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Individual and Family Predictors of the Caregiver Burden
of Parents Rearing a Child with Diabetes

Joan Margaret Leishman

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

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ABSTRACT

Individual and Family Predictors of the Caregiver Burden of Parents Rearing a Child with Diabetes

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Master of Science

Caregiver burden results from the stress that parents feel due to their responsibilities as a caregiver. This study was performed to analyze a proposed model of variables that predict caregiver burden of parents raising a child with type 1 diabetes, as well as determine differences in mothers' and fathers' models of caregiver burden. The predictor variables of caregiver burden were based on mothers and fathers perceptions of marital conflict, marital satisfaction, depression, child externalizing behaviors, number of children in the family, and family income. The results showed that for mothers, marital conflict, depression, and child externalizing behaviors had significant direct relationships to caregiver burden. For fathers, marital satisfaction, depression, and income had significant direct relationships to caregiver burden. The gender comparison showed a difference in the relationships of depression, marital conflict, and marital satisfaction with caregiver burden for mothers and fathers. Marital satisfaction had a stronger relationship with fathers' caregiver burden than with mothers', and marital conflict had a stronger relationship with mothers' caregiver burden than fathers' caregiver burden. Depression was significantly related to both mothers' and fathers' caregiver burden with fathers' depression having the stronger association with caregiver burden. These findings provide an increased understanding of the caregiver burden of parents who have a child with diabetes.

Keywords: caregiver burden, parental stress, depression, marital conflict, marital satisfaction, externalizing, diabetes

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Caregiver Burden in Families Raising a Child with Type I Diabetes

Stress, a little understood yet fundamental part of life, is defined as the state of changed or disturbed equilibrium. When the change in equilibrium, or stress, becomes overwhelming it can become a crisis (Boss, 1988). Families, especially parents, are particularly affected by changes producing both stress and crises. Parents constantly cope with stresses, in particular when it involves their children, and specifically when their children face disease, such as diabetes.

Diabetes is a life-threatening disease caused by the inability of the body to process food. Type 1 diabetes occurs when the body does not produce insulin—the hormone needed to properly convert food into energy (American Diabetes Association, 2007). The result of this insulin shortage is potentially extensive: heart and blood vessel disease, nerve damage, kidney damage, eye damage, foot damage, skin and mouth conditions, osteoporosis, pregnancy complications, and hearing problems (Mayo Clinic, 2009). As many as 3 million people in the United States have type 1 diabetes, with 40 children a day being newly diagnosed (Juvenile Diabetes Research Foundation International, 2009), suggesting a need for information on diabetes and how individuals and their families cope. There is also a need for more information concerning the stresses experienced by parents raising a child with diabetes.

The stresses brought about from raising children and other familial circumstances contribute to caregiver burden (Robinson, 1983). These stresses including the weight of responsibility as a result of parental obligations (Vitaliano, Russo, Young, Becker, & Maiuro, 1991), the perceived level of emotional strain, and the imposition of care giving activities on an individual's life (Savundranayagam, Hummert, & Montgomery, 2005). The caregiver burden experienced by parents raising a child with diabetes has also been called pediatric parenting

stress and refers to the child's health and the psychological and behavioral responses and adaptations to the illness (Mitchell, Hillard, Mednick, Henderson, Cogen, & Streisand, 2009).

Adaptations are required by the parents of a child with diabetes because of the specific responsibilities related to the disease, and these responsibilities may increase the parent's caregiver burden (Landolt et al., 2002). Too much caregiver burden or parenting stress is negatively associated with the welfare and life satisfaction of parents and other family members (Ostwald, Hepburn, Caron, Burns, & Mantell, 1999). Also, the theoretical framework of caregiver burden suggests that the impact of the child's illness on the parents' behavior most likely plays a role in how the child adapts to their illness (Mitchell et al., 2009). Consequently, more research is needed to clarify and possibly reduce factors related to caregiver burden (Steisand, Swift, Wickmark, Chen, & Holmes, 2005), especially for parents raising children with a chronic illness such as diabetes (Elstad, Tusiofo, Rosen, & McGarvey, 2008).

Common family features that specifically contribute, either directly or indirectly, to parenting stress and the resulting caregiver burden include child characteristics, gender, parental characteristics, and marital relationships (Abidin, 1992). Non-normative stressors experienced in a family, such as raising a child with a disability or chronic condition such as type 1 diabetes, are also a part of the family features contributing to parenting stress (Elstad et al., 2008). Past research has focused on simple relationships between variables for those caring for someone with a disability or chronic condition, rather than a more complex, natural web of variables (Raina et al., 2004). There is a need for an expanded understanding of predictors of caregiver burden and how they are related, including the direct and indirect effects of the variables.

With the predictors of caregiver burden in mind, the concentration of this study will be on both maternal and paternal caregiver burden. Mothers are generally considered when studying

caregiver burden, particularly when they have a child with diabetes, because there is a reciprocal relationship between maternal well being and family functioning (Blankfeld & Holahan, 1996). This does not, however, negate the importance of paternal caregiver burden. Therefore, both maternal and paternal caregiver burden are considered.

In this study I propose to investigate predictors of caregiver burden, focusing on mothers and fathers who are raising a child with diabetes. In the theoretical model I include child characteristics, such as child externalizing behaviors; parent characteristics, such as maternal or paternal depression; and aspects of the marital relationships, such as marital conflict and marital satisfaction, as predictors of mothers' and fathers' caregiver burden. I will investigate these relationships through the model shown in Figure 1.

Relevancy

The objective of this study is to better understand caregiver burden within a specific environment, that of a family raising a child with type 1 diabetes. There is a much research concerning the stress levels of parents raising children with general chronic illness (Quittner et al., 1998; Wiener, Vasquez, & Battles, 2001). Some literature, however, suggests parents of children with different types of chronic illnesses experience different types of stressors (Walker, Van Slyke, & Newbrough, 1992). Therefore, the use of a specialized sample allows for a better understanding of the stress or burden experienced by parents raising a child with diabetes. For example, when a child is diagnosed with diabetes, parents experience unique physical and emotional demands (Whittemore, Urban, Tamborlane, & Grey, 2003; Landolt et al., 2002). These demands include an intense feeling of constant vigilance associated with their child's diabetes as well as a profound feeling of responsibility. Parents' responsibilities may include blood glucose monitoring, meal planning, and insulin administration, among other things

(Canam, 1993). Parents may also experience feelings of fear concerning the effects of diabetes on their child, including hypoglycemia or severely low blood glucose levels (Marrero, Guare, Vandagriff, & Fineberg, 1997), as well as parents' beliefs about their inability to execute certain aspects of the diabetes regimen (Streisand et al., 2005). Parents also experience different kinds of loss when a child is diagnosed with diabetes, including the loss of freedom and flexibility (Hatton, Canam, Thorne, & Hughes, 1995). These demands produced by the disease may lead to physical or emotional problems for the parent (Sullivan-Bolyai, Deatrick, Gruppuso, Tamborlane, & Grey, 2003), such as less attachment to children, less spousal support, and poor health (Hauenstein, Marvin, Snyder, & Clarke, 1989). All of these factors may contribute to caregiver burden.

The study of caregiver burden itself is also important. Excessive caregiver burden can lead to a number of negative outcomes for parents; for example, increased caregiver burden sometimes contributes to parental drug use (Clipp & George, 1990) and child mistreatment (Jaffee, 2004). An increase in caregiver burden also has been shown to be related to a decline in the health of the individual due to the increase in chronic conditions and illnesses (Schulz, O Brain, Bookwala, & Fleissner, 1995). Beyond the individual parent, caregiver burden also can contribute to familial stress and decreased well-being of all family members (Lieberman & Fisher, 1995). Studies have shown that an increase in caregiver burden is related to an increase in poor family functioning (Streisand, Kazak, & Tercyak, 2003) and child depression (Mullins et al., 2004). Due to these and other negative effects, it is important to continue investigating these factors so that interventionists can design programs to help decrease the levels of caregiver burden.

Conceptualization and Literature Review

Theoretical Foundation

Caregiver burden results from a cumulative effect of various stress factors on parents (Webster-Stratton, 1990). Parents, generally, must perform highly complex tasks in demanding situations with little resources to help or guide them (Abidin, 1990). There are a number of theories and models that attempt to show the complexity of parenting stress and caregiver burden. One specific theory, suggested by Richard Abidin (1992), is based loosely on the parenting theory developed by Jay Belsky (1984). It depicts parents in a realistic setting, with abilities to think, plan, and set goals. A number of variables, including environmental, sociological, biological, and familial variables, are related to how parents perceive their roles. This perception is related to the amount of stress that parents feels. The stress, in turn, has an association with the way parents behaves towards their children, their environment, and others.

The model I am investigating is based on this theory. Like Abidin's model, my model examines the direct and indirect effects of numerous family variables on parental caregiver burden. Following Abidin's model, the variables that will be focused on as predictors of caregiver burden include child characteristics, parent characteristics, and marital relationships.

Variables Related to Caregiver Burden

Child Characteristics

Children's characteristics include the internalizing behaviors of children such as depressed and withdrawn behaviors (Katz & Gottman, 1993), externalizing behaviors such as aggressive, hostile, and non-compliant behaviors (Rothbaum & Weisz, 1994), the gender of the child, and other specific problems of the child, which in this study manifests as type 1 diabetes.

Children's characteristics can also include temperament, physical, or mental problems, and be connected to the caregiver burden of a parent as well.

The child's conduct or behaviors have a specific impact on parents' feelings of caregiver burden. For example, the temperament of a child, such as inhibition or shyness, affects the amount of time a parent spends with the child, increasing or decreasing the stress on the parent (McBride, Schoppe, & Rane, 2002). Caregiver burden in both parents (Bhavnagri & Parke, 1991), but specifically in mothers, also is increased if mothers perceive their children as being more socially inept (Mize, Pettit, & Brown, 1995); this perception possibly stems from the child's social inhibition (Rubin, Coplan, & Bowker, 2009). In addition, if the child has behavioral issues or conduct problems such as aggression (a behavior addressed in this study), parents are more likely to have higher levels of caregiver burden (Lecavalier, Leone, & Wiltz, 2006).

Higher levels of caregiver burden may be especially visible in parents who have a child with a chronic illness, such as type 1 diabetes (Brown et al., 1993). As already indicated, type 1 diabetes occurs when the body does not produce insulin (American Diabetes Association, 2009). This lack of insulin can be compensated for by careful control of all aspects of an individual's life—especially diet, exercise, and administering to and measuring blood glucose levels. Parents may have an increased feeling of burden if their child has diabetes, due to the regiment required for controlling the disease and living a full healthy life (Streisand et al., 2005). In addition, parents raising a child with diabetes may experience more burden due to the negative behavioral and emotional difficulties the child experiences while coping with the disease (Lewin et al., 2005). For example, some children with diabetes may be unwilling to eat proper food, which feels more stressful for parents due to the child's need to maintain proper sugar levels (Powers

et. al., 2002). Also psychological problems of the child, such as high emotional stress both of the child with diabetes, as well as a result of the disease on other members of the family, must be dealt with by the parents, which may increase the burden of those parents (Seiffge-Krenke, 2001).

Parent Characteristics

Parental depression. The parenting characteristic of depression has been shown to have a greater impact on caregiver burden than any other factor (Pinquart & Sorensen, 2003). There is evidence that parental depression is both a direct and an indirect precursor of caregiver burden (Pinquart & Sorensen, 2003; Webster–Stratton & Hammond, 1988).

Parents raising children with diabetes are at risk for depressive symptoms and other emotional stress (Streisand et al., 2008). For example, mothers of children with diabetes display an increase in depressive symptoms when their children are initially diagnosed; they then show a slight increase in those symptoms over the duration of the illness (Kovacs et al., 1990). There is also indication that fathers experience increased depressive symptoms when their child is diagnosed with diabetes (Northam, Anderson, Adler, Werther, & Warne, 1996). These symptoms could be related to grief over the loss of health within the family or to the general disturbances associated with the child's diabetes (Kovacs et al., 1990). They also may be a result of feelings of posttraumatic stress disorder (Landolt et al., 2002). Although both parents do experience stress due to their child's diabetes, fathers experience less psychological distress than mothers. For example one study found that the prevalence of posttraumatic stress disorder symptoms in mothers raising children with diabetes was 22.4% at 6 weeks, 16.3% at 6 months, and 20.4% and 12 months. Fathers, on the other hand, displayed fewer symptoms, with prevalence at 14.6% at 6 weeks, 10.4% at 6 months, and 8.3% at 12 months (Landolt, Vollrath, Laimbacher, Gnehm, &

Sennhauser, 2005). These results do show a similar decrease in posttraumatic stress symptoms for both fathers and mothers within the year, a pattern that has been observed in other research (Northan et al., 1996). Another study of parents raising children with diabetes (Streisand et al., 2008) revealed that both parent's depressive symptoms were associated with increased caregiver burden. However, fathers' symptoms of depression may be different than mothers' (Mitchell et al., 2009).

A chronic disease, such as diabetes, may also increase the child's externalizing and internalizing behavior problems, such as aggression or depression, which may disrupt the parents' depression and burden. This depression is an issue for the family in that it may result in a further disruption of the parents' ability to work or manage the family (Lewin et al., 2005) and is linked to future problems with their children. For example, McCarty and McMahon (2003) found that maternal depression was associated with later problems, including child externalizing issues, within the family environment. This relationship between child externalizing problems and depression was mediated by a number of variables: mother-child communication, the quality of the mother-child relationships, social support, and stressful life events (McCarty & McMahon, 2003). Parental depression is also a problem for families because it is negatively associated with children's quality of life and overall family functioning (Jaser, Whittemore, Ambrosino, Lindemann, & Grey, 2007; Fincham & Hall, 2005).

Gender differences in caregiver burden. Studies of families raising children with chronic illnesses have focused primarily on mothers, resulting in a lack of knowledge regarding fathers' experiences (Mednick et al., 2007). In addition, some family research indicates mothers' experience more of the responsibility of care giving for a child with disabilities than fathers (Heller, Hsieh, & Rowitz, 1997; Hooyman & Gonyea, 1995). For example, compared to fathers,

mothers of children who have disabilities spend more time providing care of the child and perceive more caregiver burden (Heller et al., 1997). When research does examine both mothers' and fathers' adjustment to raising a child with diabetes there are inconsistent results regarding which parent is more affected by the disease and which areas of the parent's life are influenced most (Dashiff, Morrison, & Rowe, 2008). There is also some research that suggests an equal balance of some of the caregiver responsibilities between fathers and mother (Friedrich, Greenberg, & Crnic, 1983; Rousey, Best, & Blacher, 1992); however, other research explores the difference in the roles that fathers and mothers play with their child with diabetes and the influences of those roles (Dashiff, et al., 2008). For example, an increase in fathers' distress contributes to poor psychological functioning in the child with diabetes although the mothers' distress did not contribute to the child's psychological functioning (Chaney et al., 1997). Also, some fathers compensate for the mother's increased burden by taking over other household task, thus increasing their own burden (Sullivan-Bolyai, Rosenbergy, & Bayard, 2006). This inconsistency, and the lack of specific information regarding burden on families raising a child with diabetes, supports the need for a comparison of predictors of fathers' and mothers' caregiver burden. (Mitchell et al., 2009).

Marital Relationships

Relationships and the issues associated with them can impact caregiver burden. This is especially true within a marital relationship since caregiver burden is related to marital conflict and lack of marital satisfaction (Buehler & Gerard, 2002). For example, Deater-Deckard and Scarr (1996) found that there was a moderating effect of marital dissatisfaction on caregiver burden. This effect was particularly strong among fathers, with more marital discord having a greater influence on parenting stress. In addition other research has shown that fathers tend to let

unhappiness in their marriages affect their parenting styles and characteristics by becoming less supportive and less engaged (Kitzmann, 2000). However, these differences in gender responses to marital dissatisfaction are generally small and outweighed by similarities between genders (Deater-Deckard & Scarr, 1996). On the other hand, in many cases both mothers and fathers are equally influenced by their marital quality. For example, one study found that lower marital quality predicted higher caregiver burden and more depression for both fathers and mothers (Kersh, Hedvat, Hauser-Cram, & Warfield, 2006).

Although Abidin (1992) hypothesizes a direct relationship between aspects of marriages and caregiver burden, many researchers consider these relationships to be indirect (Fincham & Hall, 2005). One variable that indirectly affects parenting stress is ineffective parenting, contributing to child maladjustment and subsequently, greater caregiver burden (Fincham & Hall, 2005). For example, if parents become increasingly absorbed in their marital problems, and more withdrawn, coercive, or hostile in the parenting behaviors, they may experience greater caregiver burden because of their child's maladjusted behaviors (Buehler & Gerard, 2002). Parents also become less effective and less consistent in their parenting styles (Fauber & Long, 1991). Another factor that may mediate marital satisfaction and caregiver burden is the type of parenting style that the parent uses. When a parent uses a more authoritative parenting style they are less likely to experience increased caregiver burden due to their marital dissatisfaction (Goldberg & Easterbrooks, 1984) than parents that use a permissive or authoritarian parenting style (DeVito & Hopkins, 2001). Even physiological changes in the married couple may account for the indirect effect between marital dissatisfaction and caregiver burden. For example, marital conflict or the lack of marital satisfaction is related to an individual's cortisol (or stress hormone) level (Robles, Shaffer, Malarkey, & Kiecolt-Glaser, 2006). Cortisol is released in the body in

response to stress (Taylor et al., 2008), and in high amounts it is dangerous and causes chronic stress syndrome, which has been linked to fatigue, lack of energy, irritability, hostility, weight gain, heart disease, and diabetes (McEwen, 1998). Consequently, when marital conflict occurs, parenting stress is inevitable due to a concurrent release of cortisol, potentially leading to an unhealthy situation. Therefore, whether it is ineffective parenting or the parents own physiology, there are many different variables that may play a part in an indirect relationship between marital dissatisfaction and caregiver burden.

Along with the other possible variables in the indirect pathway between marital discord and caregiver burden, depression is a possible mediator (Pinquart & Sorensen, 2003). This is because marital conflict is a high risk factor in the development of depression (Choi & Marks, 2008). For example, when marital satisfaction increases or decreases, depressive symptoms of those in the marriage simultaneously increase or decrease (Davila, Karney, Hall, & Bradbury, 2003). As shown before, depression is also a risk factor for the increase in feelings of caregiver burden (Northam et al., 1996), and especially true when parents are raising a child with diabetes (Landolt et al., 2002). Therefore, it is important to consider depression as a possible mediator between marital relationship and feelings of caregiver burden.

Theoretical Model and Hypotheses

The predictors of caregiver burden are shown in the model in Figure 1. This model includes the marital relationship variables, parental depression, and child externalizing behavior. By considering the interrelationships of these variables, the model allows for the investigation of the strength of the relationships and determines if the effects are directly and indirectly related to caregiver burden. As well, because the model is tested for both mothers and fathers, the differences in the strengths of the paths between the predictor variables and both maternal and

paternal caregiver burden can be isolated, allowing for a better understanding of the relationship of parent gender.

The following hypotheses will be tested. First (H1), as parental depression increases, the levels of parental caregiver burden will also increase. Second (H2), as child externalizing behaviors increase there will also be an increase in the levels of parental caregiver burden. Third (H3), there will be direct positive relationship between marital conflict and caregiver burden. Fourth (H4), there will be direct negative relationship between marital satisfaction and caregiver burden. Fifth (H5), an increase in marital conflict and a decrease in marital satisfaction will be associated with an increase in depression; thus, marital satisfaction and conflict will be indirectly related with caregiver burden, with parental depression serving as a mediator. Finally (H6), there will be a difference in the pattern of relationships among depression, marital conflict, marital satisfaction, and caregiver burden according to parent gender. .

In summary, in this study my focus is on child characteristics, parent characteristics, and marital relationships, and their associations with each other and with caregiver burden. The identification of significant predictors of caregiver burden will help the parents and the family - with an end goal of better care for children with diabetes.

Methods

Participants

Eighty-four mothers and fathers participated in this study, each with a child with type 1 diabetes. Participants included families with children with diabetes who were between the ages of 4 and 19. Families were recruited from volunteer participants from the diabetes management clinic at a regional medical center in a western state. Participants were also recruited at the Foundation for Children and Youth with Diabetes summer camps and through referrals.

Forty-nine families (58.3%) were raising female children. The mean age of the child with diabetes was 12.77 years ($SD = 2.89$). On average the children with diabetes had been diagnosed with type 1 diabetes for an average of 4.78 years (*Range*: 0.5 – 14.0, $SD = 3.40$). The average hemoglobin A1c level for participants in the sample was 8.24 ($SD = 1.24$). Hemoglobin A1c is a blood test that assesses how well an individual is controlling their diabetes (American Diabetes Association [ADA], 2007). The recommendation by the ADA for hemoglobin A1c levels is less than 7.00% for most children with diabetes (Qaseem et al., 2007). Information regarding other variables is found in Table 1.

Procedures

The data for this research were collected as part of a larger study concerning the adjustment of families raising a child with type 1 diabetes. After obtaining Institutional Review Board approval, a questionnaire packet was hand-delivered or mailed to families who were participating in the study. This packet included informed consent letters and a survey for fathers and for mothers. It also included a diary to be filled out by the child with diabetes. Families were given a \$25 gift card as compensation.

Measures

Self-report measures assessed the variables used in this study. Mothers and fathers completed all measures independently.

Marital conflict. The Porter-O' Leary Marital Conflict Scale (Porter & O'Leary, 1980) consists of 10 questions that assess the amount of marital conflict displayed in front of the children. Questions were based on a Likert scale anchored by 1 = "*Never*" and 5 = "*Very often*." Questions included items such as "How often have your children seen you and your

spouse/partner argue about the wife's role in the family?" and "How often do you complain to your spouse/partner about his/her personal habits in front of your children?" Mean scores were calculated for the scale; a higher score indicated higher marital conflict. The Cronbach's alpha for this scale was .78 for mothers and .81 for fathers.

Marital satisfaction. A marital satisfaction scale was constructed that included three items based on a likert scale anchored by 1 = "*Never*" and 5 = "*Very often*." The items included "How often do you and your spouse/partner compliment each other in front of your children?" and "How often do you and your spouse/partner calmly discuss something in front of your children?" Mean scores were calculated; a higher score indicated higher marital satisfaction. The Cronbach's alpha for this scale was .78 for mothers and .75 for fathers.

Depression. The Center for Epidemiological Studies Depression Scale (CES-D) assessed depression (Radloff, 1977). Twenty items were included in this scale, and each question was based on a Likert scale anchored by 1 = "*Rarely*" and 4 = "*Most or all of the time*." Sample items include "I talked less than usual," "I felt depressed," and "I felt that everything I did was an effort." Mean scores were calculated for the scale; a higher score indicated higher levels of depression. The Cronbach's alpha was .91 for mothers and .87 for fathers.

Child externalizing. Externalizing behaviors of the child with diabetes was measured using the Gresham Social Skills Rating Scale (Gresham & Elliot, 1990). Mothers rated child externalizing using a scale consisting of 5 questions that examined the outward expression of a child's externalizing behaviors. Questions were based on a Likert scale anchored by 0 = "*My child never does this behavior*" to 2 = "*My child very often does this behavior*." Questions include "(My child) gets angry easily" and "(My child) fights with others." Mean scores were

calculated; a higher score indicated higher child externalizing. The Cronbach's alpha was .73 for mothers and .78 for fathers.

Caregiver burden. The Caregiver Strain Index adapted from Robinson (1983) was used to assess caregiver burden. There were 11 items in this scale and responses were based on a Likert scale anchored by 1 = "*Rarely*" and 4 = "*Constantly*." Sample questions consisted of "I frequently feel overwhelmed at all there is to do in caring for my children," and "I frequently feel emotionally drained due to caring for my children—emotionally frazzled and worn out." Mean scores were calculated for the scale; a higher score indicated higher caregiver burden. The Cronbach's alpha was .83 for mothers and .85 for fathers.

Analysis Strategies

In SPSS, I performed preliminary analyses, including frequencies and descriptive statistics followed by a correlation of all study variables. In addition, study variables were correlated with possible confounding variables such as income, number of children in the family, the age of the child with diabetes, the number of years the child had been diagnosed with diabetes, and their average hemoglobin A1c level. Next, I used AMOS to test models for mothers and fathers that included the constructs of marital satisfaction, marital conflict, parental depression, and externalizing behaviors of the child with diabetes. I tested indirect and direct relationships between the predictor variables and caregiver burden. I also used AMOS to evaluate a multiple group comparison, with mothers as one group and fathers as another, where all of the measured components were constrained to be equal.

Results

Descriptive statistics for the five study variables are shown in Table 1. I also computed correlation coefficients for the study variables, as rated by both mothers and fathers, as well as

the control variables (Table 2). Results of the correlation analysis for mothers showed that mothers' ratings of marital conflict, depression, and child externalizing behaviors were all correlated significantly with mothers' ratings of caregiver burden, with correlations of .38 or greater. Mothers' ratings of marital satisfaction were not significantly correlated with caregiver burden. None of the control variables were significantly correlated with mothers' ratings of caregiver burden.

Fathers' ratings of depression, marital conflict, and marital satisfaction were all significantly correlated with fathers' reports of caregiver burden with correlations of .40 or greater. Only fathers' ratings of child externalizing behaviors were not correlated with fathers' caregiver burden. None of the control variables were significantly correlated with fathers' ratings of caregiver burden; however, the relationship between hemoglobin A1c and burden approached significance.

Structural Equation Models for Mothers and Fathers

I created a structural equation model to identify how marital conflict and marital satisfaction were related to depression, and how marital conflict, marital satisfaction, depression, and child externalizing behaviors were associated with caregiver burden. I also examined the relationship between child externalizing behavior and parental depression. Figure 1 shows the initial hypothesized model. I tested two separate models, one for mothers and one for fathers. Although not shown in the figure, in both initial models I also included the control variables as predictors of caregiver burden.

In the initial models, the pathway from child externalizing behaviors to depression in both the mothers' and fathers' models was not statistically significant so I removed these paths from the models. For both the mothers' and fathers' models, most of the control variables were

not significantly associated with caregiver burden, with the exception of family income which significantly predicted fathers' caregiver burden and the number of children in the family which approached being significantly related with mothers' caregiver burden. Consequently, I included only number of children and family income as control variables in both the fathers' and mothers' trimmed models.

When I tested the trimmed model for mothers, the model fit indices for the model (Figure 2) indicated a good fit of the model to the data ($\chi^2 = 5.50$, $df = 6$, $p = 0.48$, $TLI = 1.04$, $CFI = 1.00$, $RMSEA = 0.00$). All of the relationships between the variables were statistically significant, with the exception of the association between marital satisfaction and caregiver burden ($\beta = 0.13$, $p = 0.19$). Those that were significant included the relationships between mothers' caregiver burden and mothers' marital conflict ($\beta = 0.30$, $p = 0.002$), mothers' depression ($\beta = 0.39$, $p < 0.001$), and child externalizing behaviors ($\beta = 0.23$, $p = 0.02$). The other statistically significant relationships in the model included those between mothers' marital conflict and depression ($\beta = 0.30$, $p = 0.003$), mothers' marital satisfaction and depression ($\beta = -0.33$, $p = 0.001$), and mothers' depression and child externalizing behaviors ($\beta = 0.57$, $p = 0.01$). The relationship between the number of children and caregiver burden was approaching significance ($\beta = 0.20$, $p = 0.06$). All of the significant relationships in the model were positive except for that between mothers' marital satisfaction and depression.

Therefore, marital conflict and marital satisfaction were both significantly linked to depression in mothers, with increases in mothers' marital satisfaction related to decreases in depression, and increases in mothers' marital conflict associated with increases in depression. Increases in mothers' depression were related with increases in both child externalizing behaviors and caregiver burden. Higher levels of child externalizing behavior also predicted

increases in caregiver burden. Also, increases in mothers' marital conflict were related to higher levels of their caregiver burden.

The fit indices for the trimmed model for the fathers (Figure 3) indicated a good fit of the model for the data ($\chi^2 = 3.63$, $df = 9$, $p = 0.93$, $TLI = 1.26$, $CFI = 1.00$, $RMSEA = 0.00$). The only relationships that were statistically significant were those between fathers' depression and caregiver burden ($\beta = 0.59$, $p = <0.001$), fathers' marital conflict and depression ($\beta = 0.40$, $p = 0.002$), fathers' marital satisfaction and caregiver burden ($\beta = -0.23$, $p = 0.01$), and family income and fathers' caregiver burden ($\beta = 0.26$, $p = 0.001$).

Although increases in fathers' marital conflict were linked to increases in fathers' depression, decreases in fathers' marital satisfaction were not associated with fathers' depression. Increases in fathers' depression were significantly related with increases in fathers' caregiver burden, but depression was not significantly linked to child externalizing behaviors. Fathers' ratings of child externalizing behaviors were not significantly linked to fathers' caregiver burden; however, family income was significantly linked with caregiver burden.

Testing Direct and Indirect Effects

As a follow-up analysis, I then calculated the indirect and direct effects in the fathers' and mothers' models (Table 3). A Sobel Test was used to assess whether the indirect effects were significant (Preacher & Leonardelli, 2009). I first assessed the indirect effects of marital conflict and satisfaction on caregiver burden through depression. The model for mothers supports an indirect effect for marital conflict and marital satisfaction on caregiver burden through depression but the Sobel Test only supports the significance of the indirect effect through depression for marital conflict (test statistic= 2.23, $p=0.03$). The model for fathers and the Sobel Test (test statistic= 4.36, $p=<0.001$) supports an indirect effect for marital conflict on caregiver

burden through depression. Neither the model nor the Sobel test support a significant indirect effect for fathers' marital satisfaction on caregiver burden through depression.

I also assessed whether there was a direct relationship between depression and caregiver burden as well as an indirect effect between depression and caregiver burden through child externalizing behaviors for the mothers' model. The model supported both an indirect and direct effect. The Sobel Test did not confirm a significant indirect relationship between depression and caregiver burden through child externalizing behaviors for mothers.

Comparison of Mothers' and Fathers' Models

Next, I used multiple group comparisons within the same model to compare the mothers' model to the fathers' model, with the intention of identifying differences in the relationships between the variables in the two models (Figure 4). I first constrained all the pathways in both groups to be equal in order to determine if there was an overall difference in the strength of the paths. The chi-square test indicated that constraining all paths at once to be equal significantly worsened the model fit ($\Delta \chi^2 = 29.0$, $df = 12$, $p = 0.004$).

I next constrained each path separately to determine which pathways were significantly different for mothers and fathers. Chi-square difference tests were used in each case and indicated that only three pathways were significantly different across the two groups. These included the pathway of marital conflict to caregiver burden, the pathway of marital satisfaction to caregiver burden, and the pathway of depression to caregiver burden. When the pathways between marital conflict and caregiver burden were independently constrained, the chi-square difference test was statistically significant ($\Delta \chi^2 = 4.73$, $df = 1$, $p = 0.03$), indicating that mothers' caregiver burden had a stronger relationship with marital conflict than fathers' caregiver burden. When the pathways of marital satisfaction and caregiver burden were independently constrained,

the chi-square difference test was statistically significant ($\Delta \chi^2 = 6.74$, $df = 1$, $p = 0.009$), indicating that mothers' caregiver burden was not as strongly related with marital satisfaction as fathers' caregiver burden. When the pathways of depression and caregiver burden were independently constrained, the chi-square difference test was statistically significant ($\Delta \chi^2 = 5.31$, $df = 1$, $p = 0.02$). Therefore, mothers' and fathers' depression were both significantly related to their respective caregiver burdens; however fathers' depression was more strongly related to their caregiver burden than mothers' depression to their caregiver burden.

In sum, the predictor variables were related in different ways to caregiver burden for both mothers and fathers. Specifically, mothers' marital conflict was more strongly related to her caregiver burden, and fathers' marital satisfaction was more strongly related to his caregiver burden. In addition, both mothers' and fathers' caregiver burden were related to their respective feelings of depression, with fathers' caregiver burden being more strongly related to depressive symptoms than mothers'.

Discussion

The purpose of this study was to better understand the relationships among child characteristics, parent characteristics, marital relationships, and caregiver burden for parents raising a child with type 1 diabetes. The relationships between these variables and caregiver burden were represented in two separate models, one for mothers and one for fathers. These models were then analyzed to examine the direct and indirect effects of the predictors on fathers' and mothers' caregiver burden.

Mothers' caregiver burden was significantly associated with most of the predictor variables. Direct influences on caregiver burden included the mothers' depression, child externalizing behaviors, and marital conflict, with an increase in each being significantly

associated with an increase in caregiver burden. Indirect influences on mothers' caregiver burden were shown to exist between marital conflict and marital satisfaction through mothers' depression.

Family income, fathers' marital conflict, fathers' marital satisfaction, and fathers' depression each had a significant direct relationship with fathers' caregiver burden. An increase in depression, marital conflict, and family income all significantly increased fathers' caregiver burden. Marital satisfaction had a negative relationship to caregiver burden. Marital conflict was indirectly related to fathers' caregiver burden through depression.

A significant difference existed for some associations between specific predictor variables and fathers' and mothers' caregiver burden in the two models. Marital satisfaction had a stronger relationship with fathers' caregiver burden than with mothers', and marital conflict had a stronger relationship with mothers' caregiver burden than fathers' caregiver burden. Depression was significantly related to both mothers' and fathers' caregiver burden, with fathers' depression having a stronger association with their caregiver burden than mothers' depression had with their caregiver burden.

Hypothesis 1 (H1) stated that with an increase in depression there would be an increase in caregiver burden. This hypothesis was supported by the results and is also supported by past research on depression and stress (Chaney et al., 1997; Streisand et al., 2008). One explanation for this increase may be related to parents' feelings of incompetence. Some research has shown that with an increase in depression of mothers of young children, and the continuance of this depression over 6 months, there is a decrease in the competency of the mothers' ability to parent their children (Campbell, Cohn, & Meyers, 1995). Such feelings of incompetence due to increases in depression may be subsequently related to increases in caregiver burden. This

incompetence has been shown to affect fathers to the same extent as mothers (Streisand et al., 2008). The relationship between depression and caregiver burden may be related to the specific sample of parents of children with diabetes that was used (Chaney et al., 1997). This relationship may be mediated by the parents' feelings of inefficiency or incompetence, or the increased household responsibilities due to the diagnosis of diabetes (Streisand et al., 2008).

The second hypothesis (H2) stated that an increase in child externalizing behaviors would be connected to an increase in caregiver burden for both fathers and mothers. This hypothesis was only validated for mothers. Research from both the diabetes and disabilities literature may help explain this finding. For mothers of children with diabetes, externalizing behaviors may be related to caregiver burden because mothers may spend more time with the child with diabetes than fathers, and consequently, are more impacted by the child's externalizing behaviors. In contrast, fathers are less "functionally involved" than mothers in diabetes management (Dashiff et al., 2008). Functional involvement includes diabetes management tasks, such as blood glucose monitoring and insulin administration. As stated before, the responsibility of mothers in these tasks is the norm (Mednick et al., 2007). Fathers may also be excluded from care giving responsibilities by mothers, even though fathers may want to participate (Cook, 1998). As a result, fathers are perhaps less involved with the child and, therefore, less influenced by his or her behaviors.

The third hypothesis (H3) stated that there was a direct relationship between marital conflict and caregiver burden for mothers and fathers. The results, however, showed only a significant direct relationship between marital conflict and caregiver burden for mothers. A possible explanation for this relationship is the spillover theory which suggests that there is a positive or negative spillover from one familial environment to another (Jones et al., 2008). In

the case of marital relationships and caregiver burden, Erel and Burman (1995) also found that there was a significant and positive direct relationship between a marriage relationship and the caregiver burden felt by the parent, providing additional evidence for the spillover theory. Therefore, the marital relationship can be viewed as a source of negative or positive influence, with the feelings produced from the marital relationship contributing to caregiver burden (Fincham & Hall, 2005).

The absence of a significant direct pathway between marital conflict and caregiver burden for fathers may be explained by research proposing that mothers and fathers engage in different behaviors in marital conflict situations (Kerig, Cowan, & Cowan, 1993; Kaczynski et al., 2006). Fathers have been described as being less assertive and more withdrawn from their families when faced with marital conflict (Howes & Markman, 1989; Christensen & Heavey, 1990). On the other hand, mothers become more intrusive in their families when they are experiencing marital conflict (Kaczynski et al., 2006; Katz & Gottman, 1996). The combination of these different gender responses to conflict may explain the significant relationship between marital conflict and caregiver burden for mothers only.

The fourth hypothesis (H4) stated that there is a direct relationship between marital satisfaction and caregiver burden for both parents. There is, however, only a direct relationship between marital satisfaction and caregiver burden for fathers. It has been previously shown that fathering is more sensitive to the effects of the marital relationship than mothering (Howes & Markman, 1989). This sensitivity may explain the direct pathway. Confusion may arise due to the previously explained lack of a direct relationship for fathers when marital conflict is present in the relationship. However, marital conflict and marital satisfaction are separate constructs, and marital satisfaction is not necessarily the absence of dissatisfaction (Fincham & Hall, 2005).

Consequently, factors that lead to marital dissatisfaction are not the simple inverse of those that would create a satisfying relationship (Bradbury, Fincham, & Beach, 2000). All aspects of the marital relationship must be considered when defining marital satisfaction, recognizing the unique dimensions of dissatisfaction and satisfaction within the marital relationships, as well as the attributes of long-term relationships, social support, and other positive behaviors in marriage (Bradbury et al., 2000). Marital conflict, however, is the perceived conflict between those within the marital relationships based on a number of different areas including goals, wishes, expectations, and behaviors, and the results of those conflicts (Fincham & Hall, 2005). Thus, marital satisfaction and marital conflict may overlap but they are not the same construct, which may then contribute to different findings.

The direct relationship between marital satisfaction and caregiver burden for fathers can be explained by the idea that fathering is more influenced by marital quality than mothering (Belsky, Youngblade, Rovine, & Volling, 1991; Fincham & Hall, 2005). In contrast, the lack of direct relationship between marital satisfaction and mothers' caregiver burden may be explained by the compartmentalization theory, which states that it is possible to maintain a boundary between roles, specifically spousal roles and parenting roles. Therefore, feelings about marriage may be contained and consequently would not impact caregiver burden (Fincham & Hall, 2005). The fifth hypothesis (H5) predicted an indirect relationship between marital conflict and caregiver burden for fathers and mothers. This hypothesis was substantiated by the results for mothers and fathers in that there was an indirect relationship between marital conflict and caregiver burden through depression. The association between marital conflict and depression may be explained by "The Silencing the Self Model" proposed by Jack (1991) which links marital conflict to depression in women. Jack proposed that most females are highly motivated to

have conflict-free relationships and in order to do so they suppress or silence their negative feelings with the risk of increasing their risk of depression (Whiffen, Foot, & Thompson, 2007). This same effect has also been found in men (Whiffen et al., 2007).

The fifth hypothesis also suggested that a decrease in marital satisfaction would be related to increases in caregiver burden indirectly through depression. This hypothesis was substantiated for mothers but not for fathers. Both of these relationships may be bi-directional, demonstrating a possible cyclical effect that may be in play between the variables of marital satisfaction and caregiver burden (Kurdek, 1998). These relationships may be the result of a moderating influence of neuroticism related to either lack of marital satisfaction or depression (Davila, Karney, Hall, & Bradbury, 2003).

The final hypothesis (H6) proposed that there is a difference in the pattern of relationships among marital satisfaction, marital conflict, depression, and fathers' and mothers' caregiver burden, all which were supported by the results. The relationship between marital satisfaction and caregiver burden was of greater significance for fathers than for mothers. In contrast, the relationship between marital conflict and caregiver burden was of greater significance for mothers than for fathers. This difference can be explained by the research previously referred to, with fathers being more sensitive to marital relationships than mothers (Howes & Markman, 1989), and hence, a relationship between marital satisfaction and caregiver burden is observed in the fathers' model. However, fathers tend to withdraw from their families when there is marital conflict, which may explain why marital conflict has a smaller influence on fathers' caregiver burden when compared to mothers' (Christensen & Heavey, 1990; Markman & Kraft, 1989). As well, mothers tend to become more intrusive in their families when they are faced with marital conflict, which may increase caregiver burden (Katz & Gottman, 1996) and

may explain the significant relationship between marital conflict and caregiver burden for mothers. Also mothers may compensate or compartmentalize their feelings of their marital relationships from their parenting role (Fincham & Hall, 2005), which may explain the smaller influence of marital satisfaction on mothers' caregiver burden.

The results also showed that fathers' caregiver burden is more strongly related to depression than mothers' caregiver burden. This may be explained by research that focuses on family and work roles of parents and the relationship those roles have on parents' depression (Aneshensel, Frerichs, & Clark, 1981). For example, traditionally men have been expected to consider their work roles as having priority over their family roles, whereas mothers' consider the opposite to be true (Pleck, 1977). With this hypothesis in mind, it may be possible that fathers' depression becomes a mediator between family income and caregiver burden, due to the importance of family income to fathers and the influence it may have on the fathers' emotional self. If a father feels he is not earning sufficient income he may experience increased depression and caregiver burden. In more recent history, this traditional view of work and family roles has been challenged, and roles have been shown to be less defined between mothers and fathers (Duxbury & Higgins, 1991; Cinamon & Rich, 2002); however, in this study roles may be more traditional due to the small number of working mothers represented in the sample.

Limitations

These findings should be considered in the context of several limitations. First, the sample size was fairly small ($N = 84$), and those involved all lived in a somewhat small geographical area with relatively little diversity. Consequently, the results cannot be generalized to more diverse populations. Second, because the data is cross-sectional, causation cannot be presumed (Davila et al., 2003). Furthermore, bi-directionality was not assessed within this study.

The models that were tested assessed predictors of caregiver burden. It also could be possible that the direction of effects is opposite than that which was tested. Caregiver burden also may contribute to depression, marital conflict, and satisfaction, but longitudinal research is needed to assess if this is so.

Conclusion

Regardless of the limitations of this study, important conclusions can be derived from this information. The models have a good fit for the data. Thus, these results provide a solid base for a better understanding of factors related to caregiver burden and allow for a theory in which to explore future questions. By understanding these predictors more fully, better resources for the families may be put into place that will help reduce caregiver burden and increase the positive functioning of the family as a whole. These resources will be important for diabetes educators and counselors in that they will have concrete means of helping families reduce caregiver burden which may contribute to better management of a child's diabetes. With more help and better management, children will be better able to control their diabetes, with the hopes of living a longer and healthier life.

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Appendix A: Tables

Table 1

Demographic Variables

Characteristic	Fathers	Mothers
Mean Age	42.82 (<i>SD</i> = 5.38)	40.09 (<i>SD</i> = 5.30)
Mean Years of Education	15.70 (<i>SD</i> = 2.81)	14.75 (<i>SD</i> = 2.)
Mean Number of Children in the Family	3.95 (<i>SD</i> = 1.40)	3.95 (<i>SD</i> = 1.40)
Mean Hours of Work/Week	44.12 (<i>SD</i> = 12.43)	13.35 (<i>SD</i> = 15.96)
Type of Work		
Full Time	83.30%	11.90%
Part Time	2.40%	35.70%
No Work or Other Type of Work	14.30%	52.40%
Race		
Caucasian	88.10%	88.10%
Non-Caucasian	11.90%	11.90%
Income Above \$50,000	50.00%	50.00%
Marital Satisfaction	3.95 (<i>SD</i> = 0.69)	1.20 (<i>SD</i> = 0.36)
Marital Conflict	1.88 (<i>SD</i> = 0.51)	1.90 (<i>SD</i> = 0.50)
Depression	1.55 (<i>SD</i> = 0.49)	1.44 (<i>SD</i> = 0.37)
Child Externalizing Behaviors	0.57 (<i>SD</i> = 0.39)	0.60 (<i>SD</i> = 0.43)
Caregiver Burden	1.77 (<i>SD</i> = 0.48)	1.62 (<i>SD</i> = 5.38)

Table 2

Correlations of Variables

	Mothers' Caregiver Burden		Fathers' Caregiver Burden
Mothers' Depression	0.47**	Fathers' Depression	0.65**
Mothers' Marital Conflict	0.42**	Fathers' Marital Conflict	0.43**
Mothers' Marital Satisfaction	-0.14	Fathers' Marital Satisfaction	-0.40*
Mothers' Rating of Child Externalizing Behaviors	0.38*	Fathers' Rating of Child Externalizing Behaviors	0.16
Age of Children in Years	-0.19	Age of Children in Years	0.06
Family Income	-0.04	Family Income	0.15
# Years the Child Has Been Diagnosed with Diabetes	-0.05	# Years the Child Has Been Diagnosed with Diabetes	0.18
Hemoglobin A1c Averages	0.17	Hemoglobin A1c Averages	0.31
# of Children in the Family	0.06	# of Children in the Family	0.02

* $p < 0.05$ ** $p < 0.001$

Table 3

The Indirect, Direct, and Total Effects on Caregiver Burden By Predictor Variables

	Indirect Effect On Mothers' Caregiver Burden	Direct Effect On Mothers' Caregiver Burden	Total Effect On Mothers' Caregiver Burden
Mothers			
Marital Conflict	0.16	0.30	0.46
Marital Satisfaction	-0.17	0.13	-0.04
Depression	0.13	0.39	0.51
Child Externalizing Behaviors	N/A	0.23	0.23
# of Children	N/A	0.20	0.20
Family Income	N/A	0.12	0.12
	Indirect Effect On Fathers' Caregiver Burden	Direct Effect On Fathers' Caregiver Burden	Total Effect On Fathers' Caregiver Burden
Fathers			
Marital Conflict	0.24	0.09	0.33
Marital Satisfaction	0.00	-0.23	-0.23
Depression	0.01	0.59	0.60
Child Externalizing Behaviors	N/A	0.07	0.07
# of Children	N/A	0.03	0.03
Family Income	N/A	0.26	0.26

Appendix B: Figures

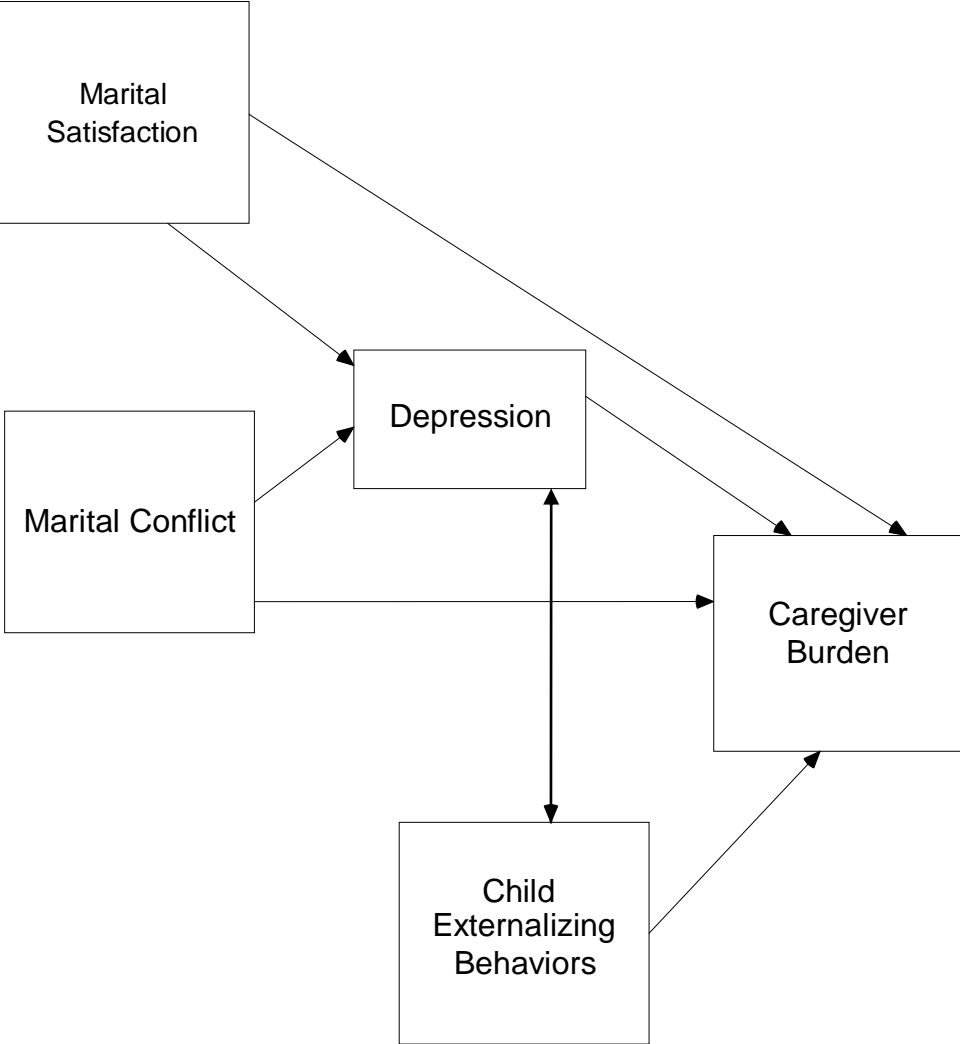


Figure 1. Hypothesized model of variables that may be related to caregiver burden.

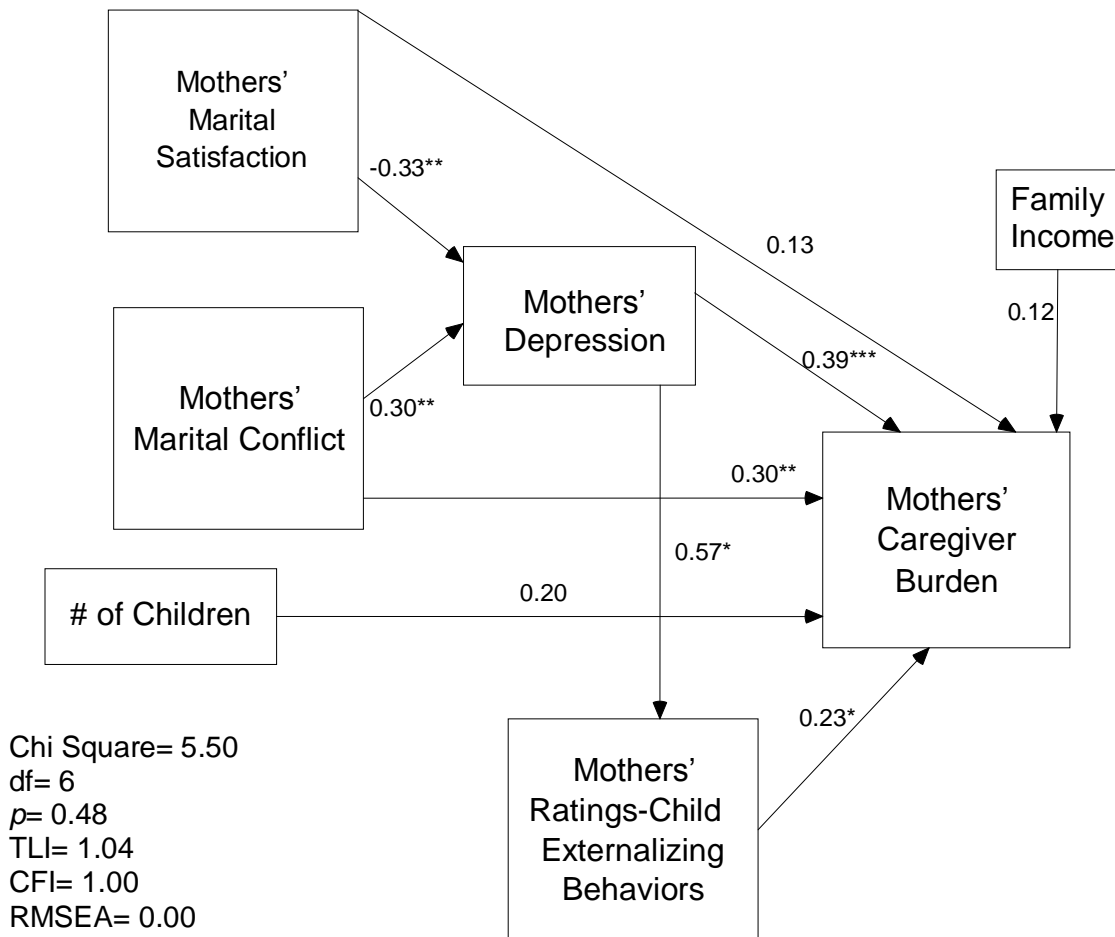


Figure 2. Predictors of mothers' caregiver burden. Note: * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

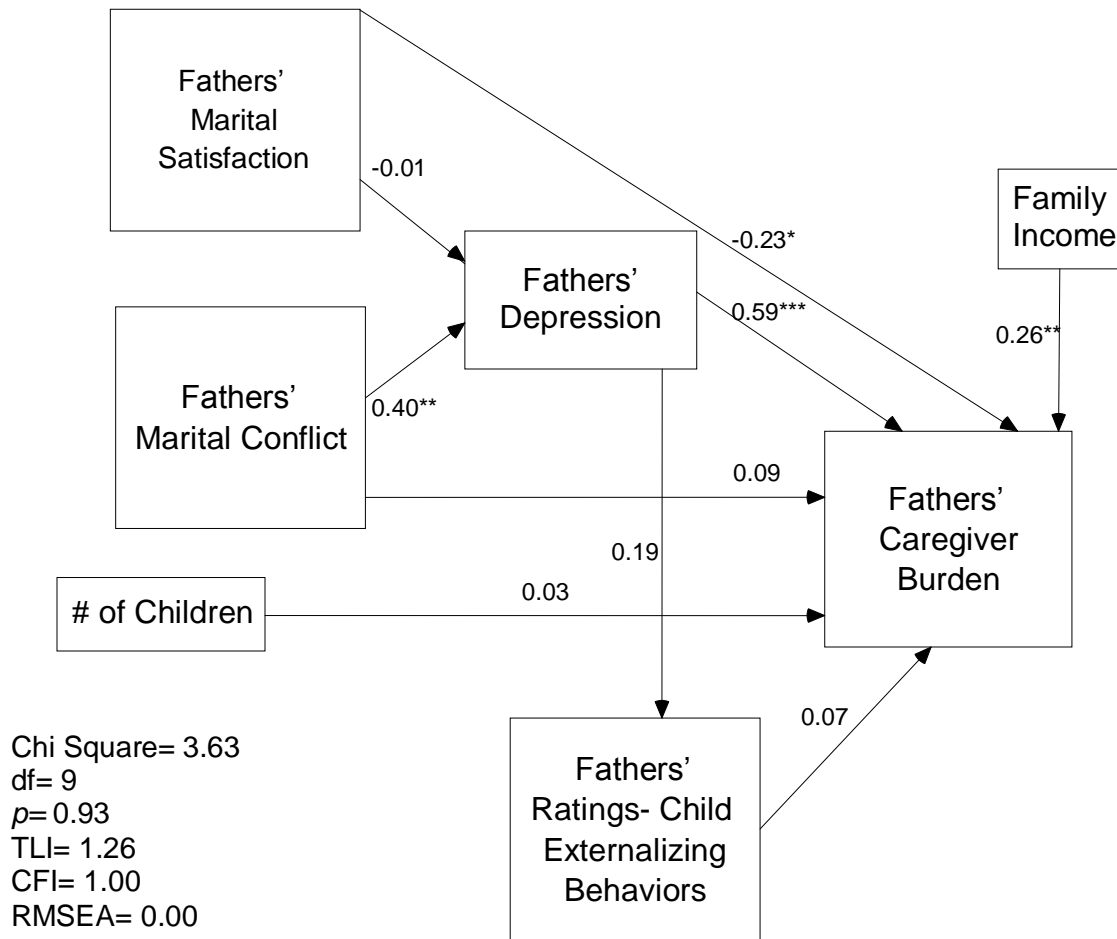
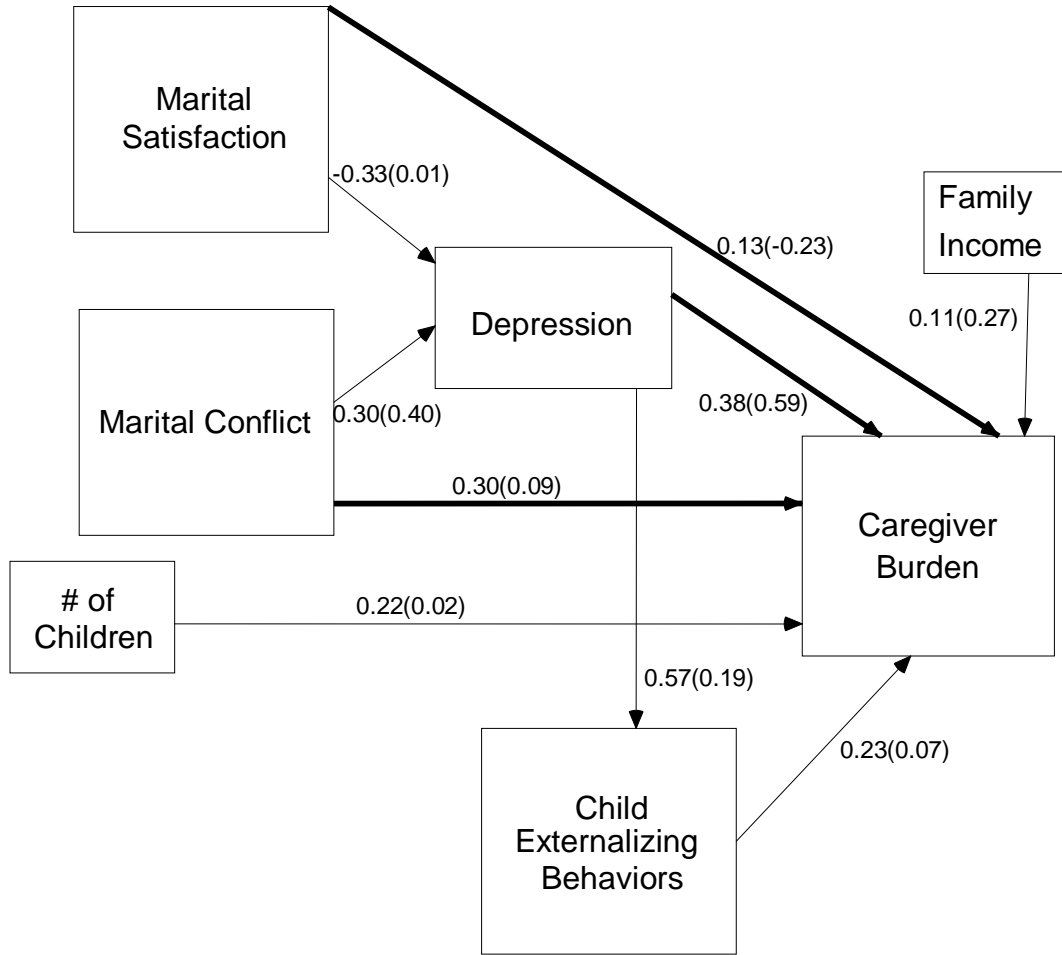


Figure 3. Predictors of fathers' caregiver burden. Note: $*p \leq 0.05$, $**p \leq 0.01$, $***p \leq 0.001$



Chi Square of Model Comparison = 29.00
 df = 12
 $p = 0.004$

Figure 4. Comparison of pathway coefficients between mothers and fathers of children with diabetes (fathers in parentheses). Note: Bolded arrows indicate relationships with significant differences between men and women when constraining all structural pathways to be equal.