1	3.4	.4

* (Sample size is based upon 42 couples with children with spina bifida and 43 couples with healthy children)

It was originally hypothesized (hypothesis #8) that the degree of emotional intimacy and communication style would predict marital satisfaction in couples with children with spina bifida. Disease severity would not moderate marital satisfaction after controlling for the effects of intimacy and communication according to hypothesis number 9. The Pearson inter-correlations between the measures in hypotheses 8 and 9 are presented in Table 20. As can be seen, intimacy is highly correlated with dyadic adjustment ($r=.74$, $p>.001$). It is, therefore, not surprising that the multiple regression testing hypotheses 8 and 9, found only intimacy to predict marital adjustment with neither communication or physical functioning accounting for any additional significant variance. Intimacy alone accounted for 56% of the variance ($F(1,39)=50.38$, $p=.001$). When intimacy was not included in the regression, the communication variables did not meet the default inclusion criteria of the multiple regression.

Integrated Model (Hypothesis 10)

A final pair of multiple regressions were conducted on the variables from Models 1 to 3. Perceived intimacy within the relationship was, however, excluded from these remaining regressions. The rationale for this decision was based on the high correlations between intimacy and dyadic adjustment. It appears that the measures are assessing the same construct and as a result, perceived intimacy, was considered to be a redundant variable.

The multiple regression results are presented in Table 21.

Table 20

Pearson Correlations of Variables in Model 3

	2	3	4	5	6
1. Dyadic Adjustment	.74***	-.01	-.19	-.35**	-.14
2. Perceived Intimacy	-	-.23	-.11	-.39**	-.16
3. Mean Communication	-	-	-.14	-.11	.06
4. Shunted	-	-	-	.51***	-.06
5. Ambulation	-	-	-	-	-.30*
6. Lesion	-	-	-	-	-

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

(Sample size on the mean communication measure is based on 42 couples).

Table 21

Multiple Regressions Testing Hypothesis 10

	R	R ²	R ² Adj.	R ² Chg.	F-Value
<hr/>					
Regression #1					
Mother Depression	.40	.16	.14	.16	7.56**
 Regression #2					
Ambulation	.38	.15	.13	.15	6.87**
Father Depression	.54	.30	.26	.15	8.26**
Mother Role Strain	.63	.39	.35	.09	5.79*

* p < .05

** p < .01

In the first regression, only maternal depression was found to account for a significant proportion of variance (16%) ($F(1,39)=7.56$, $p=.01$). In the second regression which now included the physical functioning measures, the results differ surprisingly from the previous finding. Degree of ambulation accounted for 15% of the variance ($F(1,39)=6.87$, $p<.01$). Father's score on the depression measure accounted for an additional 15% of the variance ($F(2,38)=8.26$, $p=.01$) and mother's role strain contributed for another 9% of the variance ($F(3,37)=5.79$, $p<.05$). During the computation of the regression, maternal depression which was entered in the first step of the regression was subsequently removed from the regression during the fourth execution step. Mother's role strain score was subsequently entered into the regression suggesting this measure accounted for unique variance beyond the maternal depression score.

Section 3: Secondary Analyses

A series of secondary analyses were conducted on the existing measures. These analyses further explored the differences between the two groups on the measures collected.

Subsection 1: Analyses of Spina Bifida Mother & Father Scores

The mothers' and fathers' scores on each of the measures used in this study were compared within the couples with children with spina bifida. The total scores were analysed using t-tests, and multivariate and univariate F-Tests analysis of variance were employed on the measure subscales.

1. Dyadic Adjustment Scale

Univariate and multivariate analyses of variance comparing the two groups conducted on the DAS yielded no significant differences on the total marital adjustment score ($t(45) < 1$, $p > .05$) and the subscales ($F(4,42) = 1.87$, $p > .05$). The descriptive statistics are provided in Table 22.

2. Parenting Stress Index

A t-test conducted on the total Parenting Stress Index showed no significant differences ($t(45) = 1.29$, $p > .05$) between mother's and father's score. Similarly, as can be seen in Table 23, there was no significant difference on the child domain total score ($F(45) < 1$, $p > .05$) or its subscales ($F(6,40) < 1$, $p > .05$).

On the other hand, there were significant differences between parental scores on the total parent domain ($F(45) = 4.84$, $p < .05$) and the individual subscales ($F(7,39) = 2.34$, $p < .05$). The results of these analyses are presented in Table 24. Mothers reported more depression related stress, more role restrictions, and greater relationship with spouse related-stress, than fathers.

3. Centre for Epidemiological Studies Depression Scale

Consistent with the depression subscale of the PSI, mother's reported significantly ($t(45) = 2.74$, $p < .01$) higher levels of depression on the CESD scale ($M = 10.6$, $SD = 9.1$) than fathers ($M = 7.04$, $SD = 5.3$).

Table 22

Descriptive Statistics For Each Parent on the Dyadic Adjustment Scale

	Fathers		Mothers	
	M.	SD.	M.	SD.
Total	112.2	12.1	112.4	12.6
Consensus	49.0	5.5	50.0	6.1
Affection	8.7	1.9	9.19	2.2
Satisfaction	39.2	4.2	38.9	4.8
Cohesion	15.3	3.5	11.3	2.9

Table 23

Descriptive Statistics For Each Parent on the Total and Child
Domain of Parenting Stress Index

	Fathers		Mothers	
	M.	SD.	M.	SD.
Total PSI Index	221.0	36.7	228.9	37.1
Total Child Domain	104.7	19.3	102.5	18.2
Adaptability	26.2	5.4	26.2	5.5
Acceptability	14.4	4.1	14.2	4.0
Demandingness	20.8	5.7	20.7	5.1
Mood	9.4	3.2	9.1	3.1
Distractibility/ Hyperactivity	24.0	4.9	23.3	5.8
Reinforcing	9.8	3.1	9.7	3.6

Table 24

Descriptive Statistics For Each Parent on the Parent Domain of the Parenting Stress Index

	Fathers		Mothers		F-Value
	M.	SD.	M.	SD.	
Total Parent Domain	118.6	18.8	126.2	23.2	4.83*
Depression	18.9	4.3	21.1	5.1	5.34*
Attachment	13.5	3.8	12.8	2.8	1.28
Role Restriction	15.5	3.7	17.1	4.7	5.04*
Sense of Competence	30.1	5.7	31.1	5.6	1.11
Spouse Relationship	15.4	3.9	17.9	4.6	10.52**
Health	11.1	3.6	11.8	3.5	<1
Social Isolation	12.4	3.1	12.3	4.2	<1

* $p < .05$

** $p < .01$

4. Role Strain Questionnaire

There were no significant differences on the total role strain score ($t(45) < 1$, $p > .05$) and on subscale scores ($F(4,42) < 1$, $p > .05$) between mothers and fathers. Additional descriptive statistics on the Role Strain Questionnaire are presented in Table 25.

5. Marital Sex-Role Attitude Scale

Although no differences were found on the total role attitude score ($t(45) < 1$, $p > .05$), a significant multivariate F-value was obtained on the subscales ($F(6,39) = 4.46$, $p < .001$). As can be seen in Table 26, mothers reported more "problematic husband alterations", and less "traditional-mother" role than fathers.

6. Personal Assessment of Intimacy

No significant differences were found on the total score ($t(45) = 1.01$, $p > .05$) and on the intimacy subscales ($F(5,40) = 1.70$, $p > .05$). Fathers, however, did score significantly higher ($t(45) = 9.34$, $p < .01$) on social desirability as measured in the conventionality subscale than did mothers. Further descriptive statistics are presented in Table 27.

7. Communication Skills Test

As can be seen in Table 28, there were no significant differences between mothers and fathers on the overall mean ($t(41) < .81$, $p > .05$) or on the individual subscales ($F(5,37) = 2.31$, $p > .05$) of the Communication Skills Test.

Table 25

Descriptive Statistics for Each Parent on the Role Strain Questionnaire

	Fathers		Mothers	
	M.	SD.	M.	SD.
Total Role Strain	1.00	1.07	1.15	1.1
Role Strained due to:				
Home Care Tasks	.11	.31	.28	.45
Family Decisions	.04	.20	.06	.25
Career	.28	.45	.32	.47
Child Responsibility	.08	.28	.04	.21
Outside Interests	.08	.28	.10	.31
Money Decisions	.06	.25	.08	.28

Table 26

Descriptive Statistics and Univariate F-Tests For Each Parent on the Marital Sex-Role Attitude Scale

	Fathers		Mothers		F-Value
	M.	SD.	M.	SD.	
Total	79.6	6.1	78.8	5.9	<1
Traditional Wife	30.8	4.7	30.8	5.7	<1
Wife Self-Actualize	9.1	2.7	8.8	2.0	<1
Problematic Husband	9.9	2.7	11.0	2.9	4.19*
Institutional Equals	3.2	1.2	3.4	1.3	<1
Traditional Husband	7.0	1.8	7.3	1.8	1.02
Religious Legitimate	5.4	2.4	5.0	2.2	2.00
Traditional Mother	13.9	3.5	12.3	3.4	8.33**

* $p < .05$

** $p < .01$

Table 27

Descriptive Statistics For Each Parent on the Personal Assessment
of Intimacy In Relationship Scale

	Fathers		Mothers	
	M.	SD.	M.	SD.
Total	329.9	55.7	319.3	66.3
Emotional	69.2	14.6	62.2	20.1
Social	66.5	15.0	65.6	16.6
Sexual	66.5	17.4	64.0	15.6
Intellectual	66.4	14.6	66.4	18.6
Recreational	61.1	16.1	53.1	18.3
Conventionality	61.6	17.2	53.1	18.3

Table 28

Descriptive Statistics For Each Parent on the Communication Skills Test (n=42 couples)

	Fathers		Mothers	
	M.	SD.	M.	SD.
Mean Total	3.29	.16	3.33	.21
Very Negative	.07	.26	.16	.66
Negative	.14	.41	.66	2.10
Neutral	14.26	6.43	12.88	6.07
Positive	5.35	4.08	6.45	4.69
Very Positive	.54	.16	.69	.92

Subsection 2: Analyses of Distressed Couples:

1: Spina Bifida Couples

A clinically meaningful cut-off of 100 (Spanier, 1976) on the couple's score of the Dyadic Adjustment Scale was employed to dichotomize couples with children with spina bifida as maritally distressed (n=11) or nondistressed (n=35). The socio-demographic variables and the psychosocial measures were analysed using either Mann-Whitney U-tests or t-tests.

The results of the comparison on the socio-demographic variables are presented in Table 29. Only two variables were found to significantly differ between distressed and nondistressed couples. It appears that distressed couples have younger children with spina bifida and more children than nondistressed couples. As a result of this finding, a multiple regression was subsequently conducted on the couple's dyadic adjustment score to determine whether the child's age and number of other siblings predicted dyadic adjustment. Neither variable accounted for any additional variance that had not been already accounted by the existing variables: father's level of depression, mother's role strain, and degree of ambulation.

The t-tests results on the couple or total scores of measures collected in this study are presented in Table 30. Distressed couples tended to report more parent domain stress, maternal depression, maternal and paternal role strain, and less intimacy than nondistressed couples. The degree of ambulation was also significant but in the opposite direction than one would expect. Distressed couples tended to have children who were more ambulatory than those in the nondistressed group.

Table 29

Comparison of Socio-Demographic Variables For Distressed and Nondistressed Couples with Children with Spina Bifida

	Distressed		Nondistressed		
	n=11		n=35		
	M.	SD.	M.	SD.	p-value
Child's Age	4.3	2.5	8.2	4.4	< .01
* Father Occupation/ Rank	26.1	--	22.7	--	n.s.
Father Education/ Rank	27.2	--	22.2	--	n.s.
Mother Occupation/ Rank	24.2	--	23.2	--	n.s.
Mother Education/ Rank	28.0	--	22.1	--	n.s.
Family Income Rank	22.6	--	23.7	--	n.s.
Years Married	11.8	5.8	13.1	5.2	n.s.
Sex of Child	1.6	.5	1.4	.5	n.s.
Birth Order	2.1	1.1	1.5	.7	n.s.
Number of Other Siblings	1.5	.9	.8	.8	< .05

* Ranks were analysed using Mann-Whitney U test and means were compared with t-tests.

Table 30

Comparison of Study Variables For Distressed and Nondistressed
Couples with Children with Spina Bifida

	Distressed		Nondistressed		
	n=11		n=35		
	M.	SD.	M.	SD.	t-value
Intimacy	238.3	56.0	319.6	49.2	4.42 ***
Mean Communication	3.3	.1	3.3	.1	<1
PSI Parent Domain	145.6	18.7	127.6	17.5	2.92 **
PSI Child Domain	108.6	20.5	112.3	16.4	<1
Mother Depression	16.9	13.3	8.7	6.5	2.77 *
Father Depression	8.6	6.7	6.5	4.8	1.14
Mother Role Strain	1.8	1.3	.9	.9	2.44 **
Father Role Strain	1.5	1.3	.8	.9	1.99 *
Should Discrepancy	.8	.9	.4	.5	1.93
Actual Discrepancy	1.5	.8	.9	1.1	1.80
Mother Role Attitude	79.7	5.4	78.6	6.1	<1
Father Role Attitude	80.1	7.2	79.4	5.8	<1
Shunted	1.2	.5	1.2	.4	<1
Lesion Level	2.8	1.1	2.5	1.2	<1
Ambulation	2.4	.9	1.7	.8	2.22 *

* $p < .05$

** $p < .01$

2. Control Couples

The same 100 cut-off score on the couple's score of the Dyadic Adjustment Scale was employed to dichotomize couples with healthy children into distressed (n=8) and nondistressed groups (n=38). As can be seen in Table 31, with the exception of father's educational levels, no differences were found on any of the socio-demographic variables. This is in contrast to couples with children with spina bifida as both the age of children and number of other siblings were found to significantly differ.

A comparison on the psychosocial measures is presented in Table 32. Consistent with the previous findings with distressed spina bifida couples, distressed control couples report more maternal depression, maternal role strain, actual role discrepancies, and less intimacy than nondistressed control couples.

Comparison of Distressed Spina Bifida Couples and Control Couples

Although there were more distressed spina bifida (n=11) couples than control couples (n=8), based upon a Chi-square analysis, this difference was not statistically significant ($p > .05$). The distressed couples with children with spina bifida were compared to the distressed couples with healthy children on the socio-demographic variables and the measures collected in the study.

As can be seen in Table 33, the age of the child was the only socio-demographic variable found to significantly differ between the two distressed groups. The spina bifida children were significantly younger than those in the control distressed group.

Table 31

Comparison of Socio-Demographic Variables For Distressed and Nondistressed Couples with Healthy Children

	Distressed		Nondistressed		
	n=8		n=38		
	M.	SD.	M.	SD.	p-value
Child's Age	8.3	3.3	7.7	4.7	n.s.
* Father Occupation/ Rank	23.4	--	23.5	--	n.s.
Father Education/ Rank	14.6	--	25.3	--	< .05
Mother Occupation/ Rank	19.0	--	24.4	--	n.s.
Mother Education/ Rank	22.6	--	23.6	--	n.s.
Family Income Rank	22.6	--	23.7	--	n.s.
Years Married	12.8	5.1	12.3	4.6	n.s.
Sex of Child	1.6	.5	1.5	.5	n.s.
Birth Order	1.5	.7	1.7	.7	n.s.
Number of Other Siblings	1.5	.8	1.3	.8	n.s.

* Ranks were analysed using Mann-Whitney U test and means were compared with t-tests.

Table 32

Comparison of Study Variables For Distressed and Nondistressed
Couples with Healthy Children

	Distressed		Nondistressed		
	n=8		n=38		
	M.	SD.	M.	SD.	t-value
Intimacy	213.2	47.1	327.9	54.0	5.56 ***
Mean Communication	3.3	.2	3.4	.4	<1
PSI Parent Domain	139.4	16.3	127.7	15.8	1.88 *
PSI Child Domain	110.1	18.3	108.6	17.0	<1
Mother Depression	16.2	10.3	7.5	5.4	3.44 ***
Father Depression	8.4	7.2	7.9	5.9	<1
Mother Role Strain	2.3	1.4	1.1	1.2	2.60 **
Father Role Strain	1.7	1.5	1.1	1.1	1.50
Should Discrepancy	.3	.5	.4	.8	<1
Actual Discrepancy	2.3	1.2	1.3	1.1	2.22 *
Mother Role Attitude	80.1	8.2	80.1	7.7	<1
Father Role Attitude	82.6	5.9	82.5	8.5	<1

* $p < .05$

** $p < .01$

Table 33

Comparison of Socio-Demographic Variables For Distressed Couples
with Healthy Children and Children with Spina Bifida

	Spina Bifida		Control		
	n=11		n=8		
	M.	SD.	M.	SD.	p-value
Child's Age	4.3	2.5	8.3	3.3	< .01
* Father Occupation/ Rank	10.0	--	10.0	--	n.s.
Father Education/ Rank	11.0	--	8.6	--	n.s.
Mother Occupation/ Rank	10.4	--	9.4	--	n.s.
Mother Education/ Rank	9.6	--	10.6	--	n.s.
Family Income Rank	9.1	--	11.3	--	n.s.
Years Married	11.8	5.8	12.8	5.1	n.s.
Sex of Child	1.6	.5	1.6	.5	n.s.
Birth Order	2.1	1.1	1.5	.7	n.s.
Number of Other Siblings	1.5	.9	1.5	.7	n.s.

* Ranks were analysed using Mann-Whitney U test and means were compared with t-tests.

The results of the t-tests on the study measures are presented in Table 34. No significant differences were found on any of the measures between the spina bifida or control distressed groups.

Subsection 3: Comparison of Parental Composition of Couple Scores

The final secondary analyses involved examining the couple score to determine which parental score was used to account for the couple score. The couple's score was based upon the individual parent with the lowest score on the measure. The results of this analysis for each couple score is presented in Table 36. As can be seen, no significant differences were found between the groups.

Table 34

Comparison of Study Variables For Distressed Couples with
Healthy Children and Children with Spina Bifida

	Spina Bifida		Control		
	n=11		n=8		
	M.	SD.	M.	SD.	t-value
Intimacy	238.3	56.0	213.2	47.0	<1
Mean Communication	3.3	.1	3.3	.2	<1
PSI Parent Domain	145.6	18.7	139.3	16.2	<1
PSI Child Domain	108.6	20.5	110.1	18.3	<1
Mother Depression	16.9	13.3	16.2	10.4	<1
Father Depression	8.6	6.7	8.3	7.2	<1
Mother Role Strain	1.8	1.3	2.2	1.3	<1
Father Role Strain	1.5	1.3	1.7	1.4	<1
Should Discrepancy	.8	.9	.2	.5	1.51
Actual Discrepancy	1.5	.8	2.2	1.2	1.55
Mother Role Attitude	79.7	5.4	79.7	5.4	<1
Father Role Attitude	80.1	7.2	82.6	5.9	<1

Table 35

Derivation of Couple Score Based upon Individual Parent Score

	Spina Bifida				Control				Chi-Square value
	Mother		Father		Mother		Father		
	n	%	n	%	n	%	n	%	
Dyadic Adjustment	21	46	25	54	20	44	26	56	<1
PSI Parent Domain	30	65	16	35	26	56	20	44	<1
PSI Child Domain	23	50	23	50	19	41	27	59	<1
PSI Total Index	30	65	16	35	25	54	21	46	1.13
Intimacy	25	54	21	46	24	52	22	48	<1
Role Strain	16	35	30	65	17	38	29	62	<1
Role Attitude	20	43	26	57	21	46	25	54	<1

DISCUSSION

There has been considerable research determining the impact of chronic disease on the psychological functioning of parents, children, and families. Yet, research studying the effects of childhood chronic conditions on the stability and quality of the parent's marital relationship has been sparse. Furthermore, the psychological, social, and biological factors that can ameliorate or worsen the impact of chronic disease have not been clearly identified.

In reviews of the literature, Sabbeth and Leventhal (1984) and more recently Benson and Gross (1989) concluded that although existing research provides some detail on the outcomes of the marital adjustment of parents with a chronically ill child, it does not shed any insight on the process. The fundamental process question, what factors might account for the marital satisfaction of parents with a child having a chronic illness, however, remains unanswered. Furthermore, poor methodological designs, lack of control groups, use of unstandardized measures, and failure to control for significant variables have plagued research to date resulting in ambiguous and limited interpretation of findings (Benson & Gross, 1989).

The purpose of this study was, therefore, to develop three separate and an integrated model that could account for some of the factors affecting the marital relationship of couples with chronically ill children. The models were developed from the literature on couples and parents with healthy children as well as existing research on couples with children with a chronic

illness. The study improves on past pediatric chronic illness research by including a control group, using both mothers and fathers as subjects, employing standardized measures, and controlling for variables that could confound the results (e.g. family income). The models developed were subsequently tested with a group of parents with children with spina bifida.

Preliminary Findings

A set of analyses were conducted to investigate differences between parents of children with spina bifida and those with healthy children on the measures collected in the study. Although some of the findings are consistent with existing research, there were exceptions.

There were no significant differences between the groups on the Dyadic Adjustment Scale. This finding replicates and extends more recent research (Kazak & Marvin, 1984; Spauling & Morgan, 1986; Wallander, Varni, Babani, DeHaan, Wilcox, Bains, 1989) since our sample was more representative of couples with children with spina bifida and included both the mothers' and fathers' responses. The results of this study, contrary to previous research reporting reduced marital satisfaction based upon either clinical observations or use of unstandardized measures (e.g. Richard & McIntosh, 1973; Tew et al., 1974; Hare et al., 1966), suggests that there is minimum impact of childhood chronic disease on marital satisfaction.

The results of comparison of the two groups with regard to the Parenting Stress Index yielded mixed support for existing research. In contrast to Kazak's findings (Kazak & Marvin,

1984), no differences were found on the total score and total parent domain and child domain scores. On the other hand, there were significant differences on the subscales of the child domain. In particular, mothers and fathers of children with spina bifida reported more stress as it relates to the child's level of acceptability and demandingness; whereas, mothers of healthy children reported more stress as a consequence of the child's mood.

One of the major findings which contradicts most existing findings to date (Dorner, 1973; Tew & Laurence, 1973; Breslau et al., 1982; Walker et al., 1971) with the exception of one study (Walker, Ortiz-Valdes, & Newbrough, 1989) was the lack of differences between the groups on depression. Neither mothers nor fathers of children with spina bifida reported more depression than parents of healthy children. It is interesting to note that the study which also reported no differences in level of depression (Walker et al., 1989) had also employed the Centre for Epidemiological Studies Depression Scale. This finding illustrates how the use of well standardized instruments can provide data that questions the impression that parents with children with a chronic disease are more depressed than parents with healthy children.

Another finding which again highlights the need to employ standardized instruments as well as a control group was the lack of difference between the two groups on the measure of intimacy. Previous research which reported that parents of children with spina bifida experience less intimacy (Richards & McIntosh, 1973; Hare et al., 1966) relied on clinical impression for their data.

In contrast, this study employed a validated measure of intimacy as well as a comparison control group.

There were also no differences between the spina bifida and control group on the measurement of couple's communication skills. No existing research had been done with spina bifida couples although research with parents with children with cystic fibrosis had reported communication difficulties between parents (Turk, 1964; Phillips et al., 1985).

Since no previous research has been conducted on either the behavioural or attitudinal aspects of marital sex-roles, the discussion of our findings will be in reference to the conceptual model that was developed to account for any differences. The results, therefore, will be included in the subsequent discussion sections.

Examination of the Proposed Models:

Comparison of Spina Bifida and Control Couples

It was proposed that couples with children with spina bifida would report more individual psychological functioning difficulties, more role related problems, less intimacy and more communicational difficulties than couples with healthy children. Contrary to expectations, these hypotheses were not supported. The findings of this study are consistent with more recent research which has demonstrated that families with children with a chronic disease appear to cope with the stressors associated with a chronic condition and may not necessarily be at a significantly greater risk for secondary psychological sequelae than was once expected. In trying to explain this finding, one

must consider, in part, the methodological improvements of recent research in this field. Researchers, cognizant of earlier faulty designs and methods, have increased the complexity of studies by including control groups, using standardized measurement tools, and controlling for confounding variables such as family income. As a result, well designed case-control studies appear to be dispelling past clinical impressions that families with a chronic disease are at risk for considerable psychological difficulties.

In addition, however, the reduced psychological impairment may be a reflection of improved psychosocial care of these children and families. In most centres today, a care-team approach is used with chronic conditions. As a result, health care providers such as psychologists, social workers, and other allied and medical health professionals, aware of possible secondary risks, are able to intervene more quickly on both a preventative and a recovery basis.

Finally, one must also consider the possibility that changes regarding divorce might account for this finding. Since divorce has become more acceptable, there is a greater likelihood that highly distressed couples may divorce. As a result, the remaining couples may not be that distressed.

Prediction of Marital Quality Based upon Psychological and Social Variables in Spina Bifida Couples

From a clinical perspective, examination of which psychological and physical factors best predicts marital quality is of most importance. Information on the psychological, social,

and physical factors that predict secondary psychological sequelae would be of importance for health care providers. Psychological or other appropriate interventions can be designed to assist parents in coping with the impact of those significant factors.

In the first model, it was hypothesized that the marital quality of parents would be predicted by the impact it has on the individual's psychological functioning. The results provide equivocal support for the hypotheses. Although parenting stress was not predictive of marital quality, increased maternal depression was predictive of marital quality.

In the second model, it was hypothesized that mothers of children with spina bifida would assume a more traditional role than mothers with healthy children. This shift in roles creates marital role strain. Therefore, the attitudinal and behavioural aspects of marital sex-role would predict marital quality. The results provide only partial support. The degree of role strain but not traditional attitudes predicted marital quality. Role strain, was defined as the difference between who the parent feels should do a role related task (e.g. determine how money is spent) versus who actually does the task. It was found that mothers with more role strain reported less marital satisfaction. This finding is consistent with current theoretical and applied research on sex roles and marital satisfaction (Scanzoni, 1982; Whisman & Jacobson, 1989; Frank et al., 1980).

In the third model, it was hypothesized a childhood chronic illness affects the marital relationship by interfering with

communication and the couple's ability to maintain an intimate relationship. The communication measure did not predict marital quality. The measure of communication employed in this study was a measurement of quality of communication ability versus communication content. When Turk (1964) first described the concept of "web of silence" as a communication problem, it referred to lack of communication between the parents on disease related issues rather than communication ability. Similarly, Phillips et al. (1985) findings may also have referred to lack of communication rather than communication skill. This finding suggests that in an analogue situation, parents of children with a chronic disease such as spina bifida have similar communication skills as parents with healthy children. Whether couples with a child with a chronic illness such as spina bifida communicate more or less than couples with a healthy child was, however, not addressed.

Although a significant association between intimacy and marital quality was found, the association was such ($r=.74$) that the measure of intimacy was considered redundant and accounted for most of the variance in marital satisfaction. Many items on the Dyadic Adjustment Scale (e.g. questions on degree of communality in matters of recreation, friends, sex relations, philosophy of life, amount of time spent together, leisure time activities) were repeated in the Personal Assessment of Intimacy in Relationships.

In the final model, the factors of the previous three models were integrated and tested against each other. It was hypothesized that the three models would independently account

for unique variance. The results, with the exception of the communication measure, supported this hypothesis. There was, however, a change in the variables which were considered significant from our previous three model analysis. In the integrated analysis, it was father's level of depression and not maternal depression that predicted marital quality. Although maternal and paternal depression were correlated, paternal depression and subsequently maternal role strain were able to account for unique variance beyond that accounted for by maternal depression.

Paternal Depression and Marital Satisfaction in Couples with Children with Spina Bifida

Researchers in pediatric psychology have for the most part neglected the needs and concerns of fathers. Some investigators have developed models of chronic conditions for families and couples while failing to include fathers altogether (e.g. Walker et al., 1988; Wallander et al., 1989; Wallander, Varni, Babani, Banis, DeHann, & Wilcox, 1989; Wallander, Varni, Babani, Banis & Wilcox, 1989) or including a small and non-representative sample of fathers (e.g. Kazak & Marvin, 1984; Kazak & Wilcox, 1984; Kazak, 1987). It is difficult to conceive how a model of familial and couple functioning can be tested without including all important individuals. The findings of this study illustrate the need to include fathers when examining the impact of chronic disease on interpersonal functioning.

In a review of the literature, Gotlib and Hooley (1988), highlight some of the problems associated with depression and

marital distress that may be of significance in this study. For example, research examining the casual linkages between depression and marital distress have found mixed support for: (1) a depressive episode can cause subsequent marital distress; (2) marital distress may elicit symptoms of depression in spouses; and, (3) an underlying characterological disorder may increase the risk for both marital distress and depression.

Furthermore, the association between the particular parent experiencing depression and marital distress is even more ambiguous. Hinchliffe, Hooper, and Roberts (1978) examined the interactions of a depressed spouse on behaviours typical of marital distress during hospitalization and following recovery of the depression. Following recovery of depression in which the patient was the husband, Hinchliffe et al. (1978) found a reduction in marital distress from earlier hospitalization which was similar to those observed in a control group. When the identified depressed patient was the wife, however, the spouses continued to experience elevated level of marital distress following recovery.

Further evidence that differences on marital distress outcome depend upon the depressed spouse has been reported by Gotlib (1986; cited in Gotlib & Hooley, 1988). Gotlib compared 20 depressed patients (10 male, 10 female), 20 nondepressed medical inpatients, and 20 community controls on marital satisfaction within the first week of hospitalization, second week following hospitalization, and again at 6 months following hospitalization. Gotlib found that husband of depressed wives

reported the least marital satisfaction whereas wives of depressed husbands reported similar levels of marital satisfaction as controls. At 6 months follow-up, there were no differences on depression and marital satisfaction in couples who were originally comprised of depressed husbands and their wives. On the other hand, depressed wives at 6 months follow-up, although no longer reporting depression, nonetheless continued to express along with their spouses high levels of marital distress. Despite the paucity of research examining the marital relationship of depressed husband (Gotlib & Hooley, 1988), these findings do bear some significance on the results of this dissertation.

Although speculative, the findings of our study suggest that the association between paternal depression and marital satisfaction may be secondary to the association between marital distress and father's depression. That is, if one were to treat the depression reported by the fathers, there is a strong likelihood that the marital relationship would improve.

Maternal Role Strain, Depression, and Marital Satisfaction

In the computation of the multiple regression, maternal depression, originally entered as predictor variable, was subsequently removed once mother's role strain in addition to paternal depression were considered. Furthermore, the attitudinal measure of sex-role (e.g. traditional versus modern) was not significant. This finding is consistent with Whisman & Jacobson's (1989) recent study.

Whisman and Jacobson (1989) compared 50 couples with a

presenting problem of maternal depression to 25 control couples on marital satisfaction, attitudinal and behavioural sex-roles, and depression. No differences were found between the two groups on the association between the attitudinal measure of sex-roles and marital distress. In contrast, the groups did differ on behavioural sex-roles, depression, and marital distress. Whisman & Jacobson (1989) found that depression could be mediated by behavioural sex-roles and marital distress. In couples with a depressed mother, increased maternal role strain was associated with marital distress, independent of depression.

The complexities of depression are again highlighted. Researchers continue to grapple with developing models to study depression that can explain factors that mediate depression and predict psychological outcome (Gotlib & Hooley, 1988; Fincham, Beach, & Bradbury, 1989; Fendrich, Warner, & Weissman, 1990). This study provides further evidence that marital sex-roles contribute to our understanding of depression and marital distress and must be considered when examining the impact of chronic disease on psychological adjustment.

Role of Physical Severity in Marital Quality

As with most psychological models, certain assumptions must often be accepted. In our models, we assume that raising a child with a chronic condition is a greater burden on the parents, the marital relationship, and the family than raising a healthy child. Burden of care is considered to be a parental subjective evaluation. The factors that contribute to the increased burden of care can include, for example, daily physical and medical

therapeutic interventions, severity of the disability, number of health care visits, hospitalizations, and financial costs. Physical severity of the condition can moderate some of the impact that burden of care may have on psychological functioning.

Although it was hypothesized that physical severity would not impact on marital quality, in fact, this was only partially true. Neither the level of lesion nor shunting predicted marital quality which is consistent with existing research (Kazak & Marvin, 1984; Tew et al., 1984). The child's level of ambulation was associated with marital quality and accounted for additional variance beyond maternal depression, paternal depression, and maternal role strain. The level of ambulation, however, was in the opposite direction than one might expect. Parents of children who were more ambulatory reported less marital quality than parents with less ambulatory children.

In attempting to explain the level of ambulation result, the findings of studies examining the association of physical functioning and psychological functioning of children with a chronic illness may serve as a model. Although several disease related variables such as age of onset, duration of illness, nature of therapy, visibility of disease have been addressed to a limited degree, the most frequent disease factor associated with increased psychological impairment in children has been the severity of the disease (O'Malley, Foster, Koocher, & Slavin, 1980; Pless, 1983, 1984). Two somewhat opposing hypotheses have been generated regarding the association between severity and maladjustment: 1. the greater the severity of the disease, the greater the child's psychological maladjustment; and, 2. a

marginality hypothesis that states that children with moderate severity of illness will be at greater risk for maladjustment those with mild or severe disease.

Support for the first hypothesis can be found throughout the literature in children with a variety of chronic illnesses (e.g. Pless & Roghmann, 1971; Stein & Jessop, 1982; Orr, Weller, Satterwhite, & Pless, 1984) including spina bifida (Tew & Laurence, 1985; Wallander et al., 1989). Similarly, evidence supporting the marginality hypothesis also exists (e.g. Bruhn, Hampton, & Chandler 1971; McAnarney, Pless, Satterwhite, Friedman 1974). Supporters of the marginalty hypothesis argue the children in the moderate severity group have additional cultural and familial pressures. Children with mild severity can function for the most part as healthy children given proper medical compliance. On the other extreme, those with severe physical impairment have such significant limited functioning ability that they are not expected by either the family or society to function as healthy individuals. The marginal group, however, possesses severity that is neither incapacitating nor absent. Whereas in both the mild and extreme severity groups, the children know what is expected from them, the marginal group must rely on conflicting external cues to determine their behaviours (Bruhn et al., 1971). This creates considerable internal conflict resulting in a higher degree of maladjustment.

Although one may have the impression that our finding would suggest that mild severity is associated with decreased marital quality, in fact, mild severity is this study actually represent

children with moderate severity of spina bifida. There are two basic types of spina bifida, spina bifida occulta and spina bifida cystica. Spina bifida occulta is relatively mild, symptomless and these children lead normal healthy lives receiving limited medical interventions. Children with this mild severity form of spina bifida were not included in this study. On the other hand, children with spina bifida cystica (or myelomeningocele) experience moderate to severe physical symptoms. Therefore, the children in our study with the least physical impairment are, in actuality, children with a moderate form of spina bifida.

Children with moderate severity spina bifida range in mobility from requiring braces to normal walking ability, may or may not be shunted, are often incontinent, require some corrective orthopedic surgery, and have intelligence in the normal range. Children with severe spina bifida are shunted, use wheelchairs, have a number of orthopedic and genitourinary abnormalities, and cognitive difficulties.

The parents of children may experience similar forms of stressors that are characteristic of the marginality hypothesis. Their child's disease severity is neither mild enough to be considered in a healthy range nor severe enough to be categorized within the totally dependent range. These parents perhaps must struggle with aspects of caregiving (e.g. how much independence for activity should be provided to the child or adolescent; how much discipline is considered fair) which may be unique to their group. Furthermore, as with marginally handicapped children, it may be that these families do not receive the same social support (e.g. Kazak, 1986) and medical support as those of families with

children who have more severe physical impairment. One may hypothesize that the marginal families internalize many of their stressors which are subsequently manifested in other aspects such as decreased marital satisfaction, increased maternal and paternal depression, and increased role strain.

Marital Distressed Risk Group

A series of analyses were conducted comparing maritally distressed versus nondistressed groups based upon a clinically meaningful cut-off score. The results of these analyses may differ from those in the previous multiple regressions since the sample is composed of only those couples in the extreme group (spina bifida $n=11$; control $n=8$). Therefore, the variance analysed is based upon a limited range. Interpretation of the results of these analyses should be made cautiously in view of the small sample size.

With regards to socio-demographic variables, distressed spina bifida couples had a much younger child with spina bifida and had more children than nondistressed spina bifida couples. When compared to control distressed couples, the age of child with spina bifida was still significantly younger than the age of the control child. In trying to explain this finding, it may be that parents of younger children may experience considerably more burden of care. As the child becomes older, the parent learns how to better deal with child rearing difficulties. Parents of younger children may also experience more concerns about the future of their child. Parents of older children have already been exposed to the limitations of their children whether these

be educational, physical, emotional, or social.

For the most part, no differences were found between the distressed couples independent of physical disability. It is worth noting that maternal depression was significantly higher in distressed groups than in nondistressed groups, whereas, father's depression did not differ. This finding is consistent with research on maritally distress couples (Gotlib & Hooley, 1988). In addition, it is important to realize that depression is related to family functioning and not to childhood chronic illness. Other variables that discriminated between distressed and nondistressed groups which are consistent with previous research include: increased parenting stress, increase marital sex-role strain, and reduced marital intimacy.

Family Income and Marital Quality

The importance of family income as a moderating variable is obviously apparent and must be considered when testing any model of family functioning. With spina bifida, the need to control for family income is even more important. Although unexplainable at this time, the incidence of spina bifida is greater amongst lower socioeconomic brackets (Elwood & Elwood, 1980). Furthermore, some research has shown that parenting stress in couples with children with spina bifida is no different than couples with healthy children when controlling for family income (Kazak & Marvin, 1984).

Despite our attempt to match for family income, control couples, nonetheless, reported higher income. The difference in income, approximately \$10,000, however, may be nominal when one

considers that the majority of families were still in the middle income bracket and the difference may have resulted from a few families in the extreme income brackets. Family income, despite this difference, did not in any of the analyses either within the spina bifida couples or between the groups, moderate or confound any of the results. It is also possible that previous research conducted with American samples may not be generalizable to Canadian sample as it relates to family income. The financial impact on the Canadian family of raising a child with a chronic disease may significantly differ from our American counterparts since our health care systems, private and public, also differ greatly.

Limitations of Current Study

As with most research, there are a number of limitations that need to be addressed. The sample in this study is representative of only intact currently married couples. Couples that were most maritally distressed may have already been divorced or separated and therefore would not have been included in this study. Since the "at risk" analysis did show that couples with younger children were the most at risk, the possibility exists that parents of older children represent only those who marriages have survived the tribulations and stresses of raising a child with a chronic condition.

Secondly, the simple "snapshot" analysis of the psychological functioning of couples and families with a chronic condition greatly underestimates the complexities of the underlying casual linkages between marital quality and moderating

variables. The analyses of this study represent only a description of the possible association between the moderating variables and marital quality. For example, the data does not allow us to conclude whether marital distress caused maternal depression or whether maternal depression caused marital distress. Only longitudinal data (e.g. Goldberg, Morris, Simmons, Fowler, & Levison, 1989; Fife et al., 1987) can shed light on the underlying casual models.

Caution must also be used when interpreting the step-wise multiple regressions. Although regression analysis is a powerful tool to select the best predictors of the independent variable, it also increases the chance of omitting relevant dependent variables. This occurs primarily when the dependent variables are intercorrelated and correlated with the independent variable. Only the variable contributing the most unique variance will be selected. While mathematically this is not a concern, it creates theoretical problems in the interpretation of the results.

Although attempts were made to include only standardized and validated measures, the measurement of communication in this study may have certain limitations. The fact that no differences were found between "at risk" distressed and nondistressed couples on communication raises the possibility that couples may have tried to present themselves in a favourable fashion. This finding, however, is not unique to the Communication Skills Test and this study. Others have also found using different behavioural measures that couples when aware of being video-taped in an analogue or laboratory setting tend to be more positive in

their interaction than they are at home (Vincent, Weiss, & Birchler, 1975; Gottman, 1979). Furthermore, in this study the experimenter was present during the video-taping. This may have resulted in parents in both the spina bifida group and control group presenting themselves in a more socially desirable fashion.

Investigators and clinicians commonly report that denial is a technique that parents with children with chronic disease often employ to cope with the various stressors (e.g. Vance et al., 1980; Fife et al., 1987). It is generally accepted that a certain degree of denial is beneficial as it helps to sustain equilibrium when confronted with acute stressors. The degree of denial experienced by families with children with spina bifida in this dissertation was not examined. It is, therefore, not possible to refute the possibility that these parents may have been experiencing greater marital stress than reported.

Finally, since this study included only parents with children with spina bifida, the findings might not necessarily apply to other chronic conditions. Although some have argued that the impact of a chronic illness on psychological functioning transcends the boundaries of specific disease (Pless, 1983, 1984; Stein & Jessop, 1982), the models examined in this study must be further investigated with other chronic conditions in order to generalize the results.

Conclusion and Implications of Current Study

Despite the study's limitations, the results have implications for future research. The findings highlight the need to examine the impact of chronic conditions on fathers

psychological well-being; the importance of role behaviours; and the impact of moderate disease severity on marital quality. With the exception of maternal depression, these three findings represent more subtle moderating variables that have, for the most part, been neglected. For example, most clinicians and researchers would assume that the greatest impact would be on mothers and on families with children with severe disease. While not underestimating the impact of chronic conditions on these families, other families must also be considered. Any marital or parental intervention should be designed to include components addressing the needs of these possibly neglected families.

In conclusion, researchers examining the impact of childhood chronic disease on marital functioning have identified some factors that can moderate psychological sequelae, for example, degree of social support (Kazak, 1987), and other socio-ecological factors (Wallander et al., 1989). This study extends past research by including fathers and examining more subtle factors that could affect marital functioning. Furthermore, the model supported in this study considers those factors within rather than outside the family. The results clearly identify 4 variables that can predict marital quality: maternal and paternal depression, maternal role strain, and degree of ambulation. Although communication was thought to be an important factor, the results based upon the measure of communication in this study failed to support this impression. It may well be that the communication construct measured in this study is inappropriate for couples with a child with a chronic illness.

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Appendix A

Consent of Family Physician

Dear Dr. _____ :

Your patient "_____" has been randomly selected from the medical records at the CHEO as a suitable control subject in a study of his/her parent's marital interaction. The purpose of the study is to compare the marital interaction of couples with children with spina bifida and couples with healthy children. The study is being conducted by myself, Dr. Patrick McGrath, Dr. Tina Daniels, Dr. Ian Manion, John Schillinger, Ms. Shirley Yumansky, and Ms. Liz Coughtry.

The subjects will be requested to participate in a 1 and a half hour assessment of marital interaction which will include administration of self-report instruments and a 10 minute video-taped interview. All information will be strictly confidential and only group data will be published.

We would appreciate your consent to contact your patient's parents. We require a letter indicating your approval. I will telephone your office in 2 weeks if we have not received your letter. A verbal consent will then suffice. If you have any questions, please feel free to contact me at 737-2492.

Sincerely,

Mario Cappelli

Appendix B

Information To Participate Letter:

Parents of Control Children

Mr. Mario Cappelli, Dr. Patrick McGrath, Dr. Tina Daniels, Dr. Ian Manion, Dr. John Schillinger, Ms. Liz Coughtry, and Ms. Shirley Yumansky, from the Departments of Psychology, Urology, and Social Work at the Children's Hospital of Eastern Ontario, Carleton University, and the Ottawa Children's Treatment Centre at conducting a study of couples with children with spina bifida.

The purpose of the study is to examine the marital interaction of couples with children with spina bifida. The reason why the study is being conducted is that we realize that parents of children with a chronic disease may face difficulties and we wish to know how parents cope with these problems.

In order to determine if parents with children with a chronic disease have unique problems, we must compare their interactions with parents with healthy children. Your family was selected for the following reasons:

1. your child is healthy
2. your child's sex and age match with a child who has spina bifida
3. your family size is approximately matched with the family of a child with spina bifida

We are asking both parents to participate in an assessment of marital interaction. Mario Cappelli will arrange a home-visit, at your convenience, if you decide to participate. Your participation will require approximately 1 and a half hours and will include completing some questionnaires and participating in a problem-solving task. The problem-solving task will require a 10 minute video-tape. All information, including the video-tape, will be held strictly confidential. At the completion of the study, the video-tape will be either destroyed or, if you wish, will be returned to your possession.

Your decision to participate in this study will not in anyway affect your child's present or future care at the Children's Hospital of Eastern Ontario.

Your participation in the study will however help us to understand the difficulties of couples with children with a chronic disease. The study results may guides us in developing programs that help parents of children with not only spina bifida but other diseases such as cystic fibrosis, congenital heart disease, renal disease, and diabetes to cope with raising the child.

In approximately 1 week, Mr. Mario Cappelli will contact you by phone to provide further details about the study. Any questions or comments may be directed at any time to Dr. Patrick McGrath, Mario Cappelli or any member of the study at 737-2492 (Psychology), 737-7600 (CHEO).

Sincerely,

Mario Cappelli

Appendix C

Consent Form

Mr. Mario Cappelli, Dr. Patrick McGrath, Dr. Tina Daniels, Dr. Ian Manion, Dr. John Schillinger, Ms. Liz Coughtry, and Ms. Shirley Yumansky, from the Departments of Psychology, Urology, and Social Work at the Children's Hospital of Eastern Ontario, Carleton University, and the Ottawa Children's Treatment Centre at conducting a study of marital interaction of couples with children with spina bifida.

The purpose of the study is to examine marital interaction and how parents cope with children with spina bifida. Your participation will require approximately 1 and a half hours and will include completing some questionnaires and participating in a problem-solving task. The problem-solving task will require a 10 minute video-tape. All information, including the video-tape, will be held strictly confidential. At the completion of the study, the video-tape will be either destroyed or, if you wish, will be returned to your possession.

Your decision to participate in this study will not in anyway affect your child's care at either CHEO or the Treatment Centre.

Your participation in the study will however help us to understand the difficulties of couples with children with a chronic disease. The study results may guides us in developing programs that help parents of children with not only spina bifida but other diseases such as cystic fibrosis, congenital heart disease, renal disease, and diabetes to cope with raising the child.

There are no know negative effects of the procedures in this study. All information gathered in this project is confidential and if published, the results will be in group form and will not identify any individuals.

You may withdraw from the study at any time, even after signing the consent form.

Any questions or comments may be directed at any time to Dr. Patrick McGrath, Mario Cappelli or any member of the study at 737-2492 (Psychology), 737-7600 (CHEO).

I am informed of and agree to participate in this study.

Name

Signature

Name

Signature

Witness's Name

Signature

Date

Appendix D

Semi-Structured Interview

Child's Name _____ Sex _____ Age _____

Father's Name _____

Mother's Name _____

Father's Occupation _____

Father's highest level of education _____

Mother's Occupation _____

Mother's highest level of education _____

Family Income (Per Year) _____

Religion _____

Other siblings:

1. Age: _____ Sex: _____ Birthorder: _____

2. Age: _____ Sex: _____ Birthorder: _____

3. Age: _____ Sex: _____ Birthorder: _____

4. Age: _____ Sex: _____ Birthorder: _____

5. Age: _____ Sex: _____ Birthorder: _____

Does any member of your family have any other physical handicaps

Appendix E. Dyadic Adjustment Scale

Circle one

Male Female

Most persons have disagreements in their relationships. Please indicate below approximate extent of agreement or disagreement between you and your partner on each item on the following list. (Place a checkmark / to indicate your answer)

	<u>Always</u> <u>Agree</u>	<u>Almost</u> <u>Always</u> <u>Agree</u>	<u>Occa-</u> <u>sionally</u> <u>Disagree</u>	<u>Fre-</u> <u>quently</u> <u>Disagree</u>	<u>Almost</u> <u>Always</u> <u>Disagree</u>	<u>D:</u>
1. Handling family finances	_____	_____	_____	_____	_____	_____
2. Matters of recreation	_____	_____	_____	_____	_____	_____
3. Religious matters	_____	_____	_____	_____	_____	_____
4. Demonstrations of affection	_____	_____	_____	_____	_____	_____
5. Friends	_____	_____	_____	_____	_____	_____
6. Sex relations	_____	_____	_____	_____	_____	_____
7. Conventionality (correct or proper behavior)	_____	_____	_____	_____	_____	_____
8. Philosophy of life	_____	_____	_____	_____	_____	_____
9. Ways of dealing with parents or in-laws	_____	_____	_____	_____	_____	_____
10. Aims, goals, and things believed important	_____	_____	_____	_____	_____	_____
11. Amount of time spent together	_____	_____	_____	_____	_____	_____
12. Making major decisions	_____	_____	_____	_____	_____	_____
13. Household tasks	_____	_____	_____	_____	_____	_____
14. Leisure time interests and activities	_____	_____	_____	_____	_____	_____
15. Career decisions	_____	_____	_____	_____	_____	_____

	<u>All the Time</u>	<u>Most of the Time</u>	<u>More Often Than Not</u>	<u>Occa- sionally</u>	<u>Rarely</u>	<u>Never</u>
16. How often do you discuss or have you considered divorce, separation, or terminating your relationship?	_____	_____	_____	_____	_____	_____
17. How often do you or your mate leave the house after a fight?	_____	_____	_____	_____	_____	_____
18. In general, how often do you think that things between you and your partner are going well?	_____	_____	_____	_____	_____	_____
19. Do you confide in your mate?	_____	_____	_____	_____	_____	_____
20. Do you ever regret that you married (or lived together)?	_____	_____	_____	_____	_____	_____
21. How often do you and your partner quarrel?	_____	_____	_____	_____	_____	_____
22. How often do you and your mate "get on each others' nerves"?	_____	_____	_____	_____	_____	_____
	<u>Every Day</u>	<u>Almost Every Day</u>	<u>Occa- sionally</u>	<u>Rarely</u>	<u>Never</u>	
23. Do you kiss your mate?	_____	_____	_____	_____	_____	_____
	<u>All of Them</u>	<u>Most of Them</u>	<u>Some of Them</u>	<u>Very Few of Them</u>	<u>None of Them</u>	
24. Do you and your mate engage in outside interests together?	_____	_____	_____	_____	_____	_____
How often would you say the following events occur between you and your mate?						
	<u>Never</u>	<u>Less Than Once a Month</u>	<u>Once or Twice a Month</u>	<u>Once or Twice a Week</u>	<u>Once a Day</u>	<u>More Often</u>
25. Have a stimulating exchange of ideas	_____	_____	_____	_____	_____	_____

	<u>Never</u>	<u>Less Than Once a Month</u>	<u>Once or Twice a Month</u>	<u>Once or Twice a Week</u>	<u>Once a Day</u>	<u>M Of</u>
26. Laugh together	_____	_____	_____	_____	_____	_____
27. Calmly discuss something	_____	_____	_____	_____	_____	_____
28. Work together on a project	_____	_____	_____	_____	_____	_____

These are some things about which couples sometimes agree and sometimes disagree. Indicate if either item below caused differences of opinions or were problems in your relationship during the past few weeks. (Check yes or no.)

Yes No

29. _____ Being too tired for sex.

30. _____ Not showing love.

31. The dots on the following line represent different degrees of happiness in your relationship. The middle point, "happy", represents the degree of happiness most relationships. Please circle the dot which best describes the degree of happiness, all things considered, of your relationship.

Extremely <u>Unhappy</u>	Fairly <u>Unhappy</u>	A Little <u>Unhappy</u>	Happy	Very Happy	Extremely Happy	Perfect
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32. Which of the following statements best describes how you feel about the future of your relationship?

_____ I want desperately for my relationship to succeed, and would go to almost any length to see that it does.

_____ I want very much for my relationship to succeed, and will do all I can to see that it does.

_____ I want very much for my relationship to succeed, and will do my fair share to see that it does.

_____ It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed.

_____ It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.

_____ My relationship can never succeed, and there is no more that I can do to keep the relationship going.

Appendix F Marital Sex-Role Scale

The following questions deal with different aspects of mother-wife and father-husband roles. However, we must often adapt to our home environment by sometimes changing what we do, how we do it, and how we feel. There are no right or wrong answers, but try to respond to each question how you presently feel.

Please answer each question by circling either:

1. strongly agree
2. agree
3. mixed feelings
4. disagree
5. strongly disagree

1. A married woman's most important task in life should be taking care of her husband and children:	1	2	3	4	5
2. She should realize that a woman's greatest reward and satisfaction come through her children:	1	2	3	4	5
3. Having a job herself should be just as important as encouraging her husband in his job:	1	2	3	4	5
4. If she works, she should not try to get ahead in the same way that a man does:	1	2	3	4	5
5. She should be able to make long-range plans for her occupation, in the same way that her husband does for his:	1	2	3	4	5
6. A wife should not have equal authority with her husband in making decisions:	1	2	3	4	5
7. If she has the same job as a man who has to support his family, she should not expect the same pay:	1	2	3	4	5
8. If being a wife and mother isn't satisfying enough, she should take a job:	1	2	3	4	5
9. There should be more day care centers and nursery schools so that more young mothers could work:	1	2	3	4	5
10. A wife should realize that, just as a woman is not suited for heavy physical work, there are also other kinds of jobs she is not for suited for, because of her mental and emotional nature:	1	2	3	4	5
11. A wife should give up her job whenever it inconveniences her husband and children:	1	2	3	4	5

12. If a mother of young children works: it should be only while the family needs the money:	1	2	3	4	5
13. A married man's chief responsibility should be his job:	1	2	3	4	5
14. If his wife works, he should share equally in household chores such as cooking, cleaning, and washing:	1	2	3	4	5
15. If his wife works, he should share equally in the responsibilities of child care:	1	2	3	4	5
16. If a wife's job sometimes requires her to be away from home overnight, the should not bother the husband:	1	2	3	4	5
17. If a child gets sick and his wife works, he should be just as willing as she to stay home from work and take care of the child:	1	2	3	4	5
18. If his wife makes more money than he does, this should not bother him:	1	2	3	4	5
19. A husband should be the head of the family:	1	2	3	4	5
20. On the job, men should be willing to work for women supervisors:	1	2	3	4	5
21. A married man should be willing to have a smaller family, so that his wife can work if she wants to:	1	2	3	4	5
22. Do you believe that the institution of marriage and family was established by God?:	1	2	3	4	5
23. Do you feel that being a mother is a special calling from God?:	1	2	3	4	5
24. Do you think that a working mother can establish just as warm and secure relationship with her children as a mother who does not work:	1	2	3	4	5
25. Do you feel that a parent gets more satisfaction when a son gets ahead in his occupation:	1	2	3	4	5
26. Do you feel that a marriage is incomplete without children:	1	2	3	4	5
27. Do you think that young girls should be permitted as much independence as boys:	1	2	3	4	5
28. Do you feel a preschool child is likely to suffer if the mother works:	1	2	3	4	5

Appendix G: Marital Role Strain Questionnaire

Please indicate your position on the following questions about marriage:

In your opinion who should:

	Wife	Husband	Both	Neither
Care for the home, cook and shop	—	—	—	—
Make major family decisions	—	—	—	—
Have a career	—	—	—	—
Have responsibility for the care of the children	—	—	—	—
Have interests and activities which do not include spouse	—	—	—	—
Determine how money is spent	—	—	—	—

In your marriage who:

	Wife	Husband	Both	Neither
Cares for the home, cook and shops	—	—	—	—
Makes major family decisions	—	—	—	—
Has a career	—	—	—	—
Has responsibility for the care of the children	—	—	—	—
Has interests and activities which do not include spouse	—	—	—	—
Determines how money is spent	—	—	—	—

Appendix H

Personal Assessment of Intimacy in Relationship Questionnaire

Copyrighted

Family Social Science
University of Minnesota
297 McNeal Hall
St. Paul, Minnesota, 55108

Appendix I

Parenting Stress Index

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Pediatric Psychology Press
2915 Idlewood Drive
Charlottesville, VA. 22901

Appendix J. Centre for Epidemiological Studies Depression Scale

Circle the number for each statement which best describes how often you felt or behaved this way—DURING THE PAST WEEK.

		Rarely or None of the Time (Less than 1 Day)	Some or a Little of the Time (1-2 Days)	Occasionally or a Moderate Amount of Time (3-4 Days)	Most of All of the Time (5-7 Days)
DURING THE PAST WEEK:					
1.	I was bothered by things that usually don't bother me	0	1	2	3
2.	I did not feel like eating; my appetite was poor	0	1	2	3
3.	I felt that I could not shake off the blues even with help from my family or friends	0	1	2	3
4.	I felt that I was just as good as other people	0	1	2	3
5.	I had trouble keeping my mind on what I was doing	0	1	2	3
6.	I felt depressed.	0	1	2	3
7.	I felt that everything I did was an effort	0	1	2	3
8.	I felt hopeful about the future	0	1	2	3
9.	I thought my life had been a failure	0	1	2	3
10.	I felt fearful	0	1	2	3
11.	My sleep was restless	0	1	2	3
12.	I was happy	0	1	2	3
13.	I talked less than usual	0	1	2	3
14.	I felt lonely	0	1	2	3
15.	People were unfriendly	0	1	2	3
16.	I enjoyed life	0	1	2	3
17.	I had crying spells	0	1	2	3
18.	I felt sad	0	1	2	3
19.	I felt that people disliked me	0	1	2	3
20.	I could not get "going"	0	1	2	3

Appendix K

Marital Problem Inventory

Below is a list of problem areas experienced by many married couples. We would like to get some index of the importance of each area to your marriage. In the first column following each problem area please write in a number of 0 to 100 to indicate the severity of the problem area in your marriage. In the second column, please write in a number from 0 to 100 to indicate how you think you spouse will respond to this problem area. A zero indicates that the problem area is not severe and a 100 indicates it is a very severe problem area.

	Your Response	How you think your spouse will respond
Money	-----	-----
Communication	-----	-----
In-Laws	-----	-----
Sex	-----	-----
Religion	-----	-----
Recreation	-----	-----
Friends	-----	-----
Alcohol & Drugs	-----	-----
Children	-----	-----
Jealousy	-----	-----
Other	-----	-----

END

28|02.9|2

FIN