PARENTAL INVOLVEMENT OF CHRONICALLY ILL MOTHERS AND ITS IMPACT ON THE CHILD'S EDUCATION

by

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Abstract

PARENTAL INVOLVEMENT OF CHRONICALLY ILL MOTHERS AND ITS IMPACT ON THE CHILD'S EDUCATION

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This study examined how maternal chronic illnesses may affect children's academic functioning through parental involvement. Levels of maternal demands of illness were measured in order to see if they affect the levels of parental involvement and children's grades. Four research questions are addressed in this study. Do the maternal demands of illness affect children's educational achievement? Do the maternal demands of illness impact the extent of parental involvement? Does parental involvement of mothers with chronic illness influence their children's academic achievement? Does positive parental involvement mediate or moderate the impact of maternal chronic illness on children's educational performance?

One hundred fifty mothers diagnosed with Multiple Sclerosis (MS), diabetes, cancer, HIV/AIDS, Myelodysplasic Syndrome, and Fibromyalgia and with a child in middle school or high school (aged 10-18) participating in this study were recruited from national organizations, clinics, and social support groups serving patients with chronic illnesses. Participants completed a 184-item questionnaire that was composed of measures of 1) parent demographic information, 2) parent medical information, 3) child

demographic information, 4) Demands of Illness Inventory (DOII), 5) parental self-efficacy, 6) parental educational aspirations, 7) grade expectations, 8) school contact and participation, 9) Parent Involvement in School Interview, 10) home supervision, and 11) children's educational outcomes. Each participant was compensated ten dollars for completing the questionnaire.

Overall, the results suggest that the majority of students of mothers with chronic illness were able to function adequately in terms of academic achievement. However, children's academic functioning may be at risk when their mothers experienced high levels of illness demands as a result of their chronic illness. Children's grades were found negatively related to levels of demands of illness their mothers experienced. This study also revealed that levels of demands of illness imposed on the mothers with chronic illness and disruption in normal family functioning were negatively related to parental self-efficacy in helping their children succeed in education. Moreover, this study found that parental self-efficacy mediated the effects of maternal demands of illness on children's academic achievement. Children of chronically ill mothers with higher academic efficacy tended to do better academically than those of mothers with lower levels of efficacy. Finally, among different forms of parental involvement, parental educational aspirations and grade expectations were positively related to children's educational performance in terms of grades.

Acknowledgements

This dissertation is dedicated to families living with chronic illness. In particular, I want to thank the mothers with MS, diabetes, cancer, and HIV/AIDS who took part in this study. Their willingness to participate made this dissertation possible. I also want to thank the National Multiple Sclerosis Society (NMSS), Joslin Diabetes Center, and other organizations that helped me recruit participants for their support and assistance.

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Thank you to all my friends and family for always having faith in me. Their acceptance of me for who I am has freed me to strive toward my potential. Without them, none of this would have been possible. Especially, I want to thank my mother, Chen-Hsieh Mei-Kuei, for her unconditional love and understanding. Thank you to a dear friend, Kevin Gusssiaas, who has always been there for me. Thank you to Dr. Wen-Sung Lai for being a good friend and helping me get through some difficult times. Thank you to all my colleagues who always cheered me on when I needed in the process.

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CHAPTER 1

Introduction

This chapter begins with an overview of the impact of parental chronic illness on children's functioning, including a brief description of mediating and moderating factors that have been identified in the literature to understand how children's functioning is influenced as a result of parental physical illness. This is followed by an overview of parental involvement and its impact on children's education. Finally, a study is proposed to investigate how mothers' physical illness may interfere with involvement in their children's education.

Parental Chronic Illness and the Child's Functioning

According to family systems theory, change in one part of the system will result in compensatory change in the other parts of the system. From a systems perspective, a problem in any member of a family has an effect on all other members, and changes in any member of the system affect all others (e.g., Kahle & Jones, 1999; Kazak, 1989; Pedersen & Revenson, 2005).

Therefore, a serious illness or disability is likely to impact the family system when a family member is not functioning normally, affecting all the other family members as well as the family's overall functioning.

Parental illness is a stressful experience for children and adolescents (e.g., Pedersen & Revenson, 2005). In addition to the typical developmental challenges, children of parents with chronic illness may also have to cope with the threat of the loss of a parent, decreased parental availability, increased household responsibilities, changing schedules and routines, and the depletion of financial resources (e.g., Armistead,

Klein, & Forehand, 1995; Korneluk & Lee, 1998). However, research in this field is still at a relatively early stage and the literature with respect to risk for children of ill parents has yielded few conclusions and some contradictory findings. While some studies (e.g., Brabiak et al., 2007; Forehand et al., 1998; Heiney et al., 1997; Mikail & von Baeyer, 1990) reported negative psychosocial and/or behavioral outcomes, such as depression, anxiety, academic, and behavior problems in children as a result of their parents' physical illnesses, some (e.g., De Judicibus & McCabe, 2006; Hoke, 2001) suggested that children of parents with a chronic illness do not function differently from those whose parents are not ill. The review conducted by Osborn (2007) indicated that children and adolescents of parents with chronic illnesses do not generally experience elevated levels of serious psychosocial difficulties, but they are at a slightly higher risk for internalizing or behavioral problems.

Rolland's Family Systems-Illness Model

Rolland (1987, 1999) viewed illness as a normative family challenge that can precipitate either difficulties or enhanced functioning through the promotion of intimacy and closeness. His Family Systems-Illness Model provides a theoretical framework to enable us to think systematically about the interface of any chronic condition and the family. According to this model, the unfolding of a chronic illness is viewed in a developmental context, involving the intertwining of the characteristics of illness, individual, and family life cycles (Rolland, 1999).

Furthermore, Rolland identified family systems variables such as communication styles, adaptability, and cohesion that are hypothesized to interact with types and phases of illness to influence family functioning. Children's functioning, as the result of parental

illness, needs to be examined on different dimensions, such as illness characteristics, major phases in the natural history of illness, the individual and family cycles, and family systems factors (e.g., family communication styles, parent-child relationship, etc.).

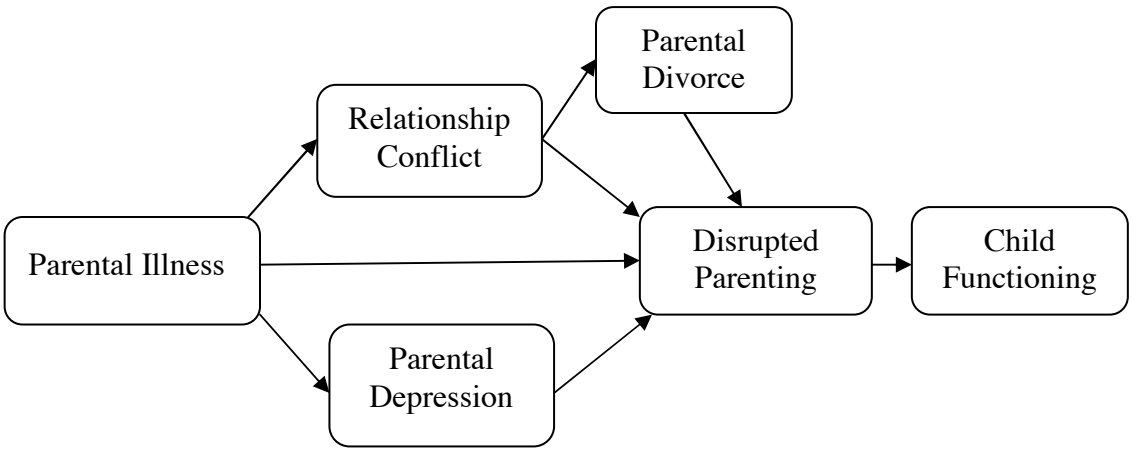
Family Systems Variables as Moderating and Mediating Factors

Some moderating and mediating factors that influence the impact of parental chronic illness on the child's functioning have been identified. According to Lewis, Woods, Hough, and Bensley (1989), parents' psychological functioning, marital adjustment, the parent-child relationship, child psychosocial functioning, and family coping styles are expected to play important roles in the family members' adaptation to illness. Similar to Lewis et al.'s hypothesis, Armistead, Klein, and Forehand's (1995) model addressing the child's adjustment to parental illness also focuses on the impact of disruptions to parenting and conflict between parents when parents become ill. Illness is hypothesized to create difficulties in the martial relationship and to interfere with effective parenting. The specific pathways by which parental illness is expected to affect children's well-being and family functioning are depicted in Figure 1. Furthermore, Lewis and Hammond (1996) suggested that illness-related demands impinging on the family are associated with higher levels of maternal depressive mood, poorer marital adjustment, and lower parenting quality, which may lead to impairments in their children's functioning. See Figure 2 for the pathway proposed by Lewis and Hammond.

Combining Armistead et al's (1995) child adjustment to parental illness model and the findings of Lewis and Hammond's (1996) path analysis study, it seems logical to hypothesize that the demands of illness experienced by ill mothers due to their physical illness may impinge on family functioning, such as maternal adjustment, parental

Figure 1

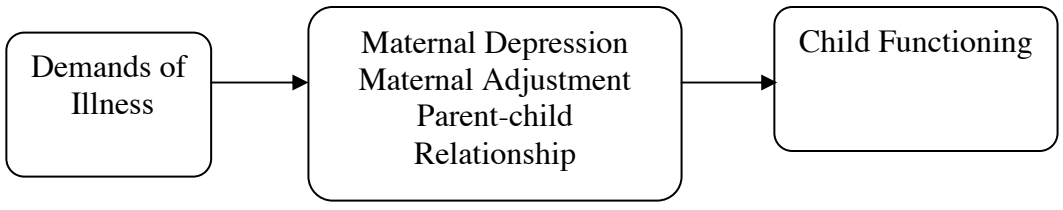
Armistead et al.'s Schematic Model of How Parental Physical Illness Influences Child Functioning



From "Parental Physical Illness and Child Functioning," by L. Armistead, K. Klein, and R. Forehand, 1995, *Clinical Psychology Review, 15*, p. 419.

Figure 2

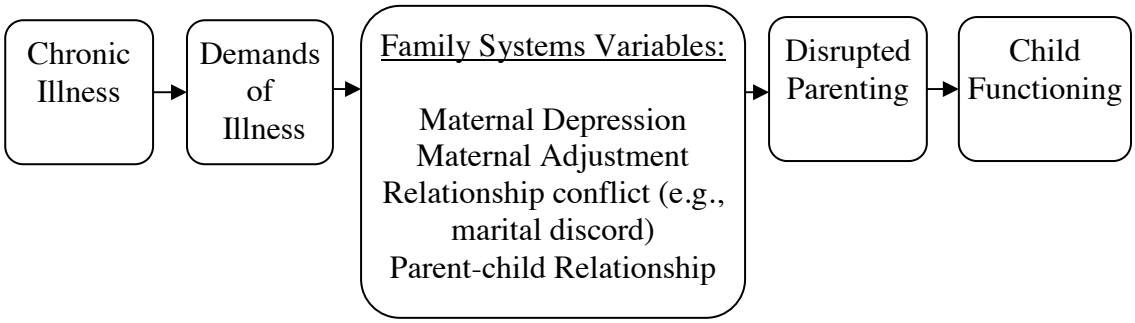
Pathway proposed by Lewis et al.



depression, relationship conflicts and parent-child relationship, which consequently cause disrupted parenting, affecting their children's functioning (see Figure 3). It is also hypothesized that these family systems variables may serve as mediating or moderating factors that buffer the possible negative impact of parental chronic illness on their children.

Figure 3

Hypothesized Combined Model



What Aspects of Parenting Are Affected?

Although disrupted parenting has been seen as a leading mechanism operating to influence child functioning of parents with chronic physical illness (Armistead et al., 1995), little is known about how the possible disrupted parenting affects parents' involvement in the child's homework, school activities, and education in general. Dura and Beck (1998) found that children from families of a parent with chronic pain tended to have more days absent from school than children of mothers with no illness. The results suggested that disrupted parenting due to parental physical illness is associated with compromised parental involvement in the student's school activities.

Parental Involvement and Its Impact on Students' Education

A wealth of research (e.g., Fan & Chen, 2001; Izzo, Weissberg, Kasprow, & Fendrich, 1999) has suggested a strong positive relationship between student achievement and parent involvement in education. Jeynes' (2003) meta-analysis examining the impact of parental involvement on academic achievement revealed positive relationships between parental involvement and all the academic measures studied, such as GPA and standardized tests, suggesting that parental involvement has a significant impact on children across academic outcomes. Similarly, Ballantine (1999) reported that children earned higher grades and test scores, had better school attendance and got into less trouble, and were more likely to graduate from high school and attend college as a result of parental involvement. In addition, parents' communication with their children improved and parents gained a sense of accomplishment from their children's success.

Furthermore, Gonzalez-DeHass, Willems, and Holbein (1999) identified a beneficial relationship between parental involvement and various social-motivational constructs, such as school engagement, intrinsic/extrinsic motivation, perceived competence, perceived control, self-regulation, mastery goal orientation, and motivation to read. When their parents are involved, students put more effort into their studies and are more concentrated and attentive. They are more inherently interested in learning and perceive higher levels of competence. Students whose parents show an interest in their children's education by getting involved adopt a mastery goal orientation to learning and are more likely to take personal responsibility for their learning. They are more likely to seek challenging tasks, persist through academic challenges, and experience satisfaction in their schoolwork. In addition, these students demonstrate greater self-efficacy as

readers (Bonzalez-DaHass et al., 1999).

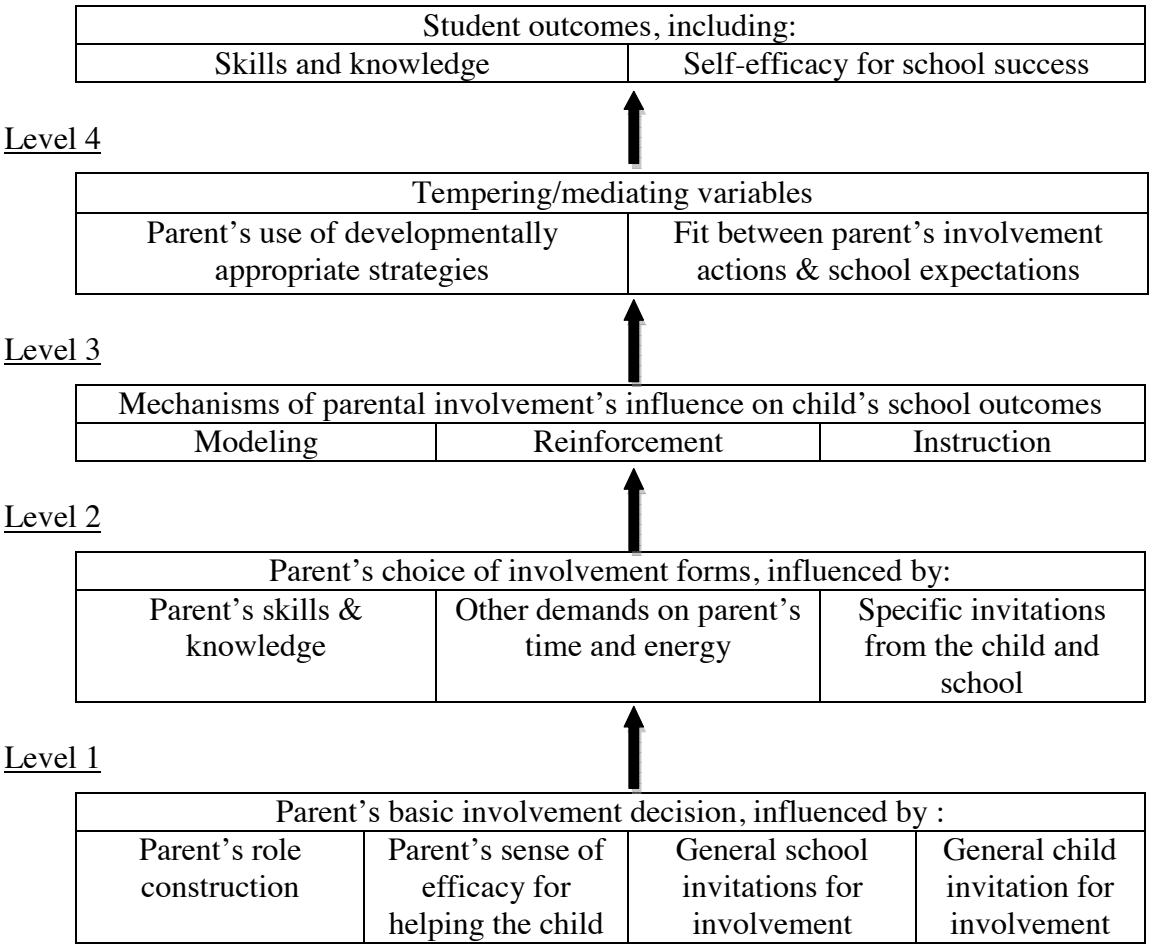
Dimensions and Perspectives of Parental Involvement

Different perspectives of parental involvement and its impact on the student's education have been reviewed in the literature. Different types of involvement such as parent-child communication (e.g., talking about children's school activities), home supervision (e.g., limiting TV watch and homework monitoring), educational aspirations for children, school contact and participation (e.g., volunteering in school, attending school meetings), and perceptions of parental efficacy have been found to be significantly linked to positive educational outcomes in children (e.g., Fan & Chen, 2001; Jeynes, 2005).

Moreover, Hoover-Dempsey and Sandler (1995, 1997) proposed a comprehensive conceptual model of parental involvement process (see Figure 4) to explain why parents get involved, what forms their involvement takes, and how their involvement influences students. According to this model, four psychological constructs include (a) parental role construction (e.g., parents' belief about what they should to in the context of their children's education); (b) parental self-efficacy for helping their children succeed in school; (c) parents' perception of invitations of involvement from the school; and (d) parents' perceptions of general invitations for involvement from their children, contribute to parents' decisions to become involved in their children's education. This model assumes that contextual factors, such as time and energy, and perception of specific invitations for involvement from the students and their teachers may affect parents' choice of involvement forms. Furthermore, parental modeling, reinforcement, and instruction were identified as the main mechanisms of parental involvement that

Figure 4

Hoover-Dempsey and Sandler's (1995, 1997) Original Model of Parental Involvement Process



From "Parental Involvement: Model Revision Through Scale Development," by J. M. T. Walker, A. S. Wilkins, J. R. Dallaire, H. M. Sandler, and K. V. Hoover-Dempsey, 2005, *The Elementary School Journal, 106*, p. 86.

influence children's school outcomes.

Walker,Wilins, Dallaire, Sandler, and Hoover-Dempsey (2005) examined the original model of parental involvement process proposed by Hoover-Dempsey and Sandler and provided revisions in the first model's first two levels (see Figure 5). The revised model reconceptualized the parents' motivational and contextual factors that affect their involvement and the forms of parents' involvement. The revised model proposed that three contributing factors to parental involvement decisions and participation forms include: parents' motivational beliefs regarding their involvement (i.e., parental role construction and parental self-efficacy); parental perceptions of invitations for involvement from the school, the child, and the teacher; and parents' perceived life context (i.e., perceived time and energy and perceived skills and knowledge). In addition, forms of parental involvement are defined as both the school-based and the home-based behaviors.

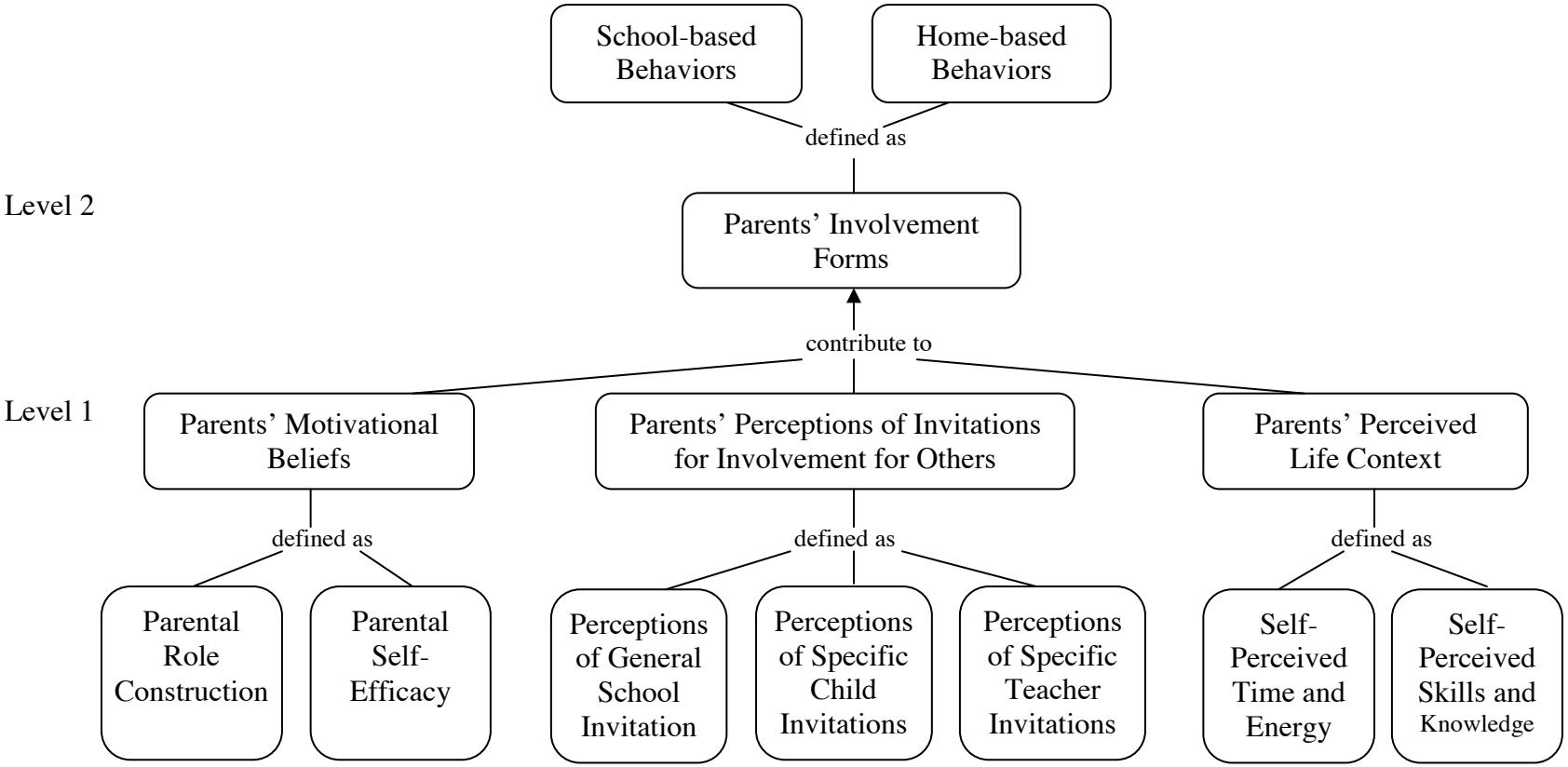
An empirical test of this theoretical model of parent involvement conducted by Green, Walker, Hoover-Dempsey, and Sandler (2007) revealed that both forms (school-based and home-based) of parental involvement were predicted by model constructs such as motivational beliefs, parents' perceptions of invitations to involvement from others, and perceived life context. The results of Green et al's (2007) study suggested that this model offers a useful framework for understanding what influences and prompts parents' home-based and school-based involvement.

How Parental Chronic Illness Might Affect Parental Involvement in Students' Education

As parental involvement has been identified as a critical factor in predicting students' academic achievement, Armistead et al.'s (1995) child adjustment model of

Figure 5

Revised Levels 1 and 2 of Hoover-Dempsey and Sandler's Theoretical Model



From "Parental Involvement: Model Revision Through Scale Development," by J. M. T. Walker, A. S. Wilkins, J. R. Dallaire, H. M. Sandler, and K. V. Hoover-Dempsey, 2005, *The Elementary School Journal, 106*, p. 88.

parental illness (see Figure 1) consequently appears to inherently suggest that the child's educational activities and performance may be compromised as a result of parental chronic illness. Guided by both Lewis et al.'s (1989) and Armistead et al.'s theoretical frameworks, this study investigated the degree of parental involvement of mothers with chronic illness in their children's academic activities and the impact of maternal chronic illness on children's educational achievement based on the hypothesized combined model depicted in Figure 3.

The impact of demands of illness on various aspects/dimensions (e.g., parental self-efficacy, home- and school-based activities) of parental involvement in children's education that are primarily depicted in the revised Hoover-Dempsey and Sandler's parental involvement model (see Figure 5), as well as their proximate influence on children's academic performance, were examined in this study. In addition, following the hypothesized model (see Figure 3), family systems variables (e.g., positive parenting and parental involvement) as potential factors that mediate or moderate the effects of parental chronic illness on children's educational functioning were examined.

In sum, based on the above discussion, this study proposed to answer the following research questions:

1. Do the demands of illness experienced by chronically ill mothers affect their children's educational outcomes?
2. Do the demands of illness experienced by chronically ill mothers impact the extent of their involvement in their children's education?
3. Does parental involvement of mothers with chronic illness affect their children's academic functioning?

4. Do family systems factors, such as positive parenting and family functioning, mediate or moderate the impact of parental chronic illness on their children's educational outcomes?

CHAPTER 2

Literature Review

This chapter includes 10 sections. The first section begins with an introduction to the influence of chronic illness on individuals and their families, followed by four theoretical perspectives (i.e., developmental, psychodynamic, social learning, and family systems) that have been used to hypothesize the consequences of being the child of a chronically ill parent, with an emphasis on the family systems theory. Section two reviews the impact of parental chronic illness on family functioning in areas such as family environment, marital discord/adjustment, and life-style changes. Section three provides a review of existing literature regarding the relationship between parental chronic illness and child functioning, including research studies examining whether parental physical illness is associated with child functioning. A description of Rolland's Family Systems-Illness Model that serves as a conceptual framework guiding the investigation of child functioning as a result of parental physical illness is provided.

This is followed by discussions in the literature regarding child, parent, and family factors that mediate and/or moderate the impact of parental illness on child functioning. The descriptions of Lewis et al.'s Family Coping with Maternal Illness Model and Armistead et al.'s schematic model of how parental physical illness influence child functions are also provided to lead the discussions about the potential roles of family systems variables (e.g., parental depression adjustment, parent-child relationship, etc.) on modifying or mediating the effects of parental chronic illness. Reviews on family systems factors, such as parental depression, parenting relationship, and martial adjustment/discord, as mediators or modifiers follow. The fourth section describes the

construct of illness demands, its definition and dimensions, and research studies exploring the impact of demands of parental illness on children and families.

In section five, the lack of research literature in examining the relationship between parental illness and children's academic functioning is discussed. Section six begins with a synopsis of parental involvement, its definition, and dimensions. Next is a review of the effects of parental involvement on students' educational outcomes. It is followed by a description of a comprehensive theoretical framework proposed by Hoover-Dempsey and Sandler to help us understand the parental involvement process. Section seven synthesizes the research in this chapter on parental chronic illness, demands of illness, parental involvement, and their effects on children and families and provides a rationale for this proposed study. Research and educational implications are provided in section eight. Finally, research questions and hypotheses of this study are described in sections nine and ten, respectively.

Chronic Illness and Families

Chronic and debilitating physical illnesses are experienced by hundreds of thousands of Americans of all ages, socioeconomic levels, and races (e.g., Armistead et al., 1995). Statistics indicate that medical conditions such as cancer, heart disease, human immunodeficiency virus (HIV) disease, chronic liver disease, cerebrovascular or pulmonary disease, and diabetes are leading causes of death among adults ages 25-44 (National Center for Health Statistics, 2004). In addition, many adults in this age range experience other chronic illnesses that are debilitating but may not be life threatening.

The impact of serious illness is not only experienced by the patient, but also by those around him/her who are exposed to the various forms of psychological, economic,

and social stressors that may accompany the illness. Members of a patient's immediate family who share the same home environment with their ill parent, child, or sibling are likely to be influenced by such stressors (e.g., Armistead et al., 1995). Armistead et al. (1995) indicated that it may be particularly difficult for families with children and adolescents to adjust to a serious illness, as these families are already faced with the continuous challenges of development and childrearing.

Given that a large percentage of Americans in this age range are raising children, it is surprising that the impact of parental chronic illness on children has not received much attention in the literature (e.g., Armistead et al., 1995). Although research on dependent children and parental illness has evolved over the past two decades, Lewis (2007) argued that science and service lag far behind the magnitude of the problem as a growing number of children are impacted by their parents' illness, such as cancer.

Anderson and Hammer (1993) conducted a longitudinal study observing the psychosocial functioning of unipolar depression, bipolar, medically ill, and psychiatrically normal women over a 2-year period and found that children of unipolar mothers showed significantly poorer functioning on all measures as compared with the other three groups of children. However, in examining rates of chronic, clinically significant problems, fewer differences between the group of children of unipolar mothers and medically ill mothers were observed than were reflected in the overall mean comparison. Findings revealed that there were no significant differences between the groups in the proportions of children with chronic problems with behavior at home, academic performance, or social competence, suggesting that chronic problems in psychosocial functioning are present among children of medically ill mothers (Anderson

& Hammen, 1993).

Theoretical Perspectives Regarding Children of Parental Chronic Illness

Kahle and Jones (1999) reviewed four theoretical perspectives—developmental theory, psychodynamic theory, social learning theory, and family systems theory—to provide hypotheses about the consequences of being the child of a chronically ill parent.

Developmental perspective. The developmental model suggests that the presence of a chronically ill parent may interfere with a family's ability to achieve developmental goals in the normal progression. Transition from one developmental stage to the next is stressful under normal circumstances. When the strains of a chronically ill parent compound this process, the evolution of family development may be disrupted (Kahle & Jones, 1999).

Psychodynamic perspective. The psychodynamic perspective suggests that chronic illness in a parent might produce anxiety within the family, which may have potential to hinder smooth progression through the psychosexual developmental stages proposed by psychodynamic theorists (Kahle & Jones, 1999). It is also assumed that if a chronic illness or disability influences the personality characteristics, values, and role functioning of a parent, the chronic illness will also influence children in the family, and much of the speculation about the effects of having a parent with a chronic illness has been in terms of maladjustment acquired through identification with a chronically ill parent (Kahle & Jones, 1999).

Social learning theory. Social learning theory is another theoretical perspective that makes predictions about the impact of exposure to parental chronic illness. Social learning theorists argue that the sick role and how one functions when ill are learned

behavior. Parents' responses to their own illness and somatic sensations serve as a model for a child's future behavior. Children learn how to interpret and respond to somatic sensations through observation and interactions with their parents (Kahle & Jones, 1999).

Family systems theory. Family systems theory characterizes the family as a set of interacting, interrelating members functioning in relation to a broader sociocultural system and evolving over the life cycle. Every family goes through different phases in its life cycle and each new phase presents a potential threat to its organization as it poses a threat to its equilibrium—a steady state that has been achieved in order to guarantee the continuity necessary for the growth of individuals in the family and the family as a whole (Asen, 1985). According to family systems theory, change in one part of the system will result in compensatory change in the other parts of the system (Kahle & Jones, 1999).

Serious illness is likely to impact the family system when a family member is not functioning normally, affecting all the other family members as well as the family's overall functioning. As a result of a family member's illness, certain functions and roles need to be reallocated to other family members and this redistribution of functions and power requires adaptation in the family (Asen, 1985). Adaptation to parental illness may act to preserve the system; however, it may be effective or ineffective and some families are better at reorganizing than others. Because of the stress of an illness, to develop equilibrium or balance a family may adopt behaviors that may be inappropriate (Johnston, Martin, Martin, & Gumaer, 1992). In the case of parental illness, a strong likelihood of role reversal exists in which the sick parent may become the "child" and the school-age or adolescent child may become the "parent."

Children and adolescents who are impacted by changes in family patterns as a result of parental illness may be involved in helping at home, such as taking on extra domestic chores and responsibilities for sibling care (Grabiak, Bener, & Puskar, 2007). The results of a retrospective multiple-case study, conducted by Davey, Askew, and Godette (2003), also revealed that family roles between adolescents and their ill parents often changed as they became the caretakers for their ill parents and took on more responsibilities at home. Johnston et al. (1992) indicated that such role reversal may have strong ramifications for the spousal relationship, because the child has assumed a parental role.

Stein, Riedel, and Rotheram-Borus (1999) examined the impact of parentification (i.e., "children or adolescents assuming adult roles before they are emotionally or developmentally ready to manage those roles successfully" [p. 193]) on adolescent children of parents with AIDS and the results supported the negative outcomes of role reversal. Findings revealed that early parentification predicted maladaptive outcomes as adult role-taking was associated with internalized emotional distress measured 6 months later, whereas parental role-taking predicted externalized problem behaviors such as sexual behavior, alcohol and marijuana use, and conduct problems. However, Stein, Rotheram-Borus, and Lester (2007) suggested that taking parents' roles may be adaptive in the long run as adolescents experience major stressors in their lives, including ill parents. They found that early parentification predicted better adaptive coping skills and less alcohol and tobacco use 6 years later in their AIDS sample.

There is also the potential of psychological fatigue in a healthy mate who may overinvest in a career to escape from the responsibility of constantly caring for a

seriously ill spouse. In such an instance, the developmental tasks of children are often compromised and masked by adult responsibility and the status and reinforcement received from them (Johnson et al., 1992). Each family member experiences pain and yet becomes fixed in maladaptive roles. Stress for the child may become overwhelming and affect both physical and psychological health.

Adaptation and Resilience

Nevertheless, based on family systems theory, Ashen (1985) argued that illness is not always a totally unwelcome visitor. It can actually serve as a valuable distraction or life-saving device when it happens at a time of family crisis, by temporally shifting the focus from other areas of family conflicts. According to Brennan (2004), chronic illness may bring members closer together in some families. Elmberger, Bolund, and Lutzen (2002) interviewed men who had been diagnosed with cancer in order to understand how cancer affects their roles as a father. Qualitative analyses of themes that emerged from the interviews suggest that the presence of cancer in a family might allow family members the opportunity to spend more time together.

Impact of Parental Chronic Illness on Family Functioning

Some studies have addressed the impact of parental chronic illness on the family as a whole. Kahle and Jones (1999) reviewed the impact of parental illness on family functioning in areas including family environment, marital discord, and life-style changes.

Alterations in Family Patterns

Stuifbergen (1990) employed the Family Environment Scale (FES) to assess the pattern of families with one chronically ill parent and identified four clusters of families—cohesive, moral-religious oriented, structured conflict, and unstructured.

Although differences in perceived impact of illness among the clusters supported the view that chronic illness contributes to the pattern of family functioning, the majority of participating families in this study functioned within the normal range for the scales and the assumption that chronic illness had a consistent negative impact on family functioning was not supported.

Peters and Esses (1985) also used the FES to examine differences between families with and without a chronically ill parent and concluded that children of parents with multiple sclerosis (MS) perceived their family environment differently from those of parents without chronic disorders. In contrast to Stuifbergen's study, Peters and Esses's results suggested that differences in children's subjective perceptions of their family environment may be a result of the presence of a chronically ill parent. A study by Stetz, Lewis, and Primomo (1986) revealed that the most frequent family coping strategy used to manage problems and challenges when the mother has a chronic illness was alterations in household management.

Marital Discord/Adjustment

Chronic illness may also affect family functioning through its possible association with marital discord (Kahle & Jones, 1999). The association between chronic illness and compromised marital adjustment has been reported (e.g., Lewis & Hammond, 1996; Woods & Lewis, 1994). Klein, Dean, and Bogdonoff (1967) compared pre- and post-illness levels of intrafamily relationships and found significant alterations in terms of role tension in both the patients with chronic illness and their spouses, suggesting that chronic illness may increase martial distress. Similarly, spouses of 47 patients with MS in Braham, Hauser, Cline, and Posner's (1975) study reported several marital complaints

and identified the martial relationship as one of the great needs to be supported.

Due to the demands imposed by chronic illness in one member of a marital dyad, Hough, Lewis, and Woods (1991) indicated that spousal depression and marital dissatisfaction in the other are often a result of the illness. Woods and Lewis (1994) investigated women's experiences of chronic illness and suggested that the persistence of illness affects martial adjustment, and marital adjustment affects every aspect of family life, including family coping, the children's psychosocial functioning, parent-child relationships, and family functioning. High levels of marital adjustment in families with a chronically ill mother were shown to positively affect the family's level of psychosocial functioning (Lewis, Hammond, & Woods, 1993; Woods & Lewis, 1994). Furthermore, Lewis, Woods, Hough, and Bensley (1989) conducted a path analysis to examine the effects of maternal chronic illness on martial satisfaction and suggested that poorer marital adjustment is associated with poorer child adjustment.

Life-Style Changes

Life-style changes that the entire family incorporates to enhance medical compliance of an ill parent have been documented in the literature. Strauss, Corbin, and Fagerhaugn (1984) presented typologies of adaptive tasks that are typical among chronically and critical ill persons and their families. These tasks include preventing and managing medical crises, managing regimens, and dealing with hospital environments and special procedures. For example, parents with non-terminal cancer in Davey et al.'s (2003) study reported many debilitating side-effects of their chemotherapy. In addition, ill parents reported changing their life style and slowing down during treatment, in particular, not being as available to their adolescent children. To illustrate, one mother

noted: “During my treatment, the most difficult time was when my two sons were playing basketball for their school and I was not able to go to a lot of their games; I usually go to all of their games (p. 253).” Male adolescents in Nelson, Sloper, and While’s study (1994) also reported that parental illness impacted their schoolwork and amount of leisure for sports and activities with friends.

Parental Chronic Illness and Children’s Functioning

Although the potential impact of parental chronic illness on children’s psychosocial functioning is apparent, little empirical evidence exists to guide the understanding of the possible effects (Kahle & Jones, 1999). Nevertheless, there is a growing awareness of the psychological impact of chronic illness on children and their families (Altschuler, Dale, & Sass-Booth, 1999). Existing studies examining the relationship between parental physical illness and child functioning have utilized between groups and/or within groups designs. The former design, typically involving a comparison of a physically ill group and a non-ill group, addresses the following question: Is parental physical illness associated with child functioning? In the later design, the relationship between selected variables and child functioning is examined within a group of physically ill parents and their children to address the following question: What are the factors which modify or mediate the relationship between parental illness and child functioning (Armistead et al., 1995)?

The Association Between Parental Chronic Illness and Child Functioning

More internalizing and externalizing problems. More behavior problems in children and adolescents of parents with chronic illness have been reported in the literature (e.g., Brabiak, Bender, & Puskar, 2007; Heiney et al., 1997; Mikail & von

Baeyer, 1990; Siegel et al., 1992). Compared to a community sample, a study by Siegel et al. (1992) revealed that children with a terminally ill parent exhibited higher levels of psychological distress, both as reported by children themselves and by their parents. In this study children with a terminally ill parent experienced not only elevated depressive symptomatology, anxiety, and other internalizing problems, but also externalizing problem behaviors. Diminished self-esteem and deficits in social competence were also identified in children with a terminally ill parent (Siegel et al., 1992). Findings of Mikail and von Baeyer's (1990) study examining functioning in children and adolescents who have a parent with chronic pain revealed that children of parents with chronic pain received higher scores on a measure of delinquency, exhibited poorer adjustment, and had poorer social skills than children of non-ill parents.

Children whose mothers were HIV infected in the Forehand et al. (1998) study also were reported to have more difficulties in psychosocial adjustment, and demonstrated more internalizing problems (e.g., anxiety, depression), externalizing problems (e.g., aggression), and lower levels of cognitive and social competence than children of noninfected mothers. The results suggest that maternal HIV infection is a stressor that places the children of these women at risk for psychosocial adjustment difficulties (Family Health Project Research Group, 1998).

In the Shaffer, Jones, Kotchick, Forehand, and the Family Health Project Research Group's (2001) study, HIV infected mothers reported a significant increase in child externalizing problems and a decrease in mother-child relationship quality following maternal HIV infection disclosure, although no significant behavioral changes were reported by their children. Birenbaum, Yancey, Phillips, Chand, and Huster (1999)

studied school-age children's and adolescent's adjustment to parental cancer and found that school-age children and adolescents of a parent with cancer have significantly more behavioral problems than were expected. Similarly, the results of the Visser et al. (2005) study suggested that adolescent daughters and latency-aged (4-11 years) sons are at risk for emotional problems following the diagnosis of cancer in a parent. Heiney et al. (1997) reported that adolescents of a parent with cancer showed significantly higher state and trait anxiety compared to an age-normed sample.

Type of parental illness and child functioning. Hirsch, Moos, and Reischl (1985) argued that it is not a specific parental diagnostic category that places children at risk. Rather, they suggested that the principal risk factors for children and adolescents may be the presence of parental disability or distress. The interpretation was drawn from their study examining the functioning of adolescent children of parents with depression, rheumatoid arthritis, or no psychological or physical illness. Hirsch et al. (1985) found that adolescents in the parent depressed group and the parent arthritic group reported lower self-esteem and fewer school activities than adolescents in the non-ill group. However, the functioning of adolescents in the arthritic group was not significantly different than those in the depressed group in terms of psychological symptoms, self-esteem, and school activities. Welch, Wadsworth, and Compas (1996) also found that adolescents' self-reported symptoms of anxiety or depression did not vary according to type of parental cancer. Similar results were reported by Anderson and Hammen (1993) who suggested that parental physical illness may be associated with poor functioning when compared with children from families where neither parent is ill.

Furthermore, the extent of disruption in child functioning may resemble that which occurs in families where a parent is affectively disordered. The coping strategies used by families across diagnostic categories of illness in the mother to manage problems that affect them were studied by Stetz, Lewis, and Primomo (1986). Data revealed that the types of management strategies used by the disease groups (i.e., non-metastatic breast cancer, diabetes, and fibrocystic breast disease) were not significantly different from each other, suggesting that the type of chronic illness in the mother does not differentiate families by categories of management strategies employed to handle identified problems or challenges. These data provide some support for the suggestion by Hirsch et al. (1983) that the specific diagnostic category does not determine risk.

No negative impact on child functioning. In contrast to aforementioned studies suggesting the negative impact of parental chronic illness on children's psychological functioning, some studies (e.g., Hoke, 2001) suggested that children of a chronically ill parent do better than expected. In Hoke's study, 35 children, aged 8-16, whose mothers had breast cancer did not function differently from those whose mothers had benign breast biopsies. Moreover, data revealed that children of mothers with breast cancer reported fewer anxiety symptoms than the Revised Children's Manifest Anxiety Scale (RCMAS) normative sample, as did children of mothers with benign breast biopsies. In addition, mothers in the breast cancer group reported fewer behavior problems in their children, compared with the Child Behavior Checklist (CBCL) normative sample. Although the small sample size may limit the conclusions that can be drawn from Hoke's study, its results appear to suggest that some children of mothers with breast cancer are actually functioning better than normative samples on some social and behavioral

adjustments.

Results of Watson's (2006) study revealed that only a substantial minority of school-aged children of breast cancer patients displayed emotional or behavioral problems. Dura and Beck (1988) reported no difference in communication patterns between children in families with a parent who has chronic pain, diabetes, and no illness. Crist (1993) also failed to identify a unique pattern of interacting between mothers with multiple sclerosis and their daughters, when compared to a normative group. Based on the findings, Crist (1993) concluded that the data provided no evidence for a detrimental effect on children raised by a parent with a disability or chronic illness. Osborn (2007) conducted a systematic review of 10 studies to learn whether early stage parental cancer is associated with an increased risk of psychosocial difficulties among children and adolescents. The evidence suggested that children and adolescents do not generally experience elevated levels of serious psychosocial difficulties compared to reference groups, but they are at a slightly increased risk for internalizing type problems.

At risk. The results of a study by De Judicibus and McCabe (2006) also indicated that children of parents with MS did not appear to differ from community norms for overall parent-rated difficulties by the symptom scale. However, these children, based on the Goodman's impact score on the Strengths and Difficulties Questionnaire (SDQ), were over three times more likely than a community sample to be perceived by parents as having difficulties indicative of clinical status. The impact scale was based on ratings of levels of distress to the child, and interference with the child's functioning in home life, friendship, classroom learning, and leisure activities. According to Goodman (1999), the clinical status was better predicted by the impact of the children's difficulties than by

their symptoms. The impact score indicated these children appeared to be more likely than those from the community to develop psychological problems in the areas of emotions, concentration, behavior, or social interactions. They might have difficulties in how they related to others, the distress they experienced, and how they managed their lives, rather than revealing higher levels of symptoms. De Judicibus and McCabe (2006) concluded that children with a parent with MS may have difficulties dealing with the stresses of living with an ill parent, but most adjust well. However, they are at increased risk of adjustment difficulties and may have peer problems.

Inconsistent findings. Inconsistencies and disagreements between informants regarding emotional and behavioral functioning of children of ill parents are documented in the literature. According to a review by Korneluk and Lee (1998), children's self-reports indicate heightened distress, while parental reports do not suggest more problematic functioning. Visser et al. (2005) used a cross-informant perspective to investigate agreement among the reports of mothers and fathers, and between parents and adolescents on the emotional and behavioral functioning of children. Data from members of 186 families in which a person had a cancer diagnosis revealed that the perception of the child's functioning and potential influencing variables varied according to the informant. Compared to the norm group, ill parents in the study reported more emotional problems for latency-aged (4-11 years) sons and adolescent daughters. Results of adolescent self-reports also indicated more problems. However, spouses of ill parents reported better functioning in adolescent children. Further analyses indicated that mothers reported more problems than did fathers. Fathers appeared to underreport the problems of their children (Visser et al., 2005).

Overall, the current literature review appears to suggest that the areas of child functioning affected by parental physical illness vary substantially across studies. As Armistead et al. (1995) concluded after reviewing studies on parental illness, although in general parental illness appears to be associated with some difficulties in child functioning, the literature is currently too sparse to reach conclusions about the relationships between specific types of illness and different areas of child functioning. Watson et al. (2006) argued that these inconsistencies may be due to variations between studies in the groups included and in how child problems are measured, together with difficulties in obtaining adequate, homogeneous, and sample sizes.

Rolland's Family Systems-Illness Model

Different theoretical models have been developed to explain children's reactions to their parents' physical illness. One of them, proposed by Rolland (1999), explained family functioning with illness in a family member from a systems perspective. Rolland viewed illness as a normative family challenge that can precipitate either difficulties or enhanced functioning through the promotion of intimacy and closeness (Korneluck & Lee, 1998). The unfolding of a chronic illness is viewed in developmental context, involving the intertwining of three evolutionary threads: the illness, the individual, and family cycles (Rolland, 1999). Consequently, three dimensions were identified to evaluate the impact of illness on the family: (a) characteristics of the illness; (b) major phases in the natural history of the individual, and the family life cycles; and (c) family systems variables.

The illness itself is included in this systems model according to its pattern of psychosocial demands over time. Rolland (1999) proposed the psychosocial types of

illness with distinct psychosocial demands for the patient and family and argued that illness patterning may vary in terms of onset (acute *vs*. gradual), course (progressive, constant, or episodic/relapsing), outcome (e.g. anticipatory loss or loss), degree of incapacitation, and the level of predictability/uncertainty about its trajectory. Illness with different combinations of these dimensions is believed to impact families in different ways as different kinds of adaptive behavior or functioning reorganization may be required (Korneluk & Lee, 1998).

Rolland's Family Systems-Illness Model hypothesized that time phases of illness (i.e., crisis, chronic, and terminal) may also require different types and degrees of family adaptation. In addition, the phases of illness are thought to interact with the developmental stages of individual family members and the family life cycle. For example, families with young children are likely to respond and adapt differently than are families with older children or those without children (Korneluk & Lee, 1998). According to Rolland (1999), when a parent develops a chronic illness during the childrearing phases of the life cycle, a family's ability to stay on course is most severely taxed. In addition, major family system variables such as communication styles between and among family members, adaptability, and cohesion are assumed to impact functioning of family members through their interactions with the types and phases of illness. Based on this conceptual model, children's functioning, as the result of parental illness, needs to be examined on different dimensions, such as illness characteristics, major phases in the natural history of illness, the individual, and family cycles, and family systems factors (e.g., family communication styles, parent-child relationship, etc.).

Moderating and Mediating Child, Parent, and Family Variables

Researchers have attempted to investigate child, parent, and family characteristics that are associated with child functioning in families with a physically ill parent (e.g., Armistead et al., 1995). Demographic variables, such as age of the child, and gender of the child and the ill parent, have been shown to be important factors associated with child functioning of a parent with physically chronic illness. Compas et al. (1994) examined the effects of cancer in a mother or father on children and found that the level of children's distress syndrome and anxiety/depression symptoms differed as a function of whether the mother or the father had cancer, as well as the child's age and gender. The results of their study indicated that adolescent girls whose mothers had cancer were the most significantly distressed. According to Grant and Compas (1995), the distress in adolescent girls of parents with illness was directly due to increased family responsibilities as a result of their mothers' illness. In addition, Compas et al. (1994) argued that children's symptoms of distress were related to appraisals of the seriousness and stressfulness of the cancer.

Armistead et al. (1995) concluded that Compas et al.'s (1994) study demonstrated several important factors regarding the differential impact of parental illness, which included the age of the child, gender of the child and the ill patient, and the child's cognitive appraisals of the parent's illnesses. However, Lindqvist, Schmitt, Santalahti, Romer, and Piha (2007) found that neither gender of the ill parents nor that of their adolescent children was a factor associated with the mental health of Finnish adolescents with a parent who has cancer. According to Watson et al. (2006), the mother's treatment status or time since diagnosis was not associated with emotional and behavioral problems.

Whether the mother was currently on or off chemotherapy was not associated with child problems nor was time since cancer diagnosis.

Watson et al. (2006) examined factors associated with emotional and behavioral problems among school age children (6- to 17-year-old) of breast cancer patients using reports from patient mothers, their healthy partners, the children's teacher, and adolescents, and found that risks of emotional and behavioral problems in school age children of women with breast cancer were linked with low levels of family cohesion, low affective responsiveness, and parental over-involvement. Furthermore, the data revealed that family communication issues were associated with externalizing behavior problems, whereas maternal depression was related to child internalizing problems, particularly in girls. The results of Watson et al.'s (2006) study suggested that maternal depression and poor family functioning are important in understanding those cases where children have emotional and behavioral problems.

Family Coping with Maternal Illness Model

The Family Coping with Maternal Illness Model proposed by Lewis et al. (1989) suggested that parental illness factors such as demands and length of time since diagnosis were important variables in determining outcome in their children. The model also assumed that different types of disease create substantially different demands to which families must adapt in order to function normally (Korneluk & Lee, 1998). It was hypothesized that individual, dyadic, and family characteristics would influence family functioning with maternal illness. According to Lewis et al., parents' psychological functioning, marital adjustment, the parent-child relationship, child psychosocial functioning, and family coping styles are expected to play important roles in the family

members' adaptation to illness. In addition, the external factors such as the socioeconomic status of the family and the availability of social support are viewed as important factors that impact family functioning.

Relationships among the illness demands, family coping, father-child relationship, and marital adjustment were found in the Lewis et al. (1989) study involving children whose mothers were afflicted with either breast cancer, diabetes, or fibrocystic breast disease. The quality of the father-child relationship and marital adjustment were revealed as two important factors with regard to child functioning when a mother is ill. A higher quality of father-child relationship and better marital adjustment were associated with higher levels of prosocial functioning in children.

Armistead et al.'s Schematic Model of How Parental Physical Illness Influences Child Functioning

Similar to Lewis and associates' hypotheses, Armistead and colleague proposed a model that specifically described child adjustment to parental physical illness (Armistead et al., 1995; Steele et al., 1997) and focused on the impact of disruptions to parenting and conflict between parents when parents become ill. Illness was hypothesized to create difficulties in the martial relationship and to interfere with effective parenting. Marital problems and disrupted parenting, in turn, were expected to negatively impact child functioning. See Figure 1 for the specific pathways by which parental illness is expected to affect children's well-being and family functioning. This model has been tested (e.g., Armistead et al., 1999; Armistead et al. 1997; Kotchick, et al., 1997; Steele et al., 1997) in examining the impact of parental illness on children and families. For example, Family Health Project Research Group (1998) examined the environmental and family

process variables that may play a role in these differences and suggested that individual child variables (e.g., understanding of illness) and family process variables (e.g., parenting) are related to psychological adjustment of children whose mothers are HIV infected. Moreover, research findings of Steele et al. (1997) revealed that family members' illness uncertainty was intercorrelated, and child uncertainty about the parent's illness predicted psychological adjustment problems in the child.

Overall, research appears to suggest that child demographic (e.g., age, gender), psychological (e.g., cognitive appraisal of illness, self-esteem, social support, perceptions of parenting), and interpersonal (e.g., parent-child relationship, marital adjustment) variables in the child, the parent, and the family may play a role in children's responses to the illness of a parent (Armistead et al., 1995). Potential mechanisms accounting for a relationship between parental physical illness and child functioning include disruption of parenting, parental depression, interparental conflict, and parental divorce, with disrupted parenting as a proposed key mechanism for explaining the relationship between parental physical illness and child functioning.

Findings of a path analysis study by Lewis and Hammond (1996) on the impact of early stage breast cancer on the functioning of families with adolescents indicated that illness-related demands impinging on the family are associated with higher levels of maternal depressive mood, poorer marital adjustment, and lower parenting quality, which leads to lower adolescent self-esteem (see Figure 2). Lewis and colleagues (I989) defined illness demands as the hardships or stressors that tax the family's resources and are direct effects of the parent's disease and its treatment. The association between higher demands of chronic illness and more depressed mood has been documented in

Woods, Haberman, and Packard's (1993) research. In addition, studies have also shown that the extent of illness demands may have an important influence on adjustment of non-ill parents (Lewis & Hammond, 1996; Lewis et al., 1989). Depressive mood in either the mother or the father can cause emotional or physical inaccessibility, thereby straining the marriage and negatively affecting the ways in which the families cope with their problems and challenges. Tension in the marriage is predicted to negatively affect the family members' coping behaviors. Interparental conflict has high potential to distract from the activities of the household and the family members' process of appraising, reconfiguring around, and adjusting to the illness as a result of the demands of the chronic illness (Lewis & Hammond, 1996).

Parental Depression

Biggar, Forehand, and the Family Health Project Research Group (1998) found that HIV infected mothers, relative to normative non-infected mothers, were more depressed. Lewis and Darby (2003) investigated the effects of parental functioning on adolescent adjustment during the acute phase of treatment for mothers diagnosed with breast cancer and found that adolescents tended to show increased behavioral problems when both parents had depression, as opposed to when neither parent was depressed. A path analysis conducted by Steele, Forehand, and Armistead (1997) suggested that parental illness impacts child internalizing problems by operating through parental depressive symptoms, which directly related to child internalizing problems, and indirectly related to internalizing problems via parent/child relationship problems and avoidant coping strategies. Additional analyses revealed that maternal, rather than paternal, depressed mood significantly contributed to the adolescent's externalizing,

internalizing, and overall behavioral problems, suggesting that maternal depressed mood was the main source of influence on child/adolescent functioning.

Parenting Relationship

In general, families with good parent-adolescent communication perceive higher levels of family cohesion, family adaptation, and family satisfaction (Barnes & Olson, 1985). Lewis and Darby's (2003) study also revealed that the parent-child relationship significantly influenced adolescent adjustment during the acute phase of the mother's breast cancer. When the quality of the parenting relationship between the child/adolescent and both parents was poor, adolescents showed significantly lowered self-esteem and increased anxiety.

According to Grant et al. (2006), there is substantial evidence from theory-based studies that supports the mediating role of family relationships in the relation between stressors and child and adolescent psychological symptoms. Healthy family functioning may facilitate children's and adolescents' adjustment to parental illness. Lindqvist, Schmitt, Santalahti, Romer, and Piha (2007) suggested that open communication, flexible problem solving, and appropriate affective involvement may reduce psychological distress in adolescents whose parents have cancer.

Kotchick, Summers, Forehand, and Steele (1997) demonstrated that parental support was a stress-buffering effect for child internalizing problems in families whose fathers had hemophilia, and in some cases, HIV seropositive. Research findings of Dutra et al. (2000) identified positive parent-child relationships (e.g., positive conversations, mutual understanding, reliable source for support for the child) as a significant predictor of resiliency in children whose mothers were HIV infected. Forehand and colleagues

(2002) also proved parenting variables, particularly the mother-child relationship, were related to child adjustment.

Marital Adjustment and Child and Adolescent Functioning

Mixed findings regarding the impact of martial adjustment on children's functioning have been documented in the literature. According to Lewis and Darby (2003), marital adjustment did not affect adolescent functioning significantly among adolescents whose mothers had breast cancer. However, Lewis, Woods, Hough, and Bensely (1989) indicated that higher levels of marital adjustment significantly and positively affected the child's level of psychosocial functioning. A meta-analysis study by Reid and Crisafulli (1990) revealed that marital discord was positively associated with child behavioral, conduct problems, and the relationship was particularly stronger for boys.

Demands of Illness

Definition of Demands of Illness

Chronic illness is considered as a multidimensional experience that produces a variety of demands. Generally, demands of illness are illness related thoughts and events that individual and families experience in response to health issues or problems (Haberman, Woods, & Packard, 1990). According to Woods and Lewis (1995), demands are "perceptions of illness-related events generated by the disease and its treatment, and they may be appraised as stressors, hardships, concerns, problems, or challenging opportunities for growth" (p. 136-137). Demands common to a wide range of chronic illness may include managing treatment regimens, seeking causal explanations for their illness, undertaking strategies to normalize life with illness, and monitoring

family and other systems around the patient (Haberman et al., 1990).

Constructs and Dimensions of Illness Demands

Based on reports by women with breast cancer, diabetes, and fibrocystic breast diseases, Packard, Haberman, Woods, and Yates (1991) identified 22 illness demand categories embedded within three constructs and seven domains of illness demands (see Table 1 for the relationships among the categories, conceptual domains, and core constructs).

Table 1

Core Constructs, Conceptual Domains, and Categories

Core Construct	*Conceptual Domain*	*Category*
Direct disease effects	Direct disease effects	1. Direct disease effects
Personal disruption	Disruption of continuity	2. Vulnerability
		3. Uncertainty
		4. Unmet expectations
		5. Future concerns
		6. Confrontation with time
		7. Reminders
	Disruption of integrity	8. Self-images
		9. Social comparisons
		10. Social-emotional disturbances

Table 1 (continued)

Core Construct	*Conceptual Domain*	*Category*
	Disruption of normalcy	11. Monitoring symptoms
		12. Monitoring coping (self and others)
Environmental transactions	Social response	13. Social network
		14. Role compensation
		15. Marital dynamics
	Treatment process	16. Financial costs
		17. Treatment effects
		18. Accommodation
		19. Waiting for results
		20. Additional treatment
	Parent provider interaction	21. Information exchange
		22. Negative relationships

From "Demands of Illness Among Chronically Ill Women," by N. J. Packard, M. R. Haberman, N. F. Woods, and B. C. Yates, 1991, *Western Journal of Nursing Research, 13*, p. 443.

The domains of illness demands include: a) direct disease effects, b) disruption of continuity, c) disruption of integrity, d) disruption of normalcy, e) social responses, f) treatment process, and g) patient/provider transactions; and these domains are grouped into three core constructs: 1) disease effects, 2) personal disruption, and 3) environmental transactions.

According to Packard et al. (1991), direct disease effects include physical and psychosocial experiences such as physical change, fatigue, nausea, pain, and emotional/cognitive changes. Personal disruptions include challenges to the ill women's sense of continuity, identity, and normalcy in daily life. Disruptions in the sense of continuity in daily life include feelings of uncertainty, unmet personal expectations, and preoccupation with both the personal meaning of the illness and attributions about the illness, whereas disruptions in personal integrity are associated with negative changes in self-image, the threat of social comparisons, and the onset of emotional disturbance. Disruptions in the sense of normalcy refer to the perception that she or her significant others are functioning in a usual or typical manner, involving monitoring oneself for physical changes and monitoring one's or significant others' coping effectiveness. Environmental transaction demands caused by the illness include difficulties in relationships with members of social networks or health care providers, as well as with the treatment process. Furthermore, the results of Packard et al. (1991) indicated that personal disruptions and the troublesome intrapersonal changes that had occurred since the onset of illness were the most prevalent illness demands in both the early and adaptation phases for women in all three disease groups (i.e., breast cancer, diabetes, and fibrocystic breast diseases) being studied.

Altschuler and Dale (1999) acknowledged that limited research and clinical attention has been paid to the experience of being an ill parent and explored how parents manage being a patient and a parent at the same time. Three themes emerged from the qualitative analyses of their clinical work, and they include: parental fears that they would be less capable to meet the needs of their children due to their illness; the dilemma of balancing self-care needs with the care for others; and how the illness can evoke feelings that are related to personal traumatic experience, influencing their responses to their children. According to Woods and Lewis (1995), ill mothers experience more demands associated with their illness as the time since their initial diagnosis lengthened. However, Altschuler and Dale (1999) argued that physically ill parents are given little support in preparing for the effect their illness might have on their children.

A study by Hough, Brumitt, and Tremplin (1999) involving women who had one or more chronic conditions, such as heart disease, hypertension, tuberculosis, epilepsy, diabetes, anorexia nervosa/bulimia, MS, osteoporosis, HIV/AIDS, or cancer, indicated that the number of chronic illnesses has a direct impact on the demands of illness. In addition, the findings suggested that having children under 18 in the home increases the demands of illness.

Woods and Lewis (1995) proposed that the demands of illness experienced are influenced by factors such as social support and the nature of the disease. Social support including affirmation, positive affect, and instrumental assistance, as well as social resources, may reduce demands women associated with their illness. It is believed that families with larger social networks would be less likely to exhaust their resources than families with smaller support networks. Access to social and economic resources may

enable families to obtain instrumental support such as child care or household help, reducing the demands women associated with their illness.

Impact of Demands of Illness on Children and Families

A series of correlational analyses between the mother's illness-related demands and the adolescent's functioning conducted by Lewis and associates revealed that the greater the number of family-related illness demands the mother experienced, the greater the number of behavioral problems reported by the adolescent (Lewis, 1996). The number of demands associated with the illness in turn produced problems with marital adjustment (e.g., Woods & Lewis, 1995). According to Lewis, Hammond, and Woods (1993), more frequently experienced illness demands were associated with higher levels of parental depressed mood.

Parental Chronic Illness and The Child's Academic Functioning

Among limited literature available to understand the relationships between parental illness and child functioning, most studies address the impact of parental illness on the child's psychological adjustment (e.g., internalizing problems, externalizing problems). The impact of parental chronic illness on the child's achievement and school behavior is rarely emphasized or mentioned in the literature. Only a few studies have documented the impact of parental physical illness on children's academic achievement and school behavior as parts of their studies. Limited literature appears to suggest a negative association between parental chronic illness and their child's educational achievement and school behavior.

Results of a study by Anderson and Hammen (1993) suggested that parental physical illness is associated with the child's poorer academic performance and social

behavior. In the Forehand et al. (1998) study, academic achievement was assessed as part of adjustment in African-American children whose mothers were HIV infected. The impact of maternal HIV infection on the child's achievement, however, was not clear since the average reading scores, as measured by the standardized Reading subtest of the Wide Range Achievement Test—Revised (WRAT-R), for both maternal infected and normative non-infected groups of children were both low (i.e., 12th percentile). Armistead, Klein, Forehand, and Wierson (1997) used grade point average as one of the outcome measures in their study on family process variables that accounted for significant variances in child functioning. The findings suggested that a positive parental-child relationship is perhaps related to better grades, in addition to lower levels of child depression and externalizing problems. Kotchick et al. (1997) also demonstrated a positive relationship between parental social support and child academic performance (e.g., GPA) in families whose fathers were chronically ill.

Yet, according to Anderson and Hammen (1993), problems in areas such as academic achievement can be a more effective index than information about specific syndromes in predicting children's later psychosocial disorders, as it can be seen as an indicator of adaptation failure.

Parental Involvement in Children's Education

Parental involvement has emerged as one of the most important topics in educational circles and has become one of the centerpieces of educational dialogue among educators, parents, and political leaders (Jeynes, 2003). Indeed, increasing parents' involvement in children's academic lives has become one of the major educational objectives at the federal, state, and local levels (Pomerantz, Morrman, &

Litwack, 2007). For example, such involvement is one of six targeted areas for reform in the No Child left Behind Act of 2001.

Definition and Dimensions of Parental Involvement

Although parental involvement is often simplistically perceived as unidimensional, Fan and Chen (2001) argued that this construct is better conceptualized as being multifaceted as parental involvement subsumes a wide variety of parental behavioral patterns and parenting practices. According to Grolnick, Benjet, Kurowski, and Apostleris (1997), parental involvement in children's education is the dedication of resources by the parent to the child in behavioral, cognitive-intellectual, and personal perspectives. The parents' behavioral involvement concerns participation in activities at school (e.g., attending parent-teacher conference and school events), and at home (e.g., help with their children's homework). The cognitive-intellectual involvement includes exposing their children to cognitively stimulating, enriching activities, such as talking about current news or events. The personal involvement generally refers to the knowledge of the child's progress, learning content, and activities in school.

Relationship Between Parental Involvement and Students' Educational Outcomes

A wealth of research suggesting a strong positive relationship between student achievement and parent involvement in education has been documented in the literature (e.g., Fan & Chen, 2001), and various studies indicate that parental involvement is salient and critical in determining how well children do in school at both the elementary and secondary school levels. For example, a longitudinal study by Izzo, Weissberg, Kasprow, and Fendrich (1999) used teacher reports on parent involvement and school performance for more than 1,000 urban, kindergarten through third-grade children for 3 years to

examine how parental involvement in children's education related to children's social and academic functioning in school. In this study four dimensions (i.e., frequency of parent-teacher contact, quality of the parent-teacher interactions, participation in education activities at home, and participation in school activities) of parent involvement were included, and the data revealed that every parent involvement variable was linked to children's current and 3-years later school performance, suggesting that parent involvement is closely linked to children's school functioning. The findings furthermore suggested that parents' participation in children's educational activities at home was particularly important as it significantly predicted a wide range of performance measures and academic achievement more strongly than any other parent involvement variable.

Fan and Chen (2001) performed a meta-analysis examining the influence of parental involvement on the general student population and concluded that parental involvement positively influences children's education outcomes. Jeynes' (2003) meta-analysis on the effects of parental involvement on minority children's achievement also revealed that parental involvement, as a whole, affected the student's academic achievement. Another meta-analysis conducted by Jeynes (2005a) indicates the relationship holds true for White and minority children and also for both boys and girls.

Hara and Burke (1998) demonstrated the effectiveness of the parent involvement program implemented in an inner city, elementary school in Chicago and claimed that increased parental involvement is the key to improving the academic achievement of children. Hampton, Mumford, and Bond (1998) reported that student achievement of parents who were involved in a 4-year long-term program named the Project FAST (Families Are Students and Teachers) that followed an extended family approach to

enhance parental involvement far surpassed that of parents who remained in the more traditional school setting.

According to Jeynes (2003), the positive impacts of parental involvement on children's academic achievement are across race. Although different ethnic groups may engage in different aspects of involvement (Okagaki & Frensch, 1998), they all appear to benefit from parental involvement. However, the effects of parental involvement may be greater for some groups more than for others. A meta-analytic study (Jeynes, 2003) indicated that parental involvement appeared to benefit African Americans and Latinos more than it did Asian Americans, suggesting among these groups certain aspects of parental involvement may have a greater impact than do others.

Consistent with the general assumption, Mau (1997) found that parental educational expectations are positively linked to high school students' academic achievement among Asian Americans and Asian immigrants. However, unlike the pervasive belief, a negative effect of parental involvement on academic achievement was found for the Asian American group. Mau (1997) suggested that the link between parental involvement and academic achievement may be a function of the type of parental involvement. Children of helping and controlling parents who help with homework, and structure and set limits for non-academic activities are less likely to perform well academically among both Whites and Asian Americans. Supporting and participating types of parental involvement (e.g., participating in school events, meetings, or acting as a volunteer) may facilitate academic achievement for White students. However, Asian American students whose parents participate in more school activities are less likely to perform well in school.

Despite its intuitive meaning, the operational use of parental involvement has not been clear and consistent (Fan & Chen, 2001). Researchers (e.g., Ballantine, 1999) have attempted to identify many components of parental involvement and addressed the importance of identifying the aspects that are most beneficial to children. Christenson, Rounds, and Gorney (1992) reviewed research findings with respect to family influences on student achievement in an attempt to identify factors that affect student achievement. Identified factors included parent expectations and attributions, structure for learning, home affective environment, discipline, and parent involvement. In general, realistic, high parent expectations for children's school performance and effort attributions are associated with positive achievement performance (Christenson et al., 1992). Positive family structure for learning characterized by an emphasis on achievement, as parents encourage academic and intellectual pursuits by structuring children's time for homework completion, encouraging verbal conversations, modeling reading and learning, encouraging children to read at home, and limiting television viewing, tends to be positively associated with children's grades and performance on achievement tests (Christenson et al., 1992).

Research also indicates that positive home affective environments characterized by parental acceptance, nurturance, encouragement, involvement, and emotional responsiveness to the child's needs are also related to better achievement outcomes in children (Christenson et al., 1992). Christenson et al. (1992) reviewed research on the impact of parental discipline and summarized that parental discipline characterized by setting clear standards, enforcing rules, and encouraging discussion, negotiation, and independence is associated with positive achievement outcomes. In addition, the positive

effects of parents' participation in education in both school and at home has been documented in the literature (Christenson et al., 1992).

Fan and Chen (2001) indicated that variables related to parental involvement that have been studied in the literature include parent-child communication, home supervision, educational aspirations for children, and school contact and participation. According to Jeynes (2005b), the extent to which parents discuss school issues and attend schools functions also has a positive impact on adolescent academic achievement. Meta-analytic results indicate that almost every major facet of parental involvement examined yielded significant results on children's education. Nearly all of the individual components of parental involvement under Jeynes' (2005a) examination, such as parental expectations, parental reading, family communication, checking homework, parental participation or attendance at school events, were found to be positively and significantly correlated with educational outcomes. Findings of Fan and Chen's (2001) meta-analytic study revealed that parental aspirations/expectations for children's educational achievement are particularly highly associated with students' academic achievement.

Hoover-Demsey et al.'s (2001) examination of parental involvement in homework revealed mixed findings. For example, Jeynes (2005b) found that whether a parent checked on the child's homework did not have a positive impact on academic achievement. However, researchers suggest parents' homework involvement behaviors are more related to proximate student outcomes (e.g., attitude about homework, perceptions of personal competence) than to student performance on summary assessments of achievement (Hoover-Demsey et al., 2001).

According to Hoover-Demsey et al. (2001), the most critical outcomes associated with parental involvement in homework may be associated with the attitudes, ideas, and behaviors enacted by students in the course of school learning through parental modeling, reinforcement, and instruction. Operating through these mechanisms, parents' involvement activities have been positively related to student achievement, and to student attributes proximally related to achievement, such as attitudes toward homework, perceptions of personal competence, and self-regulation (Hoover-Dempsey et al., 2001).

Although the positive outcomes of parental involvement in children's education have been supported by many studies, research in this area has been somewhat fragmented because the limited empirical research has been conducted without a sound theoretical foundation (Fan & Chen, 2001). Recognizing the lack of a guiding theoretical framework for understanding the impact of parental involvement, Epstein and colleagues (e.g. Epstein, 1995; Epstein & Hollifield, 1996; Epstein & Sheldon, 2002; Sheldon & Epstein, 2005) suggested a widely recognized typology to account for different levels of parental involvement in children's education.

According to Epstein (1995, 2002), parental involvement refers to a wide range of activities and connections among schools, families, and communities and includes: parenting (i.e., helping families establish supportive home environments for children and assisting in child-rearing skills); school-parent communication (i.e., establishing two-way exchanges about school programs and children's progress); volunteering (i.e., recruiting and organizing parent help at school, home, or other locations); learning at home (i.e., providing information and ideas to families about how to help students with homework and other curriculum-related materials); school decision-making (i.e., having parents

from all backgrounds serve as representatives and leaders on school committees); and school-community collaboration (i.e., identifying and integrating resources and services from the community to strengthen school programs).

Epstein reviewed the issue of parental involvement mainly from the perspective of schools, and her research is usually concerned with what schools and educators can do to stimulate more active parental involvement. Moreover, Epstein's typology of involvement provides schools with a structure to help organize specific activities to involve parents in their children's education (Epstein, 2002).

Hoover-Dempsey and Sanlder's Theoretical Framework of Parental Involvement Process

Focusing on the need to more fully understand families' contributions to student outcomes, Hoover-Dempsey and Sandler (1995, 1997) proposed a theoretical model of the parental involvement process to explain why parents get involved and how their involvement improves educational outcomes in students. Their theoretical conceptualization appears to be comprehensive as it focuses on three issues: (1) why parents become involved in their children's education, (2) how parents choose specific types of involvement, and (3) why parental involvement has a positive influence on students' educational outcomes. Constructed in five sequential levels, the model's first level identified four psychological contributors to parents' decisions to become involved (see Figure 4).

They included parental role construction or beliefs about what they should do in the context of their child's education, parental sense of efficacy for helping the child succeed in school, parents' perception of general invitations from the school, and perception of general invitations for involvement from the child. The second level of the

model assumed that once a decision to become involved had been made, contextual factors (e.g., time and energy, perceptions of specific invitations for involvement from the child and the child's teacher) influenced parents' choice of involvement forms. The third level of the model identified mechanisms of parental involvement's influences (i.e., modeling, reinforcement, and instruction) or the specific means by which parents affect children's school outcomes. The fourth level hypothesized that these mechanisms are influential to the extent that these is a "goodness of fit" between the parents' actions and the child's developmental needs and between the parents' involvement and the school's expectations for involvement. The model concluded that the student outcomes (i.e., skills and knowledge, self-efficacy for school success) are culminated in the fifth level. Although this theoretical model is promising, Fan and Chen (2001) argued that it is still unclear how the major element in the model can be operationally defined and measured empirically.

Although the examinations of the Hoover-Dempsey and Sandler's model about parental involvement are still ongoing, a revised model (see Figure 5) that involves the first two levels has been recently introduced by Walker et al. (2005). The revised model proposed that three contributing factors to parental involvement decisions and participation forms include: parents' motivational beliefs regarding their involvement (i.e., parental role construction and parental self-efficacy); parental perceptions of invitations for involvement from the school, the child, and the teacher; and parents' perceived life context (i.e., perceived time and energy and perceived skills and knowledge). In addition, forms of parental involvement are defined as both the school-based and the home-based behaviors in this newly proposed model. An empirical test of this theoretical model of

parent involvement conducted by Green, Walker, Hoover-Dempsey, and Sandler (2007) revealed that both forms (school-based and home-based) of parental involvement were predicted by model constructs such as motivational beliefs, parents' perceptions of invitations to involvement from others, and perceived life context. The results of Green et al's (2007) study suggested that this model offers a useful framework for understanding what influences and prompts parents' home-based and school-based involvement.

Domains of Educational Outcomes

Parental involvement appears to affect all levels of academic achievement. According to Ballantine (1999), children earn higher grades and test scores, have better school attendance and get into less trouble, and are more likely to graduate from high school and attend college as a result of parental involvement. In addition, parents' communication with their children improves and parents gain a sense of accomplishment from their children's success.

Jeynes' (2003) meta-analysis examining the impact of parental involvement on academic achievement revealed positive relationships between parental involvement and all the academic measures studied, such as GPA, standardized tests, and other academic measures, suggesting that parental involvement has a significant impact on children across academic outcomes. The findings also revealed that parental involvement appeared to influence standardized test scores more than GPA. According to Jeynes (2003), a possible explanation is that parents may offer not only information specific to the classroom but likely help in giving children a broader level of academic information when they get involved in their children's education.

Student motivation as an academic outcome of parental involvement has recently been investigated. Gonzalez-DeHass, Willems, and Holbein (1999) reviewed studies of students from the elementary school to high school and identified a beneficial relationship between parental involvement and various motivational constructs, such as school engagement, intrinsic/extrinsic motivation, perceived competence, perceived control, self-regulation, mastery goal orientation, and motivation to read. When their parents are involved, students put more effort into their studies and are more concentrated and attentive. They are more inherently interested in learning and perceive higher levels of competence. Students whose parents show an interest in their children's education by getting involved adopt a mastery goal orientation to learning and are more likely to take personal responsibility for their learning. They are more likely to seek challenging tasks, persist through academic challenges, and experience satisfaction in their schoolwork. In addition, these students demonstrate greater self-efficacy as readers (Bonzalez-DaHass et al., 1999).

Rationale for the Current Study

Parenting demands a commitment to caring for others and requires continuous involvement of time and effort. However, the urgency of self-care demands due to life-threatening and debilitating medical conditions means that patients' own requirements may have to be given priority over the needs of their children. Although many ill parents find a way of resolving this dilemma, they, as suggested by Altschuler and Dale (1999), are faced with a seemingly irreconcilable choice of whether to respond as parents or as patients. According to family systems theory, change in one part of the system will result in compensatory change in the other part of the system (Kahle & Jones, 1999). Serious

illness is likely to impact the family system when a family member is not functioning normally, affecting all the other family members as well as the family's overall functioning. As a result of a family member's illness, certain functions and roles need to be reallocated to other family members and this redistribution of functions and power requires adaptation in the family (Asen, 1985). Rolland's (1999) Family Systems-Illness Model provides a conceptual framework for evaluating the impact of illness on the family. This model reviews family functioning in terms of developmental context of individuals and the family as a whole. Children's functioning, as the result of parental illness, needs to be examined on different dimensions, such as illness characteristics, major phases in the natural history of illness, the individual, family cycles, and family systems factors (e.g., family communication styles).

Although a growing awareness of the psychological impact of parent chronic illness on children and their families has been noted in the past two decades, the findings regarding the impact of parental chronic illness on the child's functioning have been inconclusive in the literature. While some studies (e.g., Brabiak et al., 2007; Forehand et al., 1998; Heiney et al., 1997; Mikail & von Baeyer, 1990) reported negative psychosocial and/or behavioral outcomes in children as a result of their parent's physical illness, some (e.g., De Judicibus & McCabe, 2006; Hoke, 2001) suggested that children of parents with a chronic illness do not function differently from those whose parents are not ill. The review conducted by Osborn (2007) indicated that children and adolescents do not generally experience elevated levels of serious psychosocial difficulties, but they are at a slightly higher risk for internalizing or behavioral problems.

Some moderating and mediating factors that influence the impact of parental chronic illness on the child's functioning have been identified. According to Lewis et al. (1989), parents' psychological functioning, marital adjustment, the parent-child relationship, child psychosocial functioning, and family coping styles were expected to play important roles in the family members' adaptation to illness. Furthermore, Lewis and Hammond (1996) suggested that illness-related demands impinging on the family are associated with higher levels of maternal depressive mood, poorer marital adjustment, and lower parenting quality, which may affect children's functioning (see Figure 2).

Similar to Lewis et al.'s hypothesis, Armistead et al.'s (1995) model (see Figure 1) addressing the child's adjustment to parental illness also focuses on the impact of disruptions to parenting and conflict between parents when parents become ill. Illness is hypothesized to create difficulties in the martial relationship and to interfere with effective parenting. Although disrupted parenting has been seen as a leading mechanism operating to influence child functioning of parents with chronic physical illness (Armistead et al., 1995), little is known about how the possible disrupted parenting affects parents' involvement in their children's homework, school activities, and education in general. Dura and Beck (1998) found that children from families of a parent with chronic pain tended to have more days absent from school than children of mothers with no illness. The results suggested that disrupted parenting due to parental physical illness may be associated with negative parental involvement in the student's school activities.

As parental involvement has been identified as a critical factor in predicting the student's academic achievement, Armistead et al.'s model appears to suggest that the

child's educational activities and performance may be compromised as a result of parental chronic illness. Guided by both Lewis et al.'s (1989) and Armistead et al.'s (1995) theoretical frameworks, this study investigated the degree of parental involvement of mothers with chronic illness in their children's academic activities, and the impact of maternal chronic illness on the children's achievement.

Grant et al.'s (2003) meta-analytic path analysis argued that stressful life events such as poverty may lead to psychological symptoms in children and adolescents, and negative parenting is associated with both internalizing and externalizing problems in children and adolescents. It is proposed that stressful life events, such as parental chronic illness, may also lead to disruptive parenting and parental involvement, resulting in negative educational outcomes in children, particularly when the demands of illness experienced by the mothers are elevated. The impact of demands of illness on various aspects/dimensions of parental involvement in children's education, as well as their proximate influence on children's academic performance, was examined in this study.

Different perspectives of parental involvement and their impact on the student's education have been reviewed in the literature. Different types of involvement such as parent-child communication (e.g., talking about children's school activities), home supervision (e.g., limiting TV watch and homework monitoring), educational aspirations for children, school contact and participation (e.g., volunteering in school, attending school meetings), and perceptions of parental efficacy have been found to be significantly linked to positive educational outcomes in children (e.g., Fan & Chen, 2001; Jeynes, 2005). This study primarily adapted Hoover-Dempsey and Sandler's theoretical model of the parental involvement process (see Figures 4 and 5) to examine the impact of parental

illness on their motivation beliefs (i.e., parental self-efficacy) and involvement forms in terms of home-based (i.e., home supervision) and school-based (i.e., school contact and participation) behaviors.

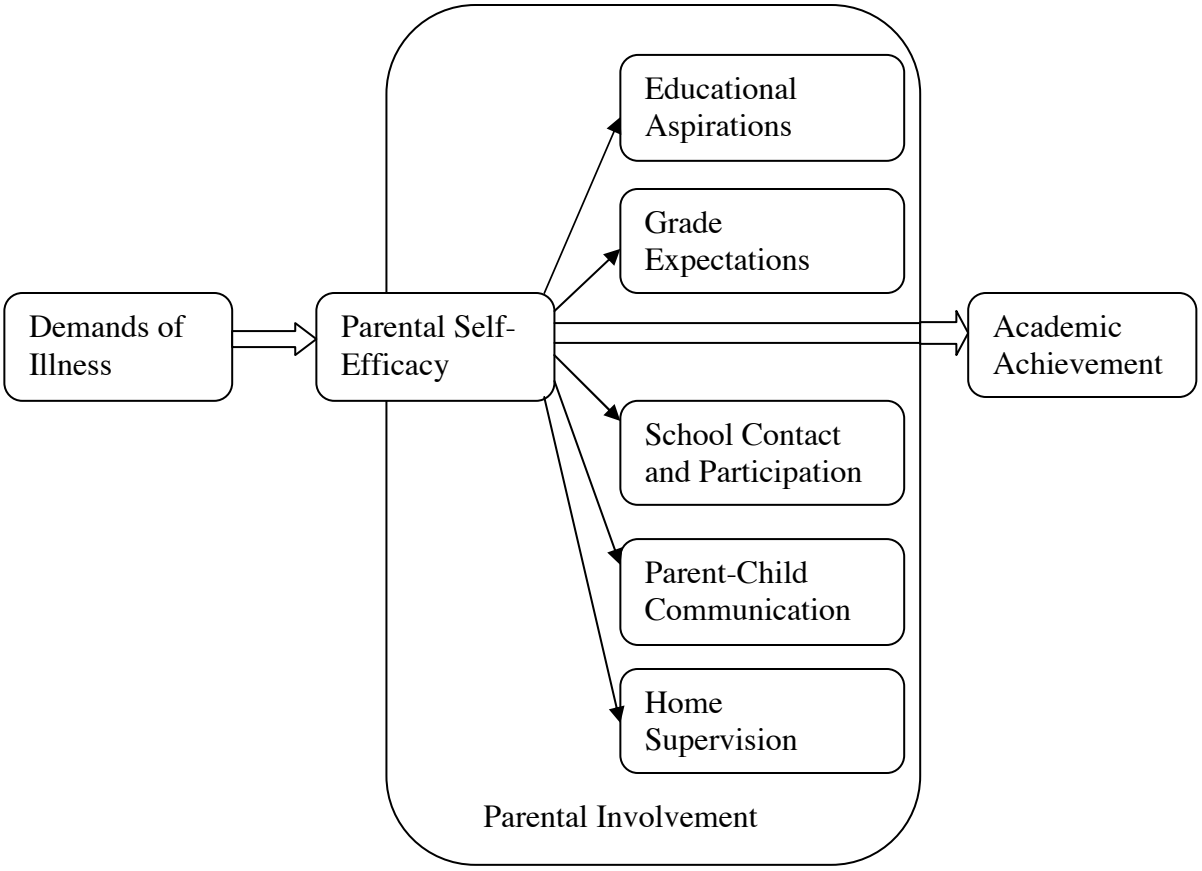
In addition, two important variables of parental involvement were also included in this study to further address the influence of parental illness on different aspects of parental participation in their child's education, and they were: a) parental aspiration/expectation for children's educational achievement; and b) parent-child communication regarding school related matters. According to Fan and Chen (2001), parents' aspiration for their children's educational attainment may be the most critical component of parental involvement as it is highly associated with students' academic achievement. Family or parent-child communication is also associated with students' educational outcomes (Jeynes, 2005). However, according to the Lewis et al.'s (1989) model, the parent-child relationship may moderate or mediate the impact of illness on the child's functioning.

Based on the theoretical frameworks of Lewis et al. (1989) and Armistead et al. (1995), it was hypothesized that demands of illness experienced by physically ill mothers might compromise all dimensions/aspects of parental involvement. Subsequently, the disrupted parenting and reduced levels of parental involvement as a result of experienced demands of illness might have negative impact on children's academic achievement (see Figure 3). The model being examined in the present study is presented in Figure 6.

Compas et al. (1994) indicated that the levels of children's distress syndrome differed as a function of the child's age among children of parents with physical illness, and adolescents appeared to be affected more than young children by parental illness.

Figure 6

Testing Model of the Impact of Parental Chronic Illness on Child Academic Functioning



According to Pedersen and Ravenson (2005), an adolescent's greater cognitive development enables an understanding of the implications of the illness for oneself and one's family, which may result in greater psychological distress than would be experienced by a younger child. Based on these suggestions, this study examined the educational functioning of middle school- and high school aged students of ill mothers.

Moreover, Hirsch, et al. (1985) argued that it is not a specific parental diagnostic category that places children at risk. Rather, they suggested that the principal risk factors

for children and adolescents might be the presence of parental disability or distress. Welch, Wadsworth, and Compas (1996) also found that adolescents' self-reported symptoms of anxiety or depression did not vary according to type of parental cancer. According to Woods, et al. (1995), type of disease is associated with the demands of illness experienced by individuals with chronic illness. Since demands of illness were measured in this study, it was believed that type of disease would not interfere with the purpose of this study. As a result, mothers with various types of chronic illness were recruited in this study.

Research and Educational Implications

Parental illness is a stressful experience for children and adolescents, constituting a potential threat to physical and mental health and normative development. However, in contrast to the substantial literatures on families adjusting to a child's illness, research literature examining the effects of parental illness on the child's development and well-being remains underdeveloped. Among the limited literature addressing the relationships between parental illness and the child's functioning, the majority of studies have mostly focused on children's psychosocial adaptations as a result of their parents' illness. The impact of parental chronic illness on the child's academic achievement and school behavior unfortunately has been overlooked and rarely documented in the literature.

The results of this proposed study will expand the research literature and extend our understanding of the effects of parental illness on the child's functioning by addressing the impact of parental illness on the child's educational outcomes. In addition, the investigation of the extent of parental involvement as a result of parental illness may shed light on the potential interventions for helping children of parents with chronic

illness improve their educational achievement and school behavior. Understanding of the factors that mediate and/or modify the impact of parental chronic illness on children's academic functioning will help school psychologists plan effective interventions or preventive programs to help families and children cope adaptively with parents' illness and reduce the potential harmful effects on children's education.

Research Questions

The present study intended to answer the following questions:

Question 1. Do the demands of illness experienced by mothers with chronic illness affect their children's educational outcomes?

Question 2. Do the demands of illness experienced by mothers with chronic illness impact the extent of their involvement in their children's education?

Question 3. Does parental involvement of mothers with chronic illness influence their children's academic achievement?

Question 4. Do positive parenting and parental involvement mediate or moderate the impact of parental chronic illness on their children's educational outcomes?

Hypotheses

The proposed research tested the model depicted in Figure 6, including a number of principal hypotheses. The overarching hypotheses to be tested include the relationship between parental demands of illness and their children's academic functioning, the relationship between parental demands of illness and parental involvement, and the relationship between parental involvement and children's academic achievement.

Hypothesis 1. The demands of illness experienced by mothers with chronic illness will be negatively related to their children's educational outcomes.

Hypothesis 2. The demands of illness experienced by mothers with chronic illness will be negatively related to their sense of parental self-efficacy in helping their children succeed in school.

Hypothesis 3. The levels of parental self-efficacy will be positively related to their children's academic achievement.

Hypothesis 4. Parental self-efficacy will mediate the relationship between the maternal illness demands and their children's academic functioning.

Hypothesis 5. The levels of parental self-efficacy will be positively related to the levels of parental educational aspirations, grade expectations, school contact and participation, parent-child communication, and home supervision.

Hypothesis 6. Children's educational outcomes will be positively related to the levels of parental educational aspirations, grade expectations, school contact and participation, parent-child communication, and home supervision.

CHAPTER 3

Method

This chapter describes the methodology of this study that examined whether the demands of illness experienced by chronically ill mothers are associated with the extent of parental involvement and their children's educational outcomes. This chapter begins with a description of the participants. This is followed by a description of the measures used and the procedures for conducting the study. Finally, the demographic characteristics of the sample are described.

Participants

Mothers with chronic illness, including multiple sclerosis (MS), diabetes, cancers, HIV/AIDS, etc., who had at least one middle school- or high school-aged child (ages between 10 and 18 years) were recruited from healthcare, social agencies, and national organizations serving chronically ill patients across the country, according to the procedures on page 77.

In order to determine statistical significance of the correlations between demands of illness and multiple variables studied, 120 participants were needed in order to detect a medium effect size at the $p < .05$ level of significance (Cohen, 1992). A total of 150 mothers with chronic illness, each with one child between the ages of 10-18, participated in this study. . Demographic variables of the ill mothers and their children are presented in Table 2.

The average age of the sample in this study was 42.92 ($SD = 6.42$), with a range from 28 to 58 years. Regarding the ethnic group distribution, 87.3% ($n = 131$) of the sample was White, 4.7% ($n = 7$) was Black, 4.7% ($n = 7$) was Hispanic, 2% ($n = 3$) was

Table 2

Socio-Demographic Characteristics of the Sample

Characteristics		*n*	%
Age of Mother	*Mean* = 42.92, *SD*=6.42		
20-29		1	0.7
30-39		47	31.3
40-49		74	49.3
50-59		24	16.0
No Response		4	2.7
Ethnicity of Mother			
White		131	87.3
Black		7	4.7
Hispanic		7	4.7
Asian		3	2.0
Mixed		2	1.3
Diagnosis of Mother			
MS		98	65.3
Diabetes		19	12.7
HIV/AIDS		11	7.3
Cancer		20	13.3
Myelodysplastic Syndrome		1	0.7
Fibromyalgia		1	0.7

Table 2 (continued)

Characteristics	*n*	%
Years since Diagnosis *Mean* = 7.98, *SD* = 6.82		
< 1	8	5.3
1-5	67	44.7
6-10	33	22.0
10-15	21	14.0
16-20	13	8.7
21-25	5	3.3
26-30	1	0.7
> 30	2	1.3
Household Income		
$20,000 or under	25	16.7
$20,001 – $35,000	12	8.0
$35,001 – $50,000	29	19.3
$50,001 – $75,000	20	13.3
$75,001 – $100,000	33	22.0
$100,000 and over	29	19.3
No Report	2	1.3
Sex of Child		
Male	68	45.3
Female	82	54.7

Table 2 (continued)

Characteristics	*n*	%
Age of Child	*M*ean= 14.22, *SD* = 2.10	
10	4	2.7
11	11	7.3
12	22	14.7
13	23	15.3
14	23	15.3
15	19	12.7
16	17	11.3
17	28	18.7
18	3	2.0
Grade Level of Child		
5	7	4.7
6	18	12.0
7	22	14.7
8	17	11.3
9	28	18.7
10	12	8.0
11	19	12.7
12	27	18.0

Table 2 (continued)

Characteristics	*n*	%
State of Residence		
Alabama	2	1.3
California	27	18.0
Colorado	1	0.7
Florida	14	9.3
Georgia	2	1.3
Iowa	1	0.7
Idaho	5	3.3
Indiana	2	1.3
Kansas	2	1.3
Massachusetts	5	3.3
Michigan	3	2.0
Missouri	4	2.7
Mississippi	2	1.3
New Jersey	12	8.0
New York	10	6.7
Ohio	45	30.0
Oklahoma	2	1.3
South Dakota	1	0.7
Tennessee	1	0.7

Table 2 (continued)

Characteristics	*n*	%
Texas	1	0.7
Virginia	4	2.7
Washington	3	2.0
Wisconsin	1	0.7

Asian, and 1.3% (*n* = 2) identified as mixed. The participants resided in 23 different states, with one third (*n* = 45, 30%) of the sample living in Ohio, 18% (*n* = 27) in California, 9.3% (*n* = 14) in Florida, 8% (*n* = 12) in New Jersey, 6.7% (*n* = 10) in New York, and the rest in Alabama, Colorado, Georgia, Iowa, Idaho, Indiana, Kansas, Massachusetts, Michigan, Missouri, Mississippi, Oklahoma, South Dakota, Tennessee, Texas, Virginia, Washington, and Wisconsin.

More than half (*n* = 98, 65.3%) of the sample was primarily diagnosed with MS, and the other primary diagnoses of the mothers included diabetes (*n* = 19, 12.7%), HIV/AIDS (*n* = 11, 7.3%), cancers (*n* = 20, 13.3%), myelodysplastic syndrome (*n* = 1, 0.7%), and fibromyalgia (*n* = 1, 0.7%). The active assistances of chapters of National Multiple Sclerosis Society (NMSS) across the country in my national participant recruitment effort may have contributed to the significantly higher portion of MS patients in the sample of this present study than patients of other illnesses. NMSS's ongoing efforts to educate their members about the importance of participating in clinical research

in understanding MS and seeking cures for MS may also have influenced MS patients' willingness to participate in this study.

With respect to the onset of illness, the sample included mothers who had been diagnosed with their primary illness for less than one year and those who had been living with their illness for more than 30 years, with the average years since diagnosis of 7.98 (*SD* = 6.82), ranging from three months to 34 years. The sample of children reported by the participants included 68 (45.3%) boys and 82 (54.7%) girls. The average age of the children was 14.22 (*SD* = 2.10) years, with a range between 10 and 18 years. Regarding the children's grade levels in school, 4.7% (*n* = 7) of the children were in 5th grade, 12% (*n* = 18) in 6th grade, 14.7% (*n* = 22) in 7th grade, 11.3% (*n* = 17) in 8th grade, 18.7% (*n* = 28) in 9th grade, 8% (*n* = 12) in 10th grade, 12.7% (*n* = 19) in 11th grade, and 18% (*n* = 27) were reported in 12th grade.

Measures

The 184-item research questionnaire of this study was comprised of 11 measures, including 1) parent demographic information, 2) parent medical information, 3) child demographic information, 4) Demands of Illness Inventory, 5) measure of educational aspirations, 6) measure of grade expectations for children, 7) parental self-efficacy scale, 8) measure of school contact and participation, 9) Parent Involvement in School Interview, 10) measure of home supervision, and 11) educational outcomes.

Parent demographic information. Parents were asked to provide personal and family background information regarding their ethnicity, age, martial status, occupation, religious affiliation, and household income and composition. See Appendix A for questions regarding the parent's background information.

Parent medical information. Parents completed questions regarding their health/medical conditions, such as diagnoses, onset of illness, and interventions/treatments receive. In addition, parents were asked to report the number of hours that they devoted to manage illness activities such as medical appointments, treatment at home and in the clinic, hospitalization, insurance, napping etc., as well as the degree of physical impairment on a 7-point Likert scale, where the number 0 indicates independent functioning which requires no assistance and 7 indicates the need for complete assistance due to physical impairment. See Appendix B for questions regarding the parent's medical information.

Child demographic information. Parents were asked to respond to demographic questions regarding their child, such as age, gender, and grade placement in school. The "target child" or "child" in the questionnaire refers to their school-aged child who is between ages 10 and 18. If the participants have two or more children who fall within this age range (10-18), the "target" or "the child" refers to the oldest child whose age falls between 10 and 18. See Appendix C for questions regarding the child's background information.

Demands of Illness Inventory. Demands of illness—the family hardships or difficulties that arise over the course of an illness that need to be managed—experienced by chronically ill mothers were assessed by the revised125-item Demands of Illness Inventory (DOII; Woods, Haberman, & Packard, 1993). See Appendix D for an example of this measure. The DOII scale consists of seven subscales (i.e., physical symptoms, personal meaning, family functioning, social relationships, self-image, monitoring symptoms, and treatment issues; see Table 3 for the definition of each subscale) and

Table 3

Definition of Subscales for the 125-Item DOII

Subscale	*Definition*
Physical symptoms	Somatic responses of illness and anxiety (e.g., pain, fatigue, headache)
Personal meaning	Priorities, values, and goals that change with illness; uncertainty, mortality; family susceptibility
Family functioning	General systems theory aspects of decision making, adaptation, integration; partner caretaking, care of children; work or job situation
Social relationships	Changes in social activities; helping others to understand or accept the illness; overprotective responses
Self-image	Changes in physical appearance, feelings of attractiveness; impact of disfiguring surgery or treatment
Monitoring symptoms	Vigilance to new bodily sensations; preoccupation with symptoms; fears of recurrence, undetected metastasis, or progressive nature of the disease
Treatment issues	Accommodation to regime; treatment evaluation; relationship with provide

From "Demands of Illness and Individual, Dyadic, and Family Adaptation in Chronic Illness," by N. F. Woods, M. R. Haberman, and N. J. Packard, 1993, *Western Journal of Nursing Research, 15*, p. 17.

measures the type, frequency, and intensity of demands of illness resulting from a chronic illness. The DOII can be scored for both the number of incidences of demands and the perceived intensity of demands. Scale items are rated on a 5-point Likert scale ranging from a 0, indicating "not at all," to a 4, meaning "extremely." All items are anchored in the stem statement "As the result of my illness…" Higher DOII scores indicate either a higher number of demands experienced, ranging between 0 and 125, or a higher rating of their intensity, ranging from 0 to 500.

The internal consistency reliability of the revised 125-item DOII has been previously examined by Haberman et al. (1990) using data collected from 96 women with breast cancer and 29 women with diabetes. Cronbach's alpha coefficients for each subscale number of demands in the subscale of DOII ranged from .78 to .91 and from .86 to .92 for the intensity of demand scores. Cronbach's alphas for the total scale were r = .96 and r = .97 for the number and intensity of demands, respectively.

Evidence supporting the validity of DOII has been reported. DOII has been shown to differentiate among the types of illness demands associated with a recent diagnosis of diabetes or breast cancer or with the long-term adaptation to these chronic illnesses (Haberman et al., 1990).

According to Haberman et al. (1990), DOII is capable of discriminating changes in demands that occur over the illness trajectory of diabetes and of breast cancer. A study by Haberman and colleagues indicated that diabetic women reported the highest number of demands in the areas of physical symptoms, social relationships, and ongoing treatment, whereas women with breast cancer experienced the greatest incidence of demands related to personal meaning, family functioning, self-image, and symptoms

monitoring. In addition, the validity of some subscales of DOII has been reported. For example, scores on the family functioning subscale have been related to measures of marital quality, family satisfaction, family adaptation, and cohesion (Woods et al.,1993), as well as measures of depression (e.g., Hough, et al. 1999).

To determine the effect of illness demands experienced by ill mothers on their parental involvement and their child's education, the intensity of demands of illness from the 125 items of DOII was measured in this study. In addition, specific demands of illness on family functioning as measured by the family functioning subscale were measured to determine the impact of disrupted family functioning on parental involvement and children's academic functioning.

In the present study, the internal consistency coefficient of the DOII was .98. The alpha coefficient for the subscale of family functioning of DOII was .95.

Parental self-efficacy scale. The 11-item parental self-efficacy scale (see Appendix G) adapted from Hoover-Dempsey, Bassler, and Brissie (1992) was used to measure parental self-efficacy for helping the child succeed in school. Parents were asked to rate their beliefs in their capability to act in ways that will produce positive influences in their children's school performance on a 6-point Likert scale, ranging from a 1 (strongly disagree) to a 6 (strongly agree). Total scale scores range from 11 to 66, and higher scores indicate a stronger sense of efficacy for helping the child succeed in school.

Originally adapted from teacher self-efficacy scales, Hoover-Dempsey et al. (1992) developed a parental self-efficacy scale, which includes 12 items. Used with 390 elementary school students, the original scale's alpha reliability was .81 (Hoover-

Dempsey, et al., 1992). The original scale was subsequently reviewed and modified to an 11-item scale by dropping one item that included multiple contingencies. Administered to more than 800 parents of public elementary and middle school students, the revised 11-item scale achieved an alpha reliability of .80. In the present study, the alpha coefficient for this 11-item parental self-efficacy scale was .90.

Educational aspirations/expectations for children. Parental expectations and aspirations toward their children's education were assessed in two dimensions: educational attainment and grade expectations.

Three items used in Okagaki and Frensch's (1998) study were adapted to measure the educational attainment expectations/aspirations. Parents were asked to indicate (1) the ideal amount of education they would like their child to attain, (2) how much education they expect their child to obtain, and (3) what the very least amount of schooling they would allow their child to attain would be, ranging from 1 = "complete some high school education" to 6 = "get a graduate or professional degree" for each item (see Appendix E). The total score of this measure ranges from 3 to 18, where higher scores indicate higher educational aspiration/expectations. In the present study, the internal consistency reliability alpha of .75 was obtained for this three-item educational aspirations measure.

The grade expectations measure developed by Okagaki and Frensch (1998) was adapted and modified to assess the parents' expectations regarding their child's grades. Parents were asked to rate how they would feel if their child hypothetically brought home certain grades (a separate item for each letter grade from A to F) on a 7-point Likert scale, ranging from a 1, meaning "extremely upset," to a 7, meaning "extremely happy" (see

Appendix F). A diagonal scoring scheme (Table 4) was utilized to calculate the parent's grade expectations for her child. The total score of this measure ranges from -10 to 20, where higher total scores on this scale indicate higher levels of grade expectations. The internal consistency alpha coefficient for this grade expectations measure was .77 in this present study.

School contact and participation. Eight items adapted from Cooper and Crosnoe (2007) were used to measure parents' engagement in schooling of their child with respect to what extent and how frequently they participate in their child's school activities, contact teachers regarding their child's learning or behavior, volunteer in school, and attend educational meetings and school social functions. Parents were asked to indicate within the past year how many times they had (a) assisted teachers in the classroom, (b) helped at school outside the classroom, (c) attended parent-teacher organization or other meetings, (d) phoned or seen teachers about their child's school work, (e) phoned or seen teachers about their child's behavior, (f) attended special school events, (g) volunteered for school events, and (h) attended a parent-teacher conference (see Appendix H).

The sum of the eight items will serve as the final scale of parental involvement in the area of school contact and participation, with higher scores indicating more involvement. Used with 805 families in which a child between the ages of 10 and 14 lived with the parent, the alpha reliability of this scale of .60 was reported by Cooper and Crosnoe (2007). In the present study, the alpha coefficient for this eight-item scale measuring parental school contact and participation was .67.

Table 4

Scoring Scheme for the Measure of Grade Expectations

	Response						
	Extremely Upset	Very Upset	Slightly Upset	Neither Happy Nor Upset	Slightly Happy	Very Happy	Extremely Happy
Grade	*1*	*2*	*3*	*4*	*5*	*6*	*7*
A	6	5	4	3	2	1	0
B	5	4	3	2	1	0	-1
C	4	3	2	1	0	-1	-2
D	3	2	1	0	-1	-2	-3
F	2	1	0	-1	-2	-3	-4

Home supervision. Four items adapted from the parental involvement indices of National Educational Longitudinal Study of 1998 (NELS:88) were revised to measure parents' involvement with the daily supervision of their child's life and educational activities at home. In this study, parents were asked to rate their levels of home supervision in a) monitoring when their child returns from school and what they do after school, b) overseeing time spent on homework, and c) the extent to which their child goes out with friends, watches television, or plays video games, ranging from "never" to "always" (see Appendix I). Responses "Never," "Rarely," "Sometimes," "Regularly," and "Always" were coded as 1, 2, 3, 4, and 5, respectively. The total scores of this measure range from 4 to 20, with higher scores indicate higher level of home supervision.

The original student-report home supervision related items have been adapted and used in many studies (e.g., Carter & Wojtkiewicz, 2000; Fan, 2001; Ho Sui-Chu, 1995; Ho Sui-Chu & Willms, 1996; Hong & Ho, 2005). Reliability coefficients using Cronbach's alpha coefficient for this parental involvement dimension of home supervision scale was .60 (Hong & Ho, 2005). A factor analysis conducted by Fan (2001) revealed Cronbach's alpha coefficients of .60, .72, and .72 for monitoring homework, limiting TV watching, and limiting going out with friends, respectively. In the present study, this four-item measure of home supervision yielded an internal consistency reliability coefficient of .77.

Parent Involvement in School Interview. The Parent Involvement in School Interview, a measure of parent-child communication, developed by Resnicow (SAMHSA's Prevention Platform, n.d.) was used to assess parent-child communication about school-related matters (see Appendix J). The scale includes six questions regarding

parents' frequent and systematic discussions with their children about schoolwork and school-related activities. Parents were asked to indicate the frequency of parent-child communication on a 5-point rating scale, ranging from "never" to "very often." Responses "Never," "Once or Twice," "Sometimes," "Regularly," and "Very Often" were coded as 1, 2, 3, 4, and 5, respectively. The total scores of this measure range from 6 to 30, with higher scores indicate higher frequency of parent-child communication about school-related matters.

A prior study indicated an acceptable alpha test-retest reliability of .80. (SAMHSA's Prevention Platform, n.d.). In the present study, the alpha internal consistency reliability for the Parent Involvement in School Interview scale was .84.

Educational outcomes. Children's academic achievement was assessed by a global measure, Grade Point Average (GPA) on the most recent school report card. A parent rating on a scale used in a study by Fehrmann, Keith, and Reimers (1987), indicating the child's grades are "Mostly A's (or a numerical average of 90-100)", "About half A's and half B's (or 85-90)", "Mostly B's (or 80-84)", "About half B's and half C's (or 75-79)", "Mostly C's (or 70-74)", "Mostly C's and D's (or 65-69), "Mostly D's (or 60-64), or "Mostly below D (or below 60)," was included. Parental ratings of their child's grades were coded as 8, 7, 6, 5, 4, 3, 2, and 1 for responses "Mostly A's (or a numerical average of 90-100)," "About half A's and half B's (or 85-90)," "Mostly B's (or 80-84)," "About half B's and half C's (or 75-79)," "Mostly C's (or 70-74)," "Mostly C's and D's (or 65-69)," "Mostly D's (or 60-64), and "Mostly below D (or below 60)," respectively (see Appendix K). Higher ratings on this scale indicate higher academic achievement.

In addition, parents were asked to report their child's specific test scores on the state/regent reading/literacy and mathematics tests. See Appendix K for questions regarding the child's educational outcomes.

Procedures

I used Internal search to identify and locate national organizations/associations, clinics/hospitals, and social support groups that served adult patients with chronic illness such as diabetes, cancers (e.g., breast cancer, ovarian cancer), MS, asthma, epilepsy, HIV/AIDS, etc. in this country. Thousands of letters and electronic mails were sent to the listed program directors, group leaders, and/or contact persons of the identified organizations (e.g., chapters of NMSS, chapters of Gilda's Club, chapters of National Ovarian Cancer Association, Joslin Diabetes Center, Shanti, Respiratory Health Association of Metropolitan Chicago, NYU Medical Center, Naomi Diabetes Center at Columbia University Medical Center, etc.) to request assistance and permission to recruit research participants for this present study through their sites by including my research participant recruitment information in their literature and publications (e.g., newsletters) and/or posting my research advertisement on their websites or in their facilities. See Appendix L for a copy of the research advertisement. I also personally visited some local organizations (e.g., Women Institute at Gay Men's Health Crisis, AIDS Service Center, CancerCare, Gilda's Club New York City, etc.) in New York City and asked for permission to post my research fliers in their facilities.

Some requesting e-mails and letters were returned as those organizations addressed to no longer exist or their contact information obtained was out of date. Some organizations (e.g., NYU Medical Center, Naomi Diabetes Center at Columbia

University Medical Center, CancerCare, etc) refused to grant permission, while some never responded to my request. Overall, approximately 100 agencies/groups/chapters provided positive responses to my request and they agreed to assist this present research by sharing information regarding this study with their clients/members, posting my research advertisement for this study on their websites and/or including it in their literature (e.g., newsletters), and/or posting the participant recruitment fliers in their facilities.

A few organizations such as Joslin Diabetes Center in Boston and NMSS required their own Institutional Review Board (IRB) review on this study's protocol and related materials. After approving this present study, they posted the participant recruitment information for this study on their organizations' websites and/or in their newsletters.

As shown in the participant recruitment advertisement (Appendix L), my e-mail, telephone number, and mailing address were listed so that the potential participants could reach me via my phone and e-mail.

When potential participants contacted me expressing interest in participating in this study, they were asked to provide their mailing address for a research package that included the instructions (Appendix M), the consent form (Appendix N), the 18-page, 184-item questionnaire, and a postage prepaid return envelope. If the potential participants agreed to participate in this study, they were instructed to grant their permission by signing the written informed consent forms. After the informed consent forms were signed, consented participants were instructed to proceed and fill out the enclosed questionnaire.

This questionnaire is comprised of (1) the parental (participant) demographic information (Appendix A), (2) the parent medical information (Appendix B), (3) the target child demographic information (Appendix C), (4) the Demands of Illness Inventory (DOII, Appendix D), (5) the parental education aspirations measure (Appendix E), (6) the parental grade expectations measure (Appendix F), (7) the parental self-efficacy scale (Appendix G), (8) the school contact and participation measure (Appendix H), (9) the home supervision measure (Appendix I), (10) the parent-child communication about school-related matters measure (Appendix J), and (11) the educational outcomes measure (Appendix K).

The questionnaire took approximately an hour to complete. However, it might have varied as a result of the participants' illness. Each participant was compensated with a check for 10 dollars for completing the questionnaire except for three participants who declined to accept the monetary compensation via an email message or a written note.

Among the potential participants who contacted me and expressed their interest in participating in this study, three individuals did not provide their mailing address for the questionnaire package to be mailed. In total, 195 questionnaires were sent out to the potential participants who provided their mailing address and 157 (80.1%) questionnaires were completed and returned. For the purpose of this study, seven respondents were excluded from data analyses because their children were enrolled in elementary school, rather than middle school or high school, leaving a total of 150 participants.

CHAPTER 4

Results

This chapter describes the statistical results obtained. Descriptive statistics, analyses of variance, multivariate analyses of variance, and hierarchical multiple regressions were calculated to answer the research questions and test the hypotheses being posed by this study. An alpha level of .05 was used for all statistical tests.

This chapter begins with the results of a preliminary analysis that examined children's academic functioning and the effects of socio-demographic factors (i.e., ethnicity, household income, maternal age, child's age, child's gender, child's grade level, diagnosis of maternal illness, and onset of maternal illness) on the main variables of this study (i.e., parental demands of illness, parental self-efficacy, educational aspirations, grade expectations, school contact and participation, home supervision, parent-child communication, and children's grades), followed by the results that link to the research questions and hypothesis. Lastly, other relevant results found in the present study are also described.

Preliminary Analysis

Child's Academic Functioning

The educational outcomes measures of GPA and state/regional reading and mathematics scores were removed from the data analyses due to incompatible grading systems and inconsistent scoring and reporting methods used by the participants from different states. As a result, the parent rating of the child's grades developed by Fehrmann et al. (1987) was the singular educational outcome measure used for the following data analyses in this study.

Grades. A descriptive statistical analysis was conducted to describe children's academic functioning in terms of grades in the sample of this present study. According to maternal report of their child's grades, 40.7% (n = 61) of children in the sample received mostly A's (or a numerical average of 90-100), 23.3% (n = 35) received about half A's and half B's (or 85-90), 13.3% (n = 20) received mostly B's (or 80-84), 8.7% (n = 13) received about half B's and half C's (or 75-79), 4% (n = 6) received mostly C's (or 70-74), 6% (n = 9) received mostly C's and D's (or 65-69), 0% (n = 0) received mostly D's (or 60-64), and 4% (n = 6) received mostly below D grades (or below 60). Overall, more than 75% of children in the sample of this study obtained mostly A's and B's (or a numerical average of 80 and above), suggesting that the majority of children of mothers with chronic illness in the sample of this study appeared to function adequately in terms of academic achievement.

Effects of Socio-Demographic Factors on the Main Variables of this Study

Pearson's correlations, multivariate analyses of variance (MANOVA), and multiple one-way analysis of variance (ANOVA) tests were calculated to examine the relations between the sample's socio-demographic characteristics and the main variables of this study including maternal demands of illness, levels/forms of parental involvement, and children's academic performance.

Table 5 presents the intercorrelations between socio-demographic variables such as household income, maternal age, onset of illness, child's age, and child's grade level and the main variables of this study.

Household income. To examine the relations between household income and the variables of demands of illness, parental self-efficacy, parental educational aspirations,

Table 5

Correlations Between Socio-Demographic Factors and Main Variables of Study

	DOII	Family Functioning	Parental Self-Efficacy	Educational Aspirations	Grade Expectations	School Contact	Parent-Child Communication	Home Supervision	Child Grades
Maternal Age	-.196*	-.135	.033	.146†	.148†	-.067	-.135	-.265**	-.124
Household Income	-.304***	-.236**	.169*	.239**	.306***	.008	-.011	-.142†	.231**
Onset of Illness	-.165*	-.091	.067	.086	-.027	.058	.042	.005	-.049
Child Age	-.098	-.043	-.130	-.222**	-.139†	-.024	-.378***	.320***	-.209*
Child's Grade Level	-.090	-.045	-.102	-.179*	-.103	-.059	-.378***	.350***	-.150†

Note: Main variables of study in this analysis include overall demands of illness (DOII), (disrupted) family functioning (subscale on the DOII), parental self-efficacy, educational aspirations, grade expectations, school contact, parent-child communication, home supervision, and child grades.

Score range: DOII = 0 – 500; family functioning = 0 – 140; parental self-efficacy = 11 – 66; educational aspirations = 3 – 18; grade expectations = -10 – 20; school contact = 0 – 148 (highest score actually acquired in this sample); parent-child communication = 6 – 30; home supervision = 4 – 20; child grades = 1 (mostly below D or a numerical average below 60) – 8 (mostly A's or a numerical average of 90-100). Higher scores on the subscale of family functioning on the DOII indicate more disruption in family functioning.

Table 5 (continued)

*$p < .05$; **$p < .01$; ***$p < .001$, †$p < .10$

grade expectations, school contact and participation, parent-child communication, home supervision, and children's grades, Pearson's correlations were calculated.

Household income was negatively associated with maternal overall demands of illness ($r = -.304, p < .001$) and disrupted family functioning ($r = -.236, p < .01$) as indicated on the DOII and positively correlated with the measures of parental self-efficacy ($r = .169, p < .05$), educational aspirations ($r = .239, p < .01$), grade expectations ($r = .306, p < .001$), and children's grades ($r = .231, p < .01$) (Table 5). Chronically ill mothers from families with higher household income appeared to experience fewer demands of illness and less disruption in normal family functioning, to perceive themselves as more competent in helping their child succeed in school, hold higher expectations for their child to achieve higher education and better grades, and their child tended to have better grades in school than their counterparts from lower income households.

Household income was not correlated with the frequency of maternal school contact and participation in their child's school activities and the levels of communication between the mother and the child regarding the school matters.

In sum, household income was related to the maternal demands of illness, family functioning, parental self-efficacy, and some forms of parental involvement in children's education. Higher household income was also associated with higher academic achievement in children.

Maternal age. To examine the relations between maternal age and the variables of demands of illness, parental self-efficacy, parental educational aspirations, grade

expectations, school contact and participation, parent-child communication, home supervision, and children's grades, Pearson's correlations were calculated.

The mother's age was negatively associated with the total score of DOII and the measure of home supervision (Table 5); $r = -.196$, $p < .05$, and $r = -.265$, $p = .001$, respectively. When compared to younger mothers, the older mothers tended to experience fewer overall demands imposed on them as the result of their illness and less frequently supervised their child's educational activities (e.g., homework) at home. The mother's age was not associated with the measures of parental self-efficacy, educational aspiration, grade expectations, school contact and participation, parent-child communication, or children's grades.

Overall, maternal age was related to levels of illness demands perceived and some form of parental involvement.

Onset of illness. Pearson's correlations were calculated to assess the relations between onset of illness and the variables of demands of illness, parental self-efficacy, parental educational aspirations, grade expectations, school contact and participation, parent-child communication, home supervision, and children's grades.

The number of years since the mothers had been diagnosed with their primary illness was negatively correlated with the maternal demands of illness, $r = -.165$, $p < .05$, indicating that the mothers who had lived with their illness longer perceived fewer demands as a result of their illness. The onset of maternal illness was not correlated with family functioning, mother's efficacy, educational aspirations, grade expectations, school contact, parent-child communication, or children's grades (Table 5).

The results suggested that onset of maternal illness was related to levels of overall demands of illness perceived. However, the number of years since maternal diagnosis of illness was not related to levels of parental involvement, or children's academic achievement.

Child age. To examine the relations between child age and the variables of demands of illness, parental self-efficacy, parental educational aspirations, grade expectations, school contact and participation, parent-child communication, home supervision, and children's grades, Pearson's correlations were calculated.

The child's age was not associated with the total score of demands of illness, subscale score of family functioning, and measures of parental self-efficacy, grade expectations for their child, and school contact and participation. However, the child's age was negatively correlated with the measures of educational aspirations ($r = -.222$, $p < .01$), parent-child communication regarding school matters ($r = -.378$, $p < .001$), home supervision ($r = -.320$, $p < .001$), and the child's grades obtained in school ($r = -.209$, $p = .01$) (Table 5). The ill mothers whose child was older had lower levels of aspirations for their child's educational attainment, lower frequency of communication with their child regarding school and educational activities, lower levels of supervision provided in the home environment, and their child's grades were lower.

In sum, the child's age was related to some forms of parental involvement and to the grades he/she received.

Child grade level. Pearson's correlations were calculated to examine the relations between the child's grade level and the variables of demands of illness, parental self-

efficacy, parental educational aspirations, grade expectations, school contact and participation, parent-child communication, home supervision, and children's grades.

Similar to the child's age, the child's grade level in school was associated with parental educational aspirations (r = -.179, $p < .05$), parental-child communication (r = -.378, $p < .001$), and home supervision (r = -.350, $p < .001$) (Table 5). The child's grade level was not associated with parental perceived demands of illness, family functioning, parental self-efficacy, grade expectations for the child, contact with school personnel and participation in the child's school activities, and the child's grades.

Overall, the child's grade level was related to some forms of parental involvement that his/her mother participated in the sample of this present study.

Next, to examine the effects of the sample's socio-demographic characteristics such as maternal diagnosis of illness, ethnicity, and child's gender on the main variables of this study, MANOVAs and multiple one-way Analysis of Variance (ANOVA) tests were conducted.

Primary diagnosis.

Table 6 presents the means and standard deviations of main variables of this study based on the maternal primary diagnosis. Two participants who were diagnosed with Myelodysplastic Syndrome and Fibromyalgia were excluded from this analysis.

To examine the relations between the maternal diagnosis of illness and the variables of demands of illness, parental self-efficacy, parental educational aspirations, grade expectations, school contact and participation, parent-child communication, home supervision, and children's grades, a MANOVA test was first conducted to protect against potential false positives as a result of multiple one-way ANOVA tests.

Table 6

The Means and Standard Deviations of the Main Variables of Study Based on the Primary Diagnosis of Maternal Illness

Primary Diagnosis	DOII	Family Functioning	Parental Self-Efficacy	Educational Aspirations	Grade Expectations	School Contact	Parent-Child Communication	Home Supervision	Child Grades
MS									
M	208.41	62.15	40.17	12.17	4.98	13.29	20.45	13.70	6.34
n	97	98	98	98	98	94	97	97	98
SD	90.07	28.82	7.80	2.66	2.95	14.07	5.03	3.20	1.96
Diabetes									
M	194.74.	55.00	43.84	14.68	5.68	24.11	23.74	13.74	6.89
n	19	19	19	19	19	19	19	19	19
SD	114.49	38.86	7.79	2.81	2.45	17.23	3.60	3.46	1.52

Table 6 (continued)

Primary Diagnosis	DOII	Family Functioning	Parental Self-Efficacy	Educational Aspirations	Grade Expectations	School Contact	Parent-Child Communication	Home Supervision	Child Grades
HIV/AIDS									
M	217.91	58.91	39.73	13.18	2.36	17.00	19.82	14.82	5.55
n	11	11	11	11	11	11	11	11	11
SD	105.63	28.98	8.88	4.17	2.84	13.25	7.18	3.60	2.02
Cancer									
M	203.85	50.70	44.70	14.15	6.70	17.20	21.85	13.35	7.30
n	20	20	20	20	20	20	20	20	20
SD	83.79	28.95	6.82	1.90	2.83	11.92	4.20	3.13	1.08

Table 6 (continued)

Note: Main variables of study in this analysis include overall demands of illness (DOII), family functioning (subscale on the DOII), parental self-efficacy, educational aspirations, grade expectations, school contact, parent-child communication, home supervision, and child grades.

Score range: DOII = 0 – 500; family functioning = 0 – 140; parental self-efficacy = 11 – 66; educational aspirations = 3 – 18; grade expectations = -10 – 20; school contact = 0 – 148 (highest score actually acquired in this sample); parent-child communication = 6 – 30; home supervision = 4 – 20; child grades = 1 (mostly below D or a numerical average below 60) – 8 (mostly A's or a numerical average of 90-100). Higher scores on the subscale of family functioning on the DOII indicate more disruption in family functioning.

The MANOVA results (Table 7) indicated that the scores of parental self-efficacy ($p < .05$), educational aspirations ($p < .001$), grade expectations ($p < .01$), school contact ($p < .05$), and parent-child communication ($p < .05$) varied among mothers with the four different types of illness. Children's grades also differed according to their mothers' illness diagnoses, $p < .05$. Multiple One-way ANOVA tests therefore followed to further examine the effects of maternal illness type on the aforementioned study variables that were statistically significant in the MANOVA test. The results of the ANOVA tests are presented in Table 8.

Consistent with the MANOVA results, the scores of parental self-efficacy, educational aspirations, grade expectations, school contact, and parent-child communication varied among mothers with the four different types of illness. Ill mothers with cancer had a higher average parental self-efficacy score ($M = 44.70$, $SD = 6.82$), followed by mothers with diabetes ($M = 43.84$, $SD = 7.79$) and MS ($M = 40$, $SD = 7.80$), and the mothers diagnosed with HIV/AIDS had the lowest average score ($M = 39.73$, $SD = 8.88$) on parental self-efficacy. The mothers with diabetes scored highest ($M = 14.68$, $SD = 2.81$) on the measure of educational aspiration, followed by the mothers diagnosed with cancer ($M = 14.15$, $SD = 1.90$) and HIV/AIDS ($M = 13.18$, $SD = 4.12$), with the mothers with MS scoring the lowest ($M = 12.17$, $SD = 2.66$) on this measure (Table 6).

The same pattern was found on the measure of school contact, where the mothers with diabetes scoring the highest ($M = 24.11$, $SD = 17.23$), followed by those diagnosed with cancer ($M = 17.20$, $SD = 11.92$), HIV/AIDS ($M = 17$, $SD = 13.25$), and MS ($M = 13.29$, $SD = 14.07$) (Table 6). On the measure of grade expectations, the mothers diagnosed with cancer scored the highest ($M = 6.70$, $SD = 2.83$), followed by the

Table 7

MANOVA Table of the Effects of Primary Diagnosis of Maternal Illness on the Main Variable of the Study

Variables	Type III Sum of Squares	*Df*	Mean Square	*F*	*Sig.*
DOII	4186.01	3	1395.34	.158	.924
Family Functioning	2332.54	3	777.51	.844	.472
Parental Self-Efficacy	492.79	3	164.26	2.770	.044*
Educational Aspirations	147.23	3	49.08	6.505	.000***
Grade Expectations	142.24	3	47.41	5.654	.001**
School Contact	1893.63	3	631.21	3.124	.028*
Parent-Child Communication	207.06	3	69.02	2.768	.044*
Home Supervision	15.91	3	5.30	.491	.689
Child Grades	30.60	3	10.20	3.052	.031*

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

Table 8

One-Way ANOVA Tests of the Effects of Primary Diagnosis of Maternal Illness on the Main Variables of the Study

Variables		Sum of Squares	*Df*	Mean Square	*F*	*Sig.*
Parental	Between Groups	504.68	3			
Self-Efficacy	Within Groups	8672.96	144	60.23	2.793	.043*
	Total	9177.64	147			
Educational	Between Groups	143.77	3	47.92	6.447	.000***
Aspirations	Within Groups	1070.34	144	7.43		
	Total	1214.11	147			
Grade Expectations	Between Groups	141.46	3	47.15	5.731	.001**
	Within Groups	1184.81	144	8.23		
	Total	1326.27	147			
School Contact	Between Groups	1949.52	3	649.84	3.225	.025*
Contact	Within Groups	28212.73	140	201.52		
	Total	30162.25	143			
Parent-Child	Between Groups	201.03	3	67.01	.730	.046*
Communication	Within Groups	3509.91	143	24.55		
	Total	3710.94				
Child Grades	Between Groups	28.34	3	9.45	2.584	.039*
	Within Groups	476.61	144	3.31		
	Total	504.94	147			

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

mothers with diabetes (M = 5.68, SD = 2.45), MS (M = 4.98, SD = 2.95), and HIV/AIDS (M = 2.36, SD = 2.84) (Table 6).

In terms of parent-child communication, the mothers diagnosed with diabetes tended to communicate with their child regarding education and school activities most frequently (M = 23.74, SD = 3.60), followed by the mothers with cancer (M = 21.85, SD = 4.20) and MS, (M =20.45, SD = 5.03), while the mothers with HIV/AIDS scored the lowest on the measure of parent-child communication (M = 19.82, SD = 7.18) (Table 6).

The child's grades also varied as a result of different diagnosis of maternal illness. The children of mothers with cancer appeared to receive better grades (M = 7.30, SD 1.08) than those mothers with diabetes (M = 6.89, SD = 1.52) and MS (M = 6.34, SD = 3.20), and the children of the mothers with HIV/AIDS scored the lowest on the parental rating of child's grades (Table 6).

No significant differences were found in the measures of overall demands of maternal illness and disrupted family functioning indicated on DOII, or on parental home supervision among mothers with different diagnosis of illness.

Overall, the results suggest that different types of maternal illness had different effects on parental involvement in terms of mothers' efficacy, educational aspirations, grade expectations, school contact, and parent-child communication, with mothers with either cancer or diabetes scoring higher on these scales than mothers with MS and HIV/AIDS.

Ethnicity. Table 9 presents the means and deviations of main variables of the study based on the participant's ethnicity.

Table 9

The Means and Standard Deviations of the Main Variables of Study Based on the Participant's Ethnicity

Ethnicity		DOII	Family Functioning	Parental Self-Efficacy	Educational Aspirations	Grade Expectations	School Contact	Parent-Child Communication	Home Supervision	Child Grades
White	*M*	198.94	57.40	41.16	12.72	5.27	14.90	20.68	13.37	6.53
	n	130	131	131	131	131	126	130	130	131
	SD	89.91	29.00	7.79	2.79	2.75	14.01	4.89	3.15	1.84
Black	*M*	246.43	66.86	41.86	11.43	1.00	23.71	25.00	17.43	6.00
	n	7	7	7	7	7	7	7	7	7
	SD	100.67	34.08	9.26	3.78	2.38	21.36	4.47	3.05	2.45
Hispanic	*M*	249.29	75.00	38.14	13.71	4.14	16.36	21.43	14.71	5.86
	n	7	7	7	7	7	7	7	7	7
	SD	45.71	24.17	7.36	3.04	3.44	9.99	7.12	3.20	1.86

Table 9 (continued)

Ethnicity		DOII	Family Functioning	Parental Self-Efficacy	Educational Aspirations	Grade Expectations	School Contact	Parent-Child Communication	Home Supervision	Child Grades
Asian	*M*	308.00	77.00	47.67	17.33	10.67	18.00	24.33	17.00	8.00
	n	3	3	3	3	3	3	3	3	3
	SD	185.03	65.21	8.39	1.16	.58	19.67	4.93	1.00	.00
Mixed	*M*	304.50	100.00	48.00	12.50	3.50	24.00	25.00	14.00	6.00
	n	2	2	2	2	2	2	2	2	2
	SD	33.23	7.07	7.07	2.12	3.53	29.70	1.41	.00	1.41

Note: Main variables of study in this analysis include overall demands of illness (DOII), family functioning (subscale on the DOII), parental self-efficacy, educational aspirations, grade expectations, school contact, parent-child communication, home supervision, and child grades.

Table 9 (continued)

Score range: DOII = 0 – 500; family functioning = 0 – 140; parental self-efficacy = 11 – 66; educational aspirations = 3 – 18; grade expectations = -10 – 20; school contact = 0 – 148 (highest score actually acquired in this sample); parent-child communication = 6 – 30; home supervision = 4 – 20; child grades = 1 (mostly below D or a numerical average below 60) – 8 (mostly A's or a numerical average of 90-100). Higher scores on the subscale of family functioning on the DOII indicate more disruption in family functioning.

A MANOVA test (Table 10) was conducted to examine whether ethnicity was associated with the demands of maternal illness, disrupted family functioning as the result of maternal illness, parental involvement, and children's academic performance in school prior to one-way ANOVA tests to protect against potential false positives as a result of multiple one-way ANOVAs. The results indicated that the scores of total demands of illness ($p < .05$), educational aspirations ($p < .05$), grade expectations ($p < .001$), and home supervision ($p < .01$) varied as a result of the mother's ethnicity.

Table 10

MANOVA Table of the Effects of Ethnicity on the Main Variable of the Study

Variables	Type III Sum of Squares	*Df*	Mean Square	*F*	*Sig.*
DOII	87052.18	4	21013.35	2.538	.043*
Family Functioning	7167.28	4	1791.82	2.013	.096
Parental Self-Efficacy	284.56	4	71.14	1.167	.328
Educational Aspirations	81.19	4	20.30	2.523	.044*
Grade Expectations	225.86	4	56.47	7.253	.000***
School Contact	666.77	4	166.69	.789	.534
Parent-Child Communication	193.93	4	48.48	1.917	.111
Home Supervision	148.35	4	37.09	3.765	.006**
Child Grades	11.55	4	2.89	.826	.511

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

Multiple One-way ANOVA tests (Table 11) were conducted to further examine the effects of ethnicity on demands of illness and parental involvement in terms of educational aspirations, grade expectations, and home supervision.

Table 11

One-Way ANOVA Tests of the Effects of Ethnicity on the Main Variables of the Study

Variables		Sum of Squares	*Df*	Mean Square	*F*	*Sig.*
DOII	Between Groups	82612.46	4	20653.11		
	Within Groups	1181692.20	142	8321.78	2.482	.047*
	Total	1264304.65	146			
Educational	Between Groups	80.78	4	20.19	2.548	.042*
Aspirations	Within Groups	1133.33	143	7.93		
	Total	1214.11	147			
Grade Expectations	Between Groups	226.29	4	56.57	7.355	.000***
	Within Groups	1099.98	143	7.69		
	Total	1326.27	147			
Home Supervision	Between Groups	148.16	4	37.04	3.811	.006**
	Within Groups	1380.02	142	9.72		
	Total	1528.18	146			

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

Consistent with the MANOVA results, mothers of different ethnic groups reported differently on the measures of parental educational aspirations, grade expectations, home supervision, and overall demands of illness. Asian participants scored the highest on the measure of educational aspirations (M = 17.33, SD = 1.16), followed by Hispanic (M = 13.71, SD = 3.04), White (M =12.72, SD = 2.79), Mixed (M = 12.50, SD = 2.12) and Black participants (M = 11.43, SD = 3.78) (Table 9). Similarly, Asian also scored the highest on the measure of grade expectations (M = 10.67, SD = .58), followed by White (M = 5.27, SD = 2.7), Hispanic (M = 4.14, SD = 3.44), Mixed (M = 3.50, SD = 3.54), and Black participants (M = 1.00, SD = 2.38) (Table 9).

With respect to the measure of home supervision, Black participants scored the highest (M = 17.43, SD = 3.05), followed by Asian (M = 17.00, SD = 1.00), Hispanic (M = 14.71, SD = 3.20), Mixed (M = 14.00, SD = .00), and White participants (M = 13.37, SD = 3.24) (Table 9).

In terms of overall demands of illness, Asian participants (M = 308.00, SD = 185.03) reported the highest levels of overall demands, followed by Mixed (M = 304.50, SD = 33.23), Hispanic (M = 249.29, SD = 45.71), Black (M = 246.43, SD = 100.67), and White participants (M = 198.94, SD = 89.91).

The scores of measures on family functioning, school contact, parent-child communication, and the child's grades did not vary as a function of ethnicity.

Overall, the results in the sample of this study suggested that illness demands and some forms of parental involvement varied as a function of ethnicity. Readers are cautioned, however, that there were few non-majority ethnic participants, especially in the Asian, mixed race categories, in the sample of the present study.

Child gender. Finally, a MANOVA test was conducted to examine whether the maternal demands of illness, family functioning, parental involvement variables, and children's grades varied as a function of the child's sex.

The means and standard deviations of main variables of the study based on the gender of the child are presented in Table 12. The results of the MANOVA test (Table 13) suggested that children's grades ($p < .001$) and parental grade expectations ($p < .05$) varied according to the child's gender.

One-way ANOVA testes followed to further examine the effects of child's gender on academic performance in terms of grades and parental grade expectations. Consistent with the MANOVA test results, gender difference was found on the measure of the child's grades, F (1, 148) = 7.384, $p < .01$ (Table 14). In this sample, girls ($M = 6.87$, $SD = 1.61$) appeared to receive better grades than boys ($M = 6.06$, $SD = 2.03$) (Table 12).

Gender difference was also found on the measure of grade expectations for the child, F (1, 148) = 5.283, $p < .05$ (Table 14). The ill mothers of girls scored higher on the measure of grade expectations ($M = 5.61$, $SD = 2.89$) than those of boys ($M = 4.50$, $SD = 3.00$), indicating higher levels of grade expectations for girls than for boys (Table 12).

The effects of the child's sex on the variables of maternal demands of illness, family functioning, parental self-efficacy, educational aspiration, school contact, parent-child communication, and home supervision were not statistically significant.

The results suggest that children's academic achievement and some forms of parental involvement varied as a result of the child's gender.

Table 12

The Means and Standard Deviation of the Main Variable Based on Child's Gender

Child Gender		DOII	Family Functioning	Parental Self-Efficacy	Educational Aspirations	Grade Expectations	School Contact	Parent-Child Communication	Home Supervision	Child Grades
Male	*M*	195.75	56.34	41.00	12.62	4.50	16.38	21.28	14.13	6.06
	n	68	68	68	68	68	65	68	68	68
	SD	86.31	28.38	7.52	3.04	3.00	14.17	4.69	3.15	2.03
Female	*M*	216.72	62.34	41.50	12.94	5.61	14.94	20.85	13.35	6.87
	n	81	82	82	82	82	80	81	81	82
	SD	96.94	31.41	8.17	2.76	2.89	14.79	5.33	3.29	1.61

Note: Main variables of study in this analysis include overall demands of illness (DOII), family functioning (subscale on the DOII), parental self-efficacy, educational aspirations, grade expectations, school contact, parent-child communication, home supervision, and child grades.

Table 12 (continued)

Score range: DOII = 0 – 500; family functioning = 0 – 140; parental self-efficacy = 11 – 66; educational aspirations = 3 – 18; grade expectations = -10 – 20; school contact = 0 – 148 (highest score actually acquired in this sample); parent-child communication = 6 – 30; home supervision = 4 – 20; child grades = 1 (mostly below D or a numerical average below 60) – 8 (mostly A's or a numerical average of 90-100). Higher scores on the subscale of family functioning on the DOII indicate more disruption in family functioning.

Table 13

MANOVA Table of the Effects of Child's Gender on the Main Variable of the Study

Variables	Type III Sum of Squares	*Df*	Mean Square	*F*	*Sig.*
DOII	12319.28	1	12319.28	1.431	.234
Family Functioning	977.86	1	977.86	1.069	.303
Parental Self-Efficacy	12.74	1	12.74	.207	.650
Educational Aspirations	1.92	1	1.92	.227	.634
Grade Expectations	55.08	1	55.08	6.240	.014*
School Contact	58.73	1	58.73	.278	.599
Parent-Child Communication	7.86	1	7.86	.302	.584
Home Supervision	26.43	1	26.43	2.517	.115
Child Grades	25.05	1	25.05	7.529	.007**

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

Table 14

One-Way ANOVA Tests of the Effects of Child's Gender on the Main Variables of the Study

Variables		Sum of Squares	*Df*	Mean Square	*F*	*Sig.*
Grade Expectations	Between Groups	45.78	1	45.78	5.283	.023*
	Within Groups	1282.51	148	8.67		
	Total	1328.29	149			
Child Grades	Between Groups	24.21	1	24.21	7.384	.007**
	Within Groups	485.29	148	3.28		
	Total	509.50	149			

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

In conclusion, socio-demographic factors such as household income, maternal age, ethnicity, maternal diagnosis of illness, onset of illness, child age, child grade level, and child gender have differential effects on maternal demands of illness, maternal self-efficacy in children's education, academic aspirations, grade expectations, school contact and participation, parent-child communication, home supervision, and their children's grades in the sample of this study. As a result, the abovementioned socio-demographic characteristics were used as controlled variables for the following analyses to investigate the relations among the main study variables and to answer the research questions posed by this study.

Research Questions

Pearson's correlations, partial correlations, and multiple regressions were calculated to answer the research questions being posed by the study. Table 15 presents the intercorrelations between the main variables of this study, including the total score of demands of illness, subscale score of family functioning on the DOII, parental involvement variables, and children's grades. Controlling for socio-demographic variables, the partial correlations among the main variables of this study are presented in Table 16.

Relations Between Parental Demands of Illness/Family Functioning and Child's Grades

The first research question addressed in this study asks if overall maternal illness demands and disrupted family functioning are related to the children's academic functioning. It was hypothesized that overall demands of illness and disrupted family functioning would be negatively related to the children's grades (Hypothesis 1).

Pearson's correlations were calculated and the results indicated that the overall demands of illness experienced by the ill mothers and disrupted family functioning as indicated on the DOII were negatively correlated with their children's grades (Table 15), $r = -.170, p < .05$, and $r = -.190, p < .05$, respectively; thus suggesting that higher experienced demands of illness in mothers and higher levels of compromised family functioning were associated with children's lower grades in school, although the correlations are small.

Partial correlations were calculated to measure the relations between children's grades and their mothers' illness demands and between children's grades and disruption

Table 15

Intercorrelations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11
Physical Impairment	-	.435***	.469***	.580***	-.352***	-.255**	-.103	-.146	-.362***	-.090	-.219*
Time of Management		-	.407***	.382***	-.239**	-.284**	-.142	.004	-.026	.101	-.303***
Demands of Illness			-	.889***	-.218**	-.164*	-.083	-.063	-.010	.174*	-.170*
Family Functioning				-	-.268**	-.158†	-.101	-.000	-.089	.109	-.190*
Parental Self-Efficacy					-	.343***	.145†	.141†	.428***	.151†	.480***
Educational Aspirations						-	.503***	.213*	.261**	-.029	.531***
Grade Expectations							-	.017	.081	-.046	.452***
School Contact								-	.347***	.263**	.058
Parent-Child Communication									-	.560***	.177*
Home Supervision										-	-.092
Child's Grades											-
Mean	2.88	13.96	207.15	59.62	41.27	12.79	5.11	15.59	21.05	13.70	6.60
SD	1.75	15.31	92.53	30.12	7.86	2.89	2.99	14.48	5.03	3.23	1.85

Table 15 (continued)

Note. Score range: Physical impairment = 1 (independent functioning require no assistance) – 7 (require complete assistance); time of management = 0 – 100 (highest number of hours provided by the participants regarding time spent on managing illness activities); DOII = 0 – 500; family functioning = 0 – 140; parental self-efficacy = 11 – 66; educational aspirations = 3 – 18; grade expectations = -10 – 20; school contact = 0 – 148 (highest score provided by the participants); parent-child communication = 6 – 30; home supervision = 4 – 20; child grades = 1 (mostly below D or a numerical average below 60) – 8 (mostly A's or a numerical average of 90-100). Higher subscale scores of family functioning on the DOII indicate more disruption in family functioning.

*$p < .05$; **$p < .01$; ***$p < .001$, †$p < .10$

Table 16

Partial Correlations among Study Variables after Controlling Socio-Demographic Factors

	1	2	3	4	5	6	7	8	9	10	11
Physical Impairment	-	.379***	.518***	.603***	-.215*	-.094	.013	-.082	-.325***	-.093	-.050
Time of Management		-	.542***	.460***	-.162†	-.164†	-.024	.037	.002	.203*	-.214*
Demands of Illness			-	.875***	-.195*	-.151†	-.018	-.051	-.027	.133	-.173*
Family Functioning				-	-.226**	-.120	-.025	.029	-.099	.069	-.169†
Parental Self-Efficacy					-	.197*	.003	.100	.402***	.165†	.392***
Educational Aspirations						-	.399***	.207*	.163†	-.105	.404***
Grade Expectations							-	.013	.005	-.029	.297***
School Contact								-	.326***	.227**	.066
Parent-Child Communication									-	.512***	.105
Home Supervision										-	-.099
Child's Grades											-
Mean	2.88	13.96	207.15	59.62	41.27	12.79	5.11	15.59	21.05	13.70	6.60
SD	1.75	15.31	92.53	30.12	7.86	2.89	2.99	14.48	5.03	3.23	1.85

Table 16 (continued)

Note. Controlled social-demographic factors include household income, maternal age, primary diagnosis of illness, onset of illness, ethnicity, child age, child grade level, and child gender.

Score range: Physical impairment = 1 (independent functioning require no assistance) – 7 (require complete assistance); time of management = 0 – 100 (highest number of hours provided by the participants regarding time spent on managing illness activities); DOII = 0 – 500; family functioning = 0 – 140; parental self-efficacy = 11 – 66; educational aspirations = 3 – 18; grade expectations = -10 – 20; school contact = 0 – 148 (highest score provided by the participants); parent-child communication = 6 – 30; home supervision = 4 – 20; child grades = 1 (mostly below D or a numerical average below 60) – 8 (mostly A's or a numerical average of 90-100). Higher subscale scores of family functioning on the DOII indicate more disruption in family functioning.

*$p < .05$; **$p < .01$; ***$p < .001$, †$p < .10$

in family functioning, while controlling for social-demographic variables. After controlling for socio-demographic variables including household income, maternal age, primary diagnosis, onset of illness, ethnicity, and child's gender, age, and grade level in school, the relation between mothers' perceived demands of illness and their children's grades was maintained (Table 16); $r = -.173$, $p < .05$. The relation between disrupted family functioning and children's grades was marginally significant ($p = .052$) after controlling for socio-demographic variables. However, with a p value of .052, the weak relation between disrupted family functioning and children's grades remained unproven. Thus, Hypothesis 1 was partially supported, with both correlations representing small effect sizes (Cohen, 1992).

Relations Between Demands of Illness/Family Functioning and Parental Involvement in Children's Education

The second research question (Question 2) asks whether the demands of illness and disrupted family functioning as the result of maternal illness affect parental involvement in children's education. It was hypothesized that levels of overall demands of illness and disrupted family functioning would be negatively associated with levels of parental self-efficacy (Hypothesis 2). The relations between the demands of illness, both overall demands and disrupted family functioning, and different forms of parental involvement, including parental educational aspirations, grades expectations, school contact, parent-child communication, and home supervision, were also examined.

Pearson's correlations and partial correlations were calculated to examine the relations between the total score of DOII and the parental involvement variables, as well as the relations between the subscale score of family functioning on the DOII and the

parental involvement variables. The correlations between demands of illness/family functioning and different levels/forms of parental involvement are presented in Table 15.

The measure of overall demands of maternal illness indicated on the DOII was negatively correlated with parental self-efficacy, $r = -.218$, $p < .01$. A Spearman's correlation coefficient for attenuation was calculated to estimate the true score correlation between the overall demands of illness and parental self-efficacy by ridding a correlation coefficient from the weakening effect of measurement error (Jensen, 1998), and a corrected coefficient of -.232 was obtained. The relation between the total score of DOII and measure of parental self-efficacy was maintained after controlling the socio-demographic variables, $r = -.195$, $p < .05$ (Table 16), with a corrected correlation coefficient of -.207.

Similarly, disrupted family functioning indicated on the family functioning subscale of DOII was negatively correlated with parental self-efficacy before and after controlling the socio-demographic variables; $r = -.268$, and $r = -.226$, $ps < .01$. The correlations for attenuation were calculated and the correlation coefficients between disrupted family functioning and parental self-efficacy before and after controlling socio-demographic factors were -.288 and -.244, respectively. Therefore, Hypothesis 2 was fully supported, with correlations in the small to median effect size range.

The measure of overall demands of maternal illness indicated on the DOII was negatively associated with parental educational aspirations for their children ($r = -.164$, $p < .05$) and positively correlated with home supervision ($r = .170$, $p < .05$). The corrected correlations were -.191 and .196 for parental educational aspirations and home supervision, respectively. The total score of DOII was not associated with the measures

of grade expectations, school contact, and parent-child communication regarding school matters. However, the correlation between the total score of DOII and educational aspirations and the relation between the total score of DOII and the measure of home supervision disappeared after the socio-demographic factors were controlled.

The subscale score of family function on DOII was not associated with measures of educational aspiration, grade expectation, school contact, and home supervision.

Relations Between Parental Involvement Variables and Child's Grades

The third research question (Question 3) asks whether higher levels of parental involvement are related to better academic functioning in children. It was hypothesized that parental self-efficacy (Hypothesis 3) and all forms (Hypothesis 6) of parental involvement measured in this study would be positively associated with children's grades.

The correlations between different types of parental involvement and the children's grades are presented in Table 15. Among parental involvement measures, parental self-efficacy, educational aspiration, grade expectations, and parent-child communication regarding school matters were positively correlated with children's grades; $r = .480, p < .001$, $r = .531, p < .001$, $r = .452, p < .001$, and $r = .177, p < .05$, respectively. Higher levels of perceived self-efficacy in helping their children succeed in school, higher expectations toward their children's educational achievement and grades, and higher frequency of parent-child communication regarding the child's education and activities in school were associated with higher grades obtained in school. The measures of school contact and participation in children's school activities and home supervision were not associated with children's grades.

After controlling the socio-demographic variables, the relations between the children's grades and parental self-efficacy ($r = .392, p < .001$), educational aspirations ($r = .404, p < .001$), and grade expectations ($r = .297, p < .001$) were maintained (Table 16). The measure of parent-child communication regarding school matters was not associated with the child's grades after socio-demographic variables were controlled.

Overall, Hypothesis 3 was supported by the results as the measure of parental self-efficacy was positively correlated with children's grades. However, Hypothesis 6 was partially supported as, among five different forms of parental involvement (i.e., educational aspiration, grade expectations, school contact, parent-child communication, and home supervision), only the measures of educational aspirations and grade expectations were related to children's grades; $r = .404, p < .001$, and $r = .297, p < .001$, respectively.

Relations among variables of parental involvement. Hypothesis 5 predicted that levels of parental self-efficacy would be positively correlated with levels of parental involvement in different forms. To examine the hypothesis, Pearson's correlations and partial correlations were calculated. The correlations among variables of parental involvement are presented in Table 15 and Table 16.

Parental self-efficacy was related to different forms of parental involvement. The measure of parental self-efficacy was positively associated with measures of parental academic aspiration and parent-child communication; $r = .343, p < .001$, and $r = .428, p < .001$, respectively. After controlling for socio-demographic factors, the score of parental self-efficacy was still positively correlated with parent-child communication ($r = .402, p < .001$) and parental academic aspirations ($r = .197, p < .05$). The corrected

correlation coefficient was .462 between parental self-efficacy and parent-child communication, and it was .240 between parental self-efficacy and parental academic aspirations. However, parent's efficacy was not significantly related to parental grade expectations, school contact, and home supervision. As a result, Hypothesis 5 was only partially supported.

Among different forms of parental involvement, the measure of parental academic aspirations was positively associated with levels of parental grade expectations and school contact after social-demographic factors were controlled; $r = .399$, $p < .001$, and $r = .207$, $p < .05$, respectively (Table 16). However, parental academic aspirations were not correlated with parent-child communication or home supervision. The score of school contact and participation was positively correlated with levels of parent-child communication and home supervision; $r = .326$, $p < .001$, and $r = .227$, $p < .01$, respectively. The corrected correlation coefficient was .435 between parental school contact and parent-child communication, and it was .316 between parental school contact and home supervision.

The Potential Mediating Effect of Parental Self Efficacy

The last research question (Question 4) concerns the relative effect of demands of maternal illness on their children's academic functioning and the ability of parental involvement to mediate this relationship. It was hypothesized that positive parenting, particularly parental self efficacy, would mediate the relationship between maternal illness demands and children's academic achievement (Hypothesis 4).

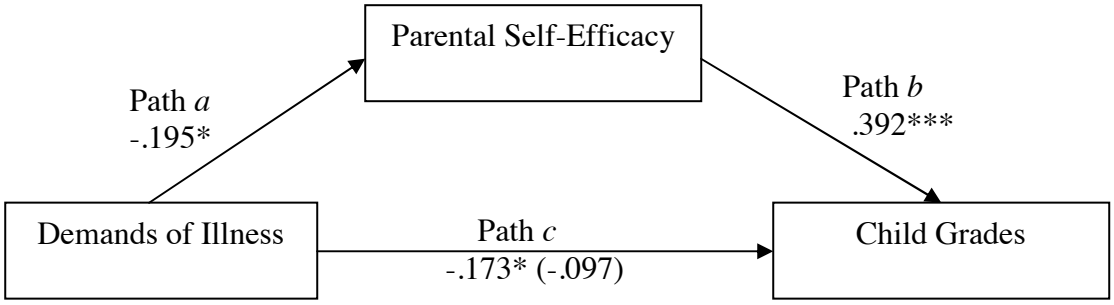
Among different types of parental involvement, parental self-efficacy was the only variable that correlated with the measure of demands of illness and the child's

grades. As a result, only parental self-efficacy was tested as a possible factor that mediates the relationship between parental demands of illness and the children's grades (see Figure 7).

According to Baron and Kenny (1986), a variable functions as a mediator when it meets the following conditions: (a) variations in levels of the independent variable significantly account for variations in the presumed mediator (i.e., Path *a* in Figure 7), (b) variations in the mediator significantly account for variations in the dependent variable (i.e., Path *b* in Figure 7*),* and (c) when Paths *a* and *b* are controlled, a previously significant relation between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when Path *c* is zero.

Figure 7

Parental Self-Efficacy as a Mediator Between Parental Demands of Illness and Children's Grades



Note. The numbers listed on Paths a and b represent the partial correlation coefficients after controlling for socio-demographic variables such as maternal age, primary diagnosis, onset of diagnosis, ethnicity, household income, child's gender, age, and grade level in school. The numbers listed on Path c are β values while controlling for the same socio-demographic variables.

To test whether parental self-efficacy functioned as a mediator in this present study, the relations among the demands of illness, parental self-efficacy, and children's grades were tested based on the abovementioned three criteria.

All three paths in the mediational model testing the relations among maternal demands of illness, parental self-efficacy, and the child's grades were significant. Parental self-efficacy was significantly associated with overall maternal demands of illness indicated on the DOII as well as the parental rating on children's grades. Higher demands of parental illness were related to lower levels of parental self-efficacy (i.e., Path *a* in Figure 7) and lower grades in their children (i.e., Path *c*). Higher levels of mothers' efficacy were related to higher grades in children (i.e., Path *b*).

A hierarchical regression was conducted to measure the unique and additive contribution of parental self-efficacy in explaining the relation between maternal demands of illness and the children's grade. As shown in Table 17, when the hypothesized mediator (parental self-efficacy) was added to the model examining the relation between maternal demands of illness and the children's grades, the magnitude of the relation was reduced from $\beta = -.173$, $p = .046$ to $\beta = -.097$, $p = .235$, and the measure of overall demands of maternal illness was not related to the children's grades. The results supported Hypothesis 4, indicating that parental self-efficacy mediated the negative relationship between the overall maternal demands of illness and children's grades. In other words, when ill mothers had higher academic self-efficacy in helping their children succeed in school, the negative relation between maternal chronic illness demands and their children's academic achievement was buffered or reduced.

Using equations suggested by Sobel (1988) and Holmbeck (2002), a *z* statistic was computed based on unstandardized beta weights and standard errors; this figure was compared to a table of critical values, which requires a *z* score to exceed 1.96 for $p < .05$ significance. The *z* score was 2.06 indicating that the amount of mediation was significant. Therefore, Hypothesis 4 was further validated.

Other Results

Additive contributions of different forms of parental involvement to the child's grades.

To examine whether different forms of parental involvement provided extra values in explaining children's academic functioning in addition to the maternal demands of illness and mothers' efficacy, a hierarchical regression was tested.

As shown in Table 18, after controlling for socio-demographic variables, maternal demands of illness, and parental self-efficacy, the variables of educational aspirations and grade expectations contributed uniquely and additively to predict the child's grades; $\beta = .277, p < .01$, and $\beta = .180, p < .05$, respectively. The ability of parental self-efficacy to predict the child's grades was maintained and became slightly stronger; β increased from $.386, p < .001$ to $.397, p < .001$. In other words, when mothers had higher levels of efficacy in helping their children succeed in school, their children tended to perform better academically in terms of grades.

The other forms of parent involvement such as parental school contact and participation, parent-child communication regarding school matters, and home supervision did not contribute to the prediction of children's grades.

Table 17

Hierarchical Regression: Unique and Additive Contribution of Parental Demands of Illness and Parental Self-Efficacy to the Prediction of Child's Grades

Predictors	*β*	*t*	R^2	ΔR^2	*p*
Step 1: F (8, 132) = 4.071			.198***	.198	.000
Control Variables					
Mother's Age	.122	1.357			.177
Household Income	.164	1.916			.058
Primary Diagnosis	.135	1.678			.096
Onset of Illness	.039	.495			.622
Ethnicity	-.040	-.470			.639
Child's Gender	.167*	2.086			.039
Child's Age	-1.009**	-3.092			.002
Child's Grade Level	.774*	2.345			.020
Step 2: F (9, 131) = 4.152			.222***	.024	.000
Demands of Illness	-.173*	-2.011			.046
Step 3: F (10, 130) = 6.715			.341***	.119	.000
Demands of Illness	-.097	-1.193			.235
Parental Self-Efficacy	.370***	4.837			.000

Note. β = standardized beta coefficients

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

Table 18

Hierarchical Regression: Unique and Additive Contribution of Parental Involvement to the Prediction of Child's Grades

Predictors	*β*	*t*	R^2	ΔR^2	*p*
Step 1: F (8, 127) = 4.109			.206***	.206	.000
Control Variables					
Step 2: F (9, 126) = 4.214			.231***	.025	.000
Demands of Illness	-.177*	-2.054			.042
Step 3: F (10, 125) = 6.749			.351***	.120	.000
Demands of Illness	-.097	-1.195			.234
Parental Self-Efficacy	.372***	4.791			.000
Step 4: F (15, 120) = 7.286			.477***	.126	.000
Demand of Illness	-.042	-.544			.587
Parental Self-Efficacy	.374***	4.642			.000
Educational Aspirations	.277**	3.032			.003
Grade Expectations	.180*	2.253			.026
School Contact	.012	.156			.876
Parent-Child Communication	-.071	-.737			.463
Home Supervision	-.066	-.725			.470

Note. Control variables include maternal age, ethnicity, primary diagnosis, onset of illness, household income, child's gender, child's age, and child's grade level.

β = standardized beta coefficients

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

Overall, the results suggest that, in addition to the overall demands of maternal illness and maternal academic self-efficacy, two forms of parental involvement (i.e., educational aspirations and grade expectations) also played an important role in predicting children's academic achievement.

Relations between mothers' physical impairment, time spent on managing illness related activities, and demands of illness/family functioning. To examine whether the degree of mothers' physical impairment and time spent on managing illness related activities (e.g., doctor's appointments, medical treatment, hospitalization, etc.) were related to the maternal demands of illness perceived, Pearson's correlations and partial correlations were calculated.

The extent of maternal physical impairment and time spent on managing illness related activities were significantly correlated with the overall demands experienced as the result of illness reported on the DOII (Table 15); $r = .469$, $p < .001$, and $r = .407$, $p < .001$, respectively. Higher levels of physical impairment and more hours spent on managing illness were related to high levels of overall demands experienced by the ill mothers. The relations were strengthened after controlling for socio-demographic variables; $r = .518$, $p < .001$, and $r = .542$, $p < .001$, respectively, suggesting strong relations between the variables of maternal medical condition and the DOII. The results supported the validity of the DOII.

Significant positive correlations were also found between the scores of the family functioning subscale on the DOII and the degree of parental physical impairment ($r = .580$, $p < .001$) and time spent on managing illness related activities ($r = .382$. $p < .001$), indicating that higher levels of physical impairment and more hours spent on managing

illness related activities were associated with higher levels of compromised family functioning. Similarly, after controlling the socio-demographic variables, the relation between the physical impairment and the disrupted family functioning and the relation between time spent on managing illness related activities both became stronger (Table 13), $r = .603, p < .001$, and $r = .460, p < .001$, respectively.

Overall, the extent of maternal physical impairment and time spent on managing illness related activities were significantly related to the overall demands of illness and disrupted family functioning reported.

No unique contributions of mothers' physical impairment and time spent on managing illness related activities in explaining children's grades. A hierarchical regression was conducted to examine the possible additive contribution of variables of maternal physical impairment and time spent on managing illness related activities in explaining children's grades after the maternal demands of illness were taken into account (Table 19).

After controlling for socio-demographic factors and the variable of demand of illness, mothers' physical impairment ($\beta = .066, p = .516$) and the number of hours spending on managing illness related activities ($\beta = -.149, p = .135$) did not contribute additively to explain children's grades as the relations between these two variables and children's grades were not significant.

Since the extent of mothers' physical impairment and time spent on managing illness related activities were both significantly related to the overall demands of illness and disrupted family functioning but did not contribute additively to explain children's grades after the demands of illness were considered, the possible effects of

Table 19

Hierarchical Regression: Unique and Additive Contributions of Parental Physical Impairment and Time of Illness Management to the Prediction of Child's Grades

Predictors	*β*	*t*	R^2	ΔR^2	*p*
Step 1: F (8, 116) = 4.587			.240***	.240	.000
Control Variables					
Step 2: F (9, 115) = 4.685			.268***	.028	.000
Demands of Illness	-.189*	-2.096			.038
Step 3: F (11, 113) = 4.074			.284***	.016	.000
Demands of Illness	-.136	-1.148			.253
Physical Impairment	.066	.652			.516
Time of Illness Management	-.149	-1.505			.135

Note. Control variables include maternal age, ethnicity, primary diagnosis, onset of illness, household income, child's gender, child's age, and child's grade level.

β = standardized beta coefficients

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

mother's physical impairment and time spent on managing illness related activities on children's academic functioning were not emphasized in this present study as they were not directly linked to the research questions being posed by this study.

Figure 8 provides a visual presentation of the overview of the results in the present study. See Appendix O for the summary of the research hypotheses and findings of the present study.

Figure 8

Overview of the Relations among Variables of Study

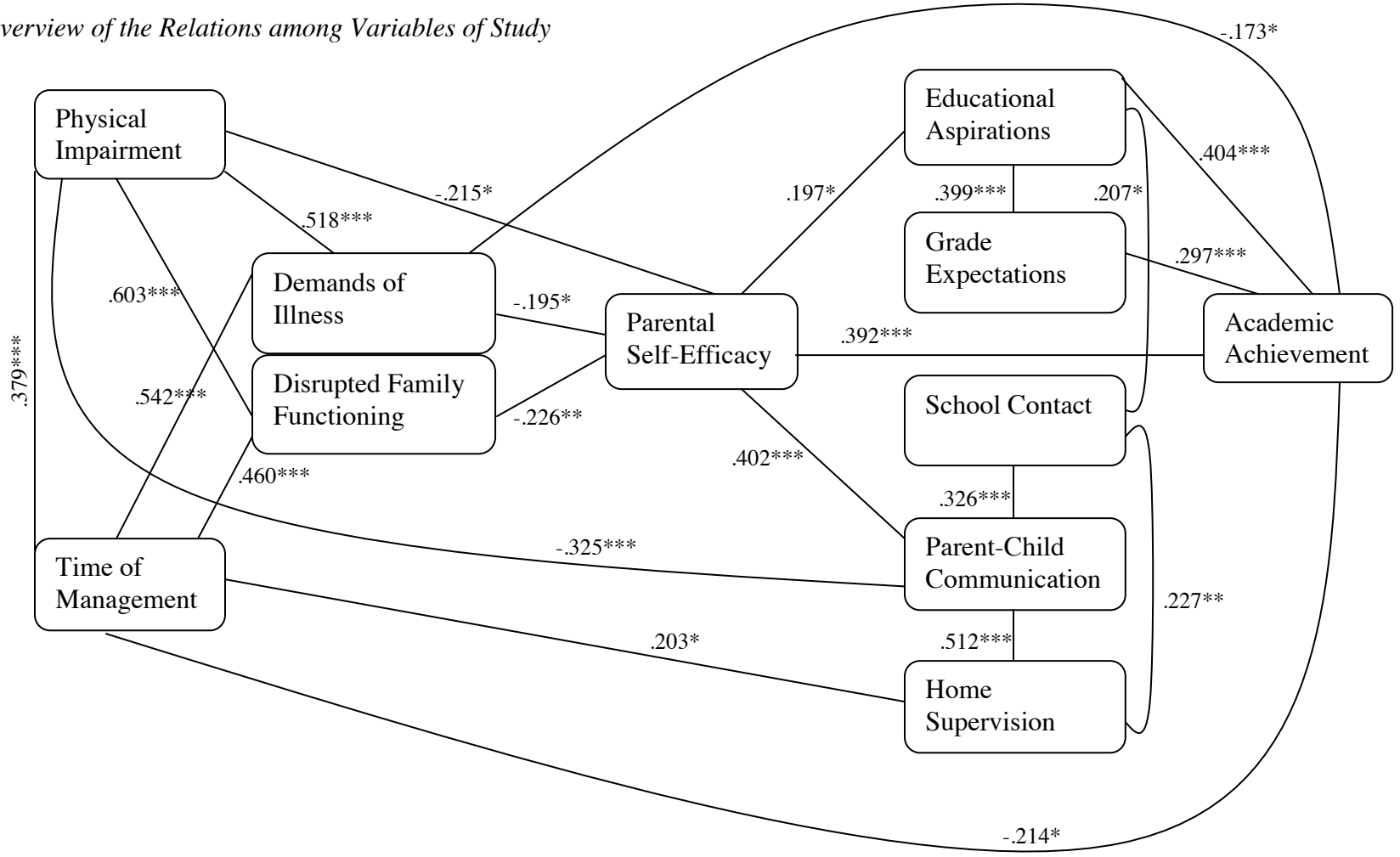


Figure 8 (continued)

Note. The figure presents a sequence of partial correlations. The lines between variables indicate significant partial correlations while controlling for socio-demographic characteristics, including maternal age, ethnicity, primary diagnosis, onset of illness, household income, child's gender, child's age, and child's grade level. All of the coefficients are significant beyond the $p < .05$ level.

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

CHAPTER 5

Discussion

This chapter describes the key findings obtained from the statistical analyses in the present study, as well as educational implications of the findings, limitations of this study, and directions for future research.

Key Findings

The present study has provided a dynamic and complex picture of the relationships among the demands of parental illness, parental involvement, and children's academic performance. Overall, the study revealed that levels of parental physical impairment as a result of their illness and the amount of time they utilized to manage illness related activities were related to the overall demands imposed by their illness and disrupted family functioning.

According to Packard et al. (1991), chronic illness is a multifaceted experience and the construct of demands of illness refers to the illness related events that individual and families experience in response to health problems such as chronic illness. In the present sample of 150 chronically ill mothers diagnosed with MS, diabetes, cancer, and HIV/AIDS from 33 states, the mothers with higher levels of physical impairment and requiring more assistance in daily functioning experienced higher levels of overall illness demands and higher levels of disruption in family functioning than those who were able to function independently without assistance. The mothers who spent more time in managing their illness related activities, such as doctor's appointments, medication and treatment, napping, etc, also experienced higher levels of overall demands and disrupted

family functioning imposed by their illness than those who consumed less time in managing their illness activities.

The parental demands of illness and disruption in family functioning were associated with some aspects of parental involvement. In this study, the mothers who experienced higher demands imposed by their illness and higher levels of disruption in normal family functioning tended to have lower levels of parental self-efficacy as they felt less confident in their ability to help their children succeed in school compared to those who experienced lower levels of illness demands and disruption in family functioning. Chronically ill mothers with lower levels of parental self-efficacy tended to have lower educational aspirations for their children and engage in communication with their children regarding education and school activities less frequently.

Furthermore, the results of the present study revealed that the levels of demands of maternal illness were negatively related to the child's grades. The children whose mothers experienced higher levels of demands imposed by their illness tended to have lower grades in school than those whose mothers experienced lower levels of illness demands. However, parental self-efficacy appeared to be a robust buffer that mediated the negative relationship between the maternal demands of illness and children's educational performance.

Lastly, the results of the present study are in agreement with recent research on the role of parental involvement in children's academic functioning. Among different aspects of parental involvement, parental educational aspirations and grade expectations were positively related to the child's academic performance. The children whose mothers

expected them to attain higher education and better grades tended to have better grades in school.

Generally, the hypotheses of this study were supported by the results. The discussion of the results in this present study is organized into four parts. The first part describes the factors that are associated with demands of illness experienced by mothers diagnosed with chronic illnesses. The second part discusses the relationships between parental demands of illness and their children's academic functioning. The third part of the discussion focuses on the role of parental self-efficacy in children's achievement. Lastly, there is a discussion that addresses the relations between different forms of parental involvement and children's academic achievement.

Demands of Illness

According to Haberman et al. (1990), demands common to a wide range of chronic illness may include managing treatment regimens, seeking causal explanations for their illness, undertaking strategies to normalize life with illness, and monitoring family and other systems around the patient. The association between more family-related illness demands experienced by ill mothers on more adolescent behavioral problems has been reported in the literature (e.g., Lewis, 1996). Factors such as number of illnesses (Hough et al, 1999), social and economic supports, nature of the illness, and onset of illness (e.g. Woods & Lewis, 1995) have been suggested to have an impact on the demands of illness experienced and family functioning. Klemm, Miller, and Fernsler (2000) found that colorectal cancer imposed more significant psychosocial and existential concerns on younger than older patients. Having more social and economic/instrumental supports appears to decrease illness demands and reduce the impact on family

functioning (e.g., Woods & Lewis, 1995). However, Woods and Lewis suggested that having a child under 18 years of age in the home increased the demands experienced by ill parents.

Consistent with the current literature, the results of the present study also revealed that maternal illness demands were associated with household income and maternal age. Household income was also associated with family-related illness demands (e.g., disruption of normal family functioning). In this study, younger mothers diagnosed with physical illness and those who were from lower income households appeared to experience higher levels of demands. As expected, the present study also revealed that the mothers who were more physically impaired and required more assistance in daily functioning and who spent more time managing their illness related activities, such as going to doctor appointments, undergoing treatment, napping to recover from medication, tended to experience higher levels of demands.

Woods and Lewis suggested that the lengthened time since the diagnosis of illness might increase illness demands. In contrast, the results of this present study suggested that patients who have been living with their illness longer tended to experience lower levels of illness demands. Newby (1996) proposed that illnesses with a gradual onset allow families some time for adjustment to the illness and time for family adaptation. The positive association between onset of illness and demands of illness revealed in this present study may be explained by Newby's argument, as the families might have become more adapted to maternal illness over time.

Parental Chronic Illness and Children's Academic Functioning

The impact of parental physical illness on children's functioning is inconclusive

in the literature. While some studies (e.g., Bender, & Puskar, 2007; Birenbaum, et al., 1999; Forehand et al., 1998; Heiney et al., 1997; Shaffer, 2001) suggested negative outcomes in children's adjustment as a result of their parents' illness, some studies indicated no effects (e.g., Crist, 1993; Hoke, 2001; Osborn, 2007) of parental illness on their child's psychosocial functioning. In De Judicibus and McCabe's (2006) study involving children with a parent with MS, most of the children appeared to adjust well although they might have some difficulties dealing with the stresses of living with an ill parent. A review by Osborn (2007) also suggested that children and adolescents do not generally experience elevated levels of serious psychosocial difficulties, but they may be at a slightly increased risk for internalizing type problems. Overall, current literature suggests that the areas of child functioning affected by parental physical illness vary substantially across studies.

Applying Armistead et al.'s (1995) child psychosocial adjustment model of parental illness (see Figure 1) to academic functioning, it was predicted that children's educational activities and performance might be compromised as a result of parental chronic illness. In contrast to the prediction, the results of the present study appeared to suggest resilience in children of mothers diagnosed with chronic illness. A majority of children in the sample of this present study appeared to function well academically. Nevertheless, the results of this sample supported the first hypothesis of this study regarding the relation between maternal demands of illness and child academic achievement. The results of this study suggested that when the overall experienced demands of illness imposed on their mothers were high, children's academic functioning might be affected. Similar to the findings with respect to children's psychosocial

adjustment to parental chronic illness in the literature (e.g., De Judicibus & McCabe, 2006; Osborn, 2007; Watson, 2006), the results of this study also suggested that children may not generally experience serious academic difficulties, but they may be at a slightly increased risk for lower academic achievement, especially when their mothers are experiencing significant demands imposed on their illness. Although the specific demands of illness on the area of family functioning may not be linked to the child's academic functioning directly, the results of the present study appeared to suggest that the impact of disruption of family functioning on child academic achievement might be through the parent's efficacy in helping her child succeed in school.

Gender difference. The impact of parental chronic illness may have different effects on children's academic achievement in terms of the child's gender. Visser et al. (2005) study suggested that adolescent daughters are at a higher risk than adolescent sons for emotional problems following the diagnosis of cancer in a parent. Similar results suggesting adolescent girls seem to represent a group at heightened risk for psychological adjustment difficulties were reported in a review by Korneluk and Lee (1998) examining the impact of parent physical illness on child functioning.

However, in the present study girls of mothers with chronic illnesses tended to perform better than boys academically, suggesting that boys of mothers with chronic illness might be more vulnerable to their parents' illness than girls in the area of academic functioning. The results were in agreement with Nelson et al.'s (1994) study in which male adolescents of mothers with chronic illnesses reported that parental illness impacted their schoolwork. The gender difference found in child academic achievement might be the result of different grade expectations that parents hold for their daughters and sons.

The results of the sample of this study suggested that mothers with chronic illness tended to have higher grade expectations for their daughters than for sons. However, the difference in grades obtained in school might also have been a reflection of the population norm. A gender gap in educational outcomes, with boys falling behind girls in regard to grades and high school graduation has been reported by educational statistics (e.g., Clark, Thompson, & Vialle, 2008). According to a U.S. Department of Education report published in 2004, boys tend to have more academic difficulties and are achieving at lower levels as shown by test scores and grades.

Diagnosis of illness. In the sample of this present study, the child's grades appeared to vary as a function of maternal diagnosis of illness. As levels of parental self-efficacy, educational aspiration, grades expectations, school contact, and home supervision differed among mothers with different diagnoses, it appeared to suggest that the different academic functioning observed in the children might have been due to their mothers' involvement.

Watson et al. (2006) suggested that treatment status and time since the diagnosis of maternal illness were not related to their children's emotional and behavioral problems. Similarly, the results of the present study suggested that onset of maternal illness was not associated with their children's academic functioning.

Socioeconomic status. The results of the present study suggested that household income was related to maternal demands of illness imposed by their illness, disruption in family functioning, parental academic aspiration, grade expectations, and the child's academic functioning measured by grades obtained in school. Bandura, Barbaranelli, Caprara, and Pastorelli (1996) proposed that family socioeconomic status was linked to

children's academic achievement indirectly through its effects on parental aspirations and children's prosocialness. In agreement with Bandura et al.'s study, the results of this present study also suggested that the effects of household income on the child's academic achievement might be operating through maternal illness demands and parental involvement in the forms of educational aspiration and grade expectations.

Parental Self-efficacy for Helping the Child Succeed in School

Hypotheses 2, 3, 4, and 5 of this present study were supported by the results. The results of the present study indicated that overall demands of illness imposed on the ill mothers and specific demands on family functioning were linked to parent's efficacy in helping their child succeed in school. The mothers who experienced higher levels of illness demands and disruption in family functioning tended to have lower efficacy in educational parenting. The children of mothers diagnosed with physical illness tended to perform well academically when their mother had higher levels of efficacy in parenting and believed that they could have a significant impact on their child's schooling and achievement. Most importantly, the results of the present study suggested that the parental self-efficacy might be a significant factor that mediated the relationship between demands of illness and child academic functioning.

A model by Hoover-Dempsey and Sandler (1995, 1997, 2005) provides a strong theoretical framework from which to examine specific predictors of parental involvement (see Figure 2). Grounded primarily in psychological literature, the Hoover-Dempsey and Sandler model of the parental involvement process proposes three major sources of motivation for involvement (Figure 2). The first is parents' motivational beliefs relevant to involvement, including parental role construction and parental self-efficacy for helping

the child succeed in school. The second is parents' perceptions of invitations to involvement, including general invitations from the school (e.g., positive school climate) and specific invitations from teachers and children. The third source is personal life context variables that influence parents' perceptions of the forms and timing of involvement that seem feasible, including parents' skills and knowledge for involvement, and time and energy for involvement.

According to Bandura (1997), self-efficacy is a person's belief that he or she can act in ways that will produce desired outcomes and it is a significant factor shaping the goals an individual chooses to pursue and his or her level of persistence in working toward those goals. Grounded in Bandura's work, parent efficacy was defined as a parent's belief that he/she is capable of exerting a positive influence on children's school outcomes (Hoover-Dempsey et al., 1992). When applying the self-efficacy theory to parental involvement, it is suggested that parents make involvement decisions based in part on their thinking about the outcomes likely to follow their involvement activities (Green et al., 2007; Hoover-Dempsey & Sandler, 1997; Walker, et al., 2005).

In general, Bandura's work suggests that persons high in efficacy will be more likely to engage in behaviors leading to a goal and will be more persistent in the face of obstacles than will persons with a lower sense of efficacy. Parents differ in their ideas about their role in their child's learning. To the extent that parents believe strongly that they have a role in their child's learning, they may be more likely to take on involvement activities. Parents who believe that they can "make a difference" in their child's education are more likely to be involved (Hoover-Dempsey, et al., 1992). Several studies have indicated that positive personal beliefs about efficacy for helping one's children

succeed in school are associated with increased parental involvement among elementary (e.g., Grolnick et al., 1997; Hoover-Dempsey et al., 1992; Seefeldt, Denton, Galper, & Younoszai, 1998), middle (e.g., Bandura et al., 1996), and high school (e.g., Shumow & Lomax, 2002) students. In Hoover-Dempsey et al.'s (1992) study, parent efficacy was moderately associated with education activities, volunteering and telephone calls. Mothers who felt efficacious in Grolnick et al.'s (1997) study were more involved in cognitive/intellectual activities, such as exposing the child to intellectually stimulating activities such as going to the library and talking about current events. Seefeldt et al. (1998) found that parents' belief in their ability to exercise control over their children's education predicted school-related parent involvement.

In agreement with the literature, the results of the present study involving chronically ill mothers also suggested that parents' efficacy in helping their child succeed in school were related to their involvement in their children's education by the forms of academic aspiration and parent-child communication in order to know and keep abreast of what is going on with the child in school. However, in this present study parents' efficacy was not related to parental grade expectations, school contact and participation, and supervision at home. As a result, the fifth hypothesis of this study was partially supported.

Bandura and colleagues (1996) suggested that parents' sense of academic efficacy and aspiration for their children were linked to their children's scholastic achievement through their perceived academic capabilities and aspirations. Children's beliefs in their efficacy to regulate their own learning and academic attainments, in turn, contributed to

scholastic achievement both independently and by promoting high academic aspirations and prosocial behavior and reducing vulnerability to feelings of futility and depression.

Forms of Parental Involvement

A strong positive relationship between parental involvement in education and student achievement has been widely documented in the literature (e.g., Fan & Chen, 2001; Hara & Burke, 1998; Hampton et al., 1998; Izzo et al., 1999; Jeynes, 2003; Mau, 1997; Okagaki & Frensch, 1998). Although the operational use of parental involvement has not been consistent in the literature, different forms of parental involvement have been identified as robust factors that improve children's educational achievement. Christenson et al. (1992) argued that realistic, high parent expectations for children's school performance, effort attributions, and positive structure for learning (e.g., emphasizing on achievement, limiting television viewing, structuring children's time for homework completion, encouraging verbal conversations, modeling reading, etc.) are associated with positive achievement performance in children. A meta-analytic study by Jeynes (2005a) indicated that parental expectations, family communication, checking homework, parental participation or attendance in school events, were positively and significantly correlated to children's educational outcomes.

Based on Hoover-Dempsey and Sandler's model about parental involvement (Green et al., 2007; Hoover-Dempsey & Sandler, 1997; Walker, et al., 2005), the present study examined the effects of parental participation in school events and contact with school personnel along, home supervision, parent-child communication, educational aspiration, and grades expectations on their children's academic achievement.

In this sample involving mothers diagnosed with chronic illnesses, only parental academic aspiration and grade expectations were associated with their children's grades. The sixth hypothesis of the present study was partially supported. However, the results of the present study were consistent with the findings of Fan and Chen's (2002) meta-analytic study in which parental aspiration/expectation for children's educational achievement was identified as the form of parental involvement that was particularly highly associated with students' academic achievement.

Overall, the results of the present study suggested that mothers with physical illness could still be involved in their children's educational process in spite of their physical illness. Although parents living with chronic illness may not able to participate in certain forms of parental involvement due to illness demands, physical impairment, and time required to manage their own medical related activities, their attitudes towards their children's academic achievement (e.g., academic aspiration and expectations) may play an important role in their children's academic functioning.

Educational Implications

Although the conclusions are inconsistent across studies, the impact of parental illness on child psychosocial adjustment has been documented in the literature. However, the effects of parental illness on children's academic functioning have rarely been discussed. The present study was the first to examine the relationship between maternal chronic illness and children's academic achievement through parental involvement in education.

The results of the present study suggest resilience in children of mothers diagnosed with different chronic illnesses in term of academic functioning. However, the

results also suggested that some children may be at risk for academic problems especially when their parents perceive high demands as a result of their illness. As a result, it is suggested that educational intervention and/or school-family partnership may be considered for school-aged children whose parents are diagnosed with chronic illness and experiencing significantly high demands of illness as a family.

Grolnick and Slowiaczek (1994) defined parental involvement as the dedication of resources by the parents to their children within a given domain. From a social-ecological perspective, the social context of parenting will be a key contributor to the way resources are allotted to the child. Grolnick and Slowiaczek suggested that beyond demographic measures, the parents' experienced inadequacy of resources will be the most likely to disrupt involvement. Stressful events might take time from parents and/or usurp energy and attention, resulting in less psychological availability for or awareness of involvement activities. In the event of parental chronic illness, disruptions of parenting are likely to occur (Armistead et al., 1995) as the urgency of self-care demands due to life-threatening and debilitating medical conditions may require parents living with chronic illness give priority to their own requirements over the needs of their children. However, the results of the present study suggest that parental involvement in education may buffer the potential impact of parental chronic illness on their children's educational functioning. Parents' academic efficacy particularly plays an important role in mediating the effects of their illness on their children's academic achievement.

Suggested by the results of the present study, the school intervention for families with parental chronic illness should address the importance of parental attitudes and beliefs in their children's education. Although parents with chronic illness may not be

able to actively engage in their children's educational process by participating in physical forms of involvement due to physical impairment and illness demands imposed on them, they may still involve their children's education through high academic aspiration/expectation.

Bandura (1997) argued that self-efficacy is socially constructed. According to Bandura, expectations of efficacy are "derived from four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physical states" (p. 192). Performance accomplishments, or past success, can be described as the experiences a person has with a particular behavioral domain. If an individual has a number of successful experiences in an area, s/he is more likely to believe in subsequent successful executions of the same or similar behaviors. Vicarious experience, or modeling, may be described as an individual's experience with people similar to him/her that have successfully executed behavior(s) in a given domain. This instills a sense of confidence that an individual can similarly accomplish the tasks in that domain. Verbal persuasion is the component of building self-efficacy in which persons with influence in an individual's life use persuasive measures to convince him/her of his/her capability to perform behaviors in a given domain. These persons may include parents, other close family members, and other individuals who have particular influence with an individual. Physiological states can be defined as the level of emotional arousal an individual exhibits when experiencing different levels of anxiety. Successful task performance is not likely when an individual exhibits high levels of anxiety. Likewise, if an individual has no interest in an activity, or a complete lack of anxiety about a given task, s/he is not likely to successfully perform this task.

Accordingly, parental self-efficacy is likely to be influenced by personal experiences of success in parental involvement, vicarious experience of similar others' successful involvement experiences, and verbal persuasion by others. Therefore, interventions for families with parental chronic illness are recommended to emphasize enhancing the parents' beliefs in their ability to help their children succeed in school in spite of their illness through education and positive feedback by incorporating the abovementioned four components of efficacy.

Parental empowerment programs may be implemented to motivate mothers with chronic illness to get involved in their children's education. Educational information regarding the positive effects of parental involvement should be provided to the ill mothers. In addition, alternative forms of academic involvement may be discussed with the mothers with chronic illness to accommodate their medical conditions. Modeling of effective parenting skills and positive parental involvement for ill mothers may be needed. Regular feedback regarding the parents' parenting practices and their effects on children's performance should be included in the parental empowerment program to promote self-monitoring skills and enhance parental self-efficacy.

Limitations of the Current Study

The findings on the impact of parental chronic illness on children's psychosocial functioning are inconclusive in the literature. Although the present study suggests that children's academic functioning may be at risk, especially when their ill parents experience significant demands imposed by their illness, no conclusive claims can be made regarding the impact of parental illness on children's educational outcomes due to lack of a control group for comparison. As a result, the present study was unable to

answer whether parental illness has a definite, negative effect on children's academic performance.

The present study employed a correlational research design to examine the relationships among variables in question. As a result, no causal-effect statements regarding the effects of parental illness demands on parental involvement and on their child's academic functioning can be made. The significant relations among demands of maternal illness, parental involvement, and children's grades indicated in the present study can be bidirectional.

Although the participants were asked to report their children's GPA on the child's most recent school report card, as well as the scores in reading and mathematics on the State/Region exam, these data were unfortunately unable to be utilized for meaningful data analyses in the present study due to the inconsistent and incompatible scoring and reporting schemes employed across states. The parental rating of youth grades was the only method available to measure children's academic functioning in the present study. This measure may only capture a narrow scope of children's academic functioning. In addition, parental self-report on their child's grades may be the perception of the child's performance rather than the reality.

The 125-item DOII measure inevitably produced a high number of "Not Applicable" responses in the sample of this present study as a result of considerable variability among the participants in terms of medical diagnoses and conditions, as well as response tendency and habit. However, the high internal consistency reliability alpha of .98 obtained in this study for the DOII may have been inflated due to a high proportion of missing data resulting from profound "Not Applicable" responses on this scale. More

sophisticated statistical procedures with a large sample size may be needed to further examine and ensure the psychometric properties of this scale that measures demands of illness.

Since the majority of the participants in the sample of this present study were White mothers diagnosed with MS, the generalizability of the results derived from this study may be limited. Also, the findings regarding different levels of parental involvement among ill mothers of different ethnic groups need to be interpreted with caution as there were few non-majority ethnic participants, especially in the Asian and mixed race categories, included in the sample of this study.

Furthermore, the 80% questionnaire return rate achieved in this present study appeared to suggest that the participants of this study might be highly motivated and were cooperative with the research procedure. These mothers recruited from the organizations serving patients with chronic illnesses might be more proactive in coping with their illness and function at a higher level than those who were not involved in those organizations. The mothers who responded to my research recruitment advertisement and completed the questionnaire might also be different from those who did not answer the advertisement and who did not return the questionnaire in terms of personal characteristics and life conditions. For example, they might be too ill to participate in this study. As a result, readers are cautioned that the generalization of the findings derived from this present study to the population is not warranted.

Future Research

The future directions of research are aimed to rectify and compensate the limitations of the current study.

Control group. To answer if parental chronic illness has a definite impact on their children's academic functioning, a community sample involving mothers without physical illness as group control should be included in order to examine if children of parents with chronic illness experience more academic difficulties than the group norm. The inclusion of a control group also will allow us to examine if there is any difference in terms of parental involvement between mothers with and without physical illness.

Parental self-efficacy intervention. To determine the potential causal effects of parental self-efficacy on their children's achievement, an experiment might be conducted to examine if an intervention emphasizing enhancing parents' academic efficacy buffers or reduces the impact of parental illness and consequently increases their children's academic functioning.

Qualitative research such as focus groups involving parents diagnosed with chronic illness may also be conducted to explore what factors may contribute to and influence their efficacy in helping their children's education. Semi-structured or structured interviews may be involved to facilitate information collection and data analysis procedures.

Educational outcomes. Children's academic functioning should not be defined only by their grades. Future research might include measures of children's academic efficacy, interest in learning, meta-cognition in problem solving, as well as their performance on standardized tests, to examine what aspects of academic functioning are most likely to be affected by their parents' illness. A psychometric project may also need to be developed in order to solve the problems regarding the inconsistent scoring

and reporting schemes on GPA and state/region reading and math tests across states/school districts as shown in the present study.

Furthermore, future research may measure children's academic achievement based on their actual school reports/records or teacher reports rather than relying on parental reports on their children's grades in order to increase the validity of outcome measures.

Children as informants. Children's perceptions of parental illness and parental involvement may be different from those of their parents. Children's perceptions of parental illness and parental involvement may be more important than their parents' actual and/or perceived involvement in understanding the effects of parental illness on parental involvement and their children's academic functioning. Therefore, future research will include children of parents with chronic illness as informants to help us understand the impact of parental physical illness on their children's educational functioning.

Comparison among different types of illness. The preliminary results of the present study suggested that levels of parental involvement such as parental self-efficacy, educational aspiration, grade expectations, school contact and participation, home supervision, and their children's grades differed among mothers with different diagnosis of illness. However, meaningful analyses were unable to be conducted to examine the differential impact of different parental illnesses on children's academic functioning due to an unequal and insufficient number of participants in some illness categories. More than half of the participants in the present study were mothers diagnosed with MS, while fewer participants in the sample were diagnosed with each of the following diagnoses:

diabetes, cancer, and HIV/AIDS. Future research will recruit more participants diagnosed with diabetes, cancer, and HIV/AIDS in order to allow for comparisons among different types of illness in terms of their unique pathways in affecting children's academic functioning.

Family constellation. This present study examined the effects of maternal chronic illness on parental involvement and children's academic outcomes. However, paternal physical illness may have different impact on children's education. Future research will investigate the effects of demands of paternal chronic illness on family functioning, paternal involvement in children's education, and children's educational achievement.

In addition, future research will study the healthy parent's involvement in their children's education when their spouses are ill and its impact on children's academic functioning. This present study examined only one child's academic functioning in each family. Future research will investigate the effects of parental chronic illness on all the children's academic functioning within the same family.

Conclusion

In sum, as the first study to examine the impact of parental chronic illness on children's educational achievement through parental involvement, the results of the present study provided new insight into the complex and dynamic process between parents' physical illness and children's academic functioning. Children of mothers diagnosed with chronic illness appeared to be resilient in terms of their academic functioning. However, the results of the present study suggested that some children of parents with chronic illness might be at risk for lower academic achievement when their parents had high illness demands. Parental self-efficacy may buffer the impact of

parental illness on their children's academic achievement through parental involvement in the forms of educational aspiration and expectations. It is suggested that enhancing parents' beliefs in their capabilities to help their children succeed in school, in spite of their own illness, should be particularly emphasized when implementing preventive interventions for families with parents who are chronically ill.

Appendix A:

Parent Demographic Information

PARENT BACKGROUND INFORMATION

NAME: Please provide your initials only.

SEX: ☐ Male ☐ Female ☐ Other: (specify here)_____

AGE:

RACE/ETHNICITY:

☐ Asian and Pacific Islander ☐ American Indian and Alaska Native
☐ Black/African American ☐ White/Caucasian
☐ Latin/Hispanic ☐ Mixed (Please specify here):_____
☐ Other (Please specify here): _____

MARITAL STATUS:

☐ Single ☐ Cohabited ☐ Married ☐ Separated
☐ Divorced ☐ Widowed ☐ Other (Please specify here): _____

YOUR OCCUPATION:

YOUR RELIGIOUS AFFILIAITON:

HOUSEHOLD INCOME:

☐ $20,000 or under ☐ $20,001 – $35,000
☐ $35,001 – $50,000 ☐ $50,001 – $75,000
☐ $75,001 - $100,000 ☐ $100,001 and over

NUMBER OF CHILDREN YOU HAVE:

NUMBER OF PEOPLE LIVING IN THE HOUSEHOLD:

Please specify and list who lives in the household:

RELATIONSHIP	AGE
_____	____
_____	____
_____	____
_____	____
_____	____

Appendix B:

Parent Medical Information

WHICH CHRONIC DISEASE DIAGNOSIS DO YOU HAVE?

- ☐ Cancer: (Please specify what cancer here)_____
- ☐ Diabetes: ☐Type I ☐ Type II
- ☐ HIV infection ☐ AIDS
- ☐ MS
- ☐ Chronic Pain
- ☐ Chronic Fatigue Syndrome
- ☐ Asthma
- ☐ Cardiovascular Disease/Heart Disease
- ☐ Other (Please specify here): _____

IF YOU HAVE MULTIPLE DIAGNOSES, WHAT IS YOUR PRIMARY DIAGNOSIS:

- ☐ Cancer: (Please specify what cancer here) _____
- ☐ Diabetes: ☐Type I ☐ Type II
- ☐ HIV infection ☐ AIDS
- ☐ MS
- ☐ Chronic Pain
- ☐ Chronic Fatigue Syndrome
- ☐ Asthma
- ☐ Cardiovascular Disease/Heart Disease
- ☐ Other (Please specify here): _____

HOW LONG HAVE YOU BEEN DIAGNOSED WITH THE (PRIMARY) CHRONIC ILLNESS INDICATED ABOVE? ☐

WHAT TREATMENTS HAVE YOU RECEIVED WITHIN THE PAST 6 MONTHS? PLEASE LIST: ☐

☐

HOW MANY HOURS PER WEEK DO YOU DEVOTE TO ILLNESS MANAGEMENT ACTIVITIES (e.g., medical appointment, treatment at home and in the clinic, hospitalization, insurance, napping etc.)? ☐ **Hours/Week**

DESCRIBE YOUR DEGREE OF PHYSICAL IMPAIRMENT AS A RESULT OF YOUR ILLNESS: (*Circle one number that represents your degree of impairment.*)

1	2	3	4	5	6	7
Independent Functioning Require No Assistance			**Require Some Assistance (e.g., crutches)**			**Require Complete Assistance**

Appendix C:

Child Demographic Information

TARGET CHILD INFORMATION

INSTRUCTIONS: For the purpose of this study, the "target child" refers to your child who is between ages **10** and **18**. If you have two or more children who fall within this age range (10-18), the "target child" refers to the OLDEST child whose age falls between 10 and 18.

NAME OF CHILD: Please provide your child's initials only.

SEX OF CHILD: ☐ Male ☐ Female ☐ Other: (specify here)_____

AGE OF CHILD: ☐ **CHILD'S GRADE IN SCHOOL:** ☐

Appendix D:

Demands of Illness Inventory (DOII)

INSTRUCTIONS:
Below is a list of events and thoughts that describe experiences some individuals have when they experience a health problem. Read the items carefully and determine the extent to which you have had these experiences as the result of your health problem **DURING THE LAST 7 DAYS INCLUDING TODAY**.

Note: Please mark NA only if the item is not applicable to your particular situation, otherwise mark 0 to 4. Please do not skip any items. Thank you!

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

As the result of my illness I have experienced:

1. Headaches.	NA	0	1	2	3	4
2. Faintness or dizziness.	NA	0	1	2	3	4
3. Pains in heart or chest	NA	0	1	2	3	4
4. Pains in lower back.	NA	0	1	2	3	4
5. Nausea or upset stomach.	NA	0	1	2	3	4
6. Soreness of muscles.	NA	0	1	2	3	4
7. Hot or cold spells.	NA	0	1	2	3	4
8. Numbness or tingling in parts of my body.	NA	0	1	2	3	4
9. Feeling weak in parts of my body.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

10. Heavy feelings in my arms or legs	NA	0	1	2	3	4
11. Feeling rundown.	NA	0	1	2	3	4
12. Inability to stay at my usual weight.	NA	0	1	2	3	4
***As the result of my illness I think about*:**						
13. The value my life has for me.	NA	0	1	2	3	4
14. How long I might live.	NA	0	1	2	3	4
15. Not being able to achieve my goals in life.	NA	0	1	2	3	4
16. How I might reorder the priorities in my life.	NA	0	1	2	3	4
***As the result of my illness I think about*:**						
17. My own mortality.	NA	0	1	2	3	4
18. How unprepared I've been for this experience.	NA	0	1	2	3	4
19. The uncertainties I face.	NA	0	1	2	3	4
20. If my life will ever return to normal.	NA	0	1	2	3	4
21. What will happen to my family in the future.	NA	0	1	2	3	4
22. Whether my children will face the same illness.	NA	0	1	2	3	4
23. Not having any past experience to relate this one to.	NA	0	1	2	3	4
24. How my experience compares with others having the same or a similar experience.	NA	0	1	2	3	4
25. Why is this happening to me?	NA	0	1	2	3	4
26. How unfair this experience has been.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

27. My odds of getting this illness.	NA	0	1	2	3	4
28. What has caused the illness.	NA	0	1	2	3	4
As the result of my illness our family:						
29. Income has gone down.	NA	0	1	2	3	4
30. Doesn't have enough time or energy for recreational activities outside our home.	NA	0	1	2	3	4
31. Doesn't have enough money to support our usual lifestyle.	NA	0	1	2	3	4
32. Doesn't have enough time or energy to entertain friends at home.	NA	0	1	2	3	4
33. Doesn't have enough money for our health care bills.	NA	0	1	2	3	4
34. Doesn't have enough time or energy to go out with friends.	NA	0	1	2	3	4
35. Has had to change our old meal patterns.	NA	0	1	2	3	4
36. Has had to change our child care arrangements.	NA	0	1	2	3	4
As the result of my illness:						
37. The children take more responsibility for household tasks.	NA	0	1	2	3	4
38. My partner takes more responsibility for household tasks.	NA	0	1	2	3	4
39. The quality of my sexual activities has changed.	NA	0	1	2	3	4
40. The frequency of my sexual activities has changed.	NA	0	1	2	3	4
41. There isn't time or energy for sexual activities.	NA	0	1	2	3	4
42. I worry about how my children are reacting to my illness.	NA	0	1	2	3	4
43. The children need more emotional support.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

44. The children need more information.	NA	0	1	2	3	4
45. I need more emotional support from my family.	NA	0	1	2	3	4
46. There is a strain on my relationship with my partner.	NA	0	1	2	3	4
47. My partner has had difficulty understanding my feelings.	NA	0	1	2	3	4
48. I worry about how my partner is responding to my illness.	NA	0	1	2	3	4
49. I wish my partner were handling the illness situation better.	NA	0	1	2	3	4
50. I need to be more sensitive to my partner's moods.	NA	0	1	2	3	4
51. I need to provide more emotional support to my partner.	NA	0	1	2	3	4
52. I need to protect my partner from stress.	NA	0	1	2	3	4
53. I need my partner to be more sensitive to my moods.	NA	0	1	2	3	4
54. I need my partner to help me with my treatment.	NA	0	1	2	3	4
55. My partner has had to change work patterns.	NA	0	1	2	3	4
56. I'm not able to work at my job.	NA	0	1	2	3	4
57. I've had to miss more time at work than usual.	NA	0	1	2	3	4
58. I'm not able to do my usual amount of work.	NA	0	1	2	3	4
59. I've had trouble finding a job.	NA	0	1	2	3	4
As the result of my illness our family has had to:						
60. Make new decisions about running the house.	NA	0	1	2	3	4
61. Revise the rules for the children.	NA	0	1	2	3	4
62. Discuss things concerning the children more.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

63. Decide what is really important to us.	NA	0	1	2	3	4
As the result of my illness:						
64. I go out with friends less often.	NA	0	1	2	3	4
65. My social life has decreased.	NA	0	1	2	3	4
66. I often have to help others understand my illness.	NA	0	1	2	3	4
67. It's hard to keep up with my usual pace or routine.	NA	0	1	2	3	4
68. People are overprotective of me.	NA	0	1	2	3	4
69. People are less supportive of me as time goes on.	NA	0	1	2	3	4
70. I find that I need to help others accept my illness.	NA	0	1	2	3	4
71. Others do not really know or understand what I am going through.	NA	0	1	2	3	4
72. Others act differently toward me.	NA	0	1	2	3	4
73. It's hard to plan social activities because I don't know how I'll feel.	NA	0	1	2	3	4
As the result of my illness I:						
74. Feel self-conscious about my body.	NA	0	1	2	3	4
75. Feel less attractive.	NA	0	1	2	3	4
76. Feel dissatisfied with the way I look.	NA	0	1	2	3	4
77. Feel I cannot always rely on my body.	NA	0	1	2	3	4
78. Think more about my sexual appeal.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

79. Think about the disfigurement caused by surgery/treatment.	NA	0	1	2	3	4
80. Think about possibly needing to undergo surgery that would result in disfigurement.	NA	0	1	2	3	4
81. Think about the possibility of undergoing surgery to improve my appearance.	NA	0	1	2	3	4
82. Think about not being able to have more children.	NA	0	1	2	3	4
83. Feel more susceptible to other illnesses.	NA	0	1	2	3	4
84. Concentrate on new bodily sensations that may indicate illness.	NA	0	1	2	3	4
85. Worry my illness may reoccur with its initial severity.	NA	0	1	2	3	4
86. Tend to be preoccupied with the symptoms of my illness.	NA	0	1	2	3	4
87. Think about how I'm handling my illness situation.	NA	0	1	2	3	4
88. Wonder if the illness can be controlled in the future.	NA	0	1	2	3	4
89. Wonder if the illness is spreading undetected.	NA	0	1	2	3	4
90. Wonder why I still receive treatments even though my symptoms have subsided.	NA	0	1	2	3	4
91. Think about the illness being unending.	NA	0	1	2	3	4
92. Worry my health will get progressively worse.	NA	0	1	2	3	4
93. Worry the illness will involve other parts of my body in the future.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

As the result of my medical treatment:

94. I find it difficult to continue with follow-up appointments.	NA	0	1	2	3	4
95. I find it difficult to continue the treatments.	NA	0	1	2	3	4
96. I sometimes think the adverse effects of treatment outweigh the possible benefits.	NA	0	1	2	3	4
97. I worry about the expense of treatment.	NA	0	1	2	3	4
98. I've changed my diet.	NA	0	1	2	3	4
99. I'm more regimented in the time I eat.	NA	0	1	2	3	4
100. My whole life is more regimented.	NA	0	1	2	3	4
101. I've adjusted the way I exercise.	NA	0	1	2	3	4
102. It's difficult to find suitable clothing.	NA	0	1	2	3	4
103. I'm considering the need to undergo more treatment.	NA	0	1	2	3	4
104. I'm considering if I should try a different treatment.	NA	0	1	2	3	4
105. It's difficult waiting for the results of my medical tests.	NA	0	1	2	3	4
106. It's difficult waiting to undergo treatment or surgery.	NA	0	1	2	3	4

At times, my health care providers:

107. Are not sensitive to my preferences for treatment.	NA	0	1	2	3	4
108. Act as if my opinions are unimportant.	NA	0	1	2	3	4
109. Make decisions without my best interests in mind.	NA	0	1	2	3	4
110. Do not tell me the truth about my health status.	NA	0	1	2	3	4

NA= Not Applicable
0= Not at All
1= A Little Bit
2= Moderately
3= Quite a Bit
4= Extremely

As I've experienced my illness situation:

111. Do not show concern for me as a person.	NA	0	1	2	3	4
112. I do not want my health providers to tell me the truth if I take a turn for the worse.	NA	0	1	2	3	4
113. I want more facts about the treatments.	NA	0	1	2	3	4
114. I have questions that I want to ask but just can't.	NA	0	1	2	3	4
115. I feel rushed to make a hasty treatment decision.	NA	0	1	2	3	4
116. I want to be more assertive about expressing the direction my treatment should take.	NA	0	1	2	3	4
117. I want to be told the reason why, when asked to do something for treatment.	NA	0	1	2	3	4
118. I sometimes don't understand the treatment I'm receiving.	NA	0	1	2	3	4
119. I'm not satisfied with the progress of my treatment.	NA	0	1	2	3	4
120. I'm not satisfied with my hospital care.	NA	0	1	2	3	4
121. I feel my illness is being incorrectly managed.	NA	0	1	2	3	4
122. I'm not confident my health will be correctly managed in the future.	NA	0	1	2	3	4

***As the result of my medical treatment*:**

123. I worry about the physical side effects of treatment.	NA	0	1	2	3	4
124. I worry I'll develop new physical symptoms in the future.	NA	0	1	2	3	4
125. I often feel worse rather than better after treatment.	NA	0	1	2	3	4

Appendix E:

Educational Aspirations

INSTRUCTIONS: In this section you will be asked to provide information regarding your expectations about your child's education. Please check only ONE box where the statement best represents your thoughts/feelings/beliefs. For the purpose of this study, the "child" refers to your child who is between ages **10** and **18**. If you have two or more children who fall within this age range (10-18), the "child" refers to the OLDEST child whose age falls between 10 and 18.

Educational attainment:

1. What will be the ideal amount of education you would like your child to attain?

- ☐ Complete some high school education
- ☐ Get a high school diploma
- ☐ Complete some college education
- ☐ Get a college degree
- ☐ Complete some high school education
- ☐ Get a graduate or professional degree

2. How much education do you expect your child to obtain?

- ☐ Complete some high school education
- ☐ Get a high school diploma
- ☐ Complete some college education
- ☐ Get a college degree
- ☐ Complete some high school education
- ☐ Get a graduate or professional degree

3. What will be the very least amount of schooling you would allow your child to attain?

- ☐ Complete some high school education
- ☐ Get a high school diploma
- ☐ Complete some college education
- ☐ Get a college degree
- ☐ Complete some high school education
- ☐ Get a graduate or professional degree

Appendix F:

Grade Expectations

INSTRUCTIONS: Please circle the number that best represents your thoughts/feelings/beliefs on each item. "1" represents that you are extremely upset about your child's grade and want him/her to do better, whereas "7" represents that you are extremely happy about your child's grade and believe he/she did a great job. For the purpose of this study, the "child" refers to your child who is between ages **10** and **18**. If you have two or more children who fall within this age range (10-18), the "child" refers to the OLDEST child whose age falls between 10 and 18.

Grade expectations:

1. How would you feel if your child brought home a grade **A** (or 90-100) from school?

1	2	3	4	5	6	7
Extremely Upset	Very Upset	Slightly Upset	Neither Happy nor Upset	Slightly Happy	Very Happy	Extremely Happy

2. How would you feel if your child brought home a grade **B** (or 80-89) from school?

1	2	3	4	5	6	7
Extremely Upset	Very Upset	Slightly Upset	Neither Happy nor Upset	Slightly Happy	Very Happy	Extremely Happy

3. How would you feel if your child brought home a grade **C** (or 70-79) from school?

1	2	3	4	5	6	7
Extremely Upset	Very Upset	Slightly Upset	Neither Happy nor Upset	Slightly Happy	Very Happy	Extremely Happy

4. How would you feel if your child brought home a grade **D** (or 60-69) from school?

1	2	3	4	5	6	7
Extremely Upset	Very Upset	Slightly Upset	Neither Happy nor Upset	Slightly Happy	Very Happy	Extremely Happy

5. How would you feel if your child brought home a grade **F** (or below 60) from school?

1	2	3	4	5	6	7
Extremely Upset	Very Upset	Slightly Upset	Neither Happy nor Upset	Slightly Happy	Very Happy	Extremely Happy

Appendix G:

Parental Self-Efficacy Scale

INSTRUCTIONS: Please circle the number that best represents your thoughts/feelings/beliefs on each item.

1. I know how to help my child do well in school.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

2. My child is so complex, I never know if I am getting through to her/him.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

3. I feel successful about my efforts to help my child learn.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

4. I don't know how to help my child learn.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

5. I don't know how to help my child make good grades.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

6. Other children have more influences than I do on my child's motivation to do well in school.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

7. I make a significant difference on my child's school performance.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

8. Most of a student's success in school depends on the classroom teacher, so parents and guardians have only limited influence.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

9. If I try hard, I can get through to my child even when he/she has difficulty understanding something.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

10. Other children have more influence on my child's grades than I do.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

11. My efforts to help my child learn are successful.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Appendix H:

School Contact and Participation

INSTRUCTIONS: Please indicate how many times in the last year you participated in each of activities listed below at your child's school.

How many times in the last year have you

(a) assisted teachers in the classroom……

(b) helped at school outside the classroom……

(c) attended parent-teacher organization or other meetings….

(d) phoned or seen teachers about your child's schoolwork....

(e) phoned or seen teachers about your child's behavior…….

(f) attended special school events……

(g) volunteered for school events……

(h) attended a parent-teacher conference……..

Appendix I:

Home Supervision

INSTRUCTIONS: Please circle the number that best represents your thoughts/feelings/beliefs on each item. Please answer the questions below based on the phase within the past 6 months.

1. How often do you check on whether your child has completed his/her homework?

☐ Never ☐ Rarely ☐ Sometimes ☐ Regularly ☐ Always

2. How often do you limit your child's time watching TV and/or playing video games?

☐ Never ☐ Rarely ☐ Sometimes ☐ Regularly ☐ Always

3. How often do you limit your child going out with friends?

☐ Never ☐ Rarely ☐ Sometimes ☐ Regularly ☐ Always

4. How often do you require your child to come home right after school?

☐ Never ☐ Rarely ☐ Sometimes ☐ Regularly ☐ Always

Appendix J:

Parent-Child Communication about School-Related Matters

INSTRUCTIONS: This section includes items that describe the parent-child communication about school-related matters. Please check the box that best represents your behavior for each item.

1. During the last 6 months how often did you check your son's/daughter's homework after it was completed?

☐ Never ☐ Once or twice ☐ Sometimes ☐ Regularly ☐ Very often

2. During the last 6 months how often did you help your son or daughter do his or her homework?

☐ Never ☐ Once or twice ☐ Sometimes ☐ Regularly ☐ Very often

3. During the last 6 months how often did you help your son or daughter prepare for tests?

☐ Never ☐ Once or twice ☐ Sometimes ☐ Regularly ☐ Very often

4. During the last 6 months how often did you talk with your son or daughter about his or her experience at school with classes or class work that day?

☐ Never ☐ Once or twice ☐ Sometimes ☐ Regularly ☐ Very often

5. During the last 6 months how often did you talk with your son or daughter about his or her experience at school with friends or other school children that day

☐ Never ☐ Once or twice ☐ Sometimes ☐ Regularly ☐ Very often

6. During the last 6 months how often did you talk with your son or daughter about his or her experience with other school activities (Sports, lunch time) that day?

☐ Never ☐ Once or twice ☐ Sometimes ☐ Regularly ☐ Very often

Appendix K:

Educational Outcomes

What is your child's overall Grade Point Average (GPA) on the most recent school report card? _____

Which of the following best describes your child's grades so far in school?

- ☐ Mostly A's (or a numerical average of 90-100)
- ☐ About half A's and half B's (or 85-89)
- ☐ Mostly B's (or 80-84)
- ☐ About half B's and half C's (or 75-79)
- ☐ Mostly C's (or 70-74)
- ☐ Mostly C's and D's (or 65-69)
- ☐ Mostly D's (or 60-64)
- ☐ Mostly below D (or below 60)

What were your child's scores on the most recent State/Regent Reading and Math Tests?

Reading Score: _____ Mathematics Score: _____

Appendix L:

Research Advertisement

LOOKING FOR

RESEARCH PARTICIPANTS

ARE YOU A **MOTHER** DIAGNOSED WITH ***DIABETES, CANCER, ASTHMA, EPILEPSY, HIV/AIDS, HEART DISEASE, ARTHRITIS, MULTIPLE SCLEROSIS, CHRONIC PAIN,*** OR ***OTHER CHRONIC DISEASES?***

AND DO YOU HAVE A **CHILD** WHO IS IN ***MIDDLE SCHOOL*** OR ***HIGH SCHOOL?***

Researchers at The Graduate School and University Center of City University of New York (CUNY) are looking for subjects to participate in a research project investigating how parental chronic illness may affect their child's school performance and behavior. *Your participation is important for the planning of interventions to help families living with chronic illness.*

You will be asked to fill out a questionnaire which may take approximately an hour to complete. All information gathered will be strictly confidential. $10 compensation will be provided.

WE NEED YOUR PARTICIPATION. Please contact the principal investigator Mr. Yung-Chi Chen in the Ph.D. Program in Educational Psychology at the Graduate Center of CUNY at:

YCHEN8@GC.CUNY.EDU
Educational Psychology, The Graduate Center, CUNY
365 5th Ave, New York, NY 10016
(917) 365-7619

Appendix M:

Instructions

Thank you for your participation in this study entitled "Parental Involvement of Chronically Ill Mother and Its Impact on the Child's Education. Please read the following instructions before you fill out the questionnaire.

Please read and sign the Consent Form if you agree to participate in this study.

Please read the Instructions on the cover of The Impact of Parental Chronic Illness on Their Child Questionnaire before you answer the questions in the questionnaire.

Please try to answer each item, to the best of your knowledge. All Information is strictly confidential.

Once you have completed the questionnaire, please be sure that you put the signed Consent Form and the completed questionnaire in the returning envelope and mail it back to the designated address listed on the envelope.

The $10 compensation will be mailed to you once the principal investigator receives your completed questionnaire packet. Please make sure that you put down your address clearly on the returning envelope.

If you have any questions or concerns, please feel free to contact the principal investigator of this study, Mr. Yung-Chi Chen, via email at ychen8@gc.cuny.edu. He can also be reached by phone: (917) 365-7619

Thank you again for your contribution to this study.

Sincerely,

Yung-Chi Chen, M.A., M.S., MSEd, NCSP
Ph.D. Program in Educational Psychology
The Graduate Center, City University of New York

Appendix N:

CONSENT FORM

My name is **Yung-Chi Chen**. I am a graduate student in the Ph. D. Program in Educational Psychology at the Graduate School and University Center of the City University of New York (CUNY). I am the Principal Investigator of a research project investigating how parental chronic illness affects children's school performance. I would like you to fill out an 18-page questionnaire that asks about your demographic information, health and medical conditions, psychological state, the influence of illness on you and your family, as well as your child's school performance. The results of this study will help us understand the particular difficulties experienced by families and plan for better interventions and services for families living with chronic illness.

Taking part is voluntary. The questionnaire should take approximately an hour. If you choose not to participate in this study, there will be no penalty. If you choose to fill out the questionnaire, please answer as many questions as you can. You do not have to answer every question and may choose to stop at any time. I will pay you $10 to complete the questionnaire.

This questionnaire is confidential. All information gathered in this study will remain strictly confidential, and will be stored in a locked file cabinet, to which only I, and my advisor, will have access.

Some questions regarding the influence of your illness in the questionnaire may induce some emotional discomfort; however, it is expected to be minimal. **Should the emotional discomfort caused by the questions become unmanageable during or after filling out the questionnaire, please contact me or my advisor, Dr. Marian Fish.** We will provide you with a referral for counseling. You will also be given a list of referrals to take with you. You can contact these organizations on the list directly for referrals, if needed.

I may publish results of the study, but any identifying characteristics of participants will not be used in any of the publications. If you would like a copy of the results of the study, please provide me with your name and address and I will send you a copy when the study is finished.

If you have any questions about this research, you can contact me atychen8@gc.cuny.edu, or my advisor **Dr. Marian Fish** at (212) 817-8290 or mfish@gc.cuny.edu. If you have questions about your rights as a participant in this study, you can contact **Kay Powell, IRB Administrator**, The Graduate Center/City University of New York, (212) 817-7525, kpowell@gc.cuny.edu.

Thank you for your participation in the study. I will give you a copy of this form to take with you.

_____	_____	_____	_____
Participant's signature	Date	Investigator's signature	Date

Appendix O:

Summary of Research Hypotheses and Findings of the Present Study

Hypothesis	Findings
Hypothesis 1. The demands of illness experienced by mothers with chronic illness will be negatively related to their children's educational outcomes.	Hypothesis 1 was partially supported. The overall maternal demands of illness were negatively correlated with children's grades, and the disrupted family functioning was marginally associated with children's grades, with both correlations representing small effect sizes.
Hypothesis 2. The demands of illness experienced by mothers with chronic illness will be negatively related to their sense of parental self-efficacy in helping their children succeed in school.	Hypothesis 2 was fully supported. The correlations between the overall maternal illness demands and parental self-efficacy and between disrupted family functioning and parental self-efficacy were in the small to median effect size range.
Hypothesis 3. The levels of parental self-efficacy will be positively related to their children's academic achievement.	Hypothesis 3 was fully supported.
Hypothesis 4. Parental self-efficacy will mediate the relationship between the maternal illness demands and their children's academic functioning.	Hypothesis 4 was supported.
Hypothesis 5. The levels of parental self-efficacy will be positively related to the levels of parental educational aspirations, grade expectations, school contact and participation, parent-child communication, and home supervision.	Hypothesis 5 was partially supported. Parental self-efficacy was positively correlated with parental educational aspirations and parent-child communication.
Hypothesis 6. Children's educational outcomes will be positively related to the levels of parental educational aspirations, grade expectations, school contact and participation, parent-child communication, and home supervision.	Hypothesis 6 was partially supported. Children's grades were positively associated with parental educational aspirations and grade expectations.

References

Altschuler, J., & Dale, B. (1999). On being ill parent. *Clinical Child Psychology and Psychiatry, 4*, 23-37.

Altschuler, J., Dale, B., & Sass-Booth, A. (1999). Supporting children when a parent is physically ill: Implications for educational psychologists and schools. *Educational Psychology in Practice, 15*, 25-32.

Anderson, C. A., & Hammern, C. L. (1993). Psychosocial outcomes of children of unipolar depressed, bipolar, medically ill, and normal women: A longitudinal study. *Journal of Consulting and Clinical Psychology, 61*, 448-454.

Armistead, L., Klein, K., & Forehand, R. (1995). Parental physical illness and child functioning. *Clinical Psychology Review, 15*, 409-422.

Armistead, L., Klein, K., Forehand, R., & Wierson, M. (1997). Disclosure of parental HIV infection to children in the families of men with hemophilia: Description, outcomes, and the role of family processes. *Journal of Family Psychology, 11*, 49-61.

Armistead, L., Summers, P., Forehand, R., Morse, P. S., Morse, E., & Clark, L. (1999). Understanding of HIV/AIDS among children of HIV-infected mothers: Implications for Prevention, Disclosure, and Bereavement. *Children's Health Care, 28*, 277-295.

Asen, K. (1985). Illness and family. *Journal of the Royal Society of Medicine, 78* (Suppl. 8), 21-25.

Ballantine, J. H. (1999). Getting involved in our children's education. *Childhood Education, 75*, 170-171.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development, 67*, 1206-1222.

Barnes, H. L., & Olson, D. H. (1985). Parent-adolescent communication and the circumplex model. *Child Development, 56*, 438-447.

Baron, R. & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Biggar, H., Forehand, R., & Family Health Research Project Group. (1998). The relationship between maternal HIV status and child depressive symptoms: Do maternal depressive symptoms play a role? *Behavior Therapy, 29*, 409-422.

Birenbaum, L. K., Yancey, D. Z., Phillips, D. S., Chand, N., Huster, G. (1999). School-age children's and adolescent's adjustment when a parent has cancer. *Oncology Nurse Forum, 26*, 1639-1645.

Braham, S., Hauser H. B., Cline, A. & Posner, M. (1975). Evaluation of the social needs of nonhospitalized chronically ill persons: 1. Study of 47 patients with multiple sclerosis. *Journal of Chronic Diseases*, *28*, 401-419.

Brennan, J. (2004). *Cancer in context: A practical guide to supportive care*. New York: Oxford University Press.

Christenson, S. L., Rounds, T., & Gorney, D. (1992). Family factors and student achievement: An avenue to increase students' success. *School Psychology Quarterly, 7*, 178-206.

Clark, M. A., Thompson, P., & Vialle, W. (2008). Examining the gender gap in educational outcomes in public education: Involving pre-service school counselors and teachers in cross-cultural and interdisciplinary research. *Internal Journal for the Advancement of Counseling, 30*, 52-66.

Compas, B. E., Worsham, N. L., Ey, S., & Howell, D. C. (1996). When mom or dad has cancer: II. Coping, cognitive appraisals, and psychological distress in children of cancer patients. *Health Psychology, 15*, 167-175.

Compas, B. E., Worsham, N. L., Epping, J. E., Grant, K.E., Mireault, G., Howell, D. C., et al. (1994). When mom or dad has cancer: Markers of psychological distress in cancer patients, spouses and children. *Health Psychology, 13*, 507-515.

Cooper, C. E, & Crosnoe, R. (2007). The engagement in schooling of economically disadvantaged parent and children. *Youth and Society, 38*, 372-391.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.

Crist, P. (1993). Contingent interaction during work and play tasks for mothers with multiple sclerosis and their daughters. *The American Journal of Occupational Therapy, 47*, 121-131.

Davey, M. P., Askew, J., & Godette, K. (2003). Parent and adolescent responses to non-terminal parental cancer: A retrospective multiple-case pilot study. *Family Systems and Health, 21*, 245-258.

De Judicibus, M. A., & McCabe, M. P. (2006). The impact of parental multiple sclerosis on the adjustment of children and adolescents. *Family Therapy, 33*, 79-97.

Dutra, R., Forehand, R., Armistead, L., Brody, G., Morse, E., Morse, P.S., et al. (2000). Child resiliency in inner-city families affected by HIV: The role of family variables. *Behaviour Research and Therapy, 38*, 471-486.

Dura, J., & Beck, S. J. (1988). A comparison of family functioning when mothers have chronic pain. *Pain, 35*, 79-89.

Elmberger, E., Bolund, C., & Lutzen, K. (2002). Men with cancer: Changes in attempts to master the self-images as a man and as a parent. *Cancer Nursing, 25*, 477-485.

Epstein, J. L. (1995). School/family/community partnerships: Caring for the children we share. *Phi Delta Kappan, 76*, 701-712.

Epstein, J. L., & Hollifield, J. H. (1996). Title I and school-family-community partnerships: Using research to realize the potential. *Journal of Education for Students Places at Risk, 1*, 263-278.

Epstein, J. L., & Sheldon, S. B. (2002). Present and accounted for: Improving student attendance through family and community involvement. *The Journal of Educational Research, 95*, 301-318.

Family Health Project Research Group (1998). The family health project: A multidisciplinary longitudinal investigation of children whose mothers are HIV infected. *Clinical Psychology Review, 18*, 839-856.

Fan, X. (2001). Parental involvement and students' academic achievement: A growth modeling analysis. *The Journal of Experimental Education, 70*, 27-61.

Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, *13*, 1-22.

Fantuzzo, J. W., McWayne, C., Perry, M. A., & Childs, S. (2004). Multiple dimensions of family involvement and their relations to behavioral and learning competencies for urban, low-income children. *School Psychology Review, 33*, 467-480.

Fehrmann, P. G., Keith, T. Z., & Reimers, T. M. (1987). Home influence on school learning: Direct and indirect effects of parental involvement on high school grades. *Journal of Educational Research, 80*, 330-337.

Forehand, R., Steele, R., Armistead, L., Morse, E., Simon, P., & Clark, L. (1998). The family health project: psychological adjustment of children whose mothers are HIV infected. *Journal of Consulting and Clinical Psychology, 66*, 513-520.

Forehand, R., Jones, D. J., Kotchick, B. A., Armistead, L., Morse, E., Morse, P. S., et al. (2002). Noninfected children of HIV-infected mothers: A 4-year longitudinal study of child psychosocial adjustment and parenting. *Behavior Therapy*, 33, 579-600.

Gonzalez-Dehass, A. R., Willems, P. P., & Holbein, M. F. D. (2005). Examining the relationship between parental involvement and student motivation. *Educational Psychology Review, 17*, 99-123.

Goodman, R. (1999). The extended version of the Strengths and Difficulties Questionnaire as a guide to child psychiatric caseness and consequent burden. *Journal of Child Psychology and Psychiatry, 40*, 791-799.

Grabiak, B. R., Bender, C. M., & Puskar, K. R., (2007). The impact of parental cancer on the adolescent: An analysis of the literature. *Psycho-Oncology, 16*, 127-137.

Grant, K. E., & Compas, B. E. (1995). Stress and anxious-depressed symptoms among adolescents: Searching for mechanisms of risk. *Journal of Consulting and Clinical Psychology, 63*, 1015-1021.

Grant, K. E., Compas, B. E., Stuhlmacher, A. F., Thum, A. E., McMahon, S. D., & Halpert, J. A. (2003). Stressors and child and adolescent psychopathology: Moving from makers to mechanisms of risk. *Psychological Bulletin, 129*, 447-466.

Grant, K. E., Compas, B. E., Thum, A. E., McMahon, S. D., Gipson, P. Y., Campbell, A. J., et al. (2006). Stressors and child and adolescent psychopathology: Evidence of moderating and mediating effects. *Clinical Psychology Review, 26*, 257-283.

Green, C. L., Walker, J. M. T., Hoover-Dempsey, K. V., & Sandler, H. M. (2007). Parents' motivations for involvement in children's education: An empirical test of a theoretical model of parental involvement. *Journal of Educational Psychology, 99*, 532-544.

Grolnick, W. S., Benjet, C., Kurowski, C. O., & Apostoleris, N. H. (1997). Predictors of parent involvement in children's schooling. *Journal of Educational Psychology, 89*, 538-548.

Haberman, M.R., Woods, N. F., & Packard, N. J. (1990). Demands of chronic illness reliability and validity assessment of a demands of illness inventory. *Holistic Nursing Practice, 5*, 25-35.

Hampton, F. M., Mumford, D. A., & Bond, L. (1998). Parent involvement in inner-city schools: The project FAST extended family approach to success. *Urban Education, 33*, 410-427.

Hara, S. R., & Burke, D. J. (1998). Parent involvement: A Key to improve student achievement. *The School Community Journal, 8*(2), 9-19.

Heiney, S. P., Bryant, L. H., Walker, L. H., Parrish, R. S., Provenzano, F. J., & Kelly, K. E. (1997). Impact of parental anxiety on child emotional adjustment when a parent has cancer. *Oncology Nursing Forum, 24*, 655-661.

Hirsch, B. J., Moos, R. H., & Reischl, T. M. (1985). Psychosocial adjustment of adolescent children of a depressed, arthritic, or normal parent. *Journal of Abnormal Psychology, 94*, 154-164.

Ho Sui-Chu, E. (1995). Parental involvement: A comparison of different definitions and explanations. *Chinese University Educational Journal, 23*, 39-68.

Ho Sui-Chu, E., & Willms, J. D. (1996). Effects of parental involvement on eight-grade achievement. *Sociology of Education, 69*, 126-141.

Hoke, L. A. (2001). Psychosocial adjustment in children of mothers with breast cancer. *Psycho-Oncology, 10*, 361-369.

Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and meditational effects in studies of pediatric populations. *Journal of the American Academy of Pediatric Psychology, 27*, 87-96.

Hong, S., & Ho, H. Z. (2005). Direct and indirect longitudinal effects of parental involvement on student achievement: Second-order latent growth modeling across ethnic groups. *Journal of Educational Psychology, 97*, 32-42.

Hough, E. S., Brumitt, G. A., & Templin, T. N. (1999). Social support, demands of illness, and depression in chronically ill urban women. *Health Care for Women International, 20*, 349-32.

Hough, E. E., Lewis, F. M., & Woods, N. F. (1991). Family response to mother's chronic illness: Case studies of well- and poorly-adjusted families. *Western Journal of Nursing Research, 13*, 568-596.

Hoover-Dempsey, K. V., Bassler, O. C., & Brissie, J. S. (1992). Explorations in parent-school relations. *Journal of Educational Research, 85*, 287-294.

Hoover-Dempsey, K. V., Battiato, A. C., Walker, J. M. T., Reed, R. P., DeJong, J. M., & Jones, K. P. (2001). Parental involvement in homework. *Educational Psychologist, 36*, 195-209.

Hoover-Dempsey, K. V., & Sandler, H. M. (1995). Parental involvement in children's education: Why does it make a difference? *Teachers College Record, 97*, 310-331.

Hoover-Dempsey, K. V., & Sandler, H. M. (1997). Why do parents become involved in their children's education? *Review of Educational Research, 67*, 3-42.

Izzo, C. V., Weissberg, R. P., Kasprow, W. J., & Fendrich, M. (1999). A longitudinal assessment of teacher perceptions of parent involvement in children's education and school performance. *American Journal of Community Psychology, 27*, 817-839.

Jensen, A.R. (1998). *The g factor: The science of mental ability*. Westport, CT: Praeger.

Jeynes, W. H. (2003). A meta-analysis: The effects of parental involvement on minority children's academic achievement. *Education and Urban Society, 35*, 202-218.

Jeynes, W. H. (2005a). Meta-analysis of the relation of parental involvement to urban elementary school student academic achievement. *Urban Education, 40*, 237-269.

Jeynes, W. H. (2005b). Effects of parental involvement and family structure on the academic achievement of adolescents. *Marriage and Family Review, 37*, 99-116.

Johnston, M., Martin, D., & Martin, M. (1992). Long-term parents and children: Perils and promises. *School Counselor, 39*, 225-231.

Kahle, A., & Jones, G. N. (1999). Adaptation to parental chronic illness. In A. J. Goreczny & M. Hersen (Eds.), *Handbook of pediatric and adolescent health psychology* (pp. 387-399). Needham Height, MA: Allyn & Bacon.

Kazak, A. E. (1989). Families of chronically ill children: A systems and social-ecological model of adaptation and challenges. *Journal of Consulting and Clinical Psychology, 57*, 25-30.

Klein, R. F., Dean, A., & Bogdonoff, M.D. (1967). The impact of illness upon the spouse. *Journal of Chronic Disease, 20*, 241-248.

Klemm, P., Miller, M. A., Fernsler, J. (2000). Demands of illness in people treated for colorectal cancer. *Oncology Nursing Forum, 27*, 633-639.

Kotchick, B. A., Summers, P., Forehand, R., & Steele, R. G. (1997). The role of parental and extrafamilial social support in the psychosocial adjustment of children with a chronically ill father. *Behavior Modification, 21*, 409-432.

Korneluk, Y. G., & Lee, C. M. (1998). Children's adjustment to parental physical illness. *Clinical Child and Family Psychology Review*, *1*, 179-193.

Lewis, F. M. (1996). The impact of breast cancer on the family: Lessons learned from the children and adolescents. In L. Baider, C. Coper, & A. De-Nour (Eds), *Cancer and the family*. Wiley: New York.

Lewis, F. M. (2007). Parental cancer and dependent children: Selected issues for future research. *Psycho-Oncology, 16*, 97-98.

Lewis, F. M., & Darby, E. L. (2003). Adolescent adjustment and maternal breast cancer: A test of the "faucet hypothesis". *Journal of Psychosocial Oncology, 21*(4), 81-104.

Lewis, F. M., & Hammond, M. A. (1996). The father's, mother's, and adolescent' functioning with breast cancer. *Family Relations, 15*, 456-465.

Lewis, F. M., Hammond, M. A., & Woods, N. F. (1993). The family's functioning with newly diagnosed breast cancer in the mother: The development of an exploratory model. *Journal of Behavioral Medicine, 16*, 351-370.

Lewis, F. M., Woods, N, F., Hough, E. E., & Bensley, L, S. (1989). The family's functioning with chronic illness in the mother: The spouse's perspective. *Social Science and Medicine, 29*, 1261-1269.

Lindqvist, B., Schmitt, F., Santalahti, P., Romer, G., & Piha, J. (2007). Factors associated with the mental health of adolescents when a parent has cancer. *Scandinavian Journal of Psychology, 48,* 345-351.

Mau, W. (1997). Parental influences on the high school student's academic achievement: A comparison of Asian immigrants, Asian Americans, and White Americans. *Psychology in School, 34*, 267-277.

Milail, S. F., & von Baeyer, C. L. (1990). Pain, somatic focus, and emotional adjustment in children of chronic headache sufferers and controls. *Social Science Medicine, 31*, 51-59.

National Center for Health Statistics (2004). *Health, United States, 2002*. Hyattsville, MD: Government Printing Office.

Nelson, E., Sloper, P., & Charlton, A. (1994). Children who have a parent with cancer: A pilot study. *Journal of Cancer Education, 9*, 30-36.

Newby, N. M. (1996). Chronic illness and the family life-cycle. *Journal of Advanced Nursing, 23*, 786-791.

Okagaki, L, Frensch, P. A. (1998). Parenting and children's school achievement: A multiethnic perspective. *American Educational Research Journal, 35*, 123-144.

Osborn, T. (2007). The psychosocial impact of parental cancer on children and adolescents: A systematic review. *Psycho-Oncology, 16,* 101-126.

Packard, N. J., Haberman, M. R., Woods, N. F., & Yaes, B. C. (1991). Demands of illness among chronically ill women. *Western Journal of Nursing Research, 13*, 434-457.

Pedersen, S., & Revenson, T. A. (2005). Parental illness family functioning, and adolescent well-being: A family ecology framework to guide research. *Journal of Family Psychology, 19*, 404-409.

Peters, L. C., & Esses, L. M. (1985). Family environment as perceived by children with a chronically ill parent. *Journal of Chronic Diseases, 38*, 301-308.

Pomerantz, E. M., Moorman, E. A., & Litwack, S. D. (2007). The how, whom, and why of parents' involvement in children's academic lives: More is not always better. *Review of Educational Research, 77*, 373-410.

Rolland, J. S. (1999). Parental illness and disability: A family systems framework. *Journal of Family Therapy, 21*, 242-266.

SAMHSA's Prevention Platform (n.d.). Measures and instruments resource: Parental involvement in school interview (CSAP core measure/CMIR25). Retrieved April 16, 2008, from https://preventionplatform.samhsa.gov/macro/csap/mir_search_create/redesign/measures/detail.cfm?MeasureID=05b200f2-85b1-4e2c-8a63-bd1af2744a12&Category=&Row=&CategoryID=&CFID=68323&CFTOKEN=80168432

Seefeldt, C., Denton, K., Galper, A., & Younoszai, T. (1998). Former Head Start parents' characteristics, perceptions of school climate, and involvement in their children's education. *The Elementary School Journal, 98*, 339-349.

Shaffer, A., Jones, D. J., Kotchick, B. A., Forehand, R., & The Family Health Project Research Group. (2001). Telling the children: Disclosure of maternal HIV infection and its effects on child psychosocial adjustment. *Journal of Child and Family Studies, 10*, 301-313.

Sheldon, S. B., & Epstein, J. L. (2005). Involvement counts: family and community partnerships and mathematics achievement. *The Journal of Educational Research, 98*, 196-206.

Shumow, L., & Lomax, R. (2002). Parental efficacy: Predictor of parenting behavior and adolescent outcomes. *Parenting: Science and Practice, 2*, 127-150.

Siegel, K., Mesagno, F. P., Karus, D., Christ, G., Banks, K., & Moynihan, R. (1992). Psychological adjustment of children with a terminally ill parent. *Journal of American Academy of Child and Adolescent Psychiatry, 31*, 327-333.

Sobel, M.E. (1988). Direct and indirect effect in linear structural equation model. In J. S. Long (Ed.), *Common problems/proper solutions: Avoiding error in quantitative research* (pp. 46-64). Beverley Hills, CA: Sage.

Steele, R. G., Forehand, R., & Armistead, L. (1997). The role of family processes and coping strategies in the relationship between parental chronic illness and childhood internalizing problems. *Journal of Abnormal Child Psychology, 25*, 83-94.

Steele, R. G., Tripp, G., Kotchcick, B. A., Summers, P., & Forehand, R. (1997). Family members' uncertainty about parental chronic illness: The relationship of hemophilia and HIV infection to child functioning. *Journal of Pediatric Psychology, 22*, 577-591.

Stein, J. A., Riedel, M., & Rotheram-Borus, M. J. (1998). Parentification and its impact on adolescent children of parents with AIDS. *Family Process, 38*, 193-208.

Stein, J. A., Rotheram-Borus, M. J., & Lester, P. (2007). Impact of parentification on long-term outcomes among children of parents with HIV/AIDS. *Family Process, 46*, 317-334.

Stetz, K. M., Lewis, F. M.,, & Primomo, J. (1986). Family coping strategies and chronic illness in the mother. *Family Relations, 35*, 515-522.

Stuifbergen, A. K. (1990). Patterns of functioning in families with a chronically ill parent: An exploratory study. *Research in Nursing and Health, 13*, 35-44.

U.S. Department of Education (2004). Trends in educational equity of girls and women: 2004. Retrieved February 20, 2009 from http://www.nces.ed.gov/pubs2005/2005016.pdf.

Veenstra, M., Moum, T., & Roysamb, E. (2005). Relationships between health domains and sense of coherence: A two-year cross-lagged study in patients with chronic illness. *Quality of Life Research, 14*, 1455-1465.

Visser, A., Huizinga, G. A., Hoekstra, H. J., Van Der Graaf, W. T. A., Klip, E. C., Pras, E., & Howkstra-Weebers, J. E. H. M. (2005). Emotional and behavioral functioning of children of a parent diagnosed with cancer: A cross-informant perspective. *Psycho-Oncology, 14*, 746-758.

Walk, J. M. T., Wilkins, A. S., Dallaire, J. R., Sandler, H. M., & Hoover-Dempsey, K. V. (2005). Parental involvement: Model revision through scale development. *The Elementary School Journal, 106*, 85-104.

Watson, M., St. James-Roberts, I., Ashley, S., Tilney, C., Brougham, B., Edwards, L., et al. (2006). Factors associated with emotional and behavioral problems among school age children of breast cancer patients. *British Journal of Cancer, 94*, 43-50.

Welch, A. S., Wadsworth, M. E., & Compas, B. E. (1996). Adjustment of children and adolescent to parental cancer: Parents' and children's perspectives. *Cancer, 77*, 1409-1418.

Woods, N. F., & Lewis, F. M. (1995). Women with chronic illness: Their views of their families' adaptation. *Health Care for Women International, 16*, 135-148.

Woods, N. F., Haberman, M. R., & Packard, N. J. (1993). Demands of illness and individual, dyadic, and family adaptation in chronic illness. *Western Journal of Nursing Research, 15*, 10-25.