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Father Involvements and Children with Chronic Conditions

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Father Involvements and Children with Chronic Conditions

By

Ju-Lien Ko

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ABSTRACT

FATHER INVOLVEMNT AND CHILDREN WITH CHRONIC CONDITIONS

By

Ju-Lien Ko

The primary objective of this study was to use the Panel Study of Income Dynamics-Child Development Supplement II (PISD-CDS II) data to investigate predictors of greater father involvement based on the Lamb-Pleck model of the determinants of father involvement. The study identified several factors which contribute to the predictability of father involvement. The results showed that fathers who have high motivation, less parenting stress, high self-esteem, and fewer working hours are more likely to be involved in child care. A second objective was to examine the influence of childhood chronic conditions on the relationships between individual predictive factor and different kinds of father involvement activities. Six relationships were affected by the dichotomous moderator variable, and three relationships were significant when the moderator variable was classified into four levels of seriousness.

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CHAPTER ONE

Introduction

In the last three decades, there has been considerable research on positive outcomes of father involvement for children. The increase in father involvement can have positive effects on children's academic performance, cognitive function, social behavior, and development (Amato & Rivera, 1999; Flouri & Buchanan, 2004). Greater father involvement relates to fathers' motivation and skills, supports from others, and institutional factors (Lamb, Pleck, Charnov, & Levine, 1987). Far beyond the traditional roles as breadwinners, the definition of father involvement today includes nurturing, caregiving, engaging in leisure and play activities, providing moral guidance, and discipline for children, and providing emotional and practical support along with the child's mother (Cabrera, Tamis-LeMonda, Bradley, Hofferth, S., & Lamb, 2000).

According to the Maternal and Child Health Bureau (U.S. Department of Health and Human Services, 2004), as many as 12.8 percent of children "have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and also require health and related services of a type or amount beyond that required by children generally." Approximately 23.2 percent of children's conditions usually or always affect their abilities, and 37.4 percent of children's abilities are sometimes influenced. In recent years, some qualitative studies have indicated that chronic illness in a child may emerge as a catalyst leading to more meaningful father involvement (Dollahite, 2004; McCubbin, Balling, Possin, Frierdich, & Bryne, 2002; McNeill, 2004). However, findings from qualitative research cannot be generalizable to the population of fathers of children with

special needs due to qualitative methodology and the unique nature of the sample (Dollahite, 2004).

Many studies have indicated various impacts of childhood chronic illness or disability on both children and their parents. Children with chronic illness or disability are at risk of psychiatric and emotional disorders, abnormal behavioral symptoms, and school-related adjustment problems (Lavigne & Faier-Routman, 1992; Meijer, Sinnema, Bijstra, Mellenbergh, & Wolters, 2000; Timko, Stovel, Moos, & Miller, 1992). Parents of children with chronic illness experience greater stress than parents of healthy children (Baker, McIntyre, Blacher, Crnic, Edelbrock & Low, 2003; Dyson, 1997). More specifically, there are a variety of burdens and obligations that exhaust their energy when providing daily care to children with chronic health conditions (Ievers & Drotar, 1996). Fathers of children with chronic conditions are more likely to experience a significantly greater number of stressful life event and to report lower self-esteem than fathers of healthy children (Kats & Krulik, 1999). Although research has investigated the impact of chronic illness of the child on the parents, literature on father involvements and children with chronic conditions is limited and needs further investigation.

In order to understand the unique nature of father involvements, the first part of this study was to identify factors that were associated with greater father involvement based on the Lamb-Pleck factor model of the determinants of father involvement (Lamb et al., 1987; McBride, Schoppe, Ho, & Rane, 2004). The second part of this study was to utilize a moderator model to examine whether childhood chronic conditions affected the relationships between each factor and different kinds of father involvement activities. This quantitative study used data from the 2001 Child Development Supplement of the

Panel Study of Income dynamics (PSID-CDS II), a longitudinal study of a representative sample of U.S. individuals and the families in which they reside (Mainieri, 2006). The information gained from the study may aid professionals, policymakers, scholars, and educators in the field of fathering to have a better understanding of the determinations of fathers' parenting behaviors and the effects of childhood chronic conditions.

Purpose of the Study

The overall aim of this study is to assess and describe a five-factor model of the determinants of father involvement, which is based on Lamb, Pleck and colleagues' conceptual model (Lamb et al., 1987; McBride et al., 2004). Further, the study attempts to identify what factors predict father involvement. Specifically, the five-factor includes motivation, skills and self-confidence, social supports and stresses, institutional factors, and demographic factors. Finally, the influence of childhood chronic conditions on the relationships between each predictive factor and different kinds of father involvement activities is addressed.

CHAPTER TWO

Review of the literature

Definition of Good Fathering

Researchers have indicated that fathering cannot serve the functions as mothering. It is a result of the meanings, beliefs, motivations, attitudes, and behaviors of all stakeholders in the lives of children (Doherty, Kouneski, & Erickson, 1998). According to Snarey (1993), good fathers mean "generative" fathers: "men who contribute to and renew the ongoing cycle of the generations through the *care* they provide as birth fathers (biological generativity), childrearing fathers (parental generativity), and cultural fathers (societal generativity)" (p. 1). Some scholars use the term "responsible fathering," which reflects a more explicit value-advocacy approach and suggests an "ought" and a moral meaning for evaluating fathers' behavior (Doherty et al., 1998). Levine and Pitt (1995) defined responsible fathering:

- He waits to make a baby until he is prepared emotionally and financially to support his child.
- He establishes his legal paternity if and when he does make a baby.
- He actively shares with the child's mother in the continuing emotional and physical care of their child, from pregnancy onwards.
- He shares with the child's mother in the continuing financial support of their child, from pregnancy onwards. (p. 5)

Other researchers define "good fathering" as "positive father involvement." Pleck (1997) stated that "positive father involvement means high engagement, accessibility, and responsibility with positive engagement behaviors and stylistic characteristics" (p. 102).

Positive paternal involvement can benefit children's emotional well-being, social functioning, and cognitive development (Amato, et al., 1999; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004; Williams & Radin, 1999). In addition, both resident and nonresident fathers who have active participation in their children's lives can advantage their children's academic achievement and enjoyment of school (Nord, Brimhall, & West, 1997).

Predictors of Father Involvement

Lamb and his colleagues (1985) proposed three dimensions of father involvement including interaction, availability, and responsibility. *Interaction* refers to the father's direct participation in caretaking and shared activities with his child. *Availability* refers to the father's potential availability for direct interaction with his child. *Responsibility* refers to the father's responsibility for ascertaining care with his child and for arranging available resources for his child. The four factors related to these three components of father involvement are motivation, skills, social support, and institutional factors (Lamb et al., 1987). *Motivation* means that the father is highly motivated for the day-to-day care of his child. *Skills* refer to the essential skills for success in and enjoyment of child care. *Social Support* is spouse and others' encouragements to be more involved in child care. *Institutional Factors* refer to workplace practices and policies that decrease or increase father's involvement. Lamb and his colleagues (1987) suggested that there was more paternal involvement when the four possible proximate reasons were present.

McBride and his colleagues (McBride et al., 2004) designed a study regarding multiple determinants of father involvement based on the Lamb-Pleck model by using the PSID-CDS data set. The five predictors in the study are motivation, skills and self-

confidence, social supports and stress, institutional factors, and demographic factors (see figure 1). The five composites representing father involvement are responsibility, paternal warmth and affection, household-centered activities, child-centered activities, and paternal monitoring. The authors found that the major portion of the Lamb-Pleck model was supported. The results of the study showed that the institutional factor was not a significant predictor of the paternal involvement, but the other four predictors were significantly related to the paternal involvement measures. In addition, paternal perception of the father role (a motivation variable) was the strongest predictor during testing of the full model. The variables that were not significantly associated with any of the measures of father involvement were economic stress, social support, child gender, father's age, mother's age, father's education, mother's education, father's total employment, and mother's total employment.

Fathers of Children With Chronic Illness

A number of studies have documented how childhood chronic conditions have impacted mothers, but less research focuses on fathers' experiences (Olson, Dollahite, & White, 2002). Several studies compare impacts on mothers and fathers and have showed different results. The majority of studies found evidence of similar patterns of couples' response to the challenges of childhood illness or disability (Hoekstra-Weebers, Jaspers, Kamps, & Klip, 1998; Holmbeck, et al., 1997; Leonard, Kratz, Skay, & Rheinberger, 1997). However, some researchers have suggested that mothers are more likely to express more intense and prolonged grief than fathers (Bruce, Schutlz, & Smyrnios, 1996; Vance, Bolye, Najman, & Thearle, 1995). Other investigators have indicated that childhood chronic illnesses may affect fathers deeply, but fathers of children with special

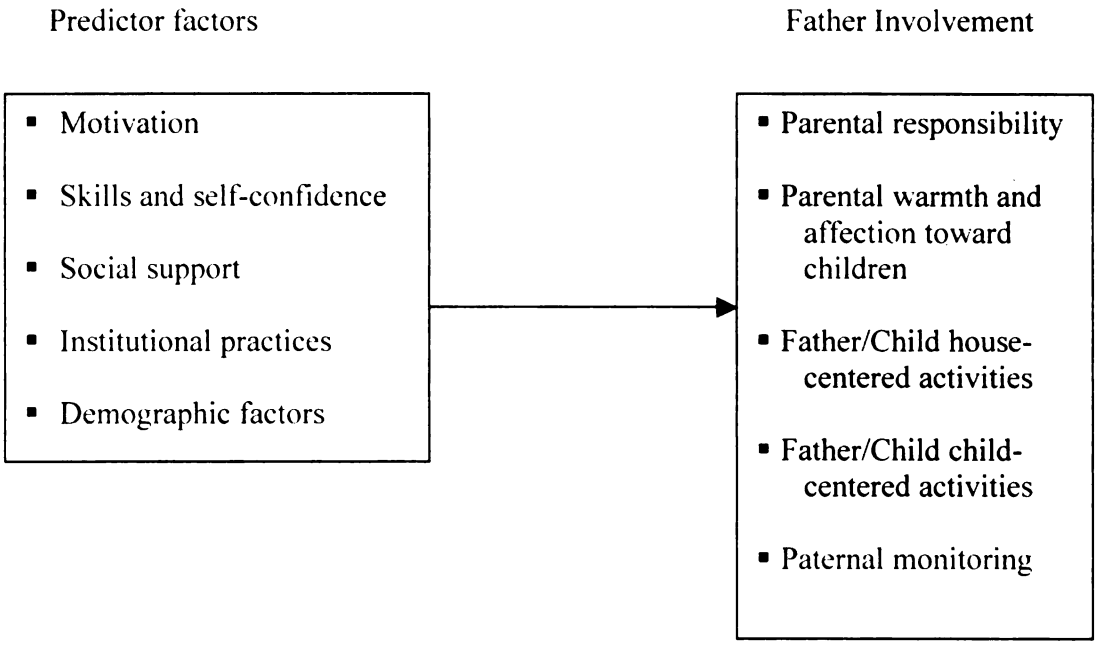

Figure 1. The Lamb-Pleck model of the determinants of father involvement

needs usually do not express their feelings publicly (Davis & May, 1991). They often felt angry and frustrated because they did not know how and where to get help. Some fathers would work longer hours in order to deal with their fears of their child's illness. Similarly, Clark and Miles (1999) reported that fathers maintained strength and hid their emotions when coping with their child's illness and hospitalization. Their desire to maintain control in their daily lives often meant continuing to work. According to Dollahite (2004), a literature review of the research on fathers of children with special-needs provide the following implications:

1. Most studies involving special-needs children have focused on mothers and relatively little research has been conducted with fathers.
2. Many of the findings in the literature on fathers are suspect because of flawed methods (i.e., interviewing mothers, relying on clinical impressions, lack of longitudinal data).
3. Until recently, fathers were often treated as relatively unimportant to the development of special-needs children by scholars and practitioners.
4. We know fairly little about what fathers actually do in their involvement with their children with disabilities.
5. There is great diversity of experience because of the variation in disabilities and fathering styles.
6. A disproportionate amount of the research has focused only on the negative aspects of the fathers' experience and less on personal growth that occurs.
7. For many fathers, religious meanings and supports are (or become) significant to how they adapt to this challenge.

8. Fathers often respond creatively and often have a significant impact on their children with special needs. (p. 111)

Few investigators address potential factors of fathers' involvement in their child's health care. Leonard and her colleagues (1997) found that fathers' positive perceptions of self-efficacy were related to their persistence and involvement with the process of successful health care for their children with Diabetes. Moore and Kotelchuck (2004) reported that higher levels of education, younger children, and less traditional childrearing beliefs enhanced fathers' involvement in their child's health care. In addition, Dollahite (2004) had in-depth interviews with 35 Latter-day Saint fathers of children with special needs. Fathers in the study had strong beliefs in their joint and unique involvement in caring for their children, and they frequently commented on how they worked hard to meet the needs of their children. Although the findings from the study might not be generalizable to the population of fathers of children with special needs, the author mentioned that the research helped illuminate responsible fathering.

Theoretical Perspective

Human ecology is a foundation to comprehend potential cumulative influences on father involvement. Human ecology theory focuses on human organisms' interaction with their natural physical-biological, social-culture, and human-built environments (Bubolz & Sontag, 1993). According to the theory, natural physical-biological environments consist of all living and nonliving things such as plants, animals, rivers, climate, soil and so on. Social-culture environments refer to the presence of abstract cultural constructions, and social and economic institutions. Examples of human-built environments are neighborhood, housing, building size, building accessibility, ambient

temperature and lighting, furnishing, and equipment (Griffore & Phenice, 2001). The theory helps one recognize the complexity of father involvements. This study investigated how fathers' parenting behaviors were influenced by motivation, skills and self-confidence, social support, institutional practices, and demographic factors.

Family ecology theory views a family as an interactive system of individuals and has four fundamental assumptions (Hanson & Lynch, 2003). First, the component parts of the family system are integrally linked with one another. The second assumption of this model is "the family as a system only can be understood as a whole rather than in terms of its individual parts" (p. 42). Third, the family system interacts with its environments. Finally, the family system is not an actual physical system but a way of knowing the organization and experiences of a family. In this system, all family members influence each other deeply, including feelings, emotions, values, thoughts, and actions. Even though the main interest of this study is fathers and fathering, some characteristics of mothers and children are considered as contributors to father involvement, beside fathers' own characteristics. Specifically, maternal employment, marital dynamics, child sex, and child age are considered as potential predisposing factors in this study.

Conclusion

It is clear that interest in fathers as active parents is becoming more prevalent within research on fathering and fatherhood. Researchers have found that there is a positive relation between father involvement and children's emotional well-being, social functioning, and cognitive development. Recent scholars have identified that "good fathering is characterized by a high degree of engagement with, accessibility to, and responsibility for children, each of which reflects fathers' sensitivity, mutual delight,

developmentally facilitative practice, and other-centered ethics" (Palkovitz, 2002, p. 135). As theoretical and empirical literature has begun to emphasize the diverse forms of fatherhood, it becomes evident that the debate about fathers has focused on what fathers should do inside the family, beyond the traditional breadwinner role. The Lamb-Pleck model of the determinants of father involvement, one of the most frequently cited and utilized frameworks, assumes that father involvement consists of interaction, availability, and responsibility (Lamb et al., 1985; Lamb et al., 1987). The model also assumes that motivation, skills, social support, and institutional practices are explanations of individual differences in involvement.

Scholars have found that fathers of children with chronic conditions often hide their emotions and try to maintain control in their daily lives, in order to cope with their fears about their children's illnesses. According to existing literature related to fathers' involvement in child's health care, paternal self-efficacy, father's education level, father's childrearing beliefs, and children's age have been found to influence fathers' participation in their children's health care. However, very little has been noted in the literature about the determinants of daily child care among fathers of children with chronic conditions. This study sought to find the predictors of father involvement based on the Lamb-Pleck model.

CHAPTER THREE

Methods

Research Hypotheses

A review of the literature reveals that different forms of father involvement are influenced by five predisposing factors: Motivation, Skills and Self-Confidence, Social Support and Stress, Institutional Factors, and Demographic Factors. This research was to investigate the relationships between individual variables represented in the five factors and father involvement. The diagram in Figure 2 depicts the conceptual model of the first hypothesis used in the study. I expect that characteristics in each of the five aspects of factors are linked to fathers' involvement. The first hypothesis is as follows:

H1. There are significant associations between five particular aspects of factors and different kinds of father involvement activities (see appendix A for details).

Further, the study was to identify and assess the effect of childhood chronic conditions on predictors of father involvement. Childhood chronic health conditions were treated as moderator variables to examine whether children's health conditions affected the relationships between each factor and different kinds of father involvement activities (See Figure 3). I expect to find that children with chronic health conditions to experience higher or lower father involvement. The second hypothesis is as follows:

H2. Childhood chronic conditions affect the relationships between each factor and different kinds of father involvement activities. (see appendix B for details).

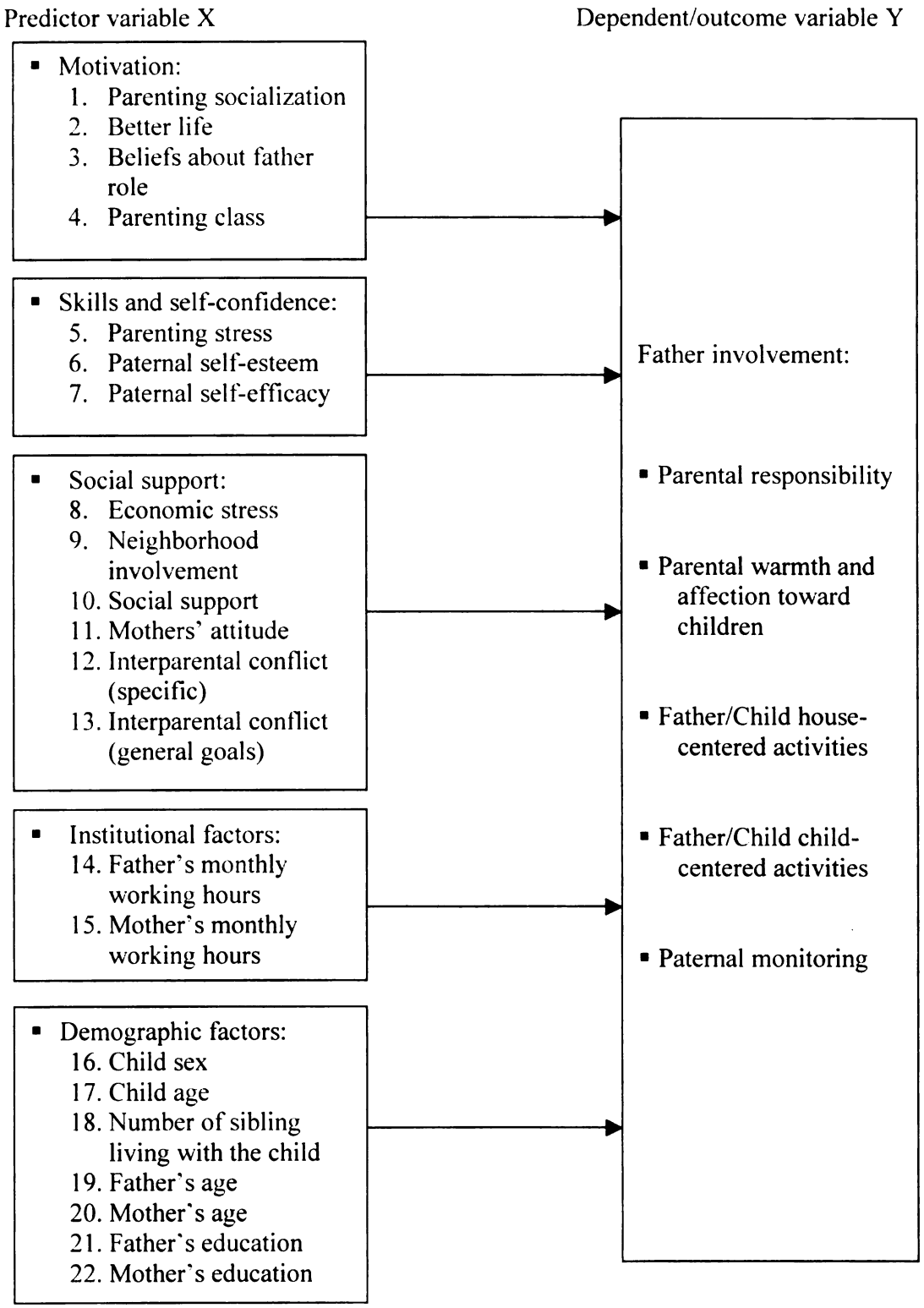

Figure 2. The conceptual model of factors affecting father involvement

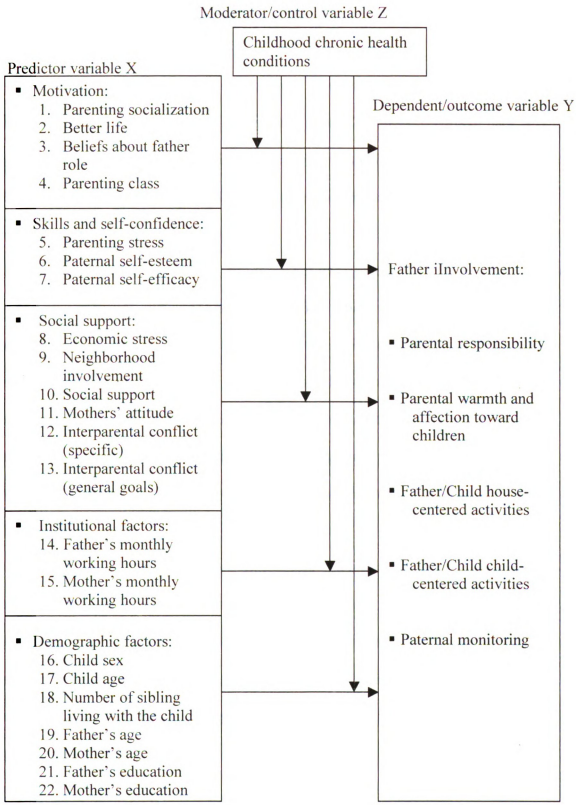

Figure 3. The model of the influence of childhood chronic conditions

Conceptual and Operation Definitions

Independent variable

Motivation. Fathers are motivated to be more involved in the day-to-day care of their children (Lamb et al., 1987). The variables include fathers' reports of parenting socialization, desire for a better life for their children, and beliefs about the father role in the family. Father's participation in parenting classes or parent support groups from mother's report is included as well.

Skills and Self-Confidence. Skills are defined as the skills necessary for success in and enjoyment of child care (Lamb et al., 1987). This consists of fathers' reports of parenting stress. Self-confidence refers to paternal self-esteem and self-efficacy. Self-esteem refers to a person's feeling of self-worth and is measured with the Rosenberg self-esteem scale (Rosenberg, 1979). Self-efficacy, " the extent to which people see themselves as being in control of the forces that importantly affect their lives," is measured with Pearlin self-efficacy scale (Pearlin, Lieberman, Menaghan, & Mullan, 1981, p. 340).

Social Supports and Stresses. Social supports mean that paternal involvement is approved by significant others- mothers, relatives, friends, and workmates. The variables under this concept include self and spouse neighborhood involvement, social support, and mothers' attitudes regarding the father role in the family. Social stresses refer to economic strain and fathers' perceptions of interparental conflict regarding specific activities and general life goals.

Institutional Factors. Two variables chosen consist of fathers' and mothers' monthly hours spent in paid employment. Fathers and mothers reported their total working hours per month.

Demographic Factors. Demographic variable selected in the study are child sex, child age, number of sibling living with the child, and father/mother's age, and father/mother's completed education.

Dependent variables

Father Involvement. Three components of father involvement are interaction, availability, and responsibility (Lamb et al., 1987). Interaction refers to father involvement in caretaking and shared activities directly with the child. Availability is "the father's potential availability for interaction, by virtue of being present or accessible to the child whether or not direct interaction is occurring" (p. 125). Responsibility is that the father ascertains whether the child is taken care of and arranges resources to be available for the child. In this study, five variables were used to construct father involvement (McBride et al., 2004). The five variables are parental responsibility, warmth and affection toward children, house-centered activities, child-centered activities, and paternal monitoring.

Moderator variable

Childhood Chronic Conditions. A chronic condition refers to a chronic physical, developmental, behavioral, or emotional condition. The chronic conditions in the study include asthma, diabetes, ear infections (more than 3 times a year), speech impairment, serious deafness, serious blindness, mental retardation, serious emotional disturbance, anemia, lead in the blood, orthopedic impairment, developmental problems, autism,

ADHD or ADD, allergies, migraine, heart condition, and hypertension. For the analyses in this study, the childhood chronic conditions were categorized into three groups: High level of Serious Health Condition, Medium level of Serious Health Condition, and Low level of Serious Health Condition. High level of Serious Health Condition includes diabetes, speech impairment, serious deafness, serious blindness, mental retardation, serious emotional disturbance, lead in the blood, autism, and heart condition. Medium level of Serious Health Condition includes asthma, ear infections, orthopedic impairment, and developmental problems. Low level of Serious Health Condition includes anemia, ADHD or ADD, allergies, migraine, and hypertension.

Sample

The analyses for this study are based on previously collected survey data from the 2001 Child Development Supplement of the Panel Study of Income dynamics (PSID-CDS II), a longitudinal study of a representative sample of U.S. individuals and the families in which they reside (Mainieri, 2006). CDS-I was begun in 1997 and interviewed 2,394 families (88%), providing information on 3,563 children aged 0-12 years. In 2002-2003, CDS recollected data from families in CDS-I and completed interviews with 2,019 families (91%), providing information on 2,907 children and adolescents aged 5-18 years. The two major ethnic groups are White non-Hispanic (46.96%) and Black non-Hispanic (40.83%).

The participants of this study were the primary child caregivers (PCG) who were biological mothers and the secondary caregivers (OCG) who were biological fathers, stepfathers, adoptive fathers, or male partners of mothers. In order to be included in the study, both the primary caregivers and secondary caregivers were living with CDS-II

sample children in 2001. The PCG interviews were administered in-person or over the telephone. The OCG interviews were also administered in-person or over the telephone, but had the added option of self-administration (Mainieri, 2006). The analysis for this study was limited to a sample of 1,122 children who lived with their biological mothers and the secondary caregivers who were biological fathers, stepfathers, adoptive fathers, or male partners of mother in 2001.

Instrumentation

This study utilized and integrated the composite variables under each conceptual factor, which are formed by McBride and his colleagues (McBride et al., 2004). The authors selected the best representative items for each factor and checked them using confirmatory factor analysis techniques to ensure the unidimensionality of the constructs. However, CDS-II added or subtracted some items in questionnaires. As a result, the variables in this study are not exactly the same as the variables of McBride and his colleagues' study.

Motivation. Variables under this conceptual factor are (a) Parenting socialization, (b) Desire for a better life for their children, (c) Beliefs about the father's role in the family, and (d) Participation in parenting classes or parent support groups. Parenting socialization was measured with a single item (e.g., "How often did you actively participate in this child's after-school activities?"), and fathers' responses to this question ranged from 1 (*never*) to 7 (*usually every day*). Higher scores reflected higher levels of participation in the child's after-school activities. For the analyses in this study, individual reporting every day while the program lasted or usually every day were recoded as six (usually every day). Possible responses ranged from 1 (*never*) to 6

(*usually every day*) after recoding this variable. Desire for a better life for their children was determined by the following question: Have you ever moved to a different neighborhood because you wanted to make life better for your children. Beliefs about the father role in the family were assessed with three items: (a) Dads should interact with children; (b) A father should be as heavily involved in the care of his child as the mother; and (c) Fathers play a central role in the child's personality development. Each item was coded on a 4-point scale (strongly disagree to strongly agree). One variable from mother's report was also included in father's parenting motivation (e.g., "How often OCG has participated in parenting classes or parent support groups within the past 12 months?"). Possible responses ranged from Never in the past 12 months (1) to Several times a week (7).

Skills and Self-Confidence. Three variables were used as measures of paternal parenting skills and self-confidence. The first variable is parenting stress using four items: (a) Being a parent is harder than I thought it would be; (b) I feel trapped by my responsibilities as a parent; (c) I find that taking care of the child(ren) is much more work than pleasure; and (d) I often feel tired, worn out, or exhausted from raising a family (McBride et al., 2004). Each item was coded on a 5-point scale (not at all true to completely true). The second variable, paternal self-esteem, was measured with Rosenberg self-esteem scale, which is a 10-item scale (Rosenberg, 1986). The scale used response scale of 1-4, where 1 indicates "Strongly Disagree" and 4 indicates "Strongly Agree". The third variable, self-efficacy, was measured by four items. The original Pearlin Self-Efficacy scale includes 7 items (Pearlin et al., 1981). CDS-II shortened the scale version based on factor analysis and reliability assessment (Mainieri, 2006). The

four items are: (a) There is really no way I can solve some of the problems I have; (b) Sometimes I feel that I'm being pushed around in life; (c) I have little control over the things that happen to me; and (d) I often feel helpless in dealing with the problems in life. Each item was scored on a 4-point response scale ranged from strongly agree (1) to strongly disagree (4).

Social Supports and Stresses. There are six variables to assess social supports and stress (McBride et al., 2004). There were four variables from the mother's reports. The first one is economic strain, a fifteen-items measure developed by Conger and Elder (1994), and the measure is designed to assess whether a family had financial stress and strain during the past year or not. A sample item is "Have you borrowed money from friends or relatives in the past 12 months?" The fifteen items are answered with Yes or No (1 = yes, 0 = no). Self and spouse neighborhood involvement included 18 items (e.g., "How often has you/other caregiver participated in a neighborhood meeting?"). Response choices on a 7-point scale ranged from never in the past 12 months (1) to several times a week (7). Social support using 4 items is scored on a seven-point response scale ranged from Completely dissatisfied (1) Neither satisfied nor dissatisfied (4) to Completely satisfied (7). A sample questions is "How satisfied are you with the amount of practical help you receive from your friends?" The last variable from mothers is attitudes regarding the father role in the family consisting of 3 items (e.g., Fathers play a central role in the child's personality development."). The questions use a response scale of 1-4, where 1 indicates "Strongly Disagree" and 4 indicates "Strongly Agree". The other two variables are fathers' perceptions of interparental conflict regarding specific activities (4 items) and general life goals (3 items). The four items regarding specific

activities are: (a) How the children are raised; (b) How you spend money on children; (c) The amount of time he/she spends with children; and (d) The friends the mother or primary caregiver spends time with. The questions were answered with a four-point response scale (1 = never to 4 = often). Interparental conflict regarding general life goals was assessed with the following items: (a) Your job or career plans; (b) The child(ren)'s mother's or primary caregiver's career plans; (c) Spending leisure time. The questions used a response scale of 1-4, where 1 indicated "Strongly Disagree" and 4 indicated "Strongly Agree".

Father Involvement. Five dependent variables are used to construct father involvement (McBride et al., 2004). The first variables assessed paternal responsibility (self vs. other vs. shared) for child-related management tasks fathers' reports. The five tasks are: (a) Choosing children's activities; (b) Buying children's clothes; (c) Driving children to activities; (d) Selecting a pediatrician and making appointments; and (e) Selecting a child care program, preschool, or school. For the analyses in this study, those who responded self or shared were recoded as one; those who responded other were recoded as zero. Fathers' reports of showing warmth and affection toward their children are the second variable (six items). A sample item is "how often in the past month have you talked with this child about things he/she is especially interested in?" The third variable (seven items) is concerned with house-centered activities (e.g., "In the past month, how often did you do dishes together?"). The fourth variable (six items) is concerned with child-centered activities (e.g., "In the past month, how often did you do arts and crafts together?"). The questions of the second to fourth variable were answered with five-point scale (1 = not in the past month to 5 = every day). An overall measure of

father involvement for the three variables (2nd, 3rd, and 4th) is a sum of the items that are included in each variable. The last variable (seven items) is paternal monitoring (e.g., "Do you have rules for how late this child can stay up at night"). The possible responses for each question were no (0) and yes (1). The seven items were summed to produce an overall paternal monitoring score.

Childhood Chronic Conditions. For the analyses in this study, a pilot study of 21 participants who are convenience samples helped to categorize all childhood chronic conditions that were mentioned in this study into three groups: (a) High level of Serious Health Condition, (b) Medium level of Serious Health Condition, and (c) Low level of Serious Health Condition. Participants in the pilot study were 7 males aged 19-65 years and 14 females aged 22-63 years. The range of participants' completed education level was from high school to doctoral degree. One female participant has a nursing background and three participants have experiences to take care or work with children with chronic conditions. Others have heard about childhood illnesses or learned about childhood illnesses from experiences of people whom they know. In the survey, participants were asked to categorize all childhood chronic conditions based on their own perception of the seriousness of illness. The surveys were administered in-person, via e-mail, or over the telephone.

CHAPTER FOUR

Results

The results are presented in two parts. The first part of this chapter is to present descriptive analysis results. For each variable, the descriptive analysis includes frequency, mean, median, standard deviation, and mode. The second part is to present the results of the Lamb-Pleck model of father involvement and the effect of childhood chronic health condition on the relationship between the independent variables (factors) and the dependent variable (father involvement).

Descriptive Results

Motivation. This conceptual factor includes parenting socialization, desire for a better life for their children, beliefs about the father role in the family, and participation in parenting classes or parent support groups. The results of the frequency analysis for the three variables are presented in Table 1. Six hundred and twelve participants (54.5%) reported "never" participated in their child's after-school activities during the last 12 months, 14% answered "less than once a month," 8.5% said "at least once a month," 8.3% said " once a week, 7.6% reported " more than once a week," and 7.1% participated daily. The mean was 2.22, the median was 1, and the mode was 1 (SD = 1.66). Forty-eight percent of the fathers in this study had not moved to a different neighborhood and 52% had moved to a different neighborhood. The mean score of desire for a better life was .52, the median was 1 (yes), and the mode was 1 (SD = .50). An overall belief about father role score was the sum of the three items (alpha= .79), and the mean score for this scale was 10.23 (SD = 1.48). The mode of father role score was 9. The range of scores for the sample in this study was from 3 to 12. The mean score

Table 1 Summary Table of Motivation

	Frequency (N = 1122)	Percentage (100.0)	Mean	Median	Mode	SD
Parenting socialization			2.22	1	1	1.66
1 Never	612	54.5				
2 Less than once a month	157	14.0				
3 At least once a month	95	8.5				
4 Once a week	93	8.3				
5 More than once a week	85	7.6				
6 Everyday	80	7.1				
Desire for a better life for their children			.52	1	1	.50
0 No, had not moved to a different neighborhood	538	48.0				
1 Yes, had moved a different neighborhood	584	52.0				
Beliefs about the father role (alpha= .79)			10.23	10	9	1.48
3 ~ 8	74	6.6				
9	396	35.3				
10	153	13.6				
11	157	14.0				
12	342	30.5				
Parenting classes			1.15	1	1	.68
1 Never in the past 12 months	1046	93.2				
2 1 or 2 times in the past 12 months	36	3.2				
3 3 or 4 times in the past 12 months	13	1.2				
4 Once a month	12	1.1				
5 A few times a month	7	.6				
6 Once a week	5	.4				
7 Several times a week	3	.4				

of participation in parenting classes for the sample was 1.15, the median was 1 (SD = .68), and the mode was 1(Never in the past 12 months). One thousand and forty-six mothers (93.2 %) in this study indicated that fathers had never participated in parenting classes or parent support groups within the past 12 months.

Skills and Self-Confidence. Three variables under this factor are parenting stress, paternal self-esteem, and paternal self-efficacy. The results of Frequency analysis are presented in Table 2. An overall parenting stress scale was the sum of the four items (alpha = .71). The range of scores for the sample in this study was from 4 to 20. The mean score for this scale was 8.51 (SD = 3.34), the median was 8, and the mode was 4. An overall self-esteem scale was the sum of the ten items. Higher scores indicated higher self-esteem, and the range of scores was from 15 to 40. Cronbach's alpha for this scale was .85, the mean score was 34.70 (SD = 4.48), and the mode was 40. An overall self-efficacy scale was the sum of the four items. High scores designated higher self-efficacy (alpha = .83), and the range of scores was from 5 to 16. The mean score for this scale was 13.05 (SD = 2.42), the median was 13, and the mode was 16.

Social Supports and Stresses. There are six variables to assess social supports and stress. The results are presented in Table 3. The first variable is economic strain, a fifteen-items measure (alpha = .69). The mean score for the economic strain scale was 1.35 (SD = 1.74). The median score was 1, and the mode was 0. The range of scores was from 0 to 10. Four hundred and ninety-three participants (43.9%) in the study did not experience financial stress and strain during the past year, 22.0% had one economic problem, 14.3 % had two, and 19.8% had three or more than three. The mean score of self and spouse neighborhood involvement measure was 39.08. The median score was

Table 2 Summary Table of Paternal Parenting Skills and Self-confidence

	Mean	Median	Mode	SD
Parenting Stress (Alpha = .71)	8.51	8	4	3.34
Paternal Self-esteem (Alpha = .85)	34.70	35	40	4.48
Paternal Self-efficacy (Alpha = .83)	13.05	13	16	2.42

Table 3 Summary Table of Social Supports and Stresses

	Mean	Median	Mode	SD
Economic Strain (Alpha = .69)	1.35	1	0	1.74
Neighborhood Involvement (Alpha = .73)	39.08	38	26	12.36
Social Support (Alpha = .79)	20.89	21	20	4.53
Father Role in the Family (Alpha = .76)	10.53	10	9	1.41
Interparental Conflict (specific activities) (Alpha = .74)	7.98	8	8	2.54
Interparental Conflict (general goal) (Alpha = .84)	9.19	9	9	1.82

38, and the mode was 26. Cronbach's alpha of the overall neighborhood involvement measure was .73. The range of scores was from 18 to 87 (SD = 12.36). Higher scores indicate higher level of neighborhood involvement. The mean score for the social support scale was 20.89 (SD = 4.53). The median score was 21, and the mode was 20. The range of scores was from 4 to 30. Higher scores reflect higher level of satisfaction with social support. Cronbach's alpha of the father role in the family measure was .76, and the mean score was 10.53 (SD = 1.41). The median score was 10, and the mode was 9. The range of scores was from 3 to 12. Higher scores indicate higher level of father's agreement with being involved in child care. Cronbach's alpha of the overall interparental conflict regarding specific activities measure was .74, and the mean score for this scale was 7.98 (SD = 2.54). The range of scores was from 4 to 16. The median score was 8, and the mode was 8 (19.3%). Cronbach's alpha of the overall interparental conflict regarding general life goals measure was .84, and the mean score for this scale was 9.19 (SD = 1.82). The range of scores was from 3 to 12. The median score was 9, and the mode was 9 (48.4% of all participants).

Institutional Factors. The mean monthly hours in paid jobs for fathers were 226.03 (SD = 110.77), the median was 225, and the mode was 200 (22.1%). The mean monthly hours in paid jobs for mothers were 128.15 (SD = 113.82), the median was 150, and the mode was 0 (31.5%). The results are presented in Table 4.

Demographic Factors. Demographic variable selected in the study are child sex, child age, number of sibling living with the child, and father/mother's age, and education (see Table 4). In this study, 49.3% of all children were boys, and 50.7% were girls. The mean age of children was 10.90 years old (SD = 3.80), the median was 11 years old, and

the mode was age 9 (9.4%). The range of child age was from 4 to 18 years old. The mean number of sibling living with child in 2001 was 1.32 (SD = .96), the median number was 1, and the mode was 1 (49.3%). The mean age of fathers was 41.92 years old (SD = 7.03), the median was 42 years old, and the mode was age 42 (11.4%). The range of fathers' age was from 24 to 77 years old. The mean age of mothers was 39.43 years old (SD = 6.58), the median was 40 years old, and the mode was age 39 (8.0%). The range of mothers' age was from 22 to 58 years old. The mean of fathers' completed education level in 2001 was 13.09 (SD = 2.68), the median was 13, and the mode was 12 (31.8%). The mean of mothers' completed education level in 2001 was 12.74 (SD = 3.49), the median was 13, and the mode was 12 (26.6%).

Father Involvement. The five items were summed to produce an overall measure of paternal responsibility (alpha = .64). The mean paternal responsibility score for the sample was 3.04 (SD = 1.38), the median was 1, and the mode was 3 (26.4%). The range of paternal responsibility was from 0 to 5. Cronbach's alpha for warmth and affection was .87, and the mean score for warmth and affection was 20.57 (SD = 5.46). The range of warmth and affection was from 6 to 30. The median score for warmth and affection was 21.00, and the mode was 24 (8.2%). Cronbach's alpha for house-centered activities was .72, and the mean score was 15.09 (SD = 4.25). The range of house-centered activities score was from 7 to 29. The median score was 15, and the mode was 15 (9.8%). Cronbach's alpha for child-centered activities was .80, and the mean score was 12.75 (SD = 4.79). The range of child-centered activities score was from 6 to 28. The median score was 12, and the mode score was 10 (8.0%). Cronbach's alpha for paternal

Table 4 Summary Table of Institutional Factors and Demographic Factors

	Frequency (N = 1122)	Percentage (100.0)	Mean	Median	Mode	SD
Father's Monthly Hours in Paid Jobs			226.03	225	220	110.77
Mother's Monthly Hours in Paid Jobs			128.15	150	0	113.82
Child Sex						
Boys	553	49.3				
Girls	569	50.7				
Child Age			10.90	11	9	3.80
Father's Age			41.92	42	42	7.03
Mother's Age			39.43	40	39	6.58
Fathers' Completed Education			13.09	13	12	2.68
Mother's Completed Education			12.74	13	12	3.49

monitoring was .84. The mean of paternal monitoring score for the sample was 4.89 (SD = 2.24). The range of paternal monitoring score was from 0 to 7. The median score was 6.00, and the mode score was 7 (36.5%). Higher scores on each scale reflect higher level of father involvement (see table 5).

Table 5 Summary Table of Father Involvement

	Mean	Median	Mode	SD
Paternal Responsibility (Alpha = .64)	3.04	1	3	1.38
Warmth and Affection (Alpha = .87)	20.57	21	24	5.46
Father/Child House-centered Activities (Alpha = .72)	15.09	15	15	4.25
Father/Child Child-centered Activities (Alpha = .80)	12.75	12	10	4.79
Paternal Monitoring (Alpha = .84)	4.89	6	7	2.24

Childhood Chronic Conditions. Frequency analysis showed that 45.5% of all children had no chronic health conditions (n= 509). Of the remaining 54.6%, 14.5% had low level of serious health conditions (n= 163), 24.9% had medium level of serious health conditions (n= 279), and 15.2% had high level of serious health condition (n= 171). The results are presented in Table 6.

Table 6 Summary Table of Childhood Chronic Conditions

	Frequency (N = 1122)	Percentage (100.0)
No Chronic Health Conditions	509	45.4
Children with Low Level of Serious Health Conditions	163	14.5
Children with Medium Level of Serious Health Conditions	279	24.9
Children with High Level of Serious Health Conditions	171	15.2

Testing of Hypotheses

The first null hypothesis to be tested in this study is that there is no association between five particular aspects of factors and five kinds of father involvement activities, *Paternal Responsibility, Paternal Warmth and Affection, Father/Child Household-centered Activities, Father/Child Child-centered Activities, and Paternal Monitoring.* Multiple regression analysis was conducted to determine the predictive power of the independent variables: *Motivation Factors (Four variables), Skills and Self-confidence Factors (Three variables), Social Support and Stresses Factors (Six variables), Institutional Factors (Two variables), and Demographic Factors (Ten variables).* For each set of analyses, all predictive variables were entered simultaneously through means of forced entry with no stepwise, forward or backward procedures, and one father involvement activity was included as the dependent variable. A .05 Alpha level was established for the evaluation, and the probability value, *p*, represents the significance of the independent variables to predict the variation in the dependent variable. The

statistical software used in the analysis was SPSS version 14.0 for Macintosh by SPSS Inc. The results of these analyses are reported in Table 7.

In order to obtain the ideal of a high R value in multiple regression it is important that the independent variables be highly correlated with the dependent variable while having a low correlation among themselves (Bowerman & O'Connell, 1990). Consequently, it is necessary to examine the potential effects of multicollinearity by confirming the variation inflation factor (VIF) statistics in the regression. According to Bowerman and O'Connell (1990), any VIF score above 10 and the average VIF greater than 1 may suggest there is a problem with multicollinearity. As the average VIF score in this output was near 1 and all VIF values were below 10, the current set of data did not appear to have a problem with multicollinerarity.

The first set of multiple regressions was to determine significant predictors of the dependent variable, Paternal Responsibility. As noted in Table 7, Parenting Socialization ($\beta = .14, p < .001$) and Beliefs about father role ($\beta = .15, p < .001$), two variables in the Motivation factors, were found to have positive correlation with Paternal Responsibility. The Skills and Self-confidence factors were not related to the dependent variable. For the Social Support and Stresses factors, Mothers' attitude was positively associated with Paternal Responsibility ($\beta = .10, p < .01$). For the Institutional Factors, Paternal Responsibility had a negative association with Father's monthly working hours ($\beta = -.07$, $p < .05$), but was positively related with Mother's monthly working hours ($\beta = .08, p < .01$). For the Demographic Factors, Mother's age ($\beta = -.11, p < .05$) and Father's education ($\beta = -.07, p < .05$) were negatively related to Paternal Responsibility. The R-square value of this analysis was .326, and this reveals that 32.6 % of the variance of

Table 7 The Factors of Father Involvement

	Paternal Responsibility	Paternal Warmth & Affection	Household-Centered Activities	Child-Centered Activities	Paternal Monitoring
Motivation:					
Parenting socialization	.14*** (.13)	.23*** (.31)	.23*** (.25)	.28*** (.34)	.15***(.18)
Better life			.07** (.11)	.07** (.09)	
Beliefs about father role	.15*** (.18)	.19*** (.30)	.14*** (.24)	.10*** (.22)	.12***(.16)
Parenting class					
Skills & Self-Confidence:					
Parenting stress		-.08** (-.16)			
Paternal self-esteem					
Paternal self-efficacy				.06* (.13)	.08* (.04)
Social supports & stress:					
Economic stress					
Neighborhood involvement					.07* (.10)
Social Support					
Mothers' attitude	.10** (.12)				
Interparental conflict (specific)				.06* (-.04)	.16***(.14)
Interparental conflict (general goals)					
Institutional Factors:					
Father's working hours	-.07* (-.10)	-.08 ** (-.08)	-.09** (-.13)	-.06** (-.08)	
Mother's working hours	.08** (.07)				
Demographic Factors:					
Child sex					
Child age		-.33***(-.40)	-.14***(-.22)	-.48*** (-.55)	-.33***(-.38)
Number of sibling living with the child			.06* (.07)		
Father's age		.11 ** (-.18)			.18***(-.18)
Mother's age	-.11* (-.12)	-.11 * (-.22)	-.11* (-.19)		-.21***(-.29)
Father's education	-.07* (-.10)		-.08 * (-.06)		
Mother's education					
R square	.326	.322	.177	.437	.248

* $p < .05$; ** $p < .01$; *** $p < .001$; The numbers in parentheses indicate zero-order correlations.

Paternal Responsibility is explained by the combination of the independent variables.

When determining significant predictors of the dependent variable, Paternal Warmth and Affection, two factors of Motivation, Parenting Socialization ($\beta = .23$, $p < .001$) and Beliefs about father role ($\beta = .19$, $p < .001$), were found to have positive relation with Paternal Warmth and Affection. For the Skills and Self-confidence factors, Parenting Stress was negatively related to Paternal Warmth and Affection ($\beta = -.08$, $p < .01$). The Social Support and Stresses factors were not significant predictors of Paternal Warmth and Affection. Father's monthly working hours ($\beta = -.08$, $p < .01$), one of the Institutional Factors, was negatively related to paternal warmth and affection. For the Demographic Factors, child age ($\beta = -.33$, $p < .001$) and Mother's age ($\beta = -.11$, $p < .05$) had negative associations with the dependent variable. Father's age was positively associated with Paternal Warmth and Affection ($\beta = .11$, $p < .05$). When controlling for the effects of other predictors, Father's age had a negative correlation with the outcome ($r = -.18$). Approximately 32.2% of the variance in Paternal Warmth and Affection is accounted for by the independent variables.

For the third set of multiple regressions, Father/Child Household-centered activities was entered as a dependent variable. For the Motivation factors, Parenting Socialization ($\beta = .23$, $p < .001$), Better Life ($\beta = .07$, $p < .05$), and Beliefs about Father role ($\beta = .14$, $p < .001$) had positive associations with Father/Child Household-centered activities. The Skills and Self-confidence factors and the Social Support and Stresses Factors were not significant predictors. For the Institutional Factors, Fathers' monthly working hours had a negative association with Father/Child Household-centered activities ($\beta = -.09$, $p < .001$). For the Demographic Factors, Child Age ($\beta = -.14$, $p <$

.001), Mother's age (β = -.11, p < .05), and Father's education (β = -.08, p < .05) had negative associations with Father/Child Household-centered activities. Number of sibling living with the child (β = .06, p < .05) was significantly associated with Father/Child Household-centered activities. The R-square value of this analysis was .18.

The next set of the analyses was to discover significant predictors of Father/Child Child-centered activities. For the Motivation factors, Parenting Socialization (β = .27, p < .001), Better Life (β = .07, p < .01), and Beliefs about Father role (β = .10, p < .001) had positive associations with Father/Child Child-centered activities. Paternal Self-efficacy under The Skills and Self-confidence factors was significantly associated with Father/Child Child-centered activities (β = .06, p < .05). For the Social Support and Stresses Factors, Interparental Conflict regarding specific activities (β = .06, p < .05) was positively associated with Father/Child Child-centered activities. As noted in Table 7, the zero-order correlation between Interparental Conflict regarding specific activities and the outcome variable was -.04. For the Institutional Factors, Fathers' monthly working hours had a negative association with Father/Child Child-centered activities (β = -.06, p < .01). For the Demographic Factors, Child age (β = -.48, p < .001) was negatively related to Father/Child Child-centered activities. Approximately 43.7 % of the variance of Father/Child Child-centered activities is explained by the combination of the independent variables.

Paternal Monitoring was entered as a dependent variable when conducting the final set of the analyses. For the Motivation factors, Parenting Socialization (β = .15, p < .001) and Beliefs about Father role (β = .12, p < .001) were positively related to Paternal Monitoring. Paternal Self-efficacy, one of the Skills and Self-confidence factors, had a

positive association with Paternal Monitoring ($\beta = .08, p < .05$). For the Social Support and Stresses Factors, Neighborhood Involvement ($\beta = .07, p < .05$) and Interparental Conflict regarding specific activities ($\beta = .16, p < .001$) were significant predictors of Paternal Monitoring. None of the Institutional Factors was associated with Paternal Monitoring. For the Demographic Factors, child age ($\beta = -.33, p < .001$) and Mother's age ($\beta = -.21, p < .001$) had negative associations with Paternal Monitoring. Father's Age ($\beta = .21, p < .001$) was positively associated with Paternal Monitoring. However, it had a negative correlation with the outcome ($r = -.18$) when testing zero-order correlation. Approximately 24.8% of the variance in *Paternal Monitoring* is accounted for by the independent variables.

In the previous analysis of paternal responsibility, fathers reported that they often did child-related management tasks or shared the tasks with other household members. In the next step, fathers who responded self were recoded as one; those who responded other or shared were recoded as zero. As shown in Table 8, Paternal Self-efficacy was positively associated with Paternal Responsibility ($\beta = .16, p < .001$). For the Social Support and Stresses factors, Neighborhood involvement ($\beta = -.11, p < .001$) and Social Support ($\beta = -.07, p < .05$) had negative associations with Paternal Responsibility. Interparental conflict was positively related to the dependent variable ($\beta = .13, p < .001$). For the Demographic Factors, Father's education ($\beta = -.09, p < .05$) was negatively related to Paternal Responsibility.

Table 8 Comparison of Paternal Responsibility

	Paternal Responsibility (self)	Paternal Responsibility (self and shared)
Motivation:		
Parenting socialization		.14*** (.13)
Better Life Beliefs about Father role		.15*** (.18)
Parenting class		
Skills & Self-Confidence:		
Parenting stress		
Paternal self-esteem		
Paternal self-efficacy	.16 *** (.07)	
Social supports & stress:		
Economic stress		
Neighborhood involvement	-.11*** (-.14)	
Social Support	-.07* (-.07)	
Mothers' attitude		.10** (.12)
Interparental conflict (specific)	.13 *** (.11)	
Interparental conflict (general goals)		
Institutional Factors:		
Father's working hours		-.07* (-.10)
Mother's working hours		.08** (.07)
Demographic Factors:		
Child Sex		
Child age		
Number of sibling living with the child		
Father's age		
Mother's age		-.11* (-.12)
Father's education	-.09 * (-.16)	-.07* (-.10)
Mother's education		
R square	.074	.326

* $p < .05$; ** $p < .01$; *** $p < .001$; The numbers in parentheses indicate zero-order correlations.

The Effect of Childhood Chronic Conditions

The next analysis in this study was to examine the possible moderation of Childhood Chronic Conditions on the associations between predictors and father involvement activities. A series of 2 X 2 ANOVAs were conducted to address this question, and childhood chronic condition was conceptualized as a moderator variable (Baron & Kenny, 1986). The p-value for the interaction term (predictor variable X the moderator variable) was examined to determine if childhood chronic conditions (the moderator variable) might moderate the associations, and a .05 Alpha level was established for the evaluation. To test this possibility, all predictor variables and the moderating variable were treated as dichotomous variable. When used as dichotomous variables, fathers and mothers who had completed or did not complete the twelfth grade were put in the low education group; all others with some college education were in the education group. Fathers who had children without any childhood chronic conditions were coded as zero (n=509); those who had children with childhood chronic conditions were coded as one (n=613). Finally, all other predictor variables representing low and high levels groups were created through median splits. For each set of analyses, the moderating variable and one predictor variable were entered as factors, and one father involvement activity was the dependent variable.

These analyses indicated that there were significant effects of Childhood Chronic conditions on father's Parenting Socialization ($F\ [1,1118]= 4.84, p< .05$) and Neighborhood Involvement ($F\ [1,1118]= 5.67, p< .05$) in Paternal Warmth and Affection. Fathers of children with chronic conditions showed less affection toward their children than fathers of children without chronic conditions when they tended to participate in the

child's after-school activities and neighborhood meetings (see Figure 4 and 5). However, those fathers appeared more affection toward their children than fathers of children without chronic conditions if they were less likely to attend at their children's after-school activities and neighborhood meetings. Overall, children with and without chronic conditions experienced more paternal affection when fathers were more likely to participate in the child's after-school activities and neighborhood meetings. In predicting Father/Child Household-centered activities, there was a significant effect of Childhood Chronic conditions on Social Support (F [1,1118]= 5.19, $p< .05$). Fathers of children with chronic conditions tended to report spending more time in household tasks with their children when mothers reported lower level of satisfactions with social support from families and friends (see Figure 6). In contrast, fathers of children without chronic conditions participated more with their children in household tasks if mothers reported higher levels of satisfactions. Finally, Interparental conflict regarding general life goals (F [1,1118]= 4.10, $p< .05$), Father's monthly working hours (F [1,1118]= 5.13, $p< .05$) and Father's age (F [1,1118]= 4.98, $p< .05$) interacted significantly with Childhood Chronic conditions in Paternal Monitoring. Fathers' reports of interparental conflicts regarding general life goals were negatively related to paternal monitoring among fathers of children with chronic conditions (see Figure 7). On the other hand, interparental conflicts regarding general life goals were positively associated with paternal monitoring among fathers of children without chronic conditions. Childhood chronic conditions had a significant interaction with fathers' monthly working hours and age on paternal monitoring (see Figure 8 and 9). Fathers who spent more time on paid work reported lower level of monitoring, especially for fathers of children with chronic conditions.

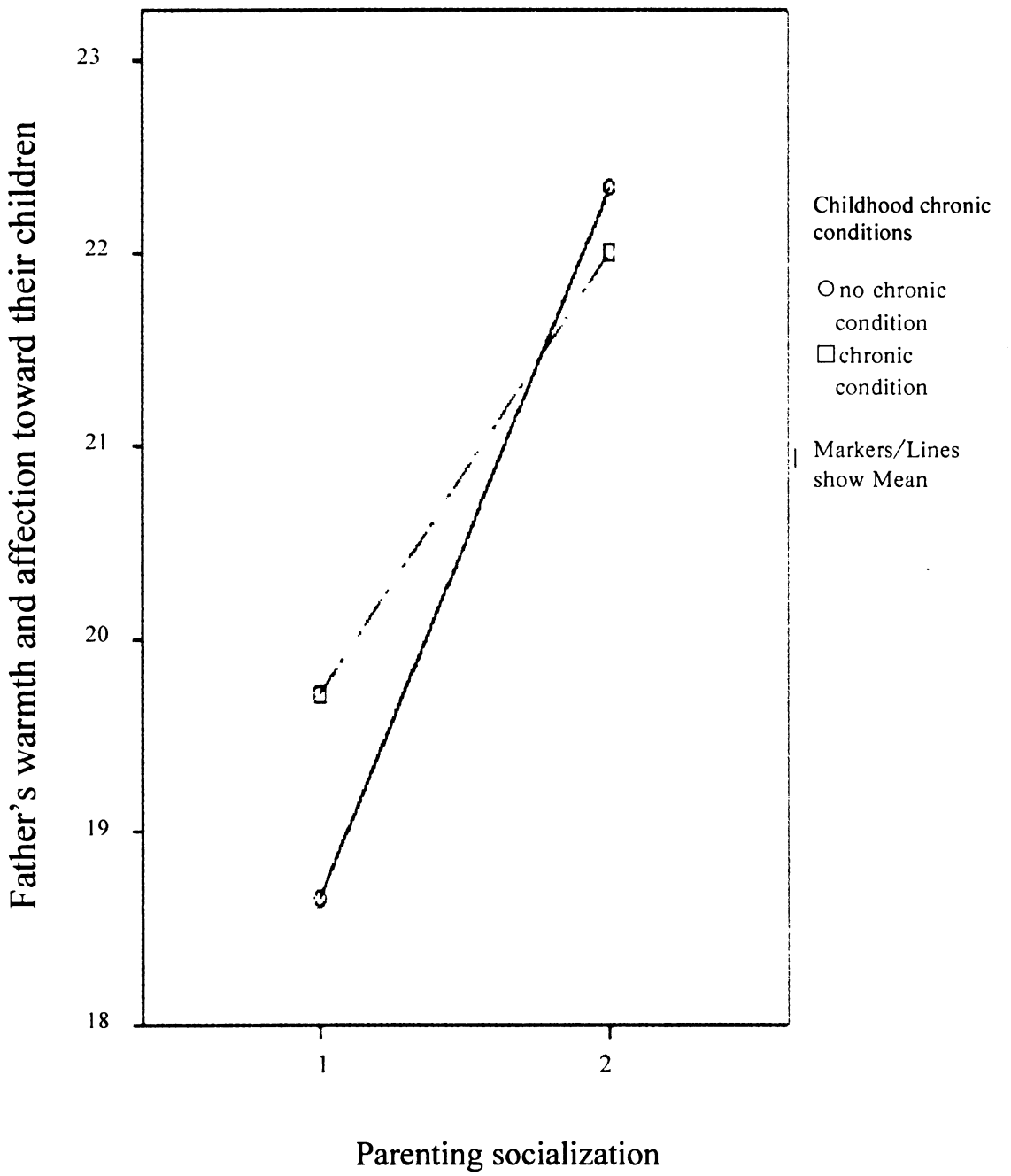

Figure 4. The interaction between Parenting Socialization and Childhood Chronic Conditions in Paternal Warmth and Affection

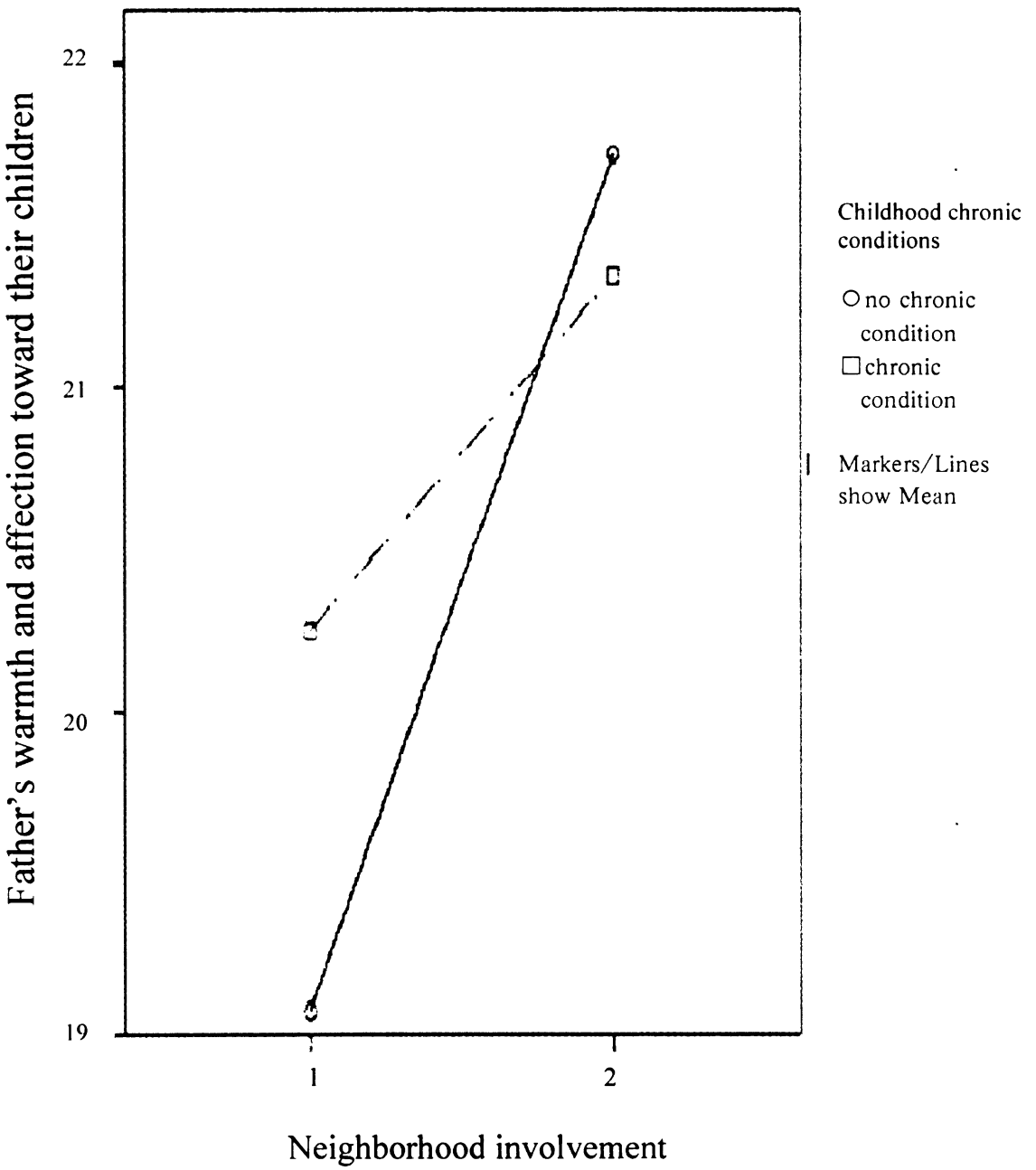

Figure 5. The interaction between Neighborhood involvement and Childhood Chronic Conditions in Paternal Warmth and Affection

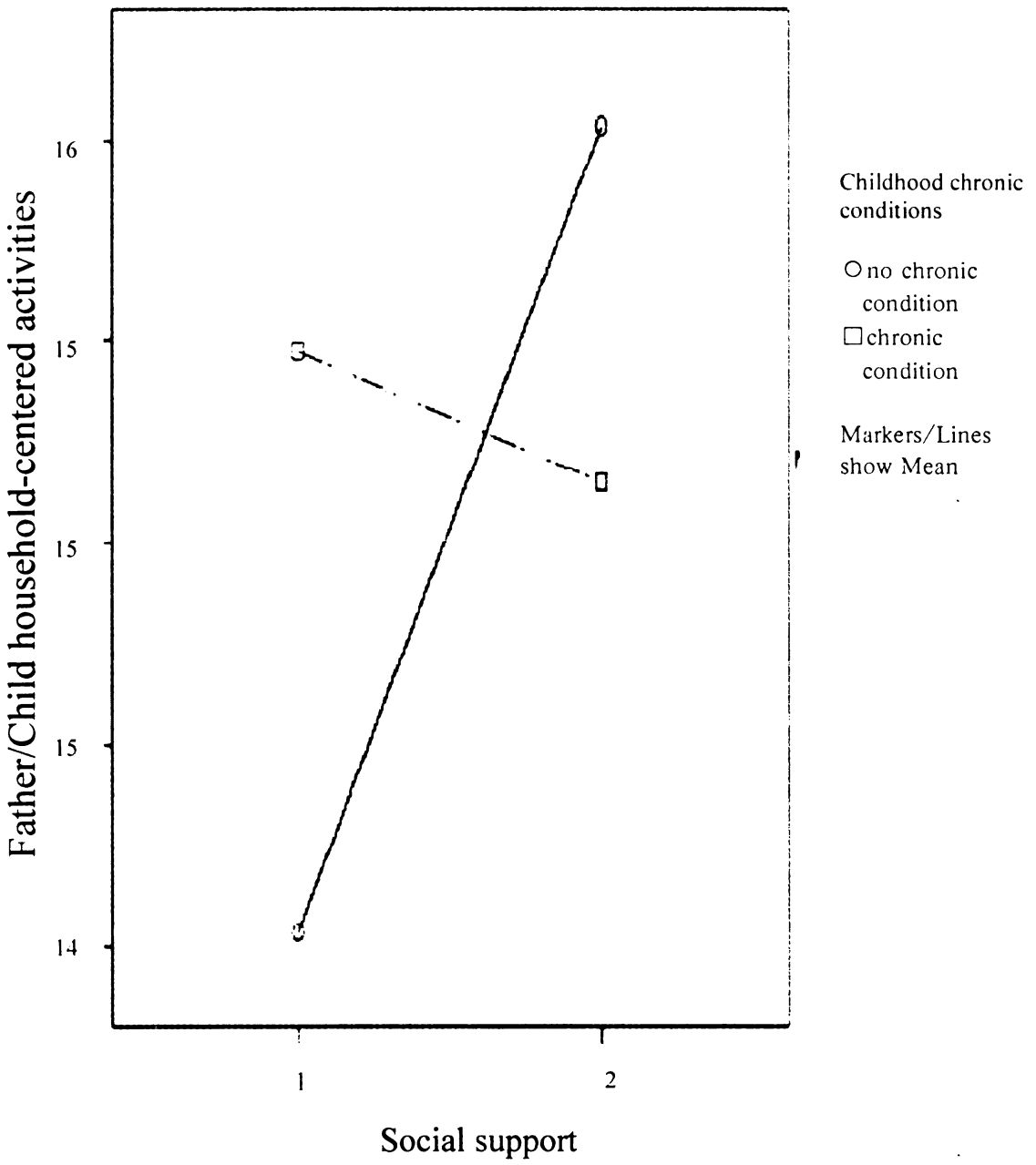

Figure 6. The interaction between Social Support and Childhood Chronic Conditions in Father/Child Household-centered activities

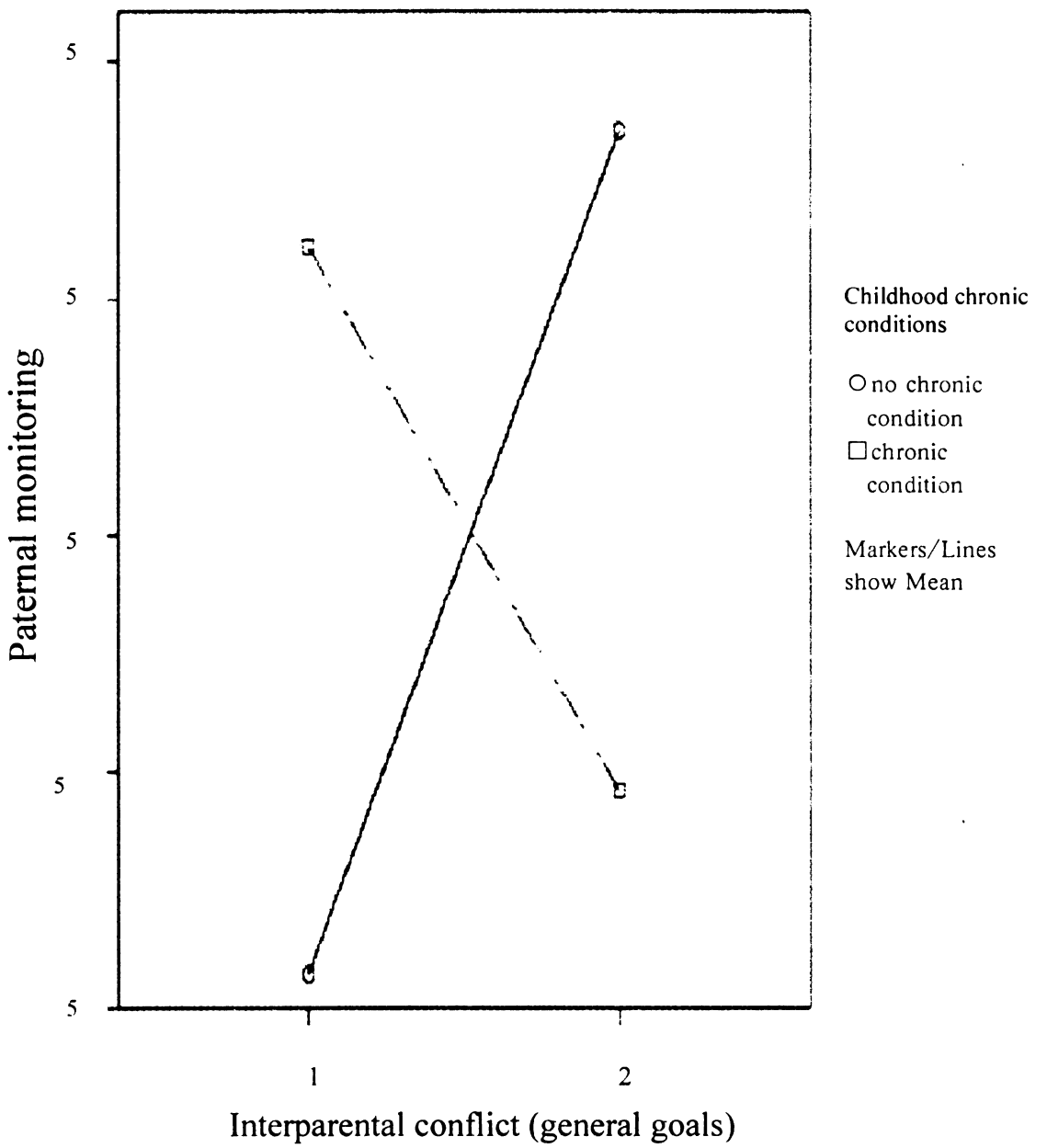

Figure 7. The interaction between Interparental conflict regarding general life goals and Childhood Chronic Conditions in Paternal Monitoring

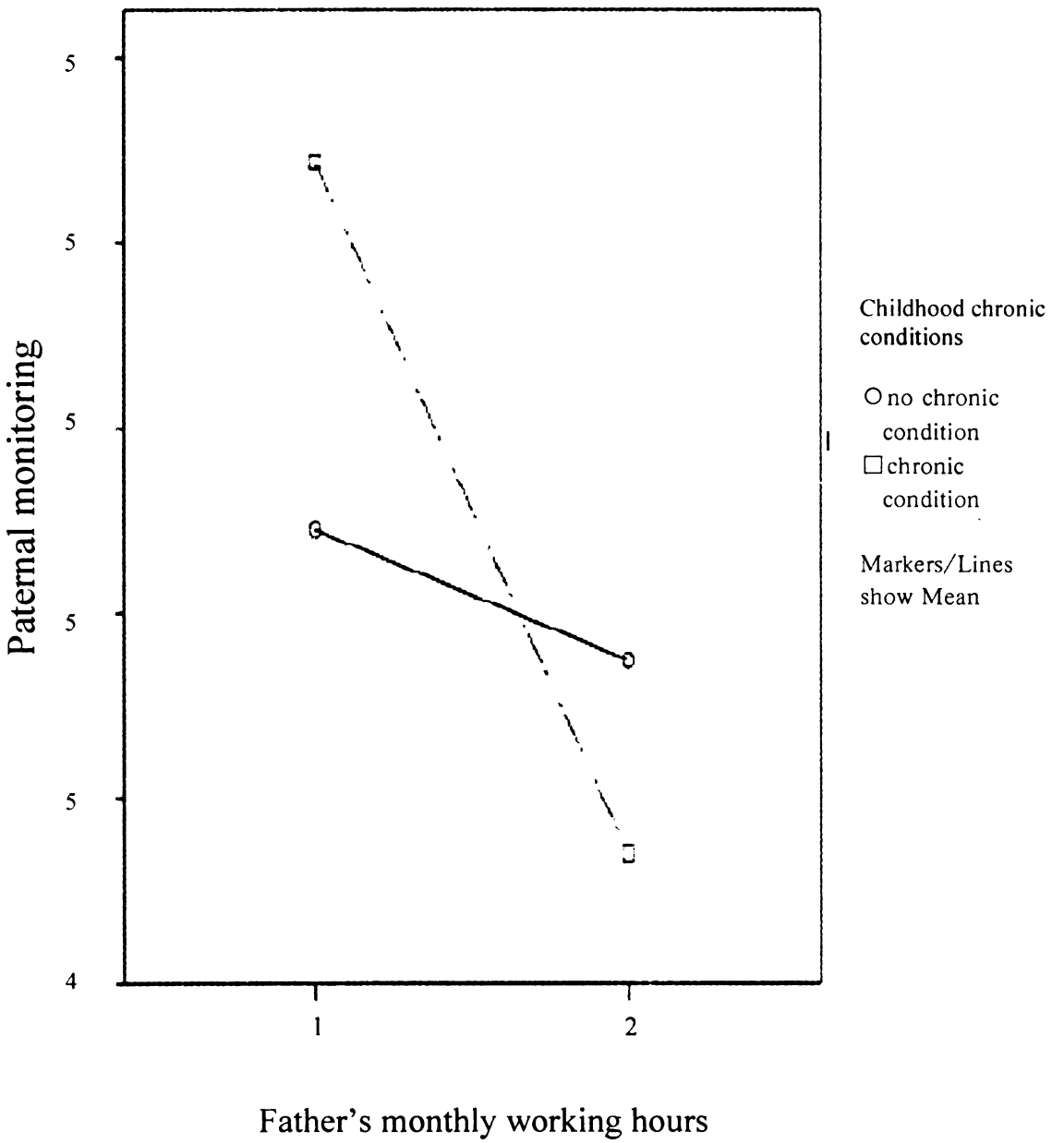

Figure 8. The interaction between Father's monthly working hours and Childhood Chronic Conditions in Paternal Monitoring

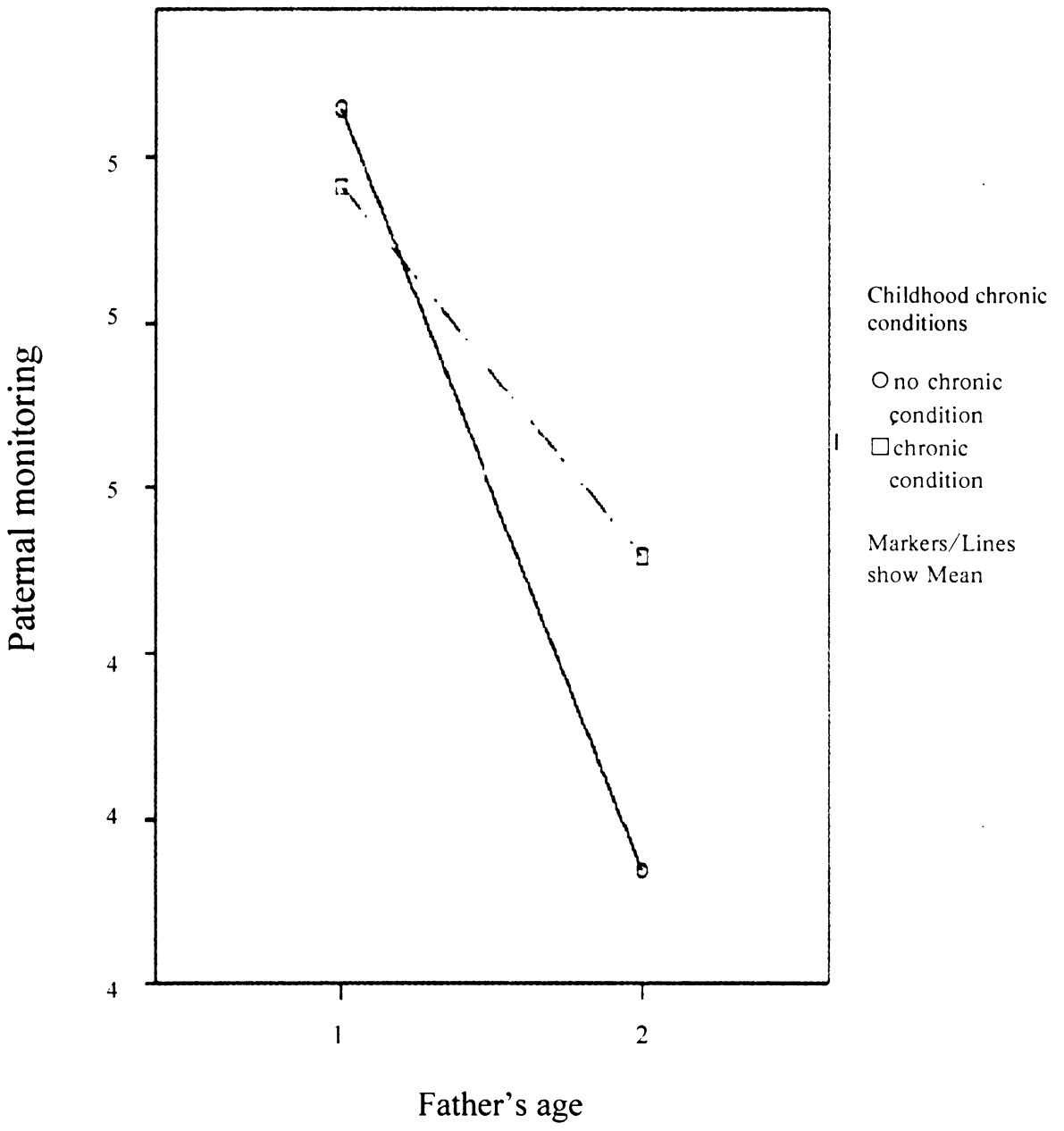

Figure 9. The interaction between Father's age and Childhood Chronic Conditions in Paternal Monitoring

Children without chronic conditions received lower lever of paternal monitoring than children with chronic conditions when fathers were older.

In the previous analyses, the childhood chronic condition (the moderator variable) was treated as a dichotomous variable (have chronic condition and have no chronic condition). In the next step, the childhood chronic conditions were categorized into 4 levels of seriousness, high level of seriousness (3), medium level of seriousness (2), low level of seriousness (1), and no chronic health conditions (0), in order to further examined the interactions between different level of seriousness of childhood chronic conditions and predictive factors. A series of 4 X 2 ANOVAs were conducted to determine the effect of childhood chronic condition on the association between predictive factors and father involvement activities. Each of ANOVA analyses included the moderator and one predictive factor as factors, and one father involvement activity was the dependent variable.

The results of these analyses showed that Father's Education had a significant interaction with Childhood Chronic Conditions in predicting Paternal Warmth and Affection. ($F [2, 609]= 6.44, p< .01$). Greater paternal warmth and affection was related to lower level of education among fathers of children with medium level of seriousness, but related to higher level of education among others (see Figure 10). The effect of Childhood Chronic Conditions on fathers' participation in Parenting Classes or Parent Support Groups ($F [2, 609]= 4.48, p< .05$) and Mother's attitude about father role ($F [2, 609]= 3.70, p< .05$) was significant when predicting Paternal Monitoring. Fathers of children with high level of seriousness reported lower level of paternal monitoring behaviors if they participated in parenting classes or parent support groups (see figure

11). Others reported higher level of paternal monitoring when they participated in parenting classes or parent support groups. When mothers reported less traditional perceptions of fatherhood, fathers of children with high level of seriousness reported lower level of paternal monitoring; but the reverse was true among fathers of children with low level of seriousness (see figure 12). Fathers of healthy children and children with medium level of seriousness were less affected by mothers' perceptions of fatherhood.

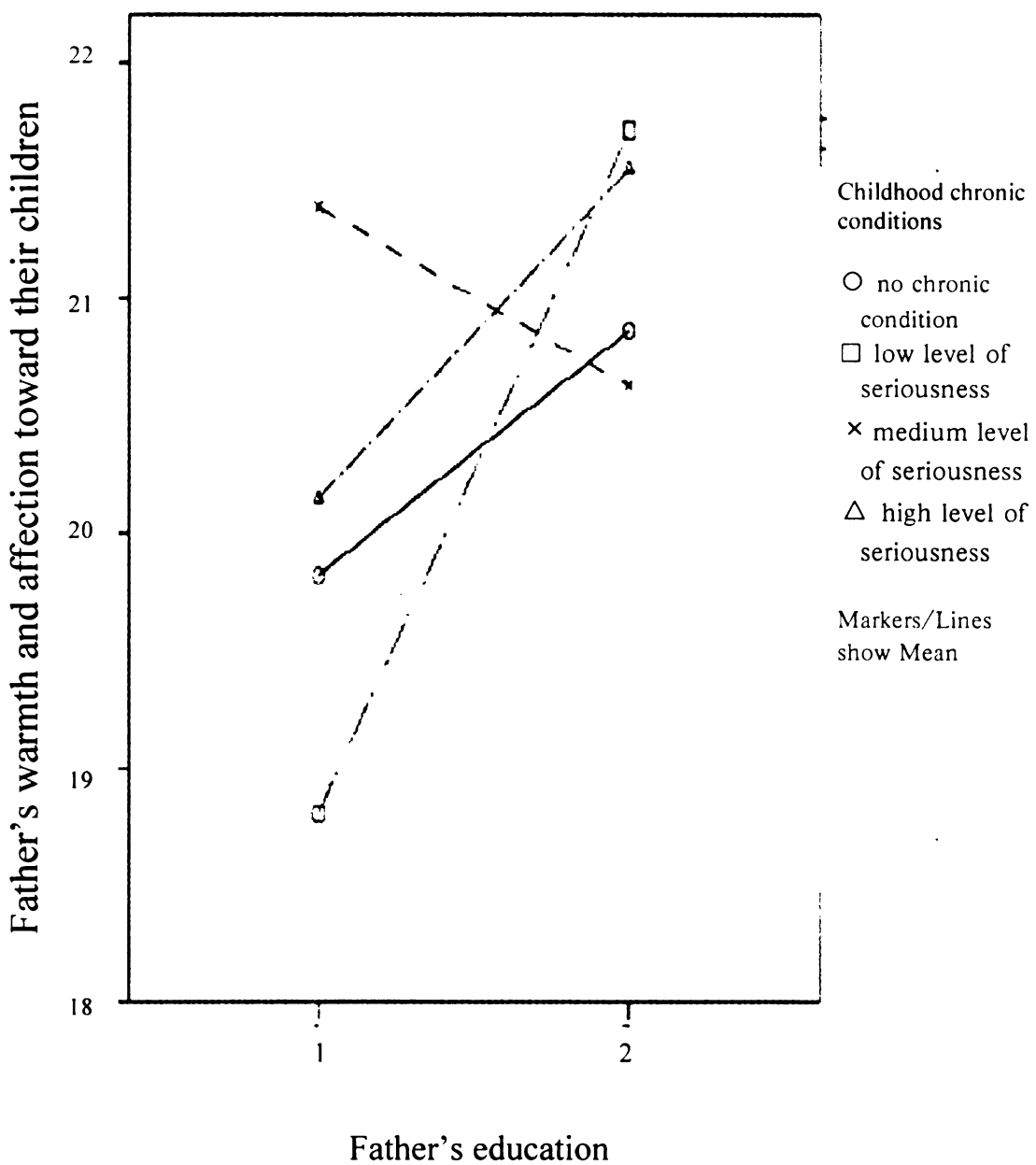

Figure 10. The interaction between Father's education and Childhood Chronic Conditions in Father's warmth and affection toward children

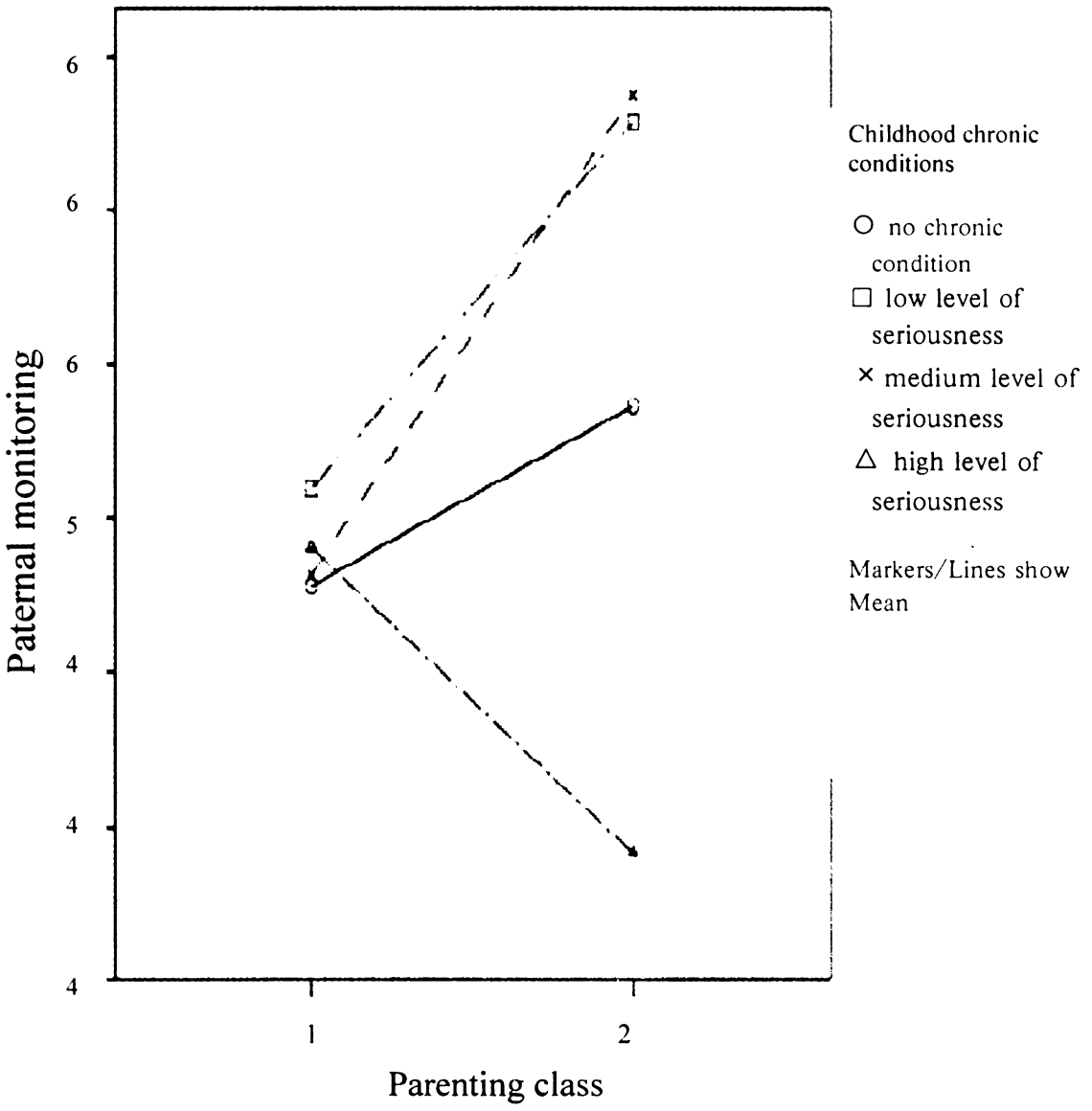

Figure 11. The interaction between Parenting class and Childhood Chronic Conditions in Paternal monitoring

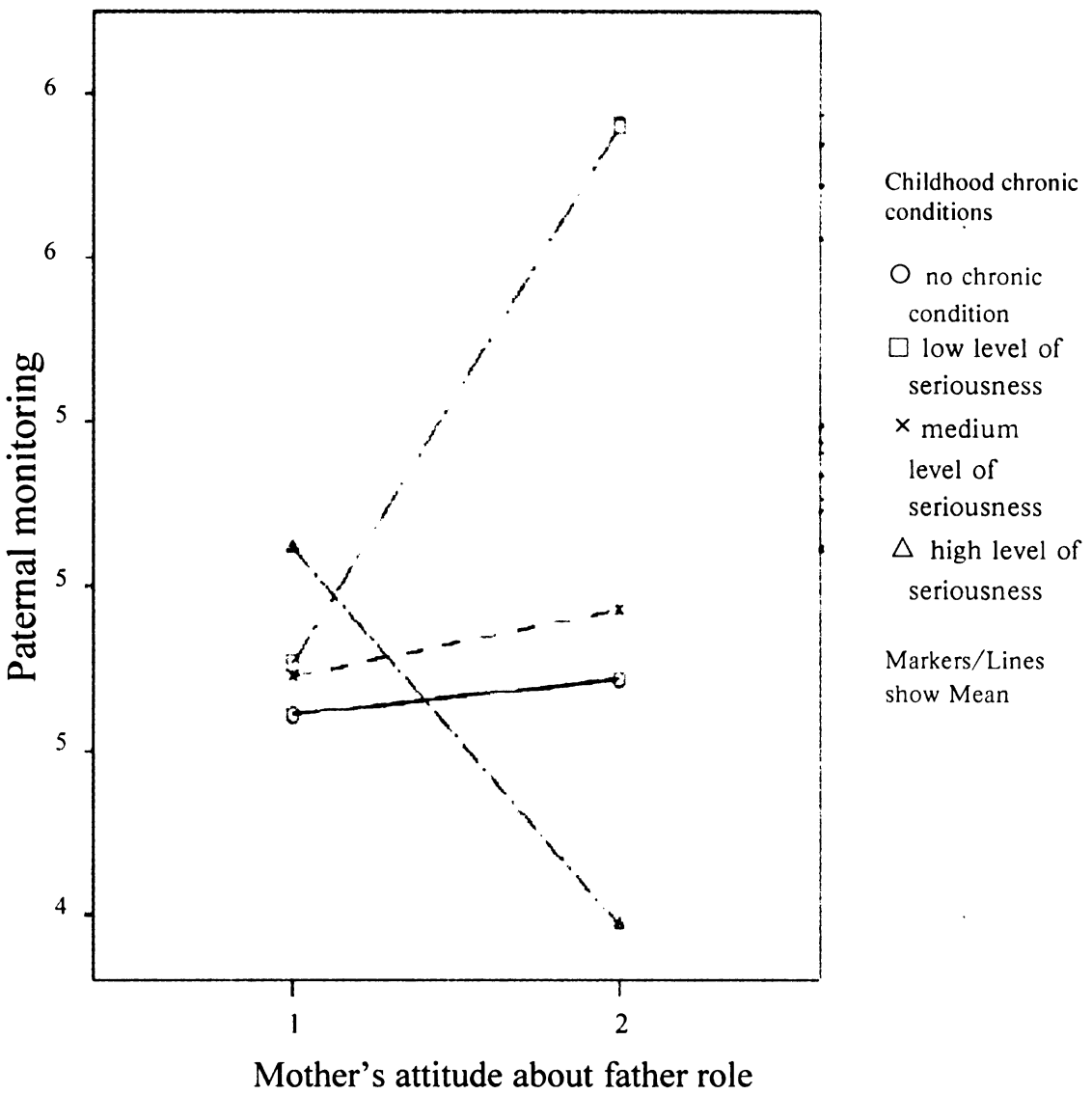

Figure 12. The interaction between Mother's attitude about father role and Childhood Chronic Conditions in Paternal monitoring

CHAPTER FIVE

Findings, Conclusions, Limitations, and Implications

Findings

Building on the Lamb-Pleck model of the determinants of father involvement (Lamb et al., 1987; McBride et al., 2004), the results from this study confirmed partial findings of previous studies when testing simultaneously all direct paths of the predictive variables. The results showed that when fathers increased participation in their children's after-school activities, their children experienced higher level of all forms of father involvements. Fathers who had ever moved to a different neighborhood to make a better life for their children tended to participate in both household-centered and child-centered activities with their children. Furthermore, fathers' beliefs about the father's role in the family were associated with five forms of father involvements. As parents, fathers who felt trapped by their responsibilities, exhausted from raising a family, experienced more work than pleasure, and thought taking care of children was much more work than pleasure showed less warmth and affection toward their children. Fathers were more likely to show higher levels of paternal responsibility and paternal monitoring if they had higher level of self-efficacy. Mothers' report of self and spouse neighborhood involvement was associated positively with paternal monitoring. Mother's attitudes regarding the father role influence higher levels of paternal responsibility. If fathers experienced more interparental conflict regarding specific activities such as raising children and spending time with friends, they reported greater father/child child-centered activities and paternal monitoring. Fathers who spent more time on monthly paid work were less likely to show paternal responsibility, paternal warmth and affection toward

their children, father/child household-centered activities, and child-centered activities with their children. When mothers spend more time in paid employment, fathers reported higher levels of paternal responsibility. Older children experienced less paternal warmth and affection, father/child household-centered activities, father/child child-centered activities, and paternal monitoring. Fathers who had more children living together were more likely to spend more time doing household-centered activities with children. Older fathers showed higher level of paternal monitoring. Fathers who had younger spouses reported higher levels of paternal responsibility, paternal warmth and affection, father/child household-centered activities, and paternal monitoring. Finally, fathers with higher education reported lower levels of paternal responsibility and spend less time in household tasks with their children.

This study found that fathers' motivation was the most important key of high father involvement. More specifically, the frequency of fathers' participation in children's after-school activities was the strongest predictor, and fathers' perception of father's role was the second strongest predictor. In McBride and his colleagues' study (2004), fathers' perception of father's role was the most consistent and strongest individual determinant of father involvement. In addition, both the current study and the previous study found that fathers who experienced more interparental conflict regarding child raising issue showed more father involvement. The possible reason may be that a father who is more involved in child care has greater opportunities for him to compare his parenting with mother's. This may cause more disagreements about child raising issues with the mother. In contrast to previous study, the results of this current study showed that father's monthly working hours, father's age, mother's age, and father's education

were significant factors of father involvement. These findings are consistent with a past study of factors associated with fathers' caregiving activities and sensitivity with young children which found that fathers who were older had more sensitivity during play interactions, and younger mothers were associated with greater paternal caregiving activities (NICHD Early Child Care Research Network, 2000). The variable of Interparental disagreements about general life goals was not significantly related to any form of father involvement, whereas it was associated with father/child household-centered activities, father/child child-centered activities, and paternal monitoring in McBride and his colleagues' study (2004). The variable of father's beliefs about father role was positively related to father's warmth and affection in this current study. Conversely, the previous study indicated that father's perception of father role was negatively associated with father's warmth and affection. Even though higher level of father and mother's neighborhood involvement related to higher level of paternal monitoring in this study, the reverse was true in the previous study. Several results differed from McBride and his colleagues' study (2004) possibly due to no control of ethnic groups in this current study and children's age. Additionally, few questions being used in this study are different from the previous study.

In addition, this study compared two different kinds of coding from paternal responsibility (see p.37). Fathers who had more self-efficacy, less neighborhood involvement, less social support, more interparental conflict, and lower education level tended to involved in child-related management tasks without sharing with other household members. The results from focusing on fathers' involvement only can reflect what is the real strongest factor that increases more father involvement. When including

sharing part as father involvement, it is not clear to show whether fathers often participated in those activities. Fathers might occasionally or rarely do those tasks which were often done by other household members.

The second subject of the current study was to explore the possible moderation of childhood chronic conditions on association between five aspects of factors and five kinds of father involvement activities. When childhood chronic conditions were treated as a dichotomous variable (children with chronic conditions and children without chronic conditions), five relationships between predictors and father involvement activities were affected by childhood chronic conditions. Children without chronic condition experienced more warmth and affection from fathers than children with chronic condition as their fathers increased participation in their children's after-school activities and neighborhood involvement. When fathers of children without chronic condition received more support from others, they were more likely to participate in household-centered activities with their children. Children with chronic condition received lower level of paternal monitoring when their fathers reported higher level of interparental conflict about general goals and worked longer hours in paid employment. Older fathers of children with chronic conditions were likely to show lower level of monitoring than older fathers of children without chronic conditions. Overall, children without chronic conditions experienced more father involvement than children with chronic conditions.

In testing interactions between different level of seriousness of childhood chronic conditions and predictive factors, three predictive factors were found to interact with the moderator variable. The patterns of these results are complex, and further research is needed to explain these findings.

Conclusions

As Lamb and his colleagues (1987) suggested, multiple factors contributed to father involvement. This study indicated that fathers' motivation is the most consistent variable, but motivation for involvements is not the only determination, and individual involvement varies depending on social circumstances and resources. Fathers who have high motivation, less parenting stress, high self-esteem, and fewer working hours are more likely to be involved in child care. Even though some variables are not significant predisposing characteristics in this study, those characteristics still have possible influences on father involvement. For instance, one study reported that fathers spent more times in play and companionship activities with their older sons (Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). According to Pleck (1997), "the specific factors that act cumulatively or interactively to influence paternal involvement probably vary, perhaps substantially, in different ecological contexts" (p.102).

The second question in this study was to examine the possible interaction between childhood chronic conditions (the moderator variable) and individual factors in different forms of father involvement activities. When comparing children without chronic conditions and with chronic conditions, four of six significant interactions showed that children without chronic conditions often received higher father involvement than children with chronic conditions. The study also intended to explore the possible influence of four levels of seriousness and found only three interactions were significant. Unfortunately, these three interactions did not provide enough information to understand the influence of four levels of seriousness on father involvement activities.

Limitations

There are some limitations in the current study. First, this study only focuses on resident biological fathers, stepfathers or other father figures, exclusive of nonresident biological fathers. The response rate for nonresident biological fathers is low, and several variables in questionnaires for nonresident biological fathers are different from variables for resident biological fathers, stepfathers or other father figures. Second, this study does not reflect how chronic heath conditions affect the children and the fathers' life experiences. Some children with chronic heath conditions may have more serious disabilities than others. For example, some children have multiple disabilities. Studies showed that parents of children with cancer reported higher levels of posttraumatic stress symptoms and general distress compared with parents of children with diabetes mellitus (Hung, Wu, & Yeh, 2004; Fuemmeler, Mullins, Pelt, Carpentier, & Parkhurst, 2005). Life threatening chronic illnesses may have more significant effect on father involvement activities than non-life threatening chronic illnesses. A third limitation to this study is that some information about fathers' activities with children is drawn from mothers' reports. As a result, there may be some questions regarding the reliability and validity of the data for assessing important dimensions of father involvement (McBride et al., 2004). This study does not include children's reports regarding relationships with fathers because children interviews are only for children age 12 years and older. The child's reports about father involvement will provide valuable information and reduce potential bias in parental reports. Finally, since this study is a quantitative research, the results from the study may not be able to provide in-depth knowledge of father involvement.

Implications

This study delineates that there is no single cause that determines father's parenting behaviors. Each factor brings people closer to understanding father's parenting behaviors. These unique features have implications for research, programs supporting fathers and their children. The current study of the determinants of father involvement suggests several areas for further research: the benefits of positive paternal parenting to fathers' own developments and relationships with their children and spouses; father involvement with adult children; and father involvement among gay fathers, single fathers, and non-resident fathers. Not only does father involvement call for unique research questions, it also calls for research regarding fathers of children with special needs. Since many factors affect experiences of fathers whose children have special needs, it is difficult to generalize their involvement in the care of children with disabilities (Lamb & Billings, 1997). The current study is a quantitative research, so it cannot reflect how the health characteristics of the children affect the families and fathers' life. A small sample size study with a single type of disabilities may provide a clear picture of the determinants of father involvement among fathers of children with special needs.

Programs and supports for fathers and their children must reflect the unique needs of fathers. As examples, programs would do well to: 1) provide information reflective of father's interests when framing and marketing programs; 2) encourage the positive relationships between father and child; 3) provide knowledge to the father regarding how his involvement will benefit the child's development and help him or her to succeed; 4) include mother as well as father, focusing on aspects of their relationship, such as

communication and conflict resolution, that are relevant to the shared care of the child; 5) provide opportunities for the father to discuss his concerns and interests; 6) connect the father to other community resources and peer groups; and 7) suggest activities that will support and enhance children's development and the personal needs of the father.

APPENDICES

APPENDIX A

Research Hypotheses I

APPENDIX A

Research Hypotheses I

The research hypotheses for question 1 include:

Ho1: There is no association between parenting socialization and paternal responsibility.

Ha1: There is an association between parenting socialization and paternal responsibility.

Ho2: There is no association between parenting socialization and paternal warmth and affection toward children.

Ha2: There is an association between parenting socialization and paternal warmth and affection toward children.

Ho3: There is no association between parenting socialization and father/child house-centered activities.

Ha3: There is an association between parenting socialization and father/child house-centered activities.

Ho4: There is no association between parenting socialization and father/child child-centered activities.

Ha4: There is an association between parenting socialization and father/child child-centered activities.

Ho5: There is no association between parenting socialization and paternal monitoring.

Ha5: There is an association between parenting socialization and paternal monitoring.

Ho6: There is no association between desire for a better life for children and paternal responsibility.

Ha6: There is an association between desire for a better life for children and paternal responsibility.

Ho7: There is no association between desire for a better life for children and paternal warmth and affection toward children.

Ha7: There is an association between desire for a better life for children and paternal warmth and affection toward children.

Ho8: There is no association between desire for a better life for children and father/child house-centered activities.

Ha8: There is an association between desire for a better life for children and father/child house-centered activities.

Ho9: There is no association between desire for a better life for children and father/child child-centered activities.

Ha9: There is an association between desire for a better life for children and father/child child-centered activities.

Ho10: There is no association between desire for a better life for children and paternal monitoring.

Ha10: There is an association between desire for a better life for children and paternal monitoring.

Ho11: There is no association between beliefs about the father role and paternal responsibility.

Ha11: There is an association between beliefs about the father role and paternal responsibility.

Ho12: There is no association between beliefs about the father role and paternal warmth and affection toward children.

Ha12: There is an association between beliefs about the father role and paternal warmth and affection toward children.

Ho13: There is no association between beliefs about the father role and father/child house-centered activities.

Ha13: There is an association between beliefs about the father role and father/child house-centered activities.

Ho14: There is no association between beliefs about the father role and father/child child-centered activities.

Ha14: There is an association between beliefs about the father role and father/child child-centered activities.

Ho15: There is no association between beliefs about the father role and paternal monitoring.

Ha15: There is an association between beliefs about the father role and paternal monitoring.

Ho16: There is no association between parenting class and paternal responsibility.

Ha16: There is an association between parenting class and paternal responsibility.

Ho17: There is no association between parenting class and paternal warmth and affection toward children.

Ha17: There is an association between parenting class and paternal warmth and affection toward children.

Ho18: There is no association between parenting class and father/child house-centered activities.

Ha18: There is an association between parenting class and father/child house-centered activities.

Ho19: There is no association between parenting class and father/child child-centered activities.

Ha19: There is an association between parenting class and father/child child-centered activities.

Ho20: There is no association between parenting class and paternal monitoring.

Ha20: There is an association between parenting class and paternal monitoring.

Ho21: There is no association between parenting stress and paternal responsibility.

Ha21: There is an association between parenting stress and paternal responsibility.

Ho22: There is no association between parenting stress and paternal warmth and affection toward children.

Ha22: There is an association between parenting stress and paternal warmth and affection toward children.

Ho23: There is no association between parenting stress and father/child house-centered activities.

Ha23: There is an association between parenting stress and father/child house-centered activities.

Ho24: There is no association between parenting stress and father/child child-centered activities.

Ha24: There is an association between parenting stress and father/child child-centered activities.

Ho25: There is no association between parenting stress and paternal monitoring.

Ha25: There is an association between parenting stress and paternal monitoring.

Ho26: There is no association between paternal self-esteem and paternal responsibility.

Ha26: There is an association between paternal self-esteem and paternal responsibility.

Ho27: There is no association between paternal self-esteem and paternal warmth and affection toward children.

Ha27: There is an association between paternal self-esteem and paternal warmth and affection toward children.

Ho28: There is no association between paternal self-esteem and father/child house-centered activities.

Ha28: There is an association between paternal self-esteem and father/child house-centered activities.

Ho29: There is no association between paternal self-esteem and father/child child-centered activities.

Ha29: There is an association between paternal self-esteem and father/child child-centered activities.

Ho30: There is no association between paternal self-esteem and paternal monitoring.

Ha30: There is an association between paternal self-esteem and paternal monitoring.

Ho31: There is no association between paternal self-efficacy and paternal responsibility.

Ha31: There is an association between paternal self-efficacy and paternal responsibility.

Ho32: There is no association between paternal self-efficacy and paternal warmth and affection toward children.

Ha32: There is an association between paternal self-efficacy and paternal warmth and affection toward children.

Ho33: There is no association between paternal self-efficacy and father/child house-centered activities.

Ha33: There is an association between paternal self-efficacy and father/child house-centered activities.

Ho34: There is no association between paternal self-efficacy and father/child child-centered activities.

Ha34: There is an association between paternal self-efficacy and father/child child-centered activities.

Ho35: There is no association between paternal self-efficacy and paternal monitoring.

Ha35: There is an association between paternal self-efficacy and paternal monitoring.

Ho36: There is no association between economic strain and paternal responsibility.

Ha36: There is an association between economic strain and paternal responsibility.

Ho37: There is no association between economic strain and paternal warmth and affection toward children.

Ha37: There is an association between economic strain and paternal warmth and affection toward children.

Ho38: There is no association between economic strain and father/child house-centered activities.

Ha38: There is an association between economic strain and father/child house-centered activities.

Ho39: There is no association between economic strain and father/child child-centered activities.

Ha39: There is an association between economic strain and father/child child-centered activities.

Ho40: There is no association between economic strain and paternal monitoring.

Ha40: There is an association between economic strain and paternal monitoring.

Ho41: There is no association between neighborhood involvement and paternal responsibility.

Ha41: There is an association between neighborhood involvement and paternal responsibility.

Ho42: There is no association between neighborhood involvement and paternal warmth and affection toward children.

Ha42: There is an association between neighborhood involvement and paternal warmth and affection toward children.

Ho43: There is no association between neighborhood involvement and father/child house-centered activities.

Ha43: There is an association between neighborhood involvement and father/child house-centered activities.

Ho44: There is no association between neighborhood involvement and father/child child-centered activities.

Ha44: There is an association between neighborhood involvement and father/child child-centered activities.

Ho45: There is no association between neighborhood involvement and paternal monitoring.

Ha45: There is an association between neighborhood involvement and paternal monitoring.

Ho46: There is no association between social support and paternal responsibility.

Ha46: There is an association between social support and paternal responsibility.

Ho47: There is no association between social support and paternal warmth and affection toward children.

Ha47: There is an association between social support and paternal warmth and affection toward children.

Ho48: There is no association between social support and father/child house-centered activities.

Ha48: There is an association between social support and father/child house-centered activities.

Ho49: There is no association between social support and father/child child-centered activities.

Ha49: There is an association between social support and father/child child-centered activities.

Ho50: There is no association between social support and paternal monitoring.

Ha50: There is an association between social support and paternal monitoring.

Ho51: There is no association between mothers' attitude about father role and paternal responsibility.

Ha51: There is an association between mothers' attitude about father role and paternal responsibility.

Ho52: There is no association between mothers' attitude about father role and warmth and affection toward children.

Ha52: There is an association between mothers' attitude about father role and warmth and affection toward children.

Ho53: There is no association between mothers' attitude about father role and father/child house-centered activities.

Ha53: There is an association between mothers' attitude about father role and father/child house-centered activities.

Ho54: There is no association between mothers' attitude about father role and father/child child-centered activities.

Ha54: There is an association between mothers' attitude about father role and father/child child-centered activities.

Ho55: There is no association between mothers' attitude about father role and paternal monitoring.

Ha55: There is an association between mothers' attitude about father role and paternal monitoring.

Ho56: There is no association between interparental conflict regarding specific activities and paternal responsibility.

Ha56: There is an association between interparental conflict regarding specific activities and paternal responsibility.

Ho57: There is no association between interparental conflict regarding specific activities and paternal warmth and affection toward children.

Ha57: There is an association between interparental conflict regarding specific activities and paternal warmth and affection toward children.

Ho58: There is no association between interparental conflict regarding specific activities and father/child house-centered activities.

Ha58: There is an association between interparental conflict regarding specific activities and father/child house-centered activities.

Ho59: There is no association between interparental conflict regarding specific activities and father/child child-centered activities.

Ha59: There is an association between interparental conflict regarding specific activities and father/child child-centered activities.

Ho60: There is no association between interparental conflict regarding specific activities and paternal monitoring.

Ha60: There is an association between interparental conflict regarding specific activities and paternal monitoring.

Ho61: There is no association between interparental conflict regarding general life goals and paternal responsibility.

Ha61: There is an association between interparental conflict regarding general life goals and paternal responsibility.

Ho62: There is no association between interparental conflict regarding general life goals and paternal warmth and affection toward children.

Ha62: There is an association between interparental conflict regarding general life goals and paternal warmth and affection toward children.

Ho63: There is no association between interparental conflict regarding general life goals and father/child house-centered activities.

Ha63: There is an association between interparental conflict regarding general life goals and father/child house-centered activities.

Ho64: There is no association between interparental conflict regarding general life goals and father/child child-centered activities.

Ha64: There is an association between interparental conflict regarding general life goals and father/child child-centered activities.

Ho65: There is no association between interparental conflict regarding general life goals and paternal monitoring.

Ha65: There is an association between interparental conflict regarding general life goals and paternal monitoring.

Ho66: There is no association between fathers' monthly working hours and paternal responsibility.

Ha66: There is an association between fathers' monthly working hours and paternal responsibility.

Ho67: There is no association between fathers' monthly working hours and paternal warmth and affection toward children.

Ha67: There is an association between fathers' monthly working hours and paternal warmth and affection toward children.

Ho68: There is no association between fathers' monthly working hours and father/child house-centered activities.

Ha68: There is an association between fathers' monthly working hours and father/child house-centered activities.

Ho69: There is no association between fathers' monthly working hours and father/child child-centered activities.

Ha69: There is an association between fathers' monthly working hours and father/child child-centered activities.

Ho70: There is no association between fathers' monthly working hours and paternal monitoring.

Ha70: There is an association between fathers' monthly working hours and paternal monitoring.

Ho71: There is no association between mothers' monthly working hours and paternal responsibility.

Ha71: There is an association between mothers' monthly working hours and paternal responsibility.

Ho72: There is no association between mothers' monthly working hours and paternal warmth and affection toward children.

Ha72: There is an association between mothers' monthly working hours and paternal warmth and affection toward children.

Ho73: There is no association between mothers' monthly working hours and father/child house-centered activities.

Ha73: There is an association between mothers' monthly working hours and father/child house-centered activities.

Ho74: There is no association between mothers' monthly working hours and father/child child-centered activities.

Ha74: There is an association between mothers' monthly working hours and father/child child-centered activities.

Ho75: There is no association between mothers' monthly working hours and paternal monitoring.

Ha75: There is an association between mothers' monthly working hours and paternal monitoring.

Ho76: There is no association between child sex and paternal responsibility.

Ha76: There is an association between child sex and paternal responsibility.

Ho77: There is no association between child sex and paternal warmth and affection toward children.

Ha77: There is an association between child sex and paternal warmth and affection toward children.

Ho78: There is no association between child sex and father/child house-centered activities.

Ha78: There is an association between child sex and father/child house-centered activities.

Ho79: There is no association between child sex and father/child child-centered activities.

Ha79: There is an association between child sex and father/child child-centered activities.

Ho80: There is no association between child sex and paternal monitoring.

Ha80: There is an association between child sex and paternal monitoring.

Ho81: There is no association between child age and paternal responsibility.

Ha81: There is an association between child age and paternal responsibility.

Ho82: There is no association between child age and paternal warmth and affection toward children.

Ha82: There is an association between child age and paternal warmth and affection toward children.

Ho83: There is no association between child age and father/child house-centered activities.

Ha83: There is an association between child age and father/child house-centered activities.

Ho84: There is no association between child age and father/child child-centered activities.

Ha84: There is an association between child age and father/child child-centered activities.

Ho85: There is no association between child age and paternal monitoring.

Ha85: There is an association between child age and paternal monitoring.

Ho86: There is no association between number of sibling living with the child and paternal responsibility.

Ha86: There is an association between number of sibling living with the child and paternal responsibility.

Ho87: There is no association between number of sibling living with the child and paternal warmth and affection toward children.

Ha87: There is an association between number of sibling living with the child and paternal warmth and affection toward children.

Ho88: There is no association between number of sibling living with the child and father/child house-centered activities.

Ha88: There is an association between number of sibling living with the child and father/child house-centered activities.

Ho89: There is no association between number of sibling living with the child and father/child child-centered activities.

Ha89: There is an association between number of sibling living with the child and father/child child-centered activities.

Ho90: There is no association between number of sibling living with the child and paternal monitoring.

Ha90: There is an association between number of sibling living with the child and paternal monitoring.

Ho91: There is no association between father's age and paternal responsibility.

Ha91: There is an association between father's age and paternal responsibility.

Ho92: There is no association between father's age and paternal warmth and affection toward children.

Ha92: There is an association between father's age and paternal warmth and affection toward children.

Ho93: There is no association between father's age and father/child house-centered activities.

Ha93: There is an association between father's age and father/child house-centered activities.

Ho94: There is no association between father's age and father/child child-centered activities.

Ha94: There is an association between father's age and father/child child-centered activities.

Ho95: There is no association between father's age and paternal monitoring.

Ha95: There is an association between father's age and paternal monitoring.

Ho96: There is no association between mother's age and paternal responsibility.

Ha96: There is an association between mother's age and paternal responsibility.

Ho97: There is no association between mother's age and paternal warmth and affection toward children.

Ha97: There is an association between mother's age and paternal warmth and affection toward children.

Ho98: There is no association between mother's age and father/child house-centered activities.

Ha98: There is an association between mother's age and father/child house-centered activities.

Ho99: There is no association between mother's age and father/child child-centered activities.

Ha99: There is an association between mother's age and father/child child-centered activities.

Ho100: There is no association between mother's age and paternal monitoring.

Ha100: There is an association between mother's age and paternal monitoring.

Ho101: There is no association between father's education and paternal responsibility.

Ha101: There is an association between father's education and paternal responsibility.

Ho102: There is no association between father's education and paternal warmth and affection toward children.

Ha102: There is an association between father's education and paternal warmth and affection toward children.

Ho103: There is no association between father's education and father/child house-centered activities.

Ha103: There is an association between father's education and father/child house-centered activities.

Ho104: There is no association between father's education and father/child child-centered activities.

Ha104: There is an association between father's education and father/child child-centered activities.

Ho105: There is no association between father's education and paternal monitoring.

Ha105: There is an association between father's education and paternal monitoring.

Ho106: There is no association between mother's education and paternal responsibility.

Ha106: There is an association between mother's education and paternal responsibility.

Ho107: There is no association between mother's education and paternal warmth and affection toward children.

Ha107: There is an association between mother's education and paternal warmth and affection toward children.

Ho108: There is no association between mother's education and father/child house-centered activities.

Ha108: There is an association between mother's education and father/child house-centered activities.

Ho109: There is no association between mother's education and father/child child-centered activities.

Ha109: There is an association between mother's education and father/child child-centered activities.

Ho110: There is no association between mother's education and paternal monitoring.

Ha110: There is an association between mother's education and paternal monitoring.

APPENDIX B

Research Hypotheses II

APPENDIX B

Research Hypotheses II

The research hypotheses for question 2 include:

Ho111: Childhood chronic conditions have no effect on the relationship between parenting socialization and paternal responsibility.

Ha111: Childhood chronic conditions have effects on the relationship between parenting socialization and paternal responsibility.

Ho112: Childhood chronic conditions have no effect on the relationship between parenting socialization and paternal warmth and affection toward children.

Ha112: Childhood chronic conditions have effects on the relationship between parenting socialization and paternal warmth and affection toward children.

Ho113: Childhood chronic conditions have no effect on the relationship between parenting socialization and father/child house-centered activities.

Ha113: Childhood chronic conditions have effects on the relationship between parenting socialization and father/child house-centered activities.

Ho114: Childhood chronic conditions have no effect on the relationship between parenting socialization and father/child child-centered activities.

Ha114: Childhood chronic conditions have effects on the relationship between parenting socialization and father/child child-centered activities.

Ho115: Childhood chronic conditions have no effect on the relationship between parenting socialization and paternal monitoring.

Ha115: Childhood chronic conditions have effects on the relationship between parenting socialization and paternal monitoring.

Ho116: Childhood chronic conditions have no effect on the relationship between desire for a better life for children and paternal responsibility.

Ha116: Childhood chronic conditions have effects on the relationship between desire for a better life for children and paternal responsibility.

Ho117: Childhood chronic conditions have no effect on the relationship between desire for a better life for children and paternal warmth and affection toward children.

Ha117: Childhood chronic conditions have effects on the relationship between desire for a better life for children and paternal warmth and affection toward children.

Ho118: Childhood chronic conditions have no effect on the relationship between desire for a better life for children and father/child house-centered activities.

Ha118: Childhood chronic conditions have effects on the relationship between desire for a better life for children and father/child house-centered activities.

Ho119: Childhood chronic conditions have no effect on the relationship between desire for a better life for children and father/child child-centered activities.

Ha119: Childhood chronic conditions have effects on the relationship between desire for a better life for children and father/child child-centered activities.

Ho120: Childhood chronic conditions have no effect on the relationship between desire for a better life for children and paternal monitoring.

Ha120: Childhood chronic conditions have effects on the relationship between desire for a better life for children and paternal monitoring.

Ho121: Childhood chronic conditions have no effect on the relationship between beliefs about the father role and paternal responsibility.

Ha121: Childhood chronic conditions have effects on the relationship between beliefs about the father role and paternal responsibility.

Ho122: Childhood chronic conditions have no effect on the relationship between beliefs about the father role and paternal warmth and affection toward children.

Ha122: Childhood chronic conditions have effects on the relationship between beliefs about the father role and paternal warmth and affection toward children.

Ho123: Childhood chronic conditions have no effect on the relationship between beliefs about the father role and father/child house-centered activities.

Ha123: Childhood chronic conditions have effects on the relationship between beliefs about the father role and father/child house-centered activities.

Ho124: Childhood chronic conditions have no effect on the relationship between beliefs about the father role and father/child child-centered activities.

Ha124: Childhood chronic conditions have effects on the relationship between beliefs about the father role and father/child child-centered activities.

Ho125: Childhood chronic conditions have no effect on the relationship between beliefs about the father role and paternal monitoring.

Ha125: Childhood chronic conditions have effects on the relationship between beliefs about the father role and paternal monitoring.

Ho126: Childhood chronic conditions have no effect on the relationship between parenting class and paternal responsibility.

Ha126: Childhood chronic conditions have effects on the relationship between parenting class and paternal responsibility.

Ho127: Childhood chronic conditions have no effect on the relationship between parenting class and paternal warmth and affection toward children.

Ha127: Childhood chronic conditions have effects on the relationship between parenting class and paternal warmth and affection toward children.

Ho128: Childhood chronic conditions have no effect on the relationship between parenting class and father/child house-centered activities.

Ha128: Childhood chronic conditions have effects on the relationship between parenting class and father/child house-centered activities.

Ho129: Childhood chronic conditions have no effect on the relationship between parenting class and father/child child-centered activities.

Ha129: Childhood chronic conditions have effects on the relationship between parenting class and father/child child-centered activities.

Ho130: Childhood chronic conditions have no effect on the relationship between parenting class and paternal monitoring.

Ha130: Childhood chronic conditions have effects on the relationship between parenting class and paternal monitoring.

Ho131: Childhood chronic conditions have no effect on the relationship between parenting stress and paternal responsibility.

Ha131: Childhood chronic conditions have effects on the relationship between parenting stress and paternal responsibility.

Ho132: Childhood chronic conditions have no effect on the relationship between parenting stress and paternal warmth and affection toward children.

Ha132: Childhood chronic conditions have effects on the relationship between parenting stress and paternal warmth and affection toward children.

Ho133: Childhood chronic conditions have no effect on the relationship between parenting stress and father/child house-centered activities.

Ha133: Childhood chronic conditions have effects on the relationship between parenting stress and father/child house-centered activities.

Ho134: Childhood chronic conditions have no effect on the relationship between parenting stress and father/child child-centered activities.

Ha134: Childhood chronic conditions have effects on the relationship between parenting stress and father/child child-centered activities.

Ho135: Childhood chronic conditions have no effect on the relationship between parenting stress and paternal monitoring.

Ha135: Childhood chronic conditions have effects on the relationship between parenting stress and paternal monitoring.

Ho136: Childhood chronic conditions have no effect on the relationship between paternal self-esteem and paternal responsibility.

Ha136: Childhood chronic conditions have effects on the relationship between paternal self-esteem and paternal responsibility.

Ho137: Childhood chronic conditions have no effect on the relationship between paternal self-esteem and paternal warmth and affection toward children.

Ha137: Childhood chronic conditions have effects on the relationship between paternal self-esteem and paternal warmth and affection toward children.

Ho138: Childhood chronic conditions have no effect on the relationship between paternal self-esteem and father/child house-centered activities.

Ha138: Childhood chronic conditions have effects on the relationship between paternal self-esteem and father/child house-centered activities.

Ho139: Childhood chronic conditions have no effect on the relationship between paternal self-esteem and father/child child-centered activities.

Ha139: Childhood chronic conditions have effects on the relationship between paternal self-esteem and father/child child-centered activities.

Ho140: Childhood chronic conditions have no effect on the relationship between paternal self-esteem and paternal monitoring.

Ha140: Childhood chronic conditions have effects on the relationship between paternal self-esteem and paternal monitoring.

Ho141: Childhood chronic conditions have no effect on the relationship between paternal self-efficacy and paternal responsibility.

Ha141: Childhood chronic conditions have effects on the relationship between paternal self-efficacy and paternal responsibility.

Ho142: Childhood chronic conditions have no effect on the relationship between paternal self-efficacy and paternal warmth and affection toward children.

Ha142: Childhood chronic conditions have effects on the relationship between paternal self-efficacy and paternal warmth and affection toward children.

Ho143: Childhood chronic conditions have no effect on the relationship between paternal self-efficacy and father/child house-centered activities.

Ha143: Childhood chronic conditions have effects on the relationship between paternal self-efficacy and father/child house-centered activities.

Ho144: Childhood chronic conditions have no effect on the relationship between paternal self-efficacy and father/child child-centered activities.

Ha144: Childhood chronic conditions have effects on the relationship between paternal self-efficacy and father/child child-centered activities.

Ho145: Childhood chronic conditions have no effect on the relationship between paternal self-efficacy and paternal monitoring.

Ha145: Childhood chronic conditions have effects on the relationship between paternal self-efficacy and paternal monitoring.

Ho146: Childhood chronic conditions have no effect on the relationship between economic strain and paternal responsibility.

Ha146: Childhood chronic conditions have effects on the relationship between economic strain and paternal responsibility.

Ho147: Childhood chronic conditions have no effect on the relationship between economic strain and paternal warmth and affection toward children.

Ha147: Childhood chronic conditions have effects on the relationship between economic strain and paternal warmth and affection toward children.

Ho148: Childhood chronic conditions have no effect on the relationship between economic strain and father/child house-centered activities.

Ha148: Childhood chronic conditions have effects on the relationship between economic strain and father/child house-centered activities.

Ho149: Childhood chronic conditions have no effect on the relationship between economic strain and father/child child-centered activities.

Ha149: Childhood chronic conditions have effects on the relationship between economic strain and father/child child-centered activities.

Ho150: Childhood chronic conditions have no effect on the relationship between economic strain and paternal monitoring.

Ha150: Childhood chronic conditions have effects on the relationship between economic strain and paternal monitoring.

Ho151: Childhood chronic conditions have no effect on the relationship between neighborhood involvement and paternal responsibility.

Ha151: Childhood chronic conditions have effects on the relationship between neighborhood involvement and paternal responsibility.

Ho152: Childhood chronic conditions have no effect on the relationship between neighborhood involvement and paternal warmth and affection toward children.

Ha152: Childhood chronic conditions have effects on the relationship between neighborhood involvement and paternal warmth and affection toward children.

Ho153: Childhood chronic conditions have no effect on the relationship between neighborhood involvement and father/child house-centered activities.

Ha153: Childhood chronic conditions have effects on the relationship between neighborhood involvement and father/child house-centered activities.

Ho154: Childhood chronic conditions have no effect on the relationship between neighborhood involvement and father/child child-centered activities.

Ha154: Childhood chronic conditions have effects on the relationship between neighborhood involvement and father/child child-centered activities.

Ho155: Childhood chronic conditions have no effect on the relationship between neighborhood involvement and paternal monitoring.

Ha155: Childhood chronic conditions have effects on the relationship between neighborhood involvement and paternal monitoring.

Ho156: Childhood chronic conditions have no effect on the relationship between social support and paternal responsibility.

Ha156: Childhood chronic conditions have effects on the relationship between social support and paternal responsibility.

Ho157: Childhood chronic conditions have no effect on the relationship between social support and paternal warmth and affection toward children.

Ha157: Childhood chronic conditions have effects on the relationship between social support and paternal warmth and affection toward children.

Ho158: Childhood chronic conditions have no effect on the relationship between social support and father/child house-centered activities.

Ha158: Childhood chronic conditions have effects on the relationship between social support and father/child house-centered activities.

Ho159: Childhood chronic conditions have no effect on the relationship between social support and father/child child-centered activities.

Ha159: Childhood chronic conditions have effects on the relationship between social support and father/child child-centered activities.

Ho160: Childhood chronic conditions have no effect on the relationship between social support and paternal monitoring.

Ha160: Childhood chronic conditions have effects on the relationship between social support and paternal monitoring.

Ho161: Childhood chronic conditions have no effect on the relationship between mothers' attitude about father role and paternal responsibility.

Ha161: Childhood chronic conditions have effects on the relationship between mothers' attitude about father role and paternal responsibility.

Ho162: Childhood chronic conditions have no effect on the relationship between mothers' attitude about father role and warmth and affection toward children.

Ha162: Childhood chronic conditions have effects on the relationship between mothers' attitude about father role and warmth and affection toward children.

Ho163: Childhood chronic conditions have no effect on the relationship between mothers' attitude about father role and father/child house-centered activities.

Ha163: Childhood chronic conditions have effects on the relationship between mothers' attitude about father role and father/child house-centered activities.

Ho164: Childhood chronic conditions have no effect on the relationship between mothers' attitude about father role and father/child child-centered activities.

Ha164: Childhood chronic conditions have effects on the relationship between mothers' attitude about father role and father/child child-centered activities.

Ho165: Childhood chronic conditions have no effect on the relationship between mothers' attitude about father role and paternal monitoring.

Ha165: Childhood chronic conditions have effects on the relationship between mothers' attitude about father role and paternal monitoring.

Ho166: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding specific activities and paternal responsibility.

Ha166: Childhood chronic conditions have effects on the relationship between interparental conflict regarding specific activities and paternal responsibility.

Ho167: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding specific activities and paternal warmth and affection toward children.

Ha167: Childhood chronic conditions have effects on the relationship between interparental conflict regarding specific activities and paternal warmth and affection toward children.

Ho168: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding specific activities and father/child house-centered activities.

Ha168: Childhood chronic conditions have effects on the relationship between interparental conflict regarding specific activities and father/child house-centered activities.

Ho169: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding specific activities and father/child child-centered activities.

Ha169: Childhood chronic conditions have effects on the relationship between interparental conflict regarding specific activities and father/child child-centered activities.

Ho170: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding specific activities and paternal monitoring.

Ha170: Childhood chronic conditions have effects on the relationship between interparental conflict regarding specific activities and paternal monitoring.

Ho171: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding general life goals and paternal responsibility.

Ha171: Childhood chronic conditions have effects on the relationship between interparental conflict regarding general life goals and paternal responsibility.

Ho172: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding general life goals and paternal warmth and affection toward children.

Ha172: Childhood chronic conditions have effects on the relationship between interparental conflict regarding general life goals and paternal warmth and affection toward children.

Ho173: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding general life goals and father/child house-centered activities.

Ha173: Childhood chronic conditions have effects on the relationship between interparental conflict regarding general life goals and father/child house-centered activities.

Ho174: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding general life goals and father/child child-centered activities.

Ha174: Childhood chronic conditions have effects on the relationship between interparental conflict regarding general life goals and father/child child-centered activities.

Ho175: Childhood chronic conditions have no effect on the relationship between interparental conflict regarding general life goals and paternal monitoring.

Ha175: Childhood chronic conditions have effects on the relationship between interparental conflict regarding general life goals and paternal monitoring.

Ho176: Childhood chronic conditions have no effect on the relationship between fathers' monthly working hours and paternal responsibility.

Ha176: Childhood chronic conditions have effects on the relationship between fathers' monthly working hours and paternal responsibility.

Ho177: Childhood chronic conditions have no effect on the relationship between fathers' monthly working hours and paternal warmth and affection toward children.

Ha177: Childhood chronic conditions have effects on the relationship between fathers' monthly working hours and paternal warmth and affection toward children.

Ho178: Childhood chronic conditions have no effect on the relationship between fathers' monthly working hours and father/child house-centered activities.

Ha178: Childhood chronic conditions have effects on the relationship between fathers' monthly working hours and father/child house-centered activities.

Ho179: Childhood chronic conditions have no effect on the relationship between fathers' monthly working hours and father/child child-centered activities.

Ha179: Childhood chronic conditions have effects on the relationship between fathers' monthly working hours and father/child child-centered activities.

Ho180: Childhood chronic conditions have no effect on the relationship between fathers' monthly working hours and paternal monitoring.

Ha180: Childhood chronic conditions have effects on the relationship between fathers' monthly working hours and paternal monitoring.

Ho181: Childhood chronic conditions have no effect on the relationship between mothers' monthly working hours and paternal responsibility.

Ha181: Childhood chronic conditions have effects on the relationship between mothers' monthly working hours and paternal responsibility.

Ho182: Childhood chronic conditions have no effect on the relationship between mothers' monthly working hours and paternal warmth and affection toward children.

Ha182: Childhood chronic conditions have effects on the relationship between mothers' monthly working hours and paternal warmth and affection toward children.

Ho183: Childhood chronic conditions have no effect on the relationship between mothers' monthly working hours and father/child house-centered activities.

Ha183: Childhood chronic conditions have effects on the relationship between mothers' monthly working hours and father/child house-centered activities.

Ho184: Childhood chronic conditions have no effect on the relationship between mothers' monthly working hours and father/child child-centered activities.

Ha184: Childhood chronic conditions have effects on the relationship between mothers' monthly working hours and father/child child-centered activities.

Ho185: Childhood chronic conditions have no effect on the relationship between mothers' monthly working hours and paternal monitoring.

Ha185: Childhood chronic conditions have effects on the relationship between mothers' monthly working hours and paternal monitoring.

Ho186: Childhood chronic conditions have no effect on the relationship between child sex and paternal responsibility.

Ha186: Childhood chronic conditions have effects on the relationship between child sex and paternal responsibility.

Ho187: Childhood chronic conditions have no effect on the relationship between child sex and paternal warmth and affection toward children.

Ha187: Childhood chronic conditions have effects on the relationship between child sex and paternal warmth and affection toward children.

Ho188: Childhood chronic conditions have no effect on the relationship between child sex and father/child house-centered activities.

Ha188: Childhood chronic conditions have effects on the relationship between child sex and father/child house-centered activities.

Ho189: Childhood chronic conditions have no effect on the relationship between child sex and father/child child-centered activities.

Ha189: Childhood chronic conditions have effects on the relationship between child sex and father/child child-centered activities.

Ho190: Childhood chronic conditions have no effect on the relationship between child sex and paternal monitoring.

Ha190: Childhood chronic conditions have effects on the relationship between child sex and paternal monitoring.

Ho191: Childhood chronic conditions have no effect on the relationship between child age and paternal responsibility.

Ha191: Childhood chronic conditions have effects on the relationship between child age and paternal responsibility.

Ho192: Childhood chronic conditions have no effect on the relationship between child age and paternal warmth and affection toward children.

Ha192: Childhood chronic conditions have effects on the relationship between child age and paternal warmth and affection toward children.

Ho193: Childhood chronic conditions have no effect on the relationship between child age and father/child house-centered activities.

Ha193: Childhood chronic conditions have effects on the relationship between child age and father/child house-centered activities.

Ho194: Childhood chronic conditions have no effect on the relationship between child age and father/child child-centered activities.

Ha194: Childhood chronic conditions have effects on the relationship between child age and father/child child-centered activities.

Ho195: Childhood chronic conditions have no effect on the relationship between child age and paternal monitoring.

Ha195: Childhood chronic conditions have effects on the relationship between child age and paternal monitoring.

Ho196: Childhood chronic conditions have no effect on the relationship between number of sibling living with the child and paternal responsibility.

Ha196: Childhood chronic conditions have effects on the relationship between number of sibling living with the child and paternal responsibility.

Ho197: Childhood chronic conditions have no effect on the relationship between number of sibling living with the child and paternal warmth and affection toward children.

Ha197: Childhood chronic conditions have effects on the relationship between number of sibling living with the child and paternal warmth and affection toward children.

Ho198: Childhood chronic conditions have no effect on the relationship between number of sibling living with the child and father/child house-centered activities.

Ha198: Childhood chronic conditions have effects on the relationship between number of sibling living with the child and father/child house-centered activities.

Ho199: Childhood chronic conditions have no effect on the relationship between number of sibling living with the child and father/child child-centered activities.

Ha199: Childhood chronic conditions have effects on the relationship between number of sibling living with the child and father/child child-centered activities.

Ho200: Childhood chronic conditions have no effect on the relationship between number of sibling living with the child and paternal monitoring.

Ha200: Childhood chronic conditions have effects on the relationship between number of sibling living with the child and paternal monitoring.

Ho201: Childhood chronic conditions have no effect on the relationship between father's age and paternal responsibility.

Ha201: Childhood chronic conditions have effects on the relationship between father's age and paternal responsibility.

Ho202: Childhood chronic conditions have no effect on the relationship between father's age and paternal warmth and affection toward children.

Ha202: Childhood chronic conditions have effects on the relationship between father's age and paternal warmth and affection toward children.

Ho203: Childhood chronic conditions have no effect on the relationship between father's age and father/child house-centered activities.

Ha203: Childhood chronic conditions have effects on the relationship between father's age and father/child house-centered activities.

Ho204: Childhood chronic conditions have no effect on the relationship between father's age and father/child child-centered activities.

Ha204: Childhood chronic conditions have effects on the relationship between father's age and father/child child-centered activities.

Ho205: Childhood chronic conditions have no effect on the relationship between father's age and paternal monitoring.

Ha205: Childhood chronic conditions have effects on the relationship between father's age and paternal monitoring.

Ho206: Childhood chronic conditions have no effect on the relationship between mother's age and paternal responsibility.

Ha206: Childhood chronic conditions have effects on the relationship between mother's age and paternal responsibility.

Ho207: Childhood chronic conditions have no effect on the relationship between mother's age and paternal warmth and affection toward children.

Ha207: Childhood chronic conditions have effects on the relationship between mother's age and paternal warmth and affection toward children.

Ho208: Childhood chronic conditions have no effect on the relationship between mother's age and father/child house-centered activities.

Ha208: Childhood chronic conditions have effects on the relationship between mother's age and father/child house-centered activities.

Ho209: Childhood chronic conditions have no effect on the relationship between mother's age and father/child child-centered activities.

Ha209: Childhood chronic conditions have effects on the relationship between mother's age and father/child child-centered activities.

Ho210: Childhood chronic conditions have no effect on the relationship between mother's age and paternal monitoring.

Ha210: Childhood chronic conditions have effects on the relationship between mother's age and paternal monitoring.

Ho211: Childhood chronic conditions have no effect on the relationship between father's education and paternal responsibility.

Ha211: Childhood chronic conditions have effects on the relationship between father's education and paternal responsibility.

Ho212: Childhood chronic conditions have no effect on the relationship between father's education and paternal warmth and affection toward children.

Ha212: Childhood chronic conditions have effects on the relationship between father's education and paternal warmth and affection toward children.

Ho213: Childhood chronic conditions have no effect on the relationship between father's education and father/child house-centered activities.

Ha213: Childhood chronic conditions have effects on the relationship between father's education and father/child house-centered activities.

Ho214: Childhood chronic conditions have no effect on the relationship between father's education and father/child child-centered activities.

Ha214: Childhood chronic conditions have effects on the relationship between father's education and father/child child-centered activities.

Ho215: Childhood chronic conditions have no effect on the relationship between father's education and paternal monitoring.

Ha215: Childhood chronic conditions have effects on the relationship between father's education and paternal monitoring.

Ho216: Childhood chronic conditions have no effect on the relationship between mother's education and paternal responsibility.

Ha216: Childhood chronic conditions have effects on the relationship between mother's education and paternal responsibility.

Ho217: Childhood chronic conditions have no effect on the relationship between mother's education and paternal warmth and affection toward children.

Ha217: Childhood chronic conditions have effects on the relationship between mother's education and paternal warmth and affection toward children.

Ho218: Childhood chronic conditions have no effect on the relationship between mother's education and father/child house-centered activities.

Ha218: Childhood chronic conditions have effects on the relationship between mother's education and father/child house-centered activities.

Ho219: Childhood chronic conditions have no effect on the relationship between mother's education and father/child child-centered activities.

Ha219: Childhood chronic conditions have effects on the relationship between mother's education and father/child child-centered activities.

Ho220: Childhood chronic conditions have no effect on the relationship between mother's education and paternal monitoring.

Ha220: Childhood chronic conditions have effects on the relationship between mother's education and paternal monitoring.

APPENDIX C

SIRB Letter

MICHIGAN STATE
UNIVERSITY

Certification for use of an approved public data file

February 19, 2008

To: Lillian Phenice
Family and Child Ecology
13 E. Human Ecology Bldg.

Re: Certification # PD08-002

Title: Fathers involvement: Children with chronic health conditions

Thank you for submitting your certification for the use of an approved public data file. The Social Science / Behavioral / Education Institutional Review Board (SIRB) **has received and accepted your certification.**

You may conduct this research project using the approved data file until its completion without any further review from the SIRB. If your project expands to include human subjects or identifiable data from human subjects you will have to submit a complete application to SIRB.

In the future, if you wish to conduct another project, not directly related to this project, or use another approved data file not listed on this certification, please submit another certification form. This will allow you to continue your work without IRB review. In addition, the certification allows us to keep a total of all human research being performed and gives credit to you and your department in any reports or statistics.

Please use the certification number listed above on any forms submitted which relate to this project, or on any correspondence with SIRB.

Thank you for your cooperation and good luck with your research. If we can be of further assistance, please contact us at 517-355-2180 or via email at IRB@ora.msu.edu.

Sincerely,

Peter Vasilenko
Director, Human Research Protection Program

cc: Ju-Lien Ko
1800 Haslett Rd Apt Apt8
East Lansing MI 48823

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