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The Relationship of Stressors and Family Resources to Family Functioning

by

Hae-Young Kim

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Science

Department of Occupational Therapy

Edmonton, Alberta

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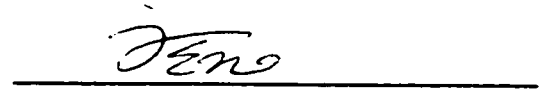

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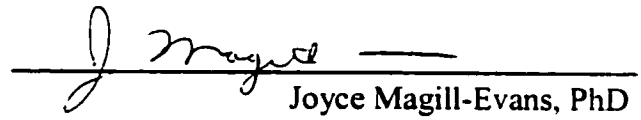

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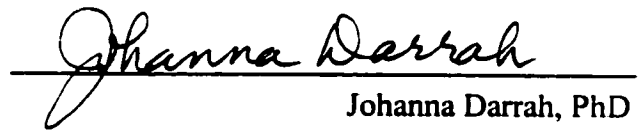

Johanna Darrah, PhD

Deanna Williamson, PhD

Dec 19, 2001

DEDICATION

-To my parents, Wee-Jae, Kim and Jung-Hwa, Lee-
for inspiring me a passion for learning,
for their loving and support at all times

-To my supervisor Joyce Magill-Evans-
for her great support and encouragement in this, and in all my endeavors

ABSTRACT

The primary purpose of the study was to determine the best predictors of family functioning from among stressful events (child's disability status, age status), intra-family resources (family coping skills, quality of life) and extra-family resources (formal support, informal support). The secondary purpose was to compare the predictors of mothers' perceptions of family functioning and average family scores of family functioning.

Participants in the study were 112 mothers and their children (44 with cerebral palsy). Two hierarchical multiple regressions were done, one with family functioning as scored by mothers as the dependent variable, and one with the family average score as the dependent variable. Both regression analyses showed that intra-family and extra-family resources were significant predictors of family functioning. Whether the child had a disability and the age of the child (adolescent versus young adult) were not significant predictors. Using the average family scores appeared preferable rather than using the mothers' perceptions only.

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CHAPTER 1

INTRODUCTION

For many years, researchers and clinicians in the health care field have focused on the family. Hanson and Boyd (1996), in a summary of the research literature, indicated that a focus on family is important for a number of reasons. First, the health problem of one member in a family unit extends to the entire family system. Second, there are reciprocal influences between the family as a unit and each individual member in the family. Third, there is evidence that family intervention is more effective than individual intervention in health care. Fourth, the health of families is the very essence of the survival of society.

Health professionals have shown concern about families of children with disabilities. The disability of a child drives the family to change and influences the entire family system (Rolland, 1993). Family structure, process, and functioning are used to meet the demands for change in family relationships, activities and goals in such families. It is assumed that these families also experience increased care-giving burdens, financial encumbrances, social isolation, physical and emotional disturbances and restrictions in life opportunities associated with the child's disability (Patterson & McCubbin, 1983; Sayger & Bowersox, 1996). The demands for change may threaten the well being of a child with a disability and his/her family as a unit.

Purpose and Objectives

The overall purpose of this study is to determine the best predictors of optimal family functioning in families of children with and without physical disabilities while recognizing the complexity of the interrelationship between variables. The results of this study will provide evidence as to the role family resources play in family functioning, which will contribute to understanding of the utility of the family empowerment model. The objectives of this study are to determine if: (1) disability and challenges associated with developmental stage predict family functioning, (2) intra-family and extra-family resources are the best predictors of family functioning, and (3) to examine which resources influence family functioning more: intra-family or extra-family resources. A further objective is to determine if the predictors of mothers' perceptions of family functioning are similar to predictors of perceptions of the family as a whole unit.

Clinical Relevance

The identification of the best predictors of family functioning will allow health care practitioners to understand the factors that have the greatest effect on family functioning from the family's perspective. Health care providers will become more aware of how families manage demands, which will ultimately help the family and lead to more fulfilling lives for family members. Practitioners will be able to guide families more effectively and plan and set the goals to meet their resource needs. The results will also have larger societal implications. The results may provide families with information to help them advocate for appropriate family resources to support optimal family

functioning and result in positive shifts in health care delivery, benefiting both the families and society as a whole.

Lawlor and Mattingly (1998) described the dramatic changes in pediatric occupational therapy practice through the expansion of family-centered care with emphasis on a collaborative process between practitioners and families. However, they pointed out the difficulty in building effective partnerships between family members and professionals and the gaps between real daily contexts and intervention situations in family-centered occupational therapy practice. In this study, perspectives from mothers will provide occupational therapists with vital information to engage in more collaborative relationships in their intervention by listening to mothers and understanding how mothers perceive their family life. Also, the issues that mothers perceive in their daily contexts will motivate occupational therapists to discern the needs based on the actual living contexts versus those seen in a therapeutic environment.

Definitions and Terminology

There have been many theories and models that focus on the family. Each has defined the family and family health from different perspectives. This study used the definitions and terms from more contemporary perspectives in health care that are based on a systems perspective. The roles of the family and characteristics of healthy families are reviewed within the family empowerment model.

The family has been defined differently within different disciplines through the years. Hanson and Boyd (1996) summarized the view of the family in contemporary health care; according to them, the family is a group of people who rely on each other for

emotional, physical and financial support and whose members are self-defined with different bonds such as marriage, blood and adoption. They also characterized the traits of the family as commitment, interaction and mutual decision-making. In their definition, family functions are to survive in society, reproduce the species, protect family members, socialize the young and foster members' physical, mental and social well-being.

Families also play the role of a change mediator (Epstein, Bishop, Ryan, Miller, & Keitners, 1993; Hanson & Boyd, 1996; Robinson, 1994; Whitchurch & Constantine, 1993). According to Robinson, family experiences influence their current situation as well as build contexts for change. In other words, families create a context for change by reframing their situation and constructing meaning from their experience. In the family of a child with a disability, the impact of the child's disability and the associated experiences build a context for change and elicit adaptations in the family. For example, in families with a child with cerebral palsy, the parents may spend more time, energy and money to take care of the child, use more professional services to improve the child's health, and change their role to manage problems associated with caring for a child with a disability. In order to develop the means to manage the demands, these families may attempt to identify the meaning of the experience in relation to the child's ability and the given situation (Patterson & McCubbin, 1983).Viewing the family as a change mediator places an emphasis on positive family functioning. Families who do well do so by making choices and decisions based on their experiences (Epstein et al., Robinson). On the other hand, families who manage life events less optimally, will benefit from changing the meaning of their experiences and positive reframing their situation.

Interactional and transactional patterns of the family play the most crucial role in determining family functioning from a system's perspective (Epstein et al., 1993; Robinson, 1994; Whitchurch & Constantine, 1993). The family is regarded as an open system, consisting of systems within systems (e.g., individual, marital dyad) and relating to other systems (e.g., extended family, schools, community)(Epstein et al.). It cannot be characterized by the individual members but must consider the family, individual members, and the interactional and reciprocal patterns. Interactional and reciprocal patterns emphasize the circular effects where A influences B and B influences A (Robinson). Family functioning, therefore, includes the interactional and reciprocal patterns between the family and family members as well as between the family and other systems. Family functioning also includes transactional patterns (e.g. communication, problem management pattern) that allow the family to deal with family events. (Epstein et al.; Robinson; Whitchurch & Constantine).

Family functioning, used interchangeably with "family health," has been described as the dynamic process that encompasses the tasks which a family performs to maintain, facilitate and protect the well-being of the family as a unit (Hanson & Boyd, 1996). Anderson and Tomlinson (1992) described family functioning as that which is focused on the family's state or process of interaction with the environment. They outlined five different processes to illustrate how the family functions: interactive, developmental, coping, integrity, and health processes. Walsh (1982) emphasized the use of family functioning when judging the effectiveness of the structural or behavioral patterns of the family in accomplishing the family's goals.

Many researchers have attempted to describe the characteristics of an optimally functioning or strong family. Friedemann (1989) defined optimal family functioning as a balance of family maintenance, family change, family togetherness, and individuation. McCubbin and McCubbin (1993) itemized the traits of a functional family as commitment to family with relationships of trust and responsibility, clear boundaries, flexible role functions, resiliency and hardiness. Wuest and Stern (1991) and Gibson (1995) listed several variables which contribute to the process of empowerment and more optimal family functioning in families of a person with a disability. They include the health status of each family member, the family's relationship with the health care system, the family's quality of life, caregivers' values, experiences, decisions and social support.

Gibson's (1991) definition of empowerment as " a social process of recognizing, promoting and enhancing people's abilities to meet their own needs, solve their own problems and mobilize the necessary resources" (p. 359) is well applied in family empowerment. As a process of enabling families to preserve family life and functioning, the family empowerment model emphasizes family resources such as intra-family and extra-family resources to satisfy the needs identified by individual families with children with disability. Families of children with chronic health conditions face the challenges of satisfying the child 's health care needs and maintaining family life (Hulme, 1999) in the family empowerment model.

The family empowerment model has focused on family functioning style which refers to the coping skills used by the family to manage life events and promote the growth and well-being of family members. Otto (as cited in Dunst, Trivette & Deal,

1988) and Williams, Lindgren, Rowe, Van Zandt, and Stinnett (1985) emphasized intra-family resources, such as problem-solving skills, communication, cohesion, and flexible roles to meet family needs, as components of family functioning style. Reports demonstrated the importance of intra-family resources in relation to the diversity of outcomes, such as life satisfaction (Williams et al.) and the emotional/physical well-being of the family unit (Lewis, Beavers, Gossett & Phillips, 1976).

Dunst et al. (1988) looked at the need of the family to mobilize informal and formal resources based on family empowerment model. They defined extra-family resources as "the emotional, physical, informational, instrumental, and material aid and assistance provided by others to maintain health and well-being, promote adaptations of life events, and foster development in an adaptive manner" (p. 28). Sources of support in terms of extra-family resources included significant others, friends, relatives, community members and health services which are necessary to facilitate the growth of the family and to make intervention more effective. They showed that social support from both informal and formal resources positively affects the functioning of care-givers, family, and individual members; social support was also shown to affect personal and family well-being, as well as the family's adaptation to life events. They proposed that social support influences care-givers' well-being, that the two together influence family functioning, and all three in turn affect parent-child interaction. These factors also influence an individual member's functioning and well-being through direct and indirect relationships.

Summary

In summary, health care has emphasized family health from the perspective of both individual members of the family, and the family as a unit. Family functioning has been referred to as the indicator of family health. Family functioning may be influenced by the health of family members such as children with disabilities. However, there are also many other factors that contribute to family functioning, such as intra-family and extra-family resources. More optimal functioning does not necessarily mean less family stress or fewer crises, but rather that the family can mobilize resources and strengths to meet family needs based on family empowerment model.

CHAPTER 2

LITERATURE REVIEW

Current literature focuses on the positive aspects of families' responses to stressful family life events. Contrary to traditional research that viewed those stressful events in a negative fashion and examined the negative impacts on family functioning, the current literature demonstrates the way families adapt and use their strengths (Kazak & Marvin, 1984; Nelson, Ruch, Jackson, Bloom, & Part, 1992). According to Patterson and Garwick (1998), a stressful situation challenges families to cope and maintain their functioning; it does not directly lead to a family crisis. For instance, when the family deals with the disability of a family member, the family may create a different repertoire of family relationships, goals and tasks and utilize resources inside and outside of the family (Patterson & McCubbin, 1983; Rolland, 1993; Sayger & Bowersox, 1996).

Family Models and Interventions

A variety of family models identify many variables that affect family functioning. Family models and interventions were reviewed to understand how families adapt in relation to these variables, and to lay the theoretical basis for the study. Furthermore, the family empowerment model and intervention provide the primary beliefs for the study and unique roles of health care providers and family. In this study, family adaptation models and interventions will be termed as traditional family models compared to family empowerment models and interventions.

Traditional Family Models and Interventions

Olson, Russell and Sprenkle (1989) proposed a Circumplex Model which defined family well-being and optimal functioning in response to situational and developmental stress as a process that balances normal family functioning in terms of family cohesion and adaptability. Based on the Circumplex model, Greeff (2000) characterized family coping skills as variables of family functioning. Family coping skills such as Problem Solving and flexible role functioning, mutual support between spouses, family and marital satisfaction and overall quality of life were found to be predictors of optimal family functioning in his study.

With increasing focus on adaptation in families who have an ill member (Clawson, 1996), a few family models that describe positive adaptation in response to chronic illness including disability are reviewed. Although the conditions of illness and disability are different from each other, the literature has dealt with the conditions in the same model because of the similar consequences of adaptation.

Rolland (1993) developed a systemic health paradigm, which views healthy family adaptation to illness and disability as a normative process over time. This perspective helps in understanding how the family constructs optimal family coping skills in response to a member's illness. Within the normative process, he stressed that the complex mutual interaction between disabilities, the member with a disability and his/her family affects the family's ability to function optimally. Furthermore, he noted the positive impact on family functioning of a pragmatic approach that focuses on extended or possible use of supports and resources outside the family on family functioning.

In the resiliency model of McCubbin and McCubbin (1993), family adaptation is the most needed response to illness. This model provides health professionals with a framework to assess family functioning and intervene in the family system to enhance family adaptation and the family capabilities and strengths needed to manage illness in the family. With the focus on the illness as a stressor, this model characterized key elements of family adaptation as the family's efforts to use internal and external resources, the family's appraisal of the situation, and the family's coping patterns and problem-solving abilities to maintain function.

Epstein et al. (1993) described the McMaster model used to conceptualize healthy family functioning in response to three areas, which are the basic tasks (fundamental functions such as nurturing), developmental tasks (a sequence of stages in family life cycle) and hazardous tasks (crises resulting from illness, accident, loss of income, job change and so forth). The model has been used in a variety of family practice clinics, programs and research. With emphasis on the structure, organization and transactional patterns of the family, the model proposes six dimensions (problem-solving, communication, roles, affective responsiveness, affective involvement and behavior control), which are considered to have the most impact on emotional and physical health or problems of family members.

Health care practitioners ultimately pay attention to the family in order to improve an individual's well-being and to promote more optimal family functioning. Robinson (1994) conceptualized family literature as having three different orientations to intervention including traditional, transitional and non-traditional. Although she reviewed and analyzed nursing literature only, her notions are applicable to other health

care providers. Each orientation provides a different perspective of family roles in health care intervention. Within a traditional, transitional or nontraditional orientation, families are either the context of care, the client of health care, or experts respectively. The nontraditional orientation is concerned with the impact of more optimal family functioning on illness and the primary goal of intervention is to assisting the family to change and function more optimally in relation to the situation with emphasis on a partnership between clinicians and families.

These family models and interventions are helpful for understanding the stress which families experience, and the resources that families mobilize to cope with the stress (Bennett & DeLuca, 1996). However, these models focus more on coping skills which are intra-family resources, rather than extra-family resources from outside the family system.

Family Empowerment Model and Intervention

The health care model of family empowerment provides the primary theoretical basis for understanding the variables which may be strongly related to family functioning in this study. The basic beliefs of family empowerment are following. First, there is no right or wrong family functioning style; however, there are styles that are more effective in response to life events and stress such as the disability of a family member. Second, families with more optimal functioning can mobilize more resources to meet family needs. Third, there are complicated interactions among variables which may influence family functioning. Fourth, the perspectives of the family should be considered the most crucial influence in family health decision-making. Finally, family functioning affects

individual members' well-being and life satisfaction as well as family well-being and society as a whole.

Those who use the family empowerment are seeking to optimize the family's power and enhance self-efficacy for both individual family members and the family as a whole. In this model, health providers play the role of help givers who assist families to clarify their needs, find the strength for functioning in terms of resources, and mobilize those resources. Therefore, health providers are not the decision makers, but the family itself.

Unlike other family models, the family empowerment perspective focuses on the more crucial role of social support in addition to considering family coping skills from the earlier traditional models. Studies from this perspective have emphasized that resources from family, friends, relatives and professionals provide emotional encouragement, acceptance of the child, valid information, and solutions to problems as the primary coping resources, regardless of the change in the stressors over time (Bennett & DeLuca, 1996; Dunst & Trivette, 1988).

Expanding on Robinson's non-traditional model, Hulme (1999) discussed the broader concepts of family within family empowerment intervention. According to her, the family must be viewed as more than just a system, having traits such as caring, long-term relationship, responsibility and love. Family empowerment is characterized by the cooperative interactions among family members, between the family system and the health care system, and between the family system and other systems (Wallerstein, 1992). For the family that has one or more members with a chronic health condition, intervention is an interactive process between the health care provider and the family. In

the process of empowerment, the family acknowledges, encourages, and increases their functioning style to cope with specific internal and/or external demands on the family. It also mobilizes proper resources for the health care needs of the individual member while maintaining the quality of family life (Gibson, 1991).

To summarize, the literature used different models and defined family functioning and resources differently. Nevertheless, it seems clear that most of the models emphasize the importance of family adaptation and both intra- and extra- family resources. In addition, current trends encourage the family to utilize formal support in health care. At the same time, health care practitioners have focused more on empowering and enabling the family and the community.

Variables of Family Functioning for the study

Exploration of the variables which influence family functioning is limited to four areas and the literature related to these areas is described. The four areas are: the impact of stressful events; youths' perceptions of family functioning; intra-family resources; and extra-family resources. Additionally, this study will compare the similarity of mothers' perception of family functioning to perceptions of other family members of its functioning.

Stressful Events for the Family

Disability of a Child in the Family

Many concerns for families have been identified related to the disability of a child who needs ongoing care demands resulting care burdens. These concerns are based on studies of general disabilities and mostly mental retardation. This study will focus on children with cerebral palsy, a condition commonly seen in child health care settings. Family participation in the intervention process is emphasized. However, the relationship between cerebral palsy and family functioning particularly during adolescence and young adulthood has not been thoroughly explored.

Pimm (1996) described the characteristics of cerebral palsy as a chronic mild to severe physical disability which may restrict a person's independent life. Cerebral palsy is an umbrella term which describes non-progressive abnormalities of the brain caused before, during and after birth that result in a variety of motor disorders such as spastic, athetoid, ataxic and mixed type of cerebral palsy. In addition to the motor problems, cerebral palsy may be accompanied by speech and language problems, visual impairment, auditory impairment, epilepsy, cognitive impairment and behavioral problems. Persons with cerebral palsy may need life-long care from others. This may result in additional care-giving, housing or equipment needs which require more time, energy and money from the family.

The impact of cerebral palsy on family functioning is expected to be similar to that of other childhood disabilities such as mental retardation and developmental disabilities. Hanson and Boyd (1996) called the process of family accommodation to the

impacts of chronic illness of a child as reality negotiation, where families test their reality of an incurable condition by experiencing ongoing and repeated relapses. Besides reality negctiation, some researchers (Pimm, 1996; Power, Dell Orto & Gibbons, 1988) who studied family functioning in families of children with cerebral palsy and physical disabilities have demonstrated the extra care demands for children with cerebral palsy which influences the family dynamics. Extra care demands are associated with more care-giving burden, which influences parent adaptation. Furthermore, care-giving burden and the difficulties of parent adaptation to a child' disability would be expected to be associated with less optimal family adaptation and functioning.

Haveman, Van Berkum, Reijnders, and Heller (1997) described well the relationship between care demands, care-giving burden and family functioning in the family of the child with mental retardation. They found that increasing care demands do not consistently result in increasing subjective perception of burden. Rather, the care-giving burden was strongly associated with the formal service network. Although their study was done in the Netherlands where there might be different cultural and environmental factors and the participating families had children with mental retardation, the study indicates that the social network impacts positively on parent adaptation and family functioning in the family of a child with a disability. Families of children with cerebral palsy confronting care-giving demands may also benefit from social network supports to improve positive family adaptation and family functioning.

In this study, the presence of a child with a disability is seen as one of the variables that may influence family functioning. Although cerebral palsy may increase current and future care-giving demands on the family, this study hypothesizes that the

presence of cerebral palsy contributes to family functioning but is not the best predictor of family functioning.

Age Status of a Child in the Family: Adolescence, Young Adult

Carter and McGoldrick (1989) postulated that family stress is increased and family crisis is most likely at transition periods in the family life cycle. They found that families with adolescents as the transitional period need to build new boundaries and perform tasks differently than families with younger children. Bowles and Fallon (1996) reported that adolescents usually experience more family, relationship, health, and education problems. On the other hand, young adults face the additional issue that they are usually ready to leave their families and live independently. In families with young adults, challenges occur when either the young adults or their parents are unaware of the need for a shift to independence (Carter & McGoldrick).

In adolescence and young adulthood, families need to develop coping strategies. Carter and McGoldrick (1989) summarized the challenges and processes of the family life cycle stages. According to them, families with adolescents need to increase the flexibility of family boundaries to allow for their children's independence by setting new rules and beliefs. Families must redefine parent-child relationships to allow adolescents to move in and out of the family, depending on their ability to act independently and begin to engage in their own independent relationships with people outside of the family such as friends. The challenge for parents in families with adolescents is to shift their focus to midlife marital and career issues, and toward joint caring for elder relatives.

Further, Carter and McGoldrick (1989) said that families with young adults need to accept a multitude of exits from and entries into the family. They need to develop adult-adult relationships between the grown children and their parents. The roles and responsibilities of family members also change along with these new relationships. Parents in families with young adults need to renegotiate the marital system as a dyad, realign the relationships to include in-laws with their children's spouses and grandchildren and deal with disabilities and deaths of their own parents.

Specifically, Goldscheider (1997) analyzed the trends of young adult living arrangements in United States. He found that the trend of leaving home has declined and been delayed during the 1990s. The delayed leaving of the parents' house represented a changed social image of adulthood, which is called "Peter Pan syndromes" (e.g., young adults do not want to grow up) according to Goldscheider (p.712). This change of social role affects the family relationships.

Lin (2000) recently asserted that in families of children with cerebral palsy, family coping and adaptation should vary in the different life cycle stages. Adolescents with physical disabilities may experience increasing problems and restrictions in the transition into young adulthood and independent living (Magill-Evans et al., 2001). Cauble (as cited in Lin) noted that parents of an adolescent with cerebral palsy deal with the permanence of the disability, the child's marginality, difficulties with their child's increased physical size and the need for adaptive equipment.

While young adults without disabilities prepare to live independently, those with cerebral palsy and their caregivers may deal with different tasks and goals. For instance, Pimm (1996) noted that young adults with cerebral palsy and their caregivers focused on

maintaining or improving physical conditions over time. This focus on the physical condition results in lost opportunities to achieve developmental tasks such as starting a career, planning for future care and other expected roles for young adults. Lin (2000) recognized the additional and increasing issues of guardianship relating to ongoing care, parents' ages and placement plans for employment, self-care, mobility and leisure.

Developmental challenges in families, both with and without a child with cerebral palsy, may be critical in family functioning, though the effect in each family would be different. Thus, in this study, the age of the child (particularly young adulthood) is expected to be a predictor of family functioning, although it will not be the best predictor of family functioning.

Youths' Perceptions of Family Functioning

Selecting an appropriate way to measure family functioning (the dependent variable) requires a decision as to whose perspective will be used in addition to choosing an appropriate measure. Sullivan and Fawcett (1991) discussed individual level family data and found that the mother is frequently the primary source. Although there are increasing attempts to collect data from fathers, siblings, or other relatives, data from mothers are still dominant in family research. This may be because of beliefs that mothers play the main role in fundamental family tasks such as care-giving and nurturing. When decisions need to be made in the family, mothers are believed to be the most powerful decision makers (Robinson, 1998). Also, in the family health care setting, mothers are usually the ones who interact with family health professionals.

Using mothers' data assumes that mothers are including other family members' views, perceptions or actions in their report of overall family functioning. However, there is still a concern that mothers' data do not reflect the family as a whole (Feetham, 1991).

There is literature that has studied the meaning of discrepancies between individual family members' perceptions of family functioning (Griffiths & Unger, 1994; Uphold & Strickland, 1989). These studies concluded that there are different perspectives between family members; however, there has been little literature to clarify how the differences between members are related to family functioning as a whole.

Most studies about the families of children and youths with disabilities have gathered data primarily from the mothers' perspective. However, current literature (Chou, 2000; Sayger & Bowersox, 1996) has attempted to obtain information from the children and youths themselves as well as mothers. There are challenges to interpreting results from such divergent perceptions within the family; therefore, it is important to deal with data from youths on family functioning and examine if data from youths and mothers show any relationship.

It is hypothesized that the youths' perceptions of family functioning will predict mother's perceptions of family functioning. However, other variables will account for more of the variance in family functioning.

Intra-family Resources

Family Coping Skills

Various theories and models describe the coping skills used to promote family adaptation or the ability to adequately handle demands on the family and to maintain family functioning. Models such as the Circumplex model (Olson et al., 1989), the family empowerment model (Dunst et al., 1988) and the McMaster model (Epstein et al., 1993) characterize family strengths and capabilities in terms of communication, problem-solving, flexibility in roles and responsibilities, togetherness and shared family perceptions. However, each model uses different terms with different philosophies to describe the crucial factors that may represent optimal family functioning.

These models and theories identified various factors which might constitute family strengths and developed the instruments for measuring family strengths; however, there has been a lack of research to demonstrate which factors are most influential on family functioning and provide the support for choosing the most comprehensive instrument for measuring family functioning. The McMaster model defined family functions to deal with issues such as the basic, developmental and hazardous tasks. Tutty (1995) described the Family Assessment Device (FAD), developed to operationalize the factors from the McMaster model (Epstein et al., 1993), as the most valid tool available due to its sensitivity in differentiating less optimally functioning families from optimally functioning families and its fairly good psychometric properties.

Greeff (2000) reviewed the literature and studied which characteristics of family coping skills were most associated with family functioning. His South African study

found that from among family satisfaction, martial satisfaction, quality of life, family support, pleasure, communication and problem-solving skills, problem-solving skills were one of the most important factors for optimal family functioning. He confirmed the role of problem solving skills put forth in various other studies (Lee & Brage, 1989; Lewis, 1978). Families who functioned well realized and admitted that there was conflict and problems in their families; however, they also found effective ways to solve the problems. However, in applying Greeff's results, there should be careful consideration of the study's cultural and societal uniqueness because it was done in South Africa with families without any specified stressors.

Problem Solving. Epstein et al. (1993) defined family problem solving skill as "a family's ability to resolve problems to a level that maintains effective family functioning (p.144)." They assumed that more effectively functioning families met with more success due to their more effective problem solutions. In their model, effective problem solving steps consisted of identifying problems, communicating, developing possible solutions, carrying out solutions, and monitoring and evaluating the effectiveness of the problem-solving process.

Role Functioning. Greeff (2000) and Snowdon, Cameron and Dunham (1994) also identified the importance of mutual support and satisfaction to family functioning. The relationships of marital partners and their flexibility and compliance were related to how spouses assign care-giving and responsibility. These factors may be extended to two aspects of Epstein et al.'s (1993) role functioning: role allocation and role accountability. Role allocation concerns the family's pattern in assigning roles such as the provision of resources, nurturance and support, the development of life skills, systems maintenance

and management of the family system (Miller, Epstein, Bishop, & Keitner, 1985). Role accountability encompasses the family's procedures for fulfilling family functions with responsibility. Flexibility and compliance would be considered in the role accountability.

In this study, intra-family resources include coping skills that may influence family functioning. Problem-solving skills and role functioning represent the parents' ability to deal with their child's care and maintain optimal family functioning. It is hypothesized that family problem solving skills and role functioning are one of the best predictors of family functioning.

Quality of Life

In many studies (Doornbos, 1997; Haveman et al., 1997; Pimm, 1996; Snowdon et al., 1994), parents of children with disabilities felt that their lives were restricted and burdened by the child's disabilities resulting in a lower quality of life. In occupational therapy, when placing the family in the center of health care, quality of life is regarded as an important indicator for both the intervention outcome and family functioning. However, there is little evidence that the quality of life of one individual family member affects family functioning.

According to Williams et al. (1985), quality of life relates more to family functioning style, which relates to intra-family resources in this study. From the perspective of family empowerment, quality of life has the potential to affect family functioning. Thus, in this study, quality of life is expected to predict family functioning.

Extra-family Resources

Extra-family resources have a crucial impact on family well-being and functioning. Dunst et al. (1988) categorized extra-family resources into informal and formal sources. Informal support sources are families, relatives, friends, neighbors, co-workers, and community members while formal support comprises professionals, social services, educational systems and health care systems (Bennett & DeLuca, 1996). The literature shows varying emphasis on formal and informal extra-family resources. Dunst et al. concluded that informal support has more influence than formal support on family functioning while Haveman et al. (1997) showed the important role of formal services in helping families cope with raising a child with a disability, by reducing time demands and providing emotional support. Bennett and DeLuca advocated the importance of both informal and formal services. In their qualitative study, they found that both support from friends and family, as well as support from professionals who have open and collaborative partnerships are important to family adaptation for the families of children with disabilities.

Informal social resources- Social support

There has been a concern in the literature related to defining social support. According to Tardy (1985), social support can be viewed in five different dimensions. This study focuses on two of the dimensions, defining the social support and describing satisfaction with support. In this study, informal resources are defined as social support from family, friends and significant others.

Dunst and Trivette (1988) and Bennett and DeLuca (1996) noted the impact of strong personal social networks on personal health, family functioning and interaction between family members. Bristol (1987) found that adequate social support is positively associated with family adaptation. Lin (2000), however, analyzed the factors related to functioning in families of children with cerebral palsy and found that there was no significant association between family functioning and social support. She did note the limitations of her study in regard to generalizability and instrument validity.

Formal social support- Satisfaction with Services

Currently, in terms of partnership and empowerment, service outcomes have been measured by individuals' satisfaction with services (Canadian Association of Occupational Therapy, 1997). In this study, formal resources will be considered as satisfaction with services and are expected to predict family functioning.

Bailey, Skinner, Rodriguez, Gut, and Correa (1999) and Sayger and Bowersox (1996) recognized that families of children with disabilities have experienced difficulties in getting information and connecting to the services which they need to access for their children's education, health care and well-being. Sloper (1999) reported the importance of gaining the views of families that use services for their children with disabilities to more effectively support and empower families. Sayger and Bowersox emphasized the active roles of families in health care planning to meet their needs and interface with other social systems.

Bailey et al. (1999) found that awareness and use of services for Latino American families with members with disabilities was negatively associated with satisfaction with

services. Increased awareness resulted in high expectations and high expectations led to the mothers being less satisfied with the services. Thus, family needs, including expectations of services, were related to satisfaction with services. The actual needs of families may not be satisfied by current health care services in spite of the emphasis on fulfilling family needs and family participation in services. In regard to the needs of families and the partnership between families and clinicians, families' satisfaction with services is an indicator as to how useful formal services are for those with children with disabilities.

There is literature to support the importance of both informal and formal supports for optimal family functioning. It is hypothesized that informal social support as well as satisfaction with services will be the best predictors of family functioning.

Summaries of Variables and Hypotheses

The literature review focused on eight variables that are expected to predict family functioning in different ways. First, disability results in non-normative events such as extra care-giving demands, which may affect family functioning. Second, the life stage of the child may affect family functioning; the child and its parents will need to cope with new developmental tasks during the adolescent and young adult stages. Third, problem-solving skills and role functioning may crucially influence family functioning. The relationship between life satisfaction and family functioning figures greatly in the family empowerment perspective. Fourth, satisfying social support may result in more optimal family functioning. Fifth, sufficient mobilization of social support may be strongly associated with family functioning; both informal and formal resources are mostly related

with family functioning in the family empowerment perspective. Lastly, youths' perceptions of family functioning also contribute to family functioning. Figure 2.1 summarizes the predictor variables for this study in four areas.

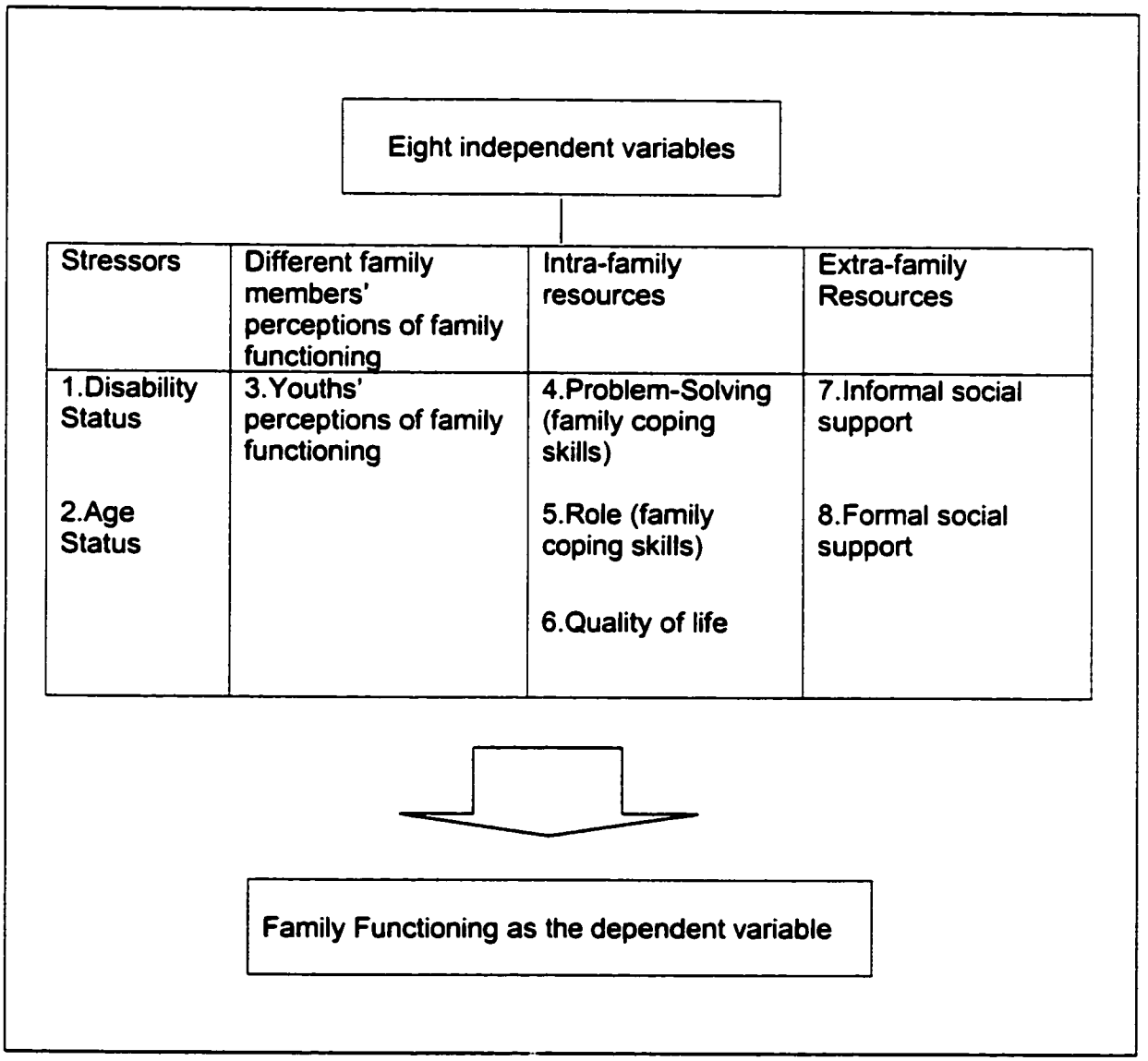


Figure 2.1 The eight independent variables and one dependent variable

Based on the family empowerment model, the hypotheses are:

(1) The variable expected to predict the most variance in family functioning was extra- family resources (social support and satisfaction with services).

(2) Intra-family resources were also expected to significantly contribute to family functioning

(3) Disability status and life stage of the child as stressful events are expected to explain the least amount of variance.

Relationship of This Study to the Larger Original Study

This study uses secondary analysis. The original study (Magill-Evans et al., 2001) focused on group differences between families of persons with CP (two groups) and a comparison group across a number of variables (family functioning, life satisfaction, future expectations, social support, satisfaction with services). There were two groups with CP; youths who could participate in the interviews and questionnaire completion, and those who could not due to cognitive limitations. The latter group is not included in this study as the disparity of perceptions was not available as a predictor variable. The larger study also included comparisons of fathers' and siblings' scores across groups. However, there were considerably fewer fathers than mothers who chose to complete all measures so they are not included in this study. Overall the original study found relatively few significant differences between groups, which is consistent with some of the more current literature.

The current study builds on the results of the earlier study by identifying factors that predict optimal family functioning, a question not addressed in the original study.

The sample included a range of family types (single parent, two-parent families, blended families) and no attempt was made to identify factors associated with different levels of physical functioning beyond disability status.

CHAPTER 3

METHODOLOGY

Participants

The data for the 116 mothers and their children is drawn from a larger sample of 159 Alberta families (Magill-Evans et al., 2001). Data from 23 mothers and family members of adolescents with cerebral palsy (CP), 41 mothers and family members of adolescents without disabilities, 21 mothers and family members of young adults with CP and 31 mothers and family members of young adults without disabilities was available. Not included in this study are 25 families of adolescents and 16 families of young adults with CP who could not report their perceptions of family functioning due to cognitive limitations. Recruitment of the total sample required 2.5 years. All participants spoke English.

The accuracy of data entry into the data file was examined by checking for missing data or invalid values. Four cases were excluded due to missing values resulting in the 112 cases used for the regression analyses. Finally, there were 62 children in the early adolescent range (ages 13-15 years), 23 (8 males, 15 females) of whom had cerebral palsy. There were 50 persons in the young adult range (ages 19- 23 years), 21 (12 males, 9 females) of whom had cerebral palsy.

Demographic characteristics of the sample are shown in Table 3.1. On average, mothers were in their early 40s although there was a wide range of ages. Unexpectedly, over half of the mothers were not employed. In Canada, 74% of partnered mothers and 57% of single mothers are employed (Baker & Tippin,1999). The high proportion of

unemployed mothers in the overall sample may be related to the fact that 80% of mothers of children with CP were unemployed compared to 51% of mothers of those without CP. Among the mothers in this study who were employed, only nine mothers had full-time employment (8%) while the remainder worked part-time. Most children were living with their family in the family's home. Thirteen young adults were living in their own dwelling or places other than their parents' home (4 with a diagnosis of CP and 9 non-disabled). One young adult with cerebral palsy was living in a group home. Most families included 2 birth parents. In 14 cases, it was a single mother family. The other family types included 2 parent blended families and one family where the grandmother provided the care. Three of the mothers had twins (2 sets with CP, 1 without CP). Income and family structure are included only for descriptive purposes although these factors may influence family functioning. Most families (both those of children with CP and without CP) reported family income as more than $20,000. However, for those with an income of less than $20,000, all were families with a child with CP with one exception.

Table 3.1 Demographic characteristics of the sample (N=112)

Demographic Characteristics	Mean	Standard Deviation	Minimum	Maximum
Mothers				
Age (years)	43.8	5.4	32	58
Employment status (% not employed)	61.6			
Youths				
Age (years)	17.1	3.3	13	24
Gender (% male)	50.0			
Living Arrangement (% home)	87.5			
Family Type (%)				
2 Birth Parents	83.0			
2 parent blended family	2.7			
Single mother family	13.4			
Others	0.9			
Family Annual Income (%)				
Less than $20,000	6.4			
$20,000-50,000	41.8			
More than $50,000	51.8			

Sampling

All adolescents and young adults with CP who met the age criteria were identified from the records of a pediatric rehabilitation hospital. Adolescents were ages 13 to 15 years old and young adults were ages 19 to 23 years old. Families received a letter explaining the research and asking them to indicate if they were interested in participating. If no response was received, attempts were made to call the families to

determine their interest. Families identified comparison families who had a child the same age and gender as their child with CP.

This method of obtaining comparison participants is called snow-ball sampling (Burns & Grove, 1993). This method is a convenient way to locate families who have children of the same age and gender, and live in the same geographical area and thus have similar access to services such as health and education. This method of sample recruitment may limit the diversity of the sample in terms of family functioning and social support because families recruited others from their friends or relatives and this is a source of informal social support. However, data showed variability in responses related to social support (range of 2 to 7 on a seven point scale) although there was a tendency for scores to cluster towards the upper end of the scale.

Sample Size

The sample size is large enough to conduct the proposed analysis. According to (Munro, 1997), when doing a regression a minimum of 10 subjects per independent variable is required. This study has eight independent variables so this requirement is met. However, the sample size did preclude inclusion of more independent variables such as family structure and income. Power was calculated using the formula shown in Appendix A. Assuming a moderate correlation ($R^2 = .20$), a level of significance of .05 and the power of .95, the minimum sample size needed was 105.

Measures

Criterion Variable

There are many different ways of obtaining data about the family as a unit of analysis by using relational data which combines data from family members into a single score (Sullivan & Fawcett, 1991). Techniques of generating relational data depend on the method of assessment, data management tools, and design strategy. Obtaining a single score can be done by calculating an arithmetic mean of individual scores, summing individual scores, selecting the most deviant or extreme among individual scores, computing differences, or multivariate procedures (Feetham, Perkins & Carroll, 1993; Sullivan & Fawcett, 1991).

Sullivan and Fawcett (1991) suggested using a family mean score when there are single scores from several family members with small variability. In this study, there is data from several family members so that mean scores for a family are appropriate. The analyses of the relationship of predictor variables to the dependent variable of family functioning are done in two ways in this study. For the primary analysis, mother's perception of family functioning is the dependent variable. As a secondary analysis, a family average score for family functioning is the dependent variable. This allows us to examine if predictor variables are different depending upon how family functioning is measured.

The 12 item general functioning (GF) scale of the Family Assessment Device (FAD), Version 3 (FAD)(Appendix B) (Epstein, Baldwin, & Bishop, 1983) was used to assess the overall health of the family. The FAD was designed to identify problem areas as simply and efficiently as possible. The FAD is clinically oriented, describes structural

and organizational properties, and discriminates between unhealthy families and healthy families. The GF scale has reasonable test-retest reliability (r = .71) (Miller et al., 1985) and good internal consistency (Chronbach's alpha = .92) (Epstein et al.). Byles, Byrne, Boyle, and Offord (1988) reported that each of the 12 items make a significant contribution to the total score and scores on the GF scale were significantly associated in the expected manner with variables viewed as affecting family functioning (e.g., reported marital disharmony, parental health). The GF scale is currently being used as a measure of family functioning in the National Longitudinal Study of Children and Adolescents. Scores on the scale range from 1 to 4, with higher scores indicating less optimal family functioning.

Predictor Variables

Two of the six dimensions (problem solving, role functioning) of the FAD are used as predictor variables. Each dimension is scored on a 4-point Likert Scale similar to the GF scale. Items on the Problem Solving subscale (Appendix B) and the Role Functioning scale are not included in the GF scale. However, the correlation between Problem Solving and GF scale is .76 and .60 between Role Functioning and GF scale in a sample of 503 individuals (Epstein et al., 1983). Internal consistency is .74 for Problem Solving and .72 for Role Functioning. Test-retest reliability was r = .66 for Problem Solving and .75 for Role Functioning (Miller et al., 1985). The correlation between the two scales varies from .08 to .49 depending upon the study and whether GF scale was included in the analysis (Epstein et al.). The Problem Solving subscale has shown the expected relationship with other measures and both subscales showed significant

differences between healthy and unhealthy families (Miller et al.). Wenniger, Hageman and Arrindell (1993) found factorial validity for the FAD constructs and that problem solving was correlated with psychological symptom states.

Another predictor variable based on the FAD is the adolescent's or young adult's score on the GF scale. The psychometrics of the GF scale were discussed earlier.

The mother's total score on the Life Situation Survey (LSS)(Chubon, 1987; 1995) is also a predictor. Developed for the use with general population as well as populations with chronic illness and disability, the LSS assesses quality of life. The 20-item paper and pencil instrument uses a 6-point Likert Scale ranging from disagree very strongly to agree very strongly. Total scores can range from 20 to 140 with higher scores meaning higher life quality and scores of 80 or less reflecting poor quality of life. Internal consistency is acceptable (range from .74 to .95 with diverse populations). Discriminant validity is seen in the ability of scores to discriminate between healthy groups and groups with serious health concerns such as renal disease, chronic back pain, spinal cord injury and mental retardation. A copy of the measure is not provided due to copyright restrictions.

The mothers' total score on the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet & Farley, 1988)(Appendix C) is a predictor. The MSPSS addresses the self reported adequacy of social support from three sources which have 4 items each; family, friends and significant others. There are 12 items rated using a 7-point scale ranging from very strongly disagree (score 1) to very strongly agree (score 7). High scores indicate more perceived social support. The MSPSS has good psychometric properties. Internal consistency of the MSPSS is excellent as .90-.95.

Construct validity was excellent as shown by the fact that high levels of perceived social support are associated with low levels of symptoms from the medical conditions.

Mothers' scores on the Satisfaction With Services Questionnaire (Magill-Evans et al., 2001)(Appendix D) are a predictor variable. The parent and adolescent independently rated their satisfaction with services on a 7-point rating scale and discussed past experiences and anticipated needs for education, recreational and health care services in a semi-structured interview that was tape-recorded. In this study, mothers' ratings for satisfaction with services, based on the sum of her scores in the areas of health, education and recreation, were used.

Other than those variables, the presence of disability is also a predictor for family functioning. Disability status of a child was coded as a dummy variable with cerebral palsy coded as 0 and non-disability as 1 during multiple regressions. Age category was also the predictor and was coded as a dummy variable as well. The adolescent stage was coded as 0 while the young adult stage was coded as 1. However, it is important to keep in mind that these two variables are not more than ordinal level data.

Data Collection

Data were collected in each family's home. Questionnaires and consent forms were mailed to the family prior to the home visit. The home environment was most convenient for families and guaranteed appropriate assistance for the participants with CP who used a variety of methods to complete the questionnaires (oral responses, in writing or using assistive devices). Informed consent was obtained at the beginning of the home visit.

The home visit required a maximum of two hours for parents and adolescent. To ensure that missing values represented refusals not omissions, questionnaires were checked before researchers left the home.

Ethics approval from the Health Research Ethics Board was obtained prior to starting the original study and the secondary analysis from the Health Research Ethics board (Appendix E). The student's supervisor was principal investigator for the study and gave permission for use of the data. The principal investigator in this study had access to computer files of data with selected variables. There were no names or other identifying information in the computer files. Families are only identified by numbers and whether the families lived in rural, urban or small urban settings.

Data Analysis

Prior to data analysis, the data were checked. To deal with the twins in the study, the mean GF score for the three sets of twins was used. This assumed that twins perceive family functioning similarly. In checking the twins' scores, the differences between twins were 0, .09, and .33.

The terminology for variables in the data analysis and results section is described below with the independent variables listed first. Extra-family resources include formal social support (Service Questionnaire) and informal social support (Multidimensional Scale of Perceived Social Support, MSPSS). Problem Solving and Role from the Family Assessment Device indicate family coping skills as one aspect of intra-family resources; quality of life (Life Situation Survey) indicates the other aspect of intra-family resources. Disability Status (cerebral palsy or not cerebral palsy) and Age Status (adolescent or

young adult) indicate stressors from family life events. Youths-Family Functioning indicate General Functioning from the FAD as perceived by youths. For the dependent variable, Mothers-Family Functioning indicate General Functioning from the FAD as perceived by mothers.

A sequential multiple regression was used to identify which variables were most associated with family functioning. The variables were to be entered based upon their expected contribution. From the literature review and family empowerment model, intra-family and extra-family resources were expected to be the best predictors of family functioning. The independent variables were to be entered in the following order. First, formal social support (Service Questionnaire) and informal social support (MSPSS), which are extra-family resources, were entered. Second, Problem Solving and Role to measure family coping skills, and quality of life (Life Situation Survey), which are intra-family resources, were entered. Last, Stressors (Disability Status, Age Status) and different perceptions of family functioning (Youth-Family Functioning) were entered.

Data Examination

There were several issues to investigate prior to doing the multiple regressions. Normality, homoscedasticity, linearity and independence of the variables and relationships between variables were checked (Appendix F). This process helps to understand the data set and the statistical limitations of the analysis and ensures that the conclusions reached are valid.

The assumption that each variable and the residuals were normally distributed was examined and the normality distribution in the data was reasonably normal. The

homoscedasticity of the data was not problematic. The linearity between each independent variable and the dependent variable showed fairly clear linear relationship.

The independence of variables was examined by looking at the correlations between the independent variables and dependent variables. Correlations between predictor variables were examined (Table 3.2) and were in the expected direction. None of the predictor variables were correlated with each other greater than .58 (Life Situation Survey with MSPSS), which was acceptable. One variable, Problem Solving, was fairly highly correlated with the dependent variable (.73). This raised concerns since this independent variable came from the same instrument (FAD) as the dependent variable (General Functioning). To ensure that Problem Solving and General Functioning represented distinctly different constructs and were not really part of a single construct additional analyses were done as described below. Role, which also came from the FAD, was less highly correlated (.59) so was not a concern. Role and General Functioning scales did not appear to overlap conceptually or statistically.

Table 3.2 Correlations between the independent and dependent variables

	1	2	3	4	5	6	7	8
1.Mothers-Family functioning	1.00							
2. Service Questionnaire	-.24*	1.00						
3. MSPSS	-.41***	.26**	1.00					
4. Problem Solving	.73***	-.23*	-.38***	1.00				
5. Role	.59***	-.21	-.40***	.51***	1.00			
6. Life Situation Survey	-.59***	.46***	.58***	-.45***	-.57***	1.00		
7. Disability Status	.04	.35***	.08	-.03	-.05	.14	1.00	
8. Age Status	-.13	.07	-.06	-.11	-.15	.10	-.05	1.00
9. Youths- Family functioning	.38***	-.19	-.34***	.34***	.31***	-.36***	.15***	-.02

*p<.01, **p<.005, ***p<.001
MSPSS: Multidimensional Scale of Perceived Social Support

The independence of residuals was reviewed by examining if the errors of prediction were independent of one another in terms of multicollinearity and singularity (Tabachnick & Fidell, 1996). The collinearity tests after the regressions are reported in Appendix G.

Analysis of General Functioning (GF) and Problem Solving (PS).

To examine the distinctness of two subscales of the FAD, the items on each subscale were reviewed to note any overlaps. The correlation between General Functioning and Problem Solving were examined item by item (Appendix F).

It was decided to remove one item from the GF scale and two items from PS. As a result of theses modifications, these two scales appeared to tap the different constructs and were conceptually more independent although the correlation between them was still high.

Since the dependent variable was modified, the term also changed from Mothers-Family Functioning to Mothers-Modified Family Functioning. Problem Solving was also changed to Modified Problem Solving. Youths-Family Functioning also used the modified General Functioning so was labeled Youths-Modified Family Functioning.

The diagnostics were redone using the modified versions of these two scales (Appendix F). The data excluding one item in GF showed the improvement in terms of normality and homoscedasticity while the linearity was relatively unchanged.

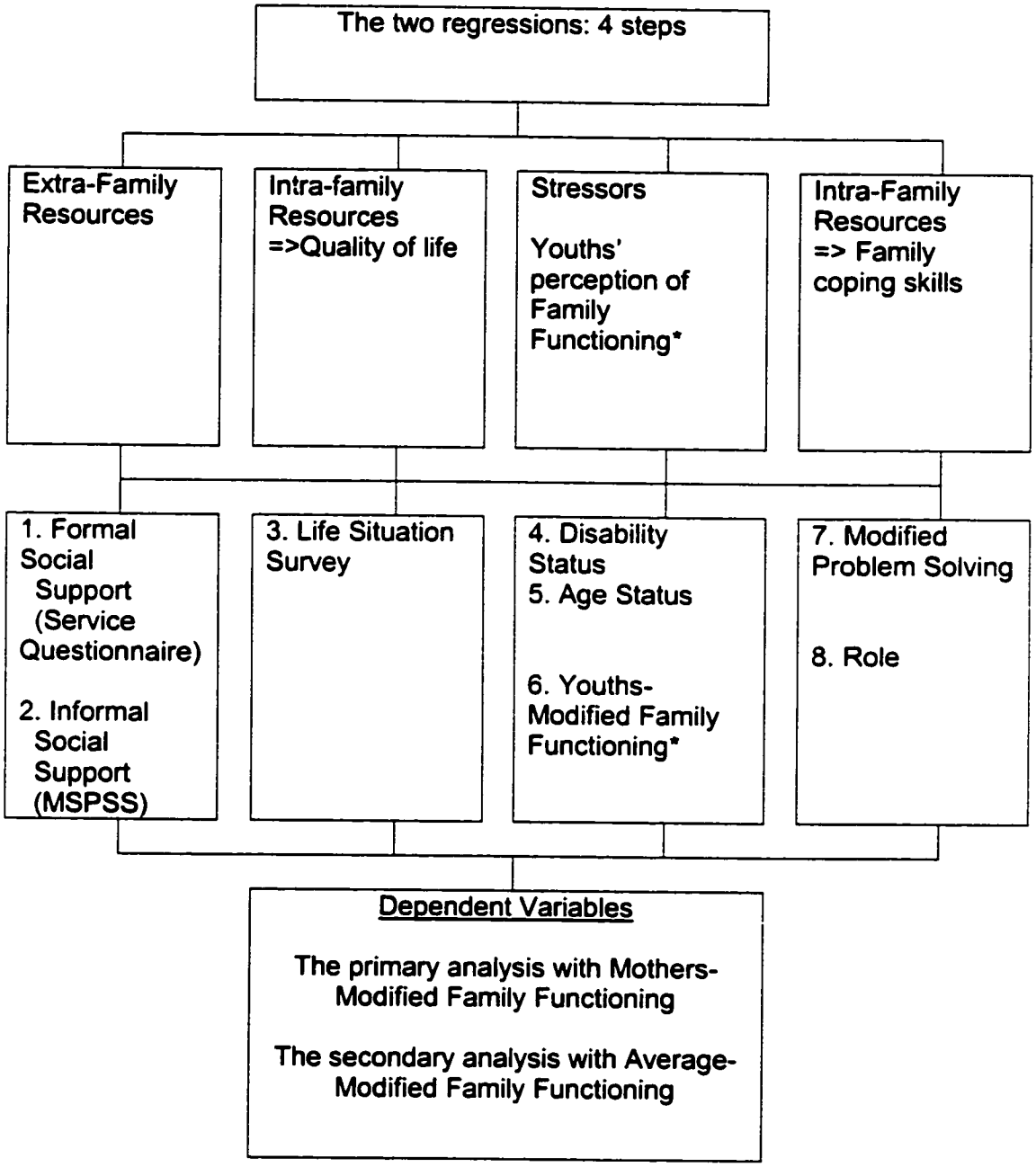
The correlations were also rerun (Table 3.3). The correlation between Modified Problem Solving and the dependent variable (Mothers-Modified Family Functioning) was lower (.65), but still fairly high. Therefore other changes were needed to ensure that the contribution of this subscale and Role did not mask the contributions of other important variables.

Table 3.3 Correlations between modified and other variables

	1	2	3	4	5	6	7	8
1.Mothers- Modified Family Functioning	1.00							
2. Service Questionnaire	-.24**	1.00						
3. MSPSS	-.41***	.26**	1.00					
4. Life Situation Survey	-.59***	.46***	.58***	1.00				
5. Disability Status	.05	.35***	.08	.14	1.00			
6. Age Status	-.14	.07	-.06	.10	-.05	1.00		
7. Youths- Modified Family Functioning	.20	-.00	-.14	-.11	.14	.04	1.00	
8. Modified problem-solving skills	**.65***	-.25**	-.31***	-.40***	-.08	-.12	.15	1.00
9. Role	.59***	-.21	-.40***	-.57***	-.05	-.15	.08	.52***

* p<.01, **p<.005, ***p<.001

The order of the steps of the regression was changed following the preliminary analyses. Although Problem Solving and Role are crucial variables representing intra-family resources, these variables were entered separately in a fourth step. Figure 3.1 illustrates the order of entry: extra-family resources, one intra-family resource (quality of life), stressors (Disability Status and Age Status) and different perception of family functioning(Youths-Modified Family Functioning) together and then family coping skills as more intra-family resources (Modified Problem Solving, Roles).



*Youths- modified family functioning was deleted in the secondary analysis

Figure 3.1 Data entry plan for the regression analyses

Secondary Analysis

As illustrated in Figure 3.1, a second regression analysis was done with Average-Modified Family Functioning as the dependent variable. Scores from all family members who participated in the original study were used. Scores on modified General Functioning for each member in a family were added and then divided by the number of participating family members to form the dependent variable. The number of family members ranged from 2 to 6. This analysis included seven independent variables: Service Questionnaire, MSPSS, Life Situation Survey, Disability Status, Age Status, Modified Problem Solving and Role. Except for Disability Status and Age Status, scores were from the mothers' perspective. Youths-Modified Family Functioning scores were deleted to avoid singularity issues as their scores had been used in calculating the family average score.

The data set for Average-Modified Family Functioning was also examined (Appendix F). Data in Average-Modified Family Functioning showed better normal distribution, homoscedastic variables than the data set for Mothers-Modified Family Functioning with similar linearity.

The correlations between variables are unchanged from Table 3.4. Only the correlations with Average-Modified Family Functioning are reported in Table 3.4. Modified Problem Solving was less highly correlated with Average-Modified Family Functioning. Mothers-Modified Family Functioning and Average-Family Functioning scores are highly correlated and the correlation is reported only for information.

Table 3.4 Correlations of Average-Modified Family Functioning with the independent variables

	Average- Modified Family Functioning
Service Questionnaire	-.29***
MSPSS	-.43***
Modified Problem Solving	.51***
Role	.53***
Life Situation Survey	-.51***
Disability Status	.06
Age Status	-.07
Mothers-Modified Family Functioning	.76***

* p<.01, **p<.005, ***p<.001

In summary, the data for both analyses showed relatively normal distributions of residuals, reasonably linear relationships between variables, relatively homogeneous variance and negligible outliers and a sufficient number of cases. Based upon concerns about two of the variables' relationships with the dependent variable, the planned regression model was reviewed, the problem-solving variable was altered for both regressions, and the order in which the variables were entered was altered as illustrated in Figure 3.1. Altering the PS and GF variables ensured that Problem Solving and General Functioning were even more theoretically distinct.

CHAPTER 4

RESULTS

The order of entry of the variables into the hierarchical regression equation was based primarily on a theoretical understanding of the relationship between variables. The variables entered first in the regression were regarded as the most important variables in explaining family functioning. How much each group of independent variables added to the variance explained could then be determined. However, as discussed in the methods section, the order of entry was altered slightly to allow consideration of possible confounding effects. The steps of entry described earlier were SQ (formal social support) and MSPSS (informal social support) as extra-family resources in the first step; LSS (quality of life) as one of intra-family resources in the second step; other predictors such as the presence of disability, youths' age and youths' scores on family functioning in the third step; and problem-solving with two omitted items and role as family coping skills in intra-family resources in the last step. While this meant separation of the intra-family resources into two groups, it made it easier to analyze the contributions of variables that might be less independent.

Descriptive Statistics

Descriptive statistics for the dependent and independent variables are presented in Table 4.1. Scores on family functioning are out of 4, with higher scores representing less optimal functioning. The mean scores for youths and mothers on family functioning were

very similar. Mothers' scores on the MSPSS were out of 7 and out of 21 on the Services Questionnaire. The means reflect a trend to score positively on these measures. The LSS was out of 140. On average, mothers described the families in this study as having healthy family functioning and themselves as having fairly good social support and quality of life.

Table 4.1 Means and standard deviations for variables

Variables	Mean	Std. Deviation	Minimum	Maximum
Mothers- Modified Family functioning	1.85	.42	1.00	3.00
Service Questionnaire	15.86	2.79	6.00	21.00
MSPSS	5.77	.85	2.00	7.00
Life Situation Survey	100.52	17.59	48.00	137.00
Youths- Modified Family functioning	1.84	.50	1.00	3.36
Modified problem-solving	2.01	.38	1.00	3.00
Role	2.24	.41	1.00	3.36
Average-Modified Family functioning	1.89	.31	1.15	2.82

Sequential Multiple Regression for the Primary Analysis

All of the independent variables were identified as significant predictors of family functioning with the exceptions of disability status, age status and youths' scores on family functioning (Table 4.2). These variables did not contribute a significant amount to the variance explained. The total adjusted R^2 was .57. Extra-family resources explained 17% of the variance in family functioning. Intra-family resources as measured by the LSS explained a similar amount of the variance while the Modified problem-solving and Role which were also intra-family resources explained slightly more of the variance.

Table 4.2 Sequential regression for Mothers-Modified Family Functioning

Independent Variables	Beta	Adjusted R^2	R^2 Change	F change	P value
Step 1		.17	.19	12.44	<. 001
SQ (FSS)	-.15				
MSPSS (ISS)	-.37				
Step2		.34	.17	28.11	<. 001
SQ (FSS)	.04				
MSPSS (ISS)	-.10				
LSS (QL)	-.55				
Step3		.35	.04	1.98	.122
SQ(FSS)	-.01				
MSPSS(ISS)	-.10				
LSS(QL)	-.52				
Disability Status	.11				
Age Status	-.09				
Youths' Modified FF	.11				
Step 4		.57	.21	26.93	<. 001
SQ (FSS)	.02				
MSPSS (ISS)	-.03				
LSS (QL)	-.31				
Disability Status	.12				
Age Status	-.03				
Youth's Modified GF	.06				
Modified Problem Solving	.43				
Role	.18				

SQ (FSS): Service Questionnaire (Formal Social Support)
MSPSS (ISS): Multidimensional Scale of Perceived Social Support (Informal Social Support)
LSS (QL): Life Situation Survey (Quality of Life)
Disability Status: Cerebral Palsy or not
Age Status: Adolescents or young adults
Youth's Modified FF: Youths-Modified Family Functioning
Modified Problem Solving

Multicollinearity was not a concern (Appendix G). The tolerances of variables were more than .45. According to literature (Norusis, 2000, p.468), if the tolerance is less than .1, multicollinearity may be problematic. In this data set, each variable seemed independent which means that "an independent variable has little of its variability explained by the other independent variables". (Noruris, 2000, p.467)

Sequential Multiple Regression for the Secondary Analysis

The regression was repeated using the average modified general functioning as the dependent variable and dropping the youths' scores from the analysis as described earlier. The analysis was executed to examine if variables from the mother were equally useful in explaining perceptions of family functioning that reflected all of the family members over the age of 12. The order of entry was extra-family resources, intra-family resources, and stressors.

The mean score and standard deviation for the average score on modified general functioning are shown in Table 4.1. The mean for the average scores was very similar to the average for the mothers' modified general functioning scores.

Results of the hierarchical regression analysis are reported in Table 4.3. Extra-family resources and intra-family resources account for very similar amounts of the variance in average family functioning scores. The total amount of variance explained by these variables is 41%. This is less than the amount of variance explained in the primary analysis (57%), indicating that for average family functioning, mothers' perceptions of family functioning are not sufficient predictors. Once again stressors as measured by disability and age status do not explain a significant proportion of the variance.

Multicollinearity of the independent variables was not evident as the lowest tolerance value was .45.

Table 4.3 Sequential regression for Average-Modified Family Functioning

Independent Variables	Beta	Adjusted R^2	R^2 Change	F change	P value
Step 1		.21	.22	15.36	<.001
SQ (FSS)	-.19				
MSPSS (ISS)	-.38				
Step2		.27	.07	10.78	<.001
SQ (FSS)	-.07				
MSPSS (ISS)	-.20				
LSS (QL)	-.36				
Step3		.29	.03	2.13	.124
SQ (FSS)	-.14				
MSPSS (ISS)	-.21				
LSS (QL)	.35				
Disability Status	.17				
Age Status	-.02				
Step 4		.41	.13	12.33	<.001
SQ (FSS)	-.13				
MSPSS (ISS)	-.15				
LSS (QL)	-.15				
Disability Status	.17				
Age Status	.02				
Modified Problem Solving	.27				
Role	.24				

CHAPTER 5

DISCUSSION

This study examined the best predictors of family functioning for a sample of mothers and their adolescent or young adult child. The results of the study, using two slightly different dependent variables, indicate that family resources (extra and intra-family resources) were significant predictors of family functioning whereas family stressors were not significantly associated with family functioning. This supports the prediction that family functioning is not solely determined by stressful events in a family's life. Rather, it is the resources that the family brings to deal with the stressors that are more strongly related to family functioning. Family resources, as reported by the mother, predicted a substantial 40 % of the variance in average family functioning scores. The importance of these findings and their relationship to other literature is discussed, along with limitations of the study and implications for practice and future research.

Extra-family and Intra-family Resources

It had been hypothesized that extra-family resources would predict more of the variance in family functioning and thus variables representing formal and informal support were entered into the regression equations first. However, intra-family resources contributed a very similar proportion of explained variance to the regression equation. This result indicates that both areas, as measured in this study, are important to consider when identifying ways to support family functioning.

As reported in the review of the literature, other researchers have also found that extra-family resources are important for healthy family functioning. Bristol (1987) and Bennett and DeLuca (1996) reported that support from significant others and social support both formally and informally positively affect individuals' well being and family functioning. Dunst et al. (1988) put more emphasis on informal support in regard to family functioning while Haveman et al. (1997) emphasized the influence of formal support for families with a child with a disability.

Informal social support as measured by the MSPSS was more highly correlated with family functioning and quality of life than was the measure of formal support. Mothers who perceived more informal social support were more satisfied with their lives and reported more optimal family functioning. Dunst et al. (1988) proposed that informal social support affects personal well being and results in more optimal family functioning. However, this study cannot determine causality. More optimal family functioning may result in mothers feeling more satisfied with their lives and having more opportunities to interact with informal sources of support.

Formal social support was significantly correlated with family functioning but the correlation was not high ($r = -.24$). Formal social support was more highly associated with mothers' quality of life ($r = .46$). Other researchers such as Haveman et al. (1997), Bailey et al. (1999), and Sayger and Bowersox (1996) have indicated that formal social support may be a crucial factor for families with a child with a disability. However, in this study scores on the formal support measure for mothers of a youth with CP were not significantly correlated with family functioning ($r = -.19$) unlike those of mothers of a youth without CP ($r = -.34$).

In this study, formal social support was assessed using the Services Questionnaire, a measure designed for the original study to identify how satisfied family members were with specific services. It was not designed to look at all aspects of formal social support as respondents made a global rating of services in specific areas (e.g., health care, education, recreation). It was not always clear if family members were basing the satisfaction rating on the current services or were also considering past experiences. In the interviews that followed the satisfaction ratings, respondents commented on many aspects of the services (the persons involved, the location, facilities, and policies) so it is unclear exactly which aspect of formal support was being rated on this measure.

The relationship between informal social support and formal social support was low (r= .26) although significant, indicating that the two measures were tapping different constructs. The measure of informal social support was significantly correlated with intra-family resources (r = .58, -.31, -.40) as was the measure of formal social support (r = .46, -.25, -.21). It is not surprising that extra-family resources and intra-family resources are related. In this study, the measure of informal social support included supports from friends as well as support from family and significant others that are closely related to intra-family resources. However, the correlations indicate that the measures they were not measuring identical constructs.

Otto (as cited in Dunst et al.,1988), and Williams et al. (1985) highlighted the importance of intra-family resources, including problem-solving skills and flexible roles, as family strengths to manage life events and maintain healthy family functioning. Williams et al. focused on the importance of quality of life in relation to intra-family

resources. However, not much literature has specifically considered the personal quality of life in relation to family functioning.

In this study, the quality of life as measured on the LSS accounted for 17% of the variance in mothers' reports on family functioning and was a significant predictor of average family functioning. Most mothers in this sample focused on the positive aspects of their lives in spite of stressful events, such as having a child with CP, and the age stage of their child.

Quality of life was highly correlated with extra-family resources and other intra-family resources. The strength of this relationship is not surprising. Dunst, Leet and Trivette (1988) found that the adequacy of resources (both intra-family and extra-family resources) were more likely related to a sense of well-being for mothers of children with disabilities (e.g. developmentally delayed). Although it is not clear if mothers' perceptions of quality of life can be predicted by extra-family and intra-family resources, it may be possible that when there are satisfactory extra-family and intra-family resources, it is more likely that mothers' perceptions of their life quality are more satisfactory.

Although little literature has focused on an individual's perception of quality of life in relation to family functioning, the results of this study support the idea that an individual's quality of life affects family functioning as perceived by all family members. Hanson and Boyd (1996) emphasized that a threat to an individual's well-being affects the entire family. It is also possible that the reverse of this is true. An individual's well being may also influence the well-being of the entire family. Researchers such as

Robinson (1998) particularly emphasized that a woman's sense of well-being is more closely linked to her family's well-being than is the well-being of other family members.

Problem Solving and Role, along with quality of life as intra-family resources, were significant predictors of family functioning. Although there were concerns because these predictor variables came from the same measure as the dependent variable, the relationship of these variables with family functioning is in keeping with the literature. The families in this study included those who could be regarded as having developmental and hazardous tasks beyond the basic tasks (Epstein et al., 1993). Having to deal with more tasks may bring more problems (e.g., care-giving burden) into the lives of families of a child with cerebral palsy. However, in this study family functioning was not related to having more tasks as indicated by disability status. Rather, family functioning was more related to the family's ability to handle the problems resulting from more tasks. Being able to handle problems helps maintain healthy family functioning as indicated by the high correlations between Problem Solving and mothers' perceptions of Family Functioning ($r=.65$) and average Family Functioning ($r=.51$). Therefore, when problems occur in a family, the management of the problems may be a very strong resource for mobilizing the family.

The family empowerment model may provide a useful guide for clinicians in assisting families to mobilize problem-solving skills. The clinician can help families to recognize and accept the presence of the problems, identify the needs of each member, negotiate with each other, and set family goals related to the problems. The focus for the clinicians should be empowering a family to become more competent and capable of solving whatever problems arise (Dunst et al., 1988).

Mothers' perception of role allocation and accountability was significantly related to their perceptions of family functioning (r= .59) and to averaged family functioning (r=.53). While all family members have to deal with the tasks and problems resulting from either the disability of a child, developmental stages of the family life cycle or both, mothers are likely the most involved and most affected by roles. The employment rate of mothers and family types in this study imply that a major role for mothers in this study was as the primary caregiver. Therefore, flexible and functional roles would be important to these mothers and have a direct relationship with their quality of life. Perceptions of role functioning were indeed significantly correlated with quality of life (r=-.57) as well as with informal social support (r=-.40). This latter relationship may indicate that mothers perceived more accountability in their role as a primary caregiver when there was social support from her family, friends and significant others.

Role may be an important intra-family resource for maintaining optimal family functioning. Wuest and Stern (1991) and Hulme (1999) clarified the important outcomes of family empowerment as rearrangement of roles and responsibilities in the family to maintain or regain optimal functioning of family life. Families in their studies identified the family's need for flexible and accountable role functioning. The results of this study support their findings related to the importance of role functioning. The study also extended the results to consider the relationship of roles with quality of life and informal social support. As clinicians in health care, it would be crucial to consider family roles (e.g. the provision of resources, nurturance, the development of life skills) and provide the professional services to allow members to fulfill their roles (e.g. the management of symptoms of cerebral palsy, suggestions for placement for youths with cerebral palsy, the

provision of necessary devices to expand independent life of youths with cerebral palsy) in addition to encouraging the use of social support from family, friends and significant others.

Disability and Age Status

Disability status was not a significant predictor of family functioning, both from the mothers' perceptions and from the family members' perceptions based on an average score. The finding was not unexpected given the results of the larger study (Magill-Evans et al., 2001) which found that there were no significant differences between groups based on disability for mothers' perception of family functioning. However, it is too early to eliminate this variable as having a relationship to family functioning. Given that the larger study did find differences between disability groups for fathers, if father's perceptions of family functioning had been used as the dependent variable, disability status might have been a significant predictor even though it was not a significant predictor of the family average score on General Functioning.

Age status was not a significant predictor of family functioning both from the mothers' perceptions and from the family members' perceptions based on an average score. Also, age status was not significantly correlated with family resources. The reason for the non-significant effect of age on family functioning may be due to the lack of distinctive roles and responsibilities between adolescents and young adults. The high percentage (84%) of young adults' living in their parents' house in this study is consistent with the increasing rate of young adults who do not leave their parents' house reported in literature (Goldscheider, 1997). According to Goldscheider, this indicates that one of the

current social trends is the delayed onset of adulthood. The delaying of adult responsibility may prevent young adults from becoming differentiated from adolescents. Therefore, age status did not contribute to family functioning.

Lin (2000) obtained results suggesting the presence of different family coping skills in different family life cycle stages for families with a child with cerebral palsy. Families with adolescents coped better with disability by using more positive family appraisal and positive social interactions than did families with young adults. The differing results may be due to major theoretical and methodological differences between Lin's study and the current study. Firstly, family functioning, family coping, and adaptation as the dependent variables were conceptualized differently. Secondly, the factors for predicting family adaptation in Lin's study contained positive coping strategies which included positive family appraisal, support from concerned others, spiritual support, personal growth and advocacy, and positive social interaction. Also, Lin divided her sample into four groups in different life cycles (infants and preschoolers, school aged, adolescence, and young adults). This study gathered data from families with a child both with and without cerebral palsy and included adolescents' status as one of the predictors instead of dividing the sample into groups.

Average family score as family data

Family functioning as perceived by youths was not a significant factor for predicting family functioning as perceived by mothers. The correlation between family functioning as perceived by mothers and by youths was not high ($r = .20$) even though the means for these variables were similar. In other words, youths perceived family

functioning differently from their mothers, and using only the mothers' perception may be inadequate when evaluating the whole family functioning. These results raise the question of whose perception to use when trying to obtain useful information about family health.

In this study both mothers and average family scores were used as the dependent variable. It was felt that using the average scores on family functioning was more representative of family functioning as a whole for several reasons. While both variables had similar patterns of relationships with the predictor variables, it is felt that the average family score does reflect some of the factors operating in the family as a unit. However, much family literature has been restricted to family functioning as perceived by mothers. As shown in this study, the variance decreased when using mothers' perceptions of family resources as predictors of average family functioning scores. Therefore, researchers need to make a special effort to get information from more than just mothers.

Average family scores at least reflect the perceptions of all family members even though they do not reflect the family's shared perception (Sawin & Harringon, 1994). In this study, the research question was not addressing shared perceptions. In order to address shared perceptions different methods would be required. For instance, statistically, a correlation between individual scores is appropriate when the research question asks about the shared perceptions of family members (Sawin & Harringon). Additionally, a rating obtained by clinicians by interviewing and observing families may also be an alternative (Miller et al., 1985).

In this study, statistically average family functioning scores had a more normal distribution. Despite the merits of average scores, Sawin and Harringon (1994) warned

that combined family scores such as the additive and average score may obscure very discrepant individual perceptions of family functioning. In addition, in practice, therapists often only have contact with mothers.

The family empowerment model which provided the basis of the hypotheses in this study, was supported in this study. Mothers perceived their families as functioning well regardless of the disability of their child and transitional periods in their family life cycle. They reported family resources, which were related to their perceptions of family functioning, positively and as being satisfactory. This study may confirm the premise of the family empowerment model that the primary needs of family members (in this case mothers) may be family resources. Quality of life, which some authors view as related to self-esteem as well as personal well-being (Chubon, 1987; Stewart, Chubon & Weldon, 1989), was one of the major predictors of family functioning. Quality of life may be addressed as part of intervention within a family empowerment perspective as the model emphasizes the need for the family and individual family members to acquire and develop competencies in their family and individual lives. (Dunst et al., 1988).

Limitations

Family functioning is influenced by a variety of factors. The factors and instruments included in this study were identified through a literature review. However, the factors that could be included were limited by the size of the available sample and by the data that was collected in the larger study. The original study was conducted for purposes other than predicting family functioning so not all potential variables were available.

The results of this study cannot be generalized to all families in Alberta as the sampling method in the original study was a convenience sampling. Sampling bias is present in that persons who volunteer to participate in studies are more likely to have higher levels of family functioning than those who do not choose to participate. Because the sample was recruited through use of the snowball technique participants may have more informal social resources than the average family.

The unemployment rate of mothers in this study was unusually high for Canadian mothers (Baker & Tippin, 1999) while family income level was adequate even though fewer mothers were employed outside the home. Mothers in this study may have the resources to allow them to be primarily caregivers, which may affect their perceptions of family functioning and their lives. However, the mothers in this study are not typical of mothers in Canada.

Not only the sampling method, but also the exclusion of families with a child with cognitive delays as well as cerebral palsy limits the generalizability of the results of this study. Although mothers in this study were satisfied with their lives despite the care-giving demands associated with their child's disability, it is uncertain if mothers taking care of a child with a more severe disability also have the same level of satisfaction with their lives. On the other hand, the larger study (Magill-Evans et al., 2001) did not find differences in life satisfaction or perceptions of family functioning between these two groups of mother (mothers with children with cerebral palsy, mothers of children with cognitive delays and cerebral palsy). Thus, it is unlikely that inclusion of the more impaired group would have altered the results found here.

In this study, the average family functioning score was not extended to the whole family, but was obtained only from the members who participated in the research and who were over the age of 12 years. Therefore, this study may not provide a picture of family functioning that includes the perspective from all family members. However, the study did include more family members than are included in many other studies of family functioning reported in the literature.

The variables in the second analysis were not consistent in terms of who provided the rating. Although this study suggests that the average score of family functioning may be highly reasonable to use for studying families, the results of the second analysis must be carefully applied. The secondary analysis revealed that the family average score on family functioning depended on family resources as perceived by mothers. Therefore, it is not known how family functioning on average would correlate with family resources as reported by other family members.

Suggestions for Further Study

In future studies, the results would be strengthened by using measures of problem-solving and role that are theoretically and psychometrically distinct from the measure of family functioning. Even though a great deal of care was taken to ensure that the items were truly tapping different constructs, future studies with different measures are needed to confirm the results. Adding other measures of more aspects of family coping skills should also be considered in future studies. Including variables such as family income and family structure in analyses to predict family functioning is important to consider in further studies.

Many family coping skills have been studied in the literature. This study selected only the problem-solving skills and role functions based on the literature. However, another method would be to select significant family coping skills more directly by a pilot study. Lin's (2000) method of factor analysis may also be useful for finding the more critical family coping skills prior to the actual study.

The average family score as relational family data may be a subject for further study. The average family score can expand the focus from the individuals to all family members and may account for the family experience in the family's complex life events. However, systematic study is needed to determine the relationship of average scores to a score reached by the family members jointly rating their family on specific dimensions.

The family empowerment model appears valuable for family intervention. With the results of this study emphasizing the importance of family resources for optimal family functioning, clinical intervention based on the model may be to help the family define its needs while considering individual members needs, identify family strengths, and mobilize family resources. Also, the importance of the well-being of individual members and the family is supported in this study. This study addressed the perspective of mothers and family members rather than professionals. To build on these results, research on the collaborative and supporting relationships between health care practitioners and families based on the family empowerment model may be the next step.

Pediatric occupational therapy has shifted its practice to family-centered care and emphasized a collaborative process. Obtaining information from family members in their actual context of living in this study may be the first step for occupational therapists to understand a family better. However, further research may focus on how therapists

develop a partnership with families with a child with disability and assist the families to obtain the power to make decisions through finding family strengths, developing a sense of competence in managing their family life and individual lives, mobilizing the resources to deal with family life challenges, and satisfying unmet family needs. Also, little literature exists about how occupational therapy practice cooperates with other professions in health care as well as with families. Therefore, further study could investigate what role occupational therapy plays in the process of identifying and satisfying family needs by working with both families and other health care practitioners.

This study found a high correlation between quality of life and family functioning. Quality of life was also significantly correlated with other family resources. In occupation therapy, clients' satisfaction is important. Quality of life as the measure of life satisfaction (Williams et al., 1985) as well as family functioning may be areas on which occupational therapists should focus. In pediatric occupational therapy field, children are not the only clients, but also the family as a whole. In future studies, it may be useful to explore quality of life as a dependent variable and family resources and family functioning as independent variables.

Summary

There have been many models and theories in family health care to explain family functioning and the related factors. However, the factors that are most associated with family functioning in families that include those with and without CP has not been fully explored. This study identified eight variables (the presence of disability, adolescent period, discrepancies in perceptions of family functioning between parent and child,

problem-solving, role functioning, quality of life, informal social support, and satisfaction with services) from the literature as potential predictors of family functioning. The results identified family resources as significant predictors of family functioning despite the stressful events of family life such as the disability status and age status of a child. This study especially contributed to our understanding of the importance of caregivers' satisfaction with their lives in relationship to family functioning.

By identifying the best predictors of family functioning, health care practitioners and occupational therapists will better understand how families function and be better able to support and encourage healthy family functioning. Results from the study will also be useful in the development of family health intervention programs.

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APPENDIX A

SAMPLE SIZE CALCULATION

Sample Size Calculation

(Warren, 1997)

$$N = \frac{L}{f^2} + K + 1, \qquad \alpha = .05, \quad \beta = .20$$

$$f^2 = \frac{R^2}{1 - R^2}, \qquad K = \text{the number of variables}$$

Where R^2 = variance to be declared significant
= .2 (Standard)

$$N = \frac{L}{\frac{.2}{.8}} + K + 1 = \frac{L}{.25} + K + 1$$

In this study, K=9 (8 independent variables and 1 dependent variable)
L=23.59

$$\text{So that } N = \frac{23.59}{.25} + 9 + 1 = 105$$

Therefore, the minimum sample size at the level of significance $\alpha = .05$ and the power .95 with standard $R^2 = .20$ is 105.

APPENDIX B

FAMILY ASSESSMENT DEVICE (FAD)

General Functioning

Problem Solving

FAMILY ASSESSMENT DEVICE

General Functioning

1. Planning family activities is difficult because we misunderstand each other.

6. In times of crisis we can turn to each other for support.

11. We cannot talk to each other about the sadness we feel.

16. Individuals are accepted for what they are.

21. We avoid discussing our fears and concerns.

26. We can express feelings to each other.

31. There are lots of bad feelings in the family.

36. We feel accepted for what we are.

41. Making decisions is a problem for our family.

46.* We are able to make decisions about how to solve problems.

51. We don't get along well together.

56. We confide each other.

* In Mothers-Modified Family Functioning, Youths-Modified Family Functioning and Average-Modified Family Functioning, the item was removed.

Problem Solving Subscale

2. We resolve most everyday problems around the house.

12. We usually act on our decisions regarding problems.

24. After our family tries to solve a problem, we usually discuss whether it worked or not.

38.** We resolve most emotional upsets that come up.

50.** We confront problems involving feelings.

60. We try to think of different ways to solve problems.

** In the regressions with Mothers-Modified Family Functioning and Average-Modified Family Functioning, these items were removed in the independent variable, Problem-Solving Skills and terms as Modified Problem Solving.

APPENDIX C

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT (MSPSS)

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT

Scores:

1: Very Strongly Disagree 2: Strongly Disagree 3: Mildly Disagree

4: Neutral 5: Mildly Agree 6: Strongly Agree

7: Very Strongly Agree

Items:

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help & support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

APPENDIX D

SERVICE QUESTIONNAIRE

SERVICE QUESTIONNAIRE (Parent Form)

1. Educational services are any kind of school experiences, including tutoring.

Circle the words that indicate your level of satisfaction with the educational services that _____ has received:

Extremely Satisfied	Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Satisfied	Extremely Dissatisfied

2. Health care services include things such as nursing care, visits to doctors, speech therapy, physical therapy, occupational therapy, counseling, hospitalizations.

Circle the words that indicate your level of satisfaction with health care services that _____ has received:

Extremely Satisfied	Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Satisfied	Extremely Dissatisfied

3. Transportaion services include things like buses, rapid transit system, and special taxi services such as Disabled Adults Transportation system.

Circle the words that indicate your level of satisfaction with *recreational services* for_____ :

Extremely Satisfied	Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Satisfied	Extremely Dissatisfied

APPENDIX E

HEALTH RESEARCH ETHICS BOARD

Health Research Ethics Board biomedical research health research

2J2.27 Walter Mackenzie Centre
University of Alberta, Edmonton, Alberta T6G 2R7
p 780.492.0928 f 780.492.7303
ethics@med.ualberta.ca

3-48 Corbett Hall, University of Alberta
Edmonton, Alberta T6G 2G4
p 780.492.0839 f 780.492.1626
ethics@www.reh.ualberta.ca

August 3, 2001

Ms. Kim Hae Young
Department of Occupational Therapy
University of Alberta

Re: The Relationship of Stressful Family Events, Intra-family and Extra-family Resources to Family Functioning

Dear Ms. Kim Hae Young:

Thank you for submitting the above study to the Health Research Ethics Board (B: Health Research) for expedited review. The board noted that the original information for subjects in Dr. Magill-Evans study did not mention any possible secondary data analysis. However, the reviewers felt that the intent of your project was close enough to Dr. Magill-Evans study that your analysis could be covered under her original review.

Please quote file number B-010801-REM in any further correspondence with the ethics board in regard to this study. I wish you every success in your future research endeavours.

Sincerely,

Sharon Warren for

Karen Turpin, RN, BScN
Administrative Assistant
Health Research Ethics Board (B: Health Research)

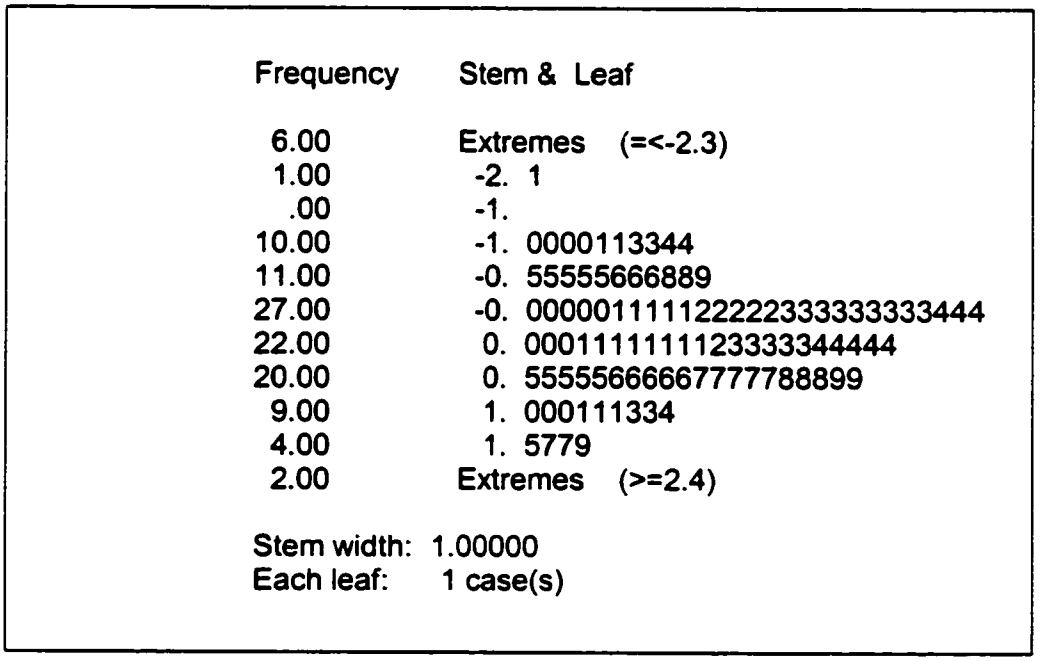
APPENDIX F

The Data Examination

Normality, Homocsedasticity, Linearity

The Diagnostics of data before modifying General Functioning and Problem Solving

Normality. The histograms of all variables in this study were reviewed and they showed relatively normal distributions, although some variables were positively skewed (e.g., MSPSS, LSS). To examine multivariate normality, Stem-and-Leaf plots of the residuals for Mothers-Family Functioning were produced (Figure 3.1). In terms of symmetry and outliers, the plot showed that the distribution is reasonably normal. There were more cases of large negative residuals (6 cases) than large positive residuals (2 cases).



Frequency	Stem & Leaf
6.00	Extremes (=<-2.3)
1.00	-2. 1
.00	-1.
10.00	-1. 0000113344
11.00	-0. 55555666889
27.00	-0. 000001111122222333333333444
22.00	0. 000111111112333344444
20.00	0. 55555666667777788899
9.00	1. 000111334
4.00	1. 5779
2.00	Extremes (>=2.4)

Stem width: 1.00000
Each leaf: 1 case(s)

Figure F.1 Studentized deleted residual stem-and-leaf plot for Mothers-Family Functioning

Homoscedasticity. A scatterplot of residuals versus predicted values of Mothers-Family Functioning (Figure F.2) indicated that most of the residuals fell in a horizontal

band around 0, which indicates relatively good multivariate normality. The same figure also indicates homoscedasticity of the data, as the band did not spread out for small predicted values and spread for large predicted values was acceptable.

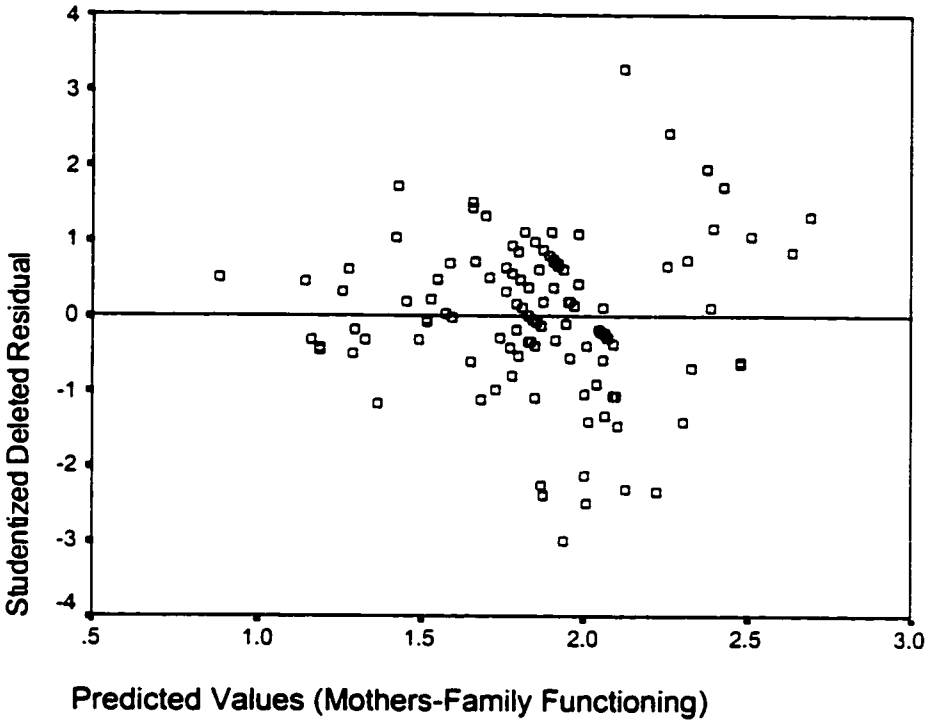
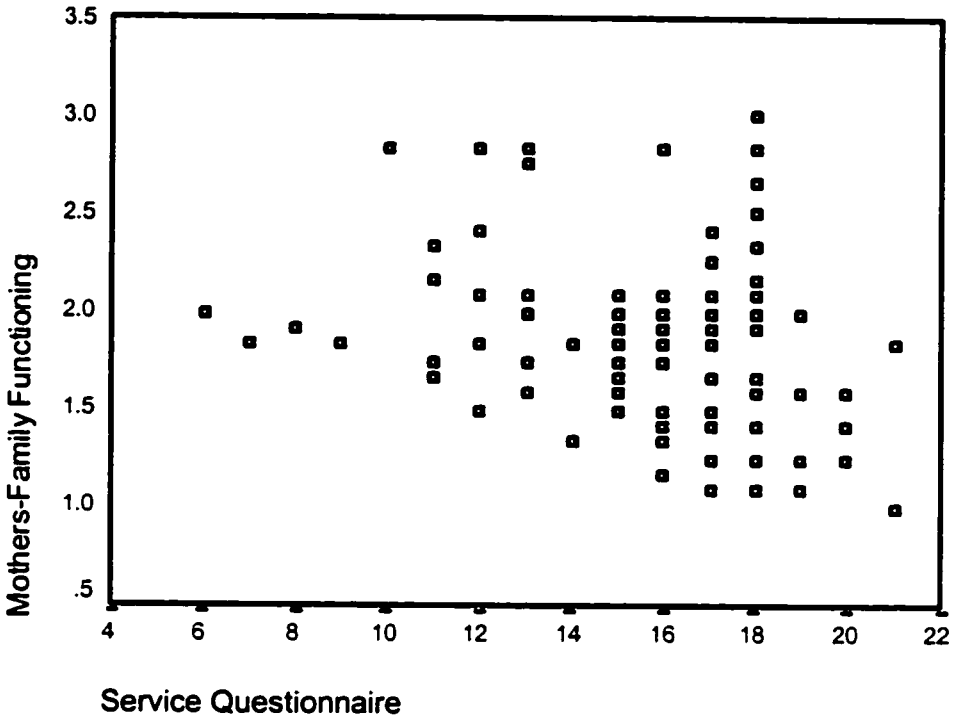
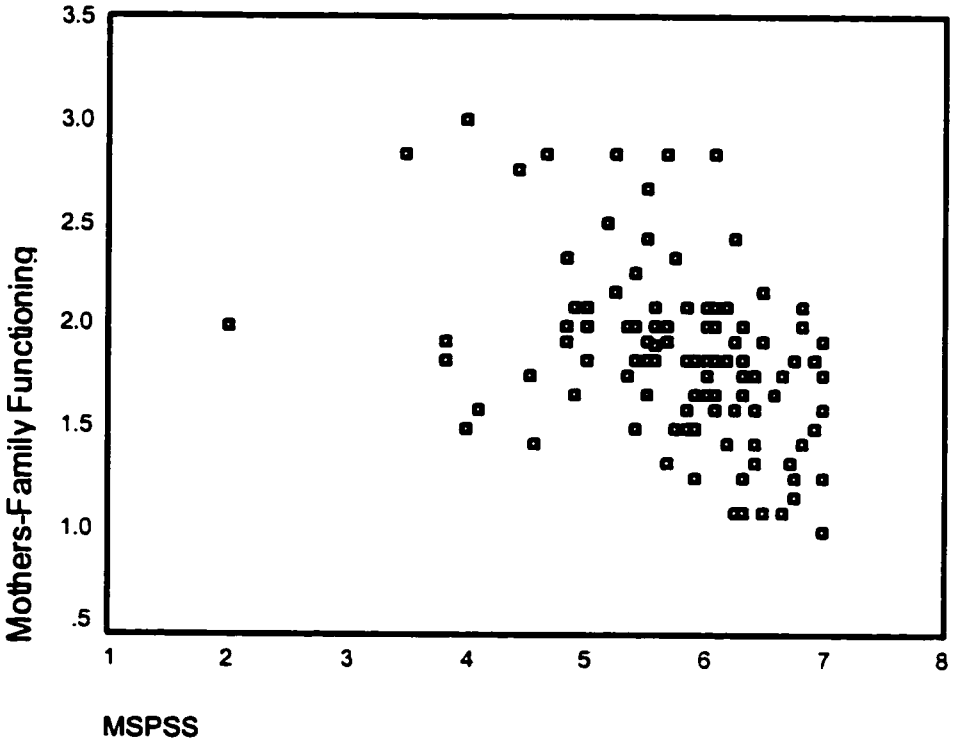
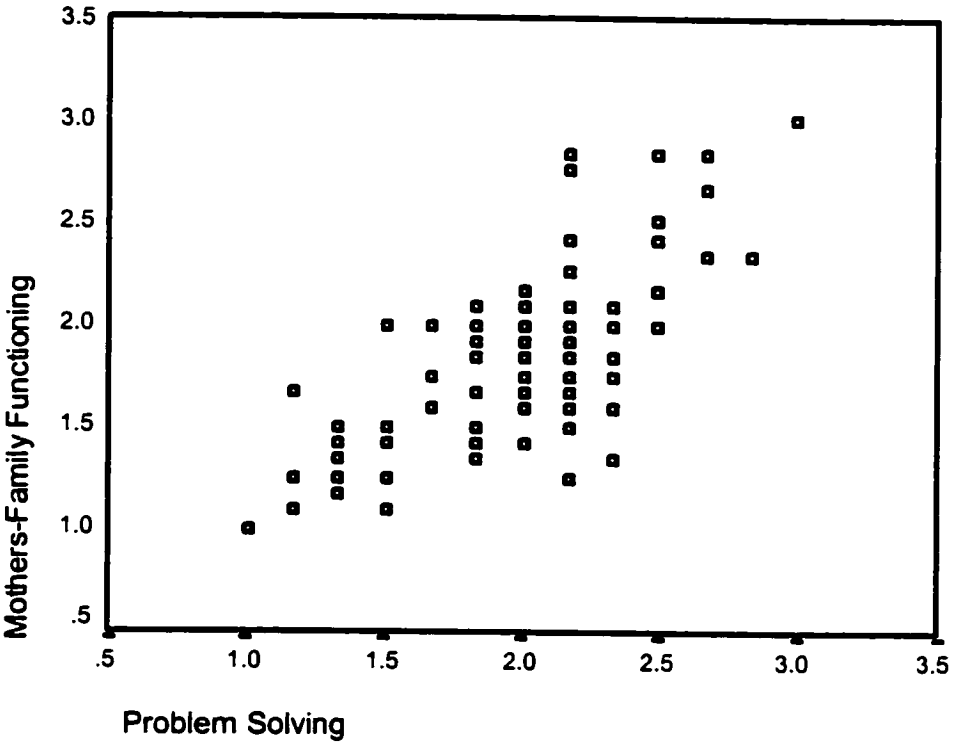


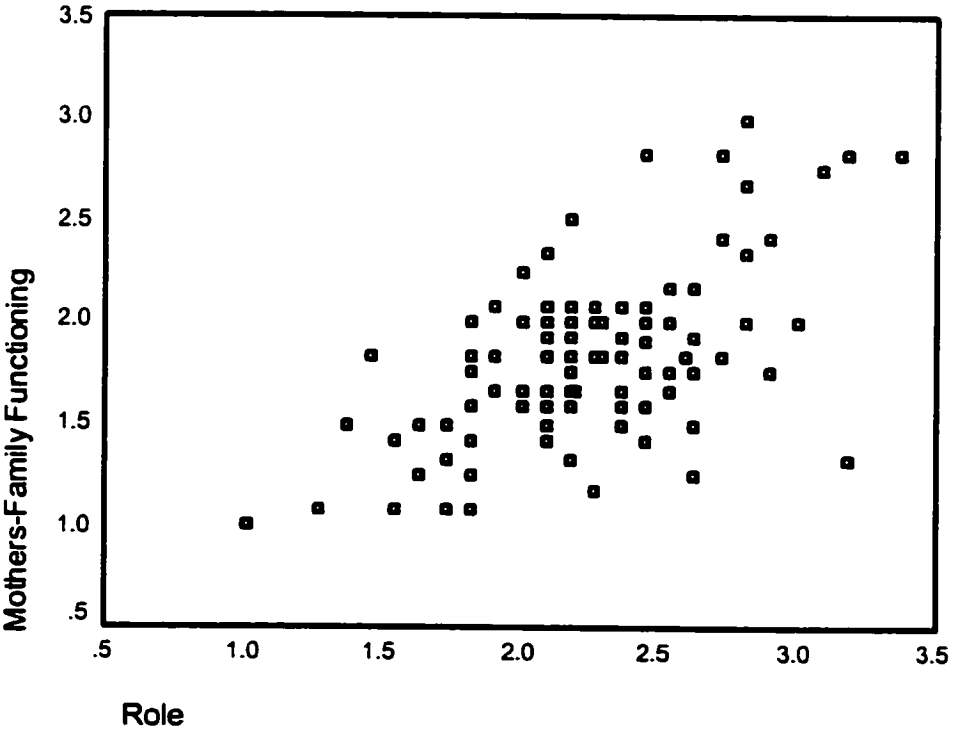
Figure F.2 Scatterplot for residuals for the predicted values of Mothers- Family Functioning

Linearity. The relationships between the dependent variable and the independent variables were examined (Figure F.3). The Service Questionnaire is the least linear of the dependent variables. Problem Solving and Role had the most clearly linear relationship with the dependent variable which must be viewed with caution as they are all subscales of the same measure. Life Situation Survey also showed a clear linear relationship.


Mothers-Family Functioning
3.5
3.0
2.5
2.0
1.5
1.0
.5
4
6
8
10
12
14
16
18
20
22
Service Questionnaire


Mothers-Family Functioning
3.5
3.0
2.5
2.0
1.5
1.0
.5
1
2
3
4
5
6
7
8
MSPSS


Mothers-Family Functioning
3.5
3.0
2.5
2.0
1.5
1.0
.5
.5
1.0
1.5
2.0
2.5
3.0
3.5
Problem Solving


Mothers-Family Functioning
3.5
3.0
2.5
2.0
1.5
1.0
.5
.5
1.0
1.5
2.0
2.5
3.0
3.5
Role

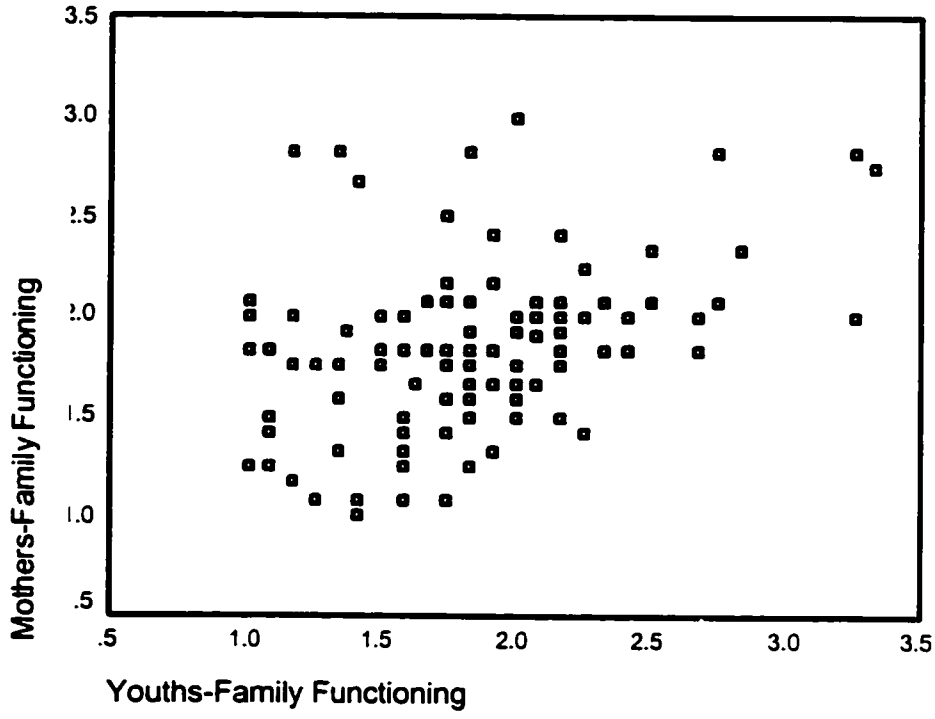


Figure F.3 Scatterplots for linearity of Mothers-Family Functioning with other variables

Analysis of General Functioning (GF) and Problem Solving (PS)

The General Functioning scale had one item that had the words "solve problems" in it (GF item 10). To check whether this item was the one most highly correlated between scales, all of the items were correlated with each other (Table F.1). The highest correlation was .59 for PS item 5 (we confront problems involving feelings) and GF item 6 (we can express feelings to each other). The second highest correlation was .49 for PS item 2 (we usually act on our decisions regarding problems) and GF item 10 (we are able to make decisions about how to solve problems).

Table F.1 Correlations between Problem Solving (PS) and General Functioning (GF) items (N=111)

	PS1	PS2	PS3	**PS4**	**PS5**	PS6
GF1	.46	.35	.27	.41	.34	.30
GF2	.34	.26	.35	.36	.34	.34
GF3	.18	.23	.19	.29	.35	.19
GF4	.26	.34	.23	.45	.27	.34
GF5	.27	.24	.32	.31	.46	.29
GF6	.39	.44	.36	.45	**.59**	.43
GF7	.29	.14	.24	.37	.25	.32
GF8	.22	.34	.26	.38	.26	.45
GF9	.36	.32	.19	.37	.31	.34
GF10	.29	**.49**	.23	.35	.32	.47
GF11	.38	.28	.10	.33	.28	.39
GF12	.34	.24	.24	.33	.45	.48

It was decided to remove Item 10 (the item about solving problems) from the GF scale, thus ensuring the items clearly related to problem-solving skills were only on the PS scale. Item 5 was removed from the PS scale because of its higher correlation with the GF scale and because it appeared to tap feelings. Item 4 on the PS scale was also

removed because it too related to feelings (we resolve most emotional upsets that come up). This left the two scales appearing more independent.

The Diagnostics after Modifying GF and PS in Mothers-Family Functioning

The residuals for Mothers-Modified Family Functioning were re-plotted and normality was improved in terms of the extreme values (only 4 large negative residuals instead of 6) and symmetry. Homoscedasticity was also better (Figure F.4). The linearity of the relationships was unchanged from the Figure F.3.

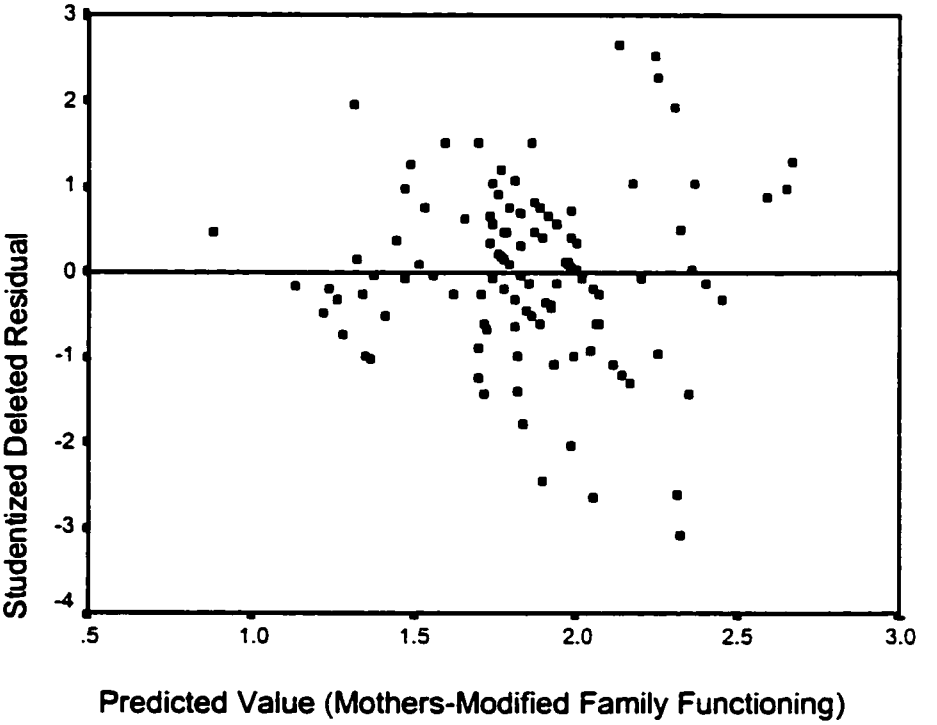
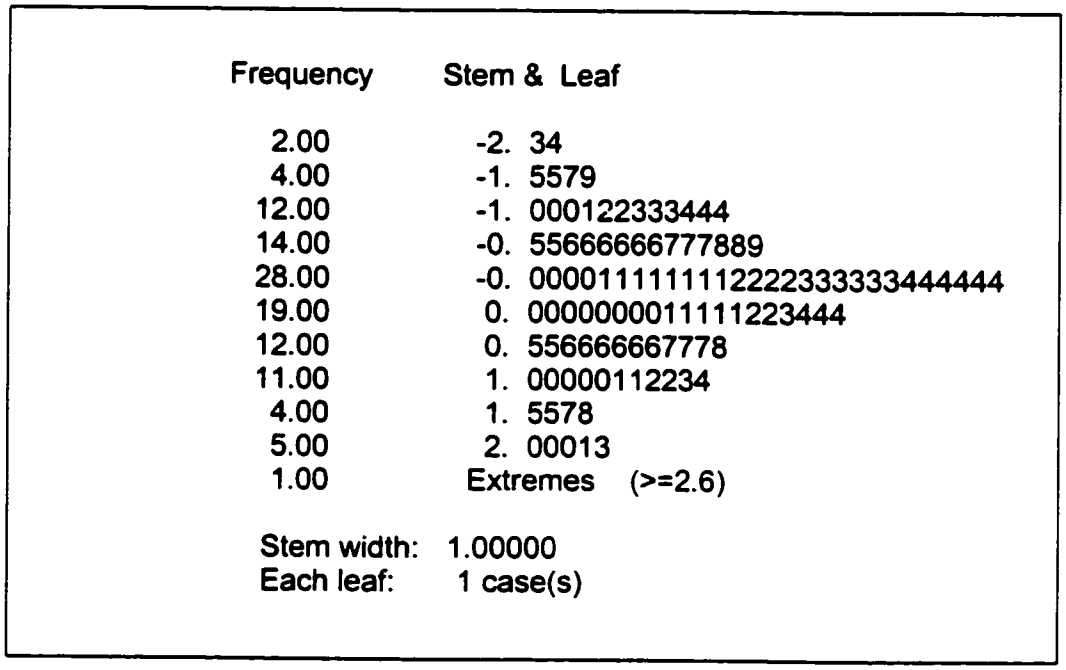


Figure F.4 Scatterplots for residuals for the predicted values of Mothers-Family Functioning

The Diagnostics of Average-Modified Family Functioning

The residuals for Average-Modified Family Functioning showed only one extreme value and were normally distributed. The assumption of homocscedasticity was also met. The linearity of the relationship between the independent variables was described earlier. The linearity of Average-Modified Family Functioning is similar to that of Mothers-Modified Family Functioning.



Frequency	Stem & Leaf
2.00	-2. 34
4.00	-1. 5579
12.00	-1. 000122333444
14.00	-0. 55666666777889
28.00	-0. 0000111111112222333333444444
19.00	0. 0000000011111223444
12.00	0. 556666667778
11.00	1. 00000112234
4.00	1. 5578
5.00	2. 00013
1.00	Extremes (>=2.6)

Stem width: 1.00000
Each leaf: 1 case(s)

Figure F.5 Residual stem-and-leaf plot for Average-Modified Family Functioning

APPENDIX G

Multicollinearity

Multicollinearity of the variables in the primary analysis

Except for Life Situation survey (.56, .54 and .45) and role (.56), the tolerances of variables are more than .63 (TableG.1). The primary analysis with the dependent variable, Mothers-Modified Family Functioning did not show multicollnearity and therefore, the independent variables in the analysis were regarded as independent on each other.

Table G.1. Collinearity test: Tolerance (I)

		Collinearity Statistics	
Model	Independent variables	Tolerance	VIF
1	SQ (FSS)	.93	1.07
	MSPSS (ISS)	.93	1.07
2	SQ (FSS)	.79	1.27
	MSPSS (ISS)	.66	1.52
	LSS (QL)	.56	1.80
3	SQ(FSS)	.71	1.42
	MSPSS(ISS)	.64	1.56
	LSS(QL)	.54	1.84
	Disability Status	.85	1.17
	Age Status	.96	1.04
	Youths-MFF	.95	1.05
4	SQ (FSS)	.69	1.45
	MSPSS (ISS)	.63	1.59
	LSS (QL)	.45	2.24
	Disability Status	.85	1.17
	Age Status	.94	1.06
	Youths-MFF	.94	1.06
	Modified problem-solving skills (FCS)	.69	1.46 1.78
	Role (FCS)	.56	

SQ (FSS): Service Questionnaire (Formal Social Support)
MSPSS (ISS): Multidimensional Scale of Perceived Social Support (Informal Social Support)
LSS (QL): Life Situation Survey (Quality of Life)
Youths-MFF: Youths-Modified Family Functioning
Modified PS (FCS): Modified Problem Solving (Family Coping Skills)
Role (FCS): Role (Family Coping Skills)

Multicollinearity of the variables in the secondary analysis

The least value of tolerance in the analysis with the dependent variable, Average-Modified Family Functioning is .45, which is the same in the primary analysis. The values of tolerance in Table G.2 indicate that the secondary regression analysis was not violated by the collinearity.

Table G.2. Collinearity test: Tolerance (Π)

		Collinearity Statistics	
Model	Independent variables	Tolerance	VIF
1	SQ (FSS)	.93	1.07
	MSPSS (ISS)	.93	1.07
2	SQ (FSS)	.79	1.27
	MSPSS (ISS)	.66	1.52
	LSS (QL)	.56	1.80
3	SQ(FSS)	.70	1.42
	MSPSS(ISS)	.65	1.55
	LSS(QL)	.55	1.83
	Disability Status	.87	1.15
	Age Status	.96	1.04
4	SQ (FSS)	.69	1.45
	MSPSS (ISS)	.63	1.58
	LSS (QL)	**.45**	2.24
	Disability Status	.87	1.15
	Age Status	.94	1.06
	Modified PS (FCS)	.70	1.43
	Role (FCS)	.56	1.78