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# Metabolic Control, Marital Conflict, Caregiver Burden and Psychological Control in Parents of Children with Type 1 Diabetes

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Metabolic Control, Marital Conflict, Caregiver Burden, and Psychological Control in Parents of  
Children with Type 1 Diabetes

Ann Jubber

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

### Metabolic Control, Marital Conflict, Caregiver Burden, and Psychological Control in Parents of Children with Type 1 Diabetes

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Using data from a purposive sample of 78 parents of children with type 1 diabetes, relationships were examined between the level of metabolic control of the child with diabetes (as measured by the HbA1c percentage), parents' marital conflict, caregiver burden, and use of psychological control. Also explored were family income and the education levels of mothers and fathers. Differences between mothers and fathers were also considered. Better metabolic control (lower HbA1c) was related to lower levels of fathers' caregiver burden. Marital conflict was also associated with mothers' and fathers' caregiver burden. Finally, mothers' caregiver burden predicted mothers' use of psychological control, and fathers' caregiver burden predicted fathers' use of psychological control. Fathers' paths were stronger from marital conflict to caregiver burden and from caregiver burden to psychological control than the mothers' paths. Only fathers had a significant path from HbA1c to caregiver burden.

Keywords: marital conflict, caregiver burden, psychological control, metabolic control, HbA1c, type 1 diabetes, parenting

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## Metabolic Control, Marital Conflict, Caregiver Burden, and Psychological Control in Parents of Children with Type 1 Diabetes

Diabetes is the second most common disease in children, with two out of every 1000 children affected (Botello-Harbaum, Nansel, Haynie, Iannotti & Simmons-Morton, 2008); it is the most common endocrine disease in children of school age (Sherifali, & Ciliska, & O'Mara, 2009). Poorly controlled diabetes increases the possibility of serious complications later in life such as heart disease, blindness, neuropathy, and stroke (Lowe et al., 2005). Children with diabetes (CWD) need to regulate their glucose metabolism by carefully balancing carbohydrates and insulin. The key to long-term health quality for CWD is the achievement of good metabolic control (Hema, Roper, Nehring, Call, Mandelco, & Dyches, 2009).

Achievement of good metabolic control requires parental involvement because children and adolescents are often overwhelmed by the tasks necessary to manage their diabetes. Almost half (45%) of adolescents do not adhere to their medical regimen and require assistance from parents (Grabill et al., 2010). In addition to performing management tasks for their children, parents influence how successfully CWD learn diabetes management skills and whether they acquire a positive attitude toward their diabetes (Ellis, Podolski, Frey, Narr-King, Wang, & Moltz, 2007).

Research indicates a warm and supportive parenting style is important to the health of children with diabetes (Sherifali et al., 2009). When children and adolescents perceive their parents as being critical, they are less likely to comply with disease management, which is associated with worse metabolic control (Grabill et al., 2010).

During late childhood through adolescence, poor diabetes outcomes stemming from ineffective parenting have been shown to originate from attributes in the child. Child behavior

can produce parenting that is perceived by youth as critical, which, in turn, elicits decreased adherence to diabetes management tasks, which leads to a decline in the youth's level of metabolic control. Thus, poor glycemic control can perpetuate a negative, cyclical pattern between parent and youth behaviors. This pattern is associated with further declines in adherence and metabolic control (Duke, Geffken, Lewin, Williams, Storch, & Silverstein, 2008). Further, when parenting styles include psychological control, children's ability to achieve autonomy is threatened (Barber, 1996).

Since few studies of CWD have focused on parents' use of psychological control in children (see Mullins et al., 2004 for an exception in elementary age children), the purpose of this research is to examine parents' psychological control in families raising a child or adolescent with type 1 diabetes, specifically focusing on the metabolic control of the child and family factors such as the marital conflict and caregiver burden of parents that might predict parents' use of psychological control. The relationship between child attributes, parental marital relationship and distress, and parent functioning is well established and has been studied longitudinally (Linville et al., 2010). In this study these factors are examined in the context of parents raising a CWD.

There is evidence that the type and quality of parenting styles used by parents is the result of a complex process whereby risk factors have been balanced with protective factors (Peterson, Hennon, & Knox, 2010). In this research, the CWD's health (as measured by hemoglobin A1c, an indicator of the level of metabolic control in CWD), and parental perceptions of marital conflict, and caregiver burden are explored as potential risk factors. Other factors considered are family income, parent education level,

number of years since the child was diagnosed with diabetes, number of children in the family, and parent ages. The following is a brief overview of the existing literature.

### **Theoretical Background**

This study draws from research on the spillover hypothesis, family systems theory, and family stress theory. The spillover hypothesis predicts that emotional fall-out in one aspect of the family, such as the marriage, may carry over into other aspects of the family, such as parenting (Krishnakumar, Buehler, & Barber, 2003). The spillover of stress from one or more family members to other family members can also be explained within the theoretical framework of family systems theory and stress theory (Price, Price, & McKenry, 2010). According to family systems theory, the family is composed of individuals who influence the family system, which, in turn, strives to maintain equilibrium (Lavee, McCubbin, & Patterson, 1985). Thus, marital interactions whether negative or positive, may either be risk or protective factors in parenting (Linville et al., 2010).

In families raising a CWD, the ultimate level of stress is dependent on the family's response to the diagnosis and management of the diabetes (potential stressor). The nature of caring for a CWD can be disruptive to everyday family routines (Price et al., 2010). Therefore, the diagnosis of type 1 diabetes in one family member can produce changes in the entire family system (Krishnakumar et al., 2003), increasing the likelihood of stress in parents caring for early adolescent/adolescent CWD (Streisand, Swift, Wickmark, Chen, & Holmes, 2005). Almost one third of parents of adolescent CWD are stressed by worries regarding their abilities to manage their child's diabetes and fear their child will experience hypoglycemia (Streisand et al., 2005). The way families balance risk factors, resources, and perceptions may be linked to the degree of crisis experienced by the family (Boss, 2002). This may involve

balancing risk and protective factors such as the child's level of metabolic control, the parents' marital conflict, and caregiver burden which, is a perception by parents regarding their abilities to manage their caregiving responsibilities (Lavee et al., 1985).

Parent functioning suffers when parents are under stress (Peterson et al., 2010). If the family system equilibrium is thrown off balance because parents perceive their CWD as being vulnerable, then parents of children may respond by parenting intrusively (Mullins et al., 2004). This imbalance may be associated with the use of harsh parenting styles such as psychological control (Krishnakumar et al., 2003).

### **Psychological Control**

Children can influence parenting style (Belsky, 1984). When children have type 1 diabetes, the risk of parental distress is higher than when children are healthy (Hema et al., 2009). Therefore, parents are at risk for using psychological control in their parenting when they are anxious about their CWD and consequently, are more inclined to parent intrusively by overprotecting and pampering their children (Mullins et al., 2004).

Adolescents with type 1 diabetes who assume responsibility for managing their disease most successfully are generally those whose parents used a warm but firm parenting style (Butler, Skinner, Gelfand, Berg & Wiebe, 2007). Baumrind (1991) described this "warm but firm" parenting style as an authoritative style. In addition to warmth and setting firm boundaries, parental monitoring contributes to the success parents have in helping adolescents manage their diabetes (Ellis et al., 2007). Unfortunately, not all parents engage in high levels of parental warmth and appropriate monitoring.

In contrast to using an authoritative parenting style, some parents engage in parenting actions that are characterized as psychological control. Parents exercise psychological control

over their children when they intrude into emotions and thoughts and thus inhibit children's self-development (Barber, 2002). An example of psychologically controlling behavior is a parent who makes a child feel guilty or one who will not look or speak to a child when the child and parent disagree. The use of psychological control has been associated with a coercive pattern of interaction between parents and their preadolescent children with health problems, such as spina bifida (Holmbeck et al., 2002). When these children receive parenting that is coercive, their independence and autonomy are threatened (Holmbeck et al., 2002). These negative patterns exacerbate the children's health challenges as they respond to negative parenting by noncompliance to their medical treatment in an effort to retain a sense of autonomy (Holmbeck et al., 2002). Furthermore, noncompliance in elementary-aged CWD has been associated with poor metabolic control (Davis et al., 2001).

It is important to study the use of psychological control in conjunction with the study of parenting children with diabetes because the nature of the disease itself can produce fear and hyper-vigilance in parents (Mullins et al., 2004). This fear and perceived need for constant parental involvement in disease management may be a stumbling block for parents. The stress and fear associated with parenting CWD can also make it difficult for some parents to provide appropriate support for their children without becoming overprotective and intrusive. In fact, there is a positive association between parents who view their children as vulnerable and parents who overprotect their children (Mullins et al., 2004). It may be that parents who are faced with the constant threat of hypo- or hyperglycemia are more inclined to be overprotecting and intrusive in their parenting style than parents of healthy children (Mullins et al., 2004).

**Metabolic Control (HbA1c)**

The long-term health of CWD is better when they are in good metabolic control. Therefore, in an effort to assist CWD achieve good control, health care providers monitor the CWD's average blood-glucose level over the previous three months by evaluating the glycosylated hemoglobin A1c level (HbA1c). The results of this test are expressed as a percentage and vary by age and circumstances. The general HbA1c goals recommended by the American Diabetes Association are for school age children (6-12 years) to have HbA1c levels below 8%, or 7.5% if the child is not experiencing excessive hypoglycemia. The recommendation for adolescents and young adults is to have HbA1c levels below 7.5%, but a goal of 7.0% or lower may be reasonable if it is achievable without excessive hypoglycemia (Anonymous, 2011).

The long-term health benefits of good metabolic control must be balanced against children's developmental needs as well as the risk of hypoglycemia. Some children may be overburdened by the intensive medical regimen required for good glycemic control and would benefit from a less restrictive goal until they mature sufficiently to assume more diabetes-management responsibilities. Also, young children (less than 5 years old) are more at risk for incurring permanent brain damage from severe hypoglycemic episodes than older children and adults. Further, some children may not be aware of the symptoms warning them that they are experiencing hypoglycemia. For these reasons, individual children may have different HbA1c goals than other children even though they share the same age category (Anonymous, 2011).

Maintaining optimal metabolic control requires balancing insulin requirements with exercise and diet. This process requires diligence in performing frequent, daily blood tests, counting dietary carbohydrates, and daily insulin injections (McBroom, & Enriquez, 2009).

Young CWD need help with this complicated, time-consuming process (Davis et al., 2001), and until mature enough to care for their diabetes independently, parents and other family members must provide assistance (Sullivan-Bolyai, Deatrick, Gruppuso, P., Tamborlane, & Grey, 2003). However, by the time CWD reach adolescence, they are expected to take primary responsibility for maintaining metabolic control. Thus, the long-term health of CWD is greatly affected by the quality of the parenting they receive. Parenting may influence the degree to which adolescents acquire a positive attitude toward their diabetes and how successfully they learn and practice diabetes management skills (Leonard, Jang, Savik, & Plumbo, 2005).

Parenting predicts children's level of metabolic control – this is well established in the literature (Sherifali et al., 2009). However, the bidirectional nature of this link is less studied – particularly if HbA1c levels predict parenting style (Kuppens, Grietens, Onghena, & Michiels, 2009). In this study, the relationship between HbA1c and a negative parenting style (psychological control) was explored. The focus of this study was on families with children and adolescents because parents must be involved with this age group's disease management. When parents are very involved in management of their children's diabetes, the relationship between metabolic control and parenting is strongest (Sherifali et al., 2009).

### **Marital Conflict**

Parents' marital relationship is related to the quality of their parenting, and marital conflict is negatively related to parenting (Bradford, Vaughn, & Barber, 2008). In fact, marital conflict is associated with diminished parental functioning, difficulties in children's adjustment, and predicts disrupted parenting of adolescents, including the use of psychological control (Doyle & Markiewicz, 2005). Marital conflict also is related to increases in parents' use of psychological control with young boys (Sturge-Apple, Davies, Boker, & Cummings, 2004). Daily hassles, in

addition to stress from outside the marriage, can spill over into the marital relationship and cause marital conflict (Bodenmann & Shantinath, 2004). When parents do not have sufficient positive marital interactions to meet emotional needs, they may parent in ways that threaten their children's psychological autonomy. Consequently, one or both parent(s) may satisfy their emotional needs through their children rather than their spouse. This may lead to parents' use of psychological control as they seek an inappropriate level of intimacy from their children (Belsky & Jaffee, 2006).

Managing children's diabetes is stressful for parents and can take a toll on marital satisfaction. Parents of children with health problems experience the same type of stress as parents of healthy children but at much higher levels (Pelchat et al., 2007). This stress associated with children's chronic health problems can affect the interactions within the marriage and ultimately affect parenting (Krishnakumar et al., 2003). Therefore, these parents are more likely to use psychological control in their parenting when they feel little control over other aspects of their lives.

### **Caregiver Burden**

Caregiver burden relates to the perceptions parents have regarding their parenting responsibilities and may be present when caring for children with health problems. Family outcomes are generally dependent on the family's ability to balance perceptions and resources (Yorgason, 2010). Caregiver burden can overwhelm parents to the point that they are unable to consider children's normal developmental needs (Sullivan-Bolyai et al., 2003). These stresses can disrupt parental functioning (Webster-Stratton, 1990) and interfere with the overall quality of parenting. In addition, caregiver burden may affect how well parents of CWD attend to their children's diabetes-related needs (Sullivan-Bolyai et al., 2003).

Mothers of CWD report tremendous stress and caregiver burden after their children are diagnosed with type 1 diabetes (Sullivan-Bolyai et al., 2003). In addition to the responsibilities associated with managing a serious disease, parents of CWD also have to manage the stresses of daily living or daily hassles. For example, other family members may become ill, parents may encounter employment problems, cars may need repair, or children may have problems at school. Many families face several of these normative stressors simultaneously but can become overwhelmed when too many of these daily hassles occur simultaneously (Streisand et al., 2005).

In addition to the normal duties associated with parenting, parents of CWD report feeling burdened by loss of sleep and the hassles of managing their children's disease (Sullivan-Bolyai et al., 2003). Additionally, they often have difficulties finding suitable childcare, making it difficult to obtain relief from their caregiver burden.

Past research has investigated the direct relationship between marital conflict and psychological control in families raising healthy children (Bradford, Vaughn, & Barber, 2008; Doyle & Markiewicz, 2005). However, few studies have identified potential mediators of the relationship between marital conflict and psychological control. One contribution of the current research is the investigation of caregiver burden as a possible mediator; increases in marital conflict may contribute to higher levels of caregiver burden, which in turn, might be related to increased levels of psychological control.

### **Fathers and Mothers**

Fathers differ from mothers in the ways they react to the stress of raising a child with a chronic illness (Pelchat et al., 2007). Mothers and fathers generally fill different roles in the family, and therefore, may experience different stress generated by raising a chronically ill child (Yorgason, 2010). Unfortunately, for many families with CWD, marital interactions can be

strained by confusion associated with different ways mothers and fathers react to their children's chronic health issues (Price et al., 2010).

For example, mothers of newly diagnosed children with a chronic illness such as type 1 diabetes may be at risk for post-traumatic stress syndrome (Horsch, McManus, Kennedy, & Edge, 2007). Exposure to recurring episodes of diabetes-related events may, over time, slowly become a chronic stressor for parents (Peterson et al., 2010). Thus, in addition to the trauma of initial diagnosis of type 1 diabetes in their children, mothers may also report severe distress related to the chronic aspects of their children's diabetes (Horsch et al., 2007).

In contrast, it is reported that fathers experience more marital distress than mothers when parenting children with health problems (Pelchat et al., 2007). Increased marital stress in families of children with health problems seems to negatively affect the relationship between fathers and their children, and this stress may lead to less father involvement in the caregiving process (Pelchat et al., 2007). Fathers of children with diabetes also are more likely to use psychological control when their children are in poor metabolic control (Dashiff, Morrison, & Rowe, 2008).

### **Summary**

Poor metabolic control of children and adolescents with type 1 diabetes may contribute to increased parental stress, resulting in marital conflict and caregiver burden, which may in turn be related to greater use of negative types of parenting. Consequently, in this study, relationships between potential stressors such as the level of metabolic control in CWD, the amount of marital conflict, parental perceptions of caregiver burden, and parents' use of psychological control were investigated. The number of years since the child was diagnosed with diabetes, the number of children in the family, the level of family income, mothers' and fathers' ages, and the number of

years of parents' education were included as control variables in the model because they have been related to parenting in other research (Horsch et al., 2007; Linville et al., 2010; Peterson et al., 2010; Price, et al., 2010; Sherifali et al., 2009; Stoneman, 2007).

### **Hypotheses**

Figure 1 presents the relationships between the predictor variables, HbA1c, marital conflict, and parents' caregiver burden, and the outcome variable of psychological control in parenting their CWD. The first hypothesis was that poor metabolic control of diabetes (higher levels of HbA1c) would be related to more marital conflict, increased caregiver burden, and higher levels of psychological control. The second hypothesis stated that high marital conflict would be associated with increased levels of caregiver burden and more frequent use of psychological control. The third hypothesis was that more caregiver burden would be related to more frequent use of psychological control. The fourth hypothesis posited that there would be a difference between mothers and fathers in the associations between these predictor variables and psychological control.

### **Methods**

#### **Participants**

The sample consisted of 85 children (42.4% male) with type 1 diabetes and their parents. Families were recruited from the Diabetes Management Clinic at a regional medical center, from diabetes summer camps in a western state, and through referrals. Families were recruited if they had a child with diabetes, a sibling between the ages of 8 and 18, and the parents were willing to participate.

The average age of the child with diabetes was 12.60 ( $SD = 3.26$ ) years old, and children had been diagnosed with type 1 diabetes for an average of 4.69 years ( $SD = 3.41$ ). The average

hemoglobin A1c of the CWD was 7.94 ( $SD = 1.02$ ) and the median was 7.83. There was one outlier whose hemoglobin A1c value was 3 standard deviations above the mean (11.60).

The average age of the mothers and fathers was 39.46 years ( $SD = 5.93$ ) and 42.37 years ( $SD = 5.90$ ), respectively. Mothers had completed fewer years of education ( $M = 14.71$  years;  $SD = 2.73$ ) than fathers ( $M = 15.67$  years;  $SD = 2.68$ ). While most fathers worked full-time (93.8%), 11.4% of mothers worked full time and 38.0% worked part-time. Most families were Caucasian (96%) and included two parents (93%). The average number of children in the families was 3.70, and the majority of families (63.3%) earned an income of more than \$50,000 a year.

### **Procedure**

Data collection was part of a larger study concerning the adjustment of families raising a CWD. After obtaining Institutional Review Board approval, surveys were mailed or personally delivered to parents who agreed to participate in the study. Families received a \$25 gift card as compensation. As part of the informed consent, parents agreed to allow researchers to access HbA1c levels from CWD's medical records.

### **Measures**

**Psychological control.** Mothers and fathers independently completed a 16-item adaptation of Barber's (1996) psychological control measure. The questions were based on a Likert scale ranging from 1 = *Behavior never happened* to 5 = *Behavior always happened*. Questions included items such as, '*I try to change how our child feels or thinks about things.*' Items on the instrument were summed and a mean score calculated. Higher scores indicated that parents were using higher levels of psychological control. The Cronbach's alphas for mothers' and fathers' reports of psychological control for this sample were 0.78 and 0.81, respectively.

**HbA1c measure of metabolic control.** To assess the most accurate glucose levels, results of four HbA1c blood tests drawn just prior to the beginning of the study were averaged. The higher the HbA1c level, the higher the average glucose level, indicating worse metabolic control. The average HbA1c for our sample was 8.24%, indicating less than optimal metabolic control. This was higher than the American Diabetes Association's recommendation ( $< 7.5\%$ ) for the mean age (12.77 years) of our sample (Anonymous, 2011).

**Marital conflict.** Mothers and fathers independently completed the 10-item Porter-O'Leary Scale (Porter & Leary, 1980) to assess marital conflict. Questions included items such as, 'How often do you and your spouse/partner display verbal hostility in front of your children?' and question responses ranged from 1 = *Never* to 5 = *Very Often*. Items on the scale were summed and a mean score calculated. Higher scores represented higher levels of marital conflict. In this sample, the Cronbach's alpha for fathers' ratings of marital conflict was 0.80 and for mothers was 0.79.

**Caregiver burden.** Mothers and fathers independently completed a 13-item self-report instrument regarding parental caregiver burden, an adaptation of the Caregiver Strain Index (Robinson, 1983). Parents were asked to rate themselves on how much of a hassle they felt on items related to child rearing such as "Time not my own" or "Emotionally drained" (1 = *No hassle*; 4 = *Big hassle*). Items on the measure were summed and a mean score was calculated. Higher scores indicated higher levels of hassle. Cronbach's alpha for both mothers' and fathers' caregiver burden was 0.86.

**Control variables.** Information regarding family income, parent educational levels, years since diagnosis, parents' age, and number of children in the family was obtained from a demographic survey, generally completed by the mother in the family.

### **Analysis**

Descriptive statistics, t-tests, and Pearson correlations were calculated for mothers' and fathers' ratings for the control, predictor, and criterion variables. Then hypotheses were tested using structural equation modeling (Figure 1). Data from both parents were included in the model. Associations were explored between the predictor variables (HbA1c, marital conflict, caregiver burden) and the outcome variable of psychological control. Both direct and indirect effects were tested. Family income and parental education, number of children, years since diagnosed with diabetes, and parental age, served as control variables. Nested model comparisons, where paths predicting mothers' outcomes were constrained to equal paths predicting fathers' outcomes, were used to test structural invariance.

### **Results**

Means and standard deviations were calculated for all study variables (Table 1). Variables for which both mothers and fathers provided reports were compared using paired samples t-tests. There were no significant differences between mothers' and fathers' ratings of marital conflict ( $t = .42, p = .68$ ) and psychological control ( $t = .73, p = .47$ ). Mothers rated the hassle of their caregiver burden significantly higher than fathers ( $t = 2.97, p = .004$ ).

A correlation analysis was performed to examine the bivariate relationships among the variables (Table 1). Metabolic control was positively correlated with fathers' caregiver burden ( $r = .41, p = .003$ ), and fathers' psychological control ( $r = .37, p = .008$ ), indicating that when children and adolescents were in worse metabolic control, fathers' ratings of caregiver burden

and psychological control were higher. In addition, higher levels of parental marital conflict were positively related to higher levels of mothers' caregiver burden ( $r = .22, p = .045$ ), fathers' caregiver burden ( $r = .37, p = .001$ ), and fathers' psychological control ( $r = .24, p = .036$ ). Mothers' caregiver burden was significantly associated with fathers' caregiver burden ( $r = .33, p = .005$ ), and both mothers' ( $r = .35, p = .002$ ) and fathers' psychological control ( $r = .23, p = .05$ ), whereas fathers' caregiver burden was only related to fathers' psychological control ( $r = .46, p = .001$ ). Finally, mothers' psychological control was moderately correlated with fathers' psychological control ( $r = .31, p = .009$ ). Results are in the expected directions; however, it is interesting that HbA1c was related to fathers' caregiver burden but not mothers'.

The structural equation model was analyzed using the Analysis of Moment Structures (AMOS 18) and Mplus software. Only observed variables were included in the model. Because mothers' and fathers' assessments of marital conflict were highly correlated ( $r = .59$ ), a composite variable for mothers' and fathers' marital conflict was created that was the sum of the mothers' and fathers' marital conflict scores. All exogenous variables (including the control variables) in the model were inter-correlated, and the error terms for mothers' and fathers' psychological control and mothers' and fathers' caregiver burden were also correlated to account for non-independence due to mothers and fathers being married spouses. Income was not included in the model as a predictor of psychological control because these two variables were not correlated in the bivariate correlations.

First the model shown in Figure 1 was investigated to determine whether there were significant paths among the control variables, HbA1c, marital conflict, mothers' and fathers' caregiver burden, and mothers' and fathers' reports of their use of psychological control. Both actor and partner effects were tested for caregiver burden and psychological control. The

relationship between mothers' rating of caregiver burden and her ratings of psychological control (actor effects), and the associations between mothers' ratings of caregiver burden and fathers' ratings of psychological control (partner effects) were investigated. Also tested were actor and partner effects for fathers' ratings of caregiver burden and psychological control. When the initial model was estimated, four of seven control variables (number of children, years since diagnosed with diabetes, mothers age, and fathers' age) were not significantly related to any of the study variables. Consequently, these control variables were not included in the final model.

The final model is shown in Figure 2; paths are shown with their unstandardized and standardized regression weights. Error terms and control variables have been omitted from the diagram for parsimony. Paths that were significant at the  $p < .05$  level are shown with solid lines and the paths significant at the trend level ( $p < .06$ ) are shown with dashed lines. The resulting model had an excellent fit to the data ( $\chi^2 = 1.253$ ,  $df = 2$ ,  $p = .534$ ,  $TLI = 1.222$ ,  $CFI = 1.00$ ,  $RMSEA = .000$ ).

There was a direct path from HbA1c to fathers' caregiver burden that trended toward significance ( $\beta = .14$ ,  $p = .057$ ); worse metabolic control (indicated by higher HbA1c) in children and adolescents with type 1 diabetes predicted higher levels of caregiver burden for fathers. The path from marital conflict to mothers' burden was also at a trend level ( $\beta = .26$ ,  $p = .053$ ), and the path from marital conflict to fathers' caregiver burden was the strongest path in the model ( $\beta = .34$ ,  $p = .007$ ). Thus, increases in marital conflict were associated with higher caregiver burden for both parents.

Results also indicated there were actor effects but no partner effects. The path from mothers' caregiver burden to mothers' psychological control was significant ( $\beta = .20$ ,  $p = .020$ ), indicating that the more mothers perceived caregiver burden, the more likely they were to use

psychological control in their parenting. This was also the case for fathers ( $\beta = .25, p = .041$ ). However, the standardized path from fathers' caregiver burden to fathers' psychological control was slightly stronger than that of the mothers

Structural invariance tests were performed to examine whether paths between variables differed for each parent. First estimated was whether the effect of HbA1c on caregiver burden and psychological control was different for mothers and fathers. Next estimated was whether there were differences for mothers and fathers in the relationships between marital conflict and caregiver burden, marital conflict and psychological control, and caregiver burden and psychological control. Constraining these paths to be equal for mothers and fathers did not significantly alter model fit. When comparing the constrained model to the baseline model, the model had 6 degrees of freedom and a chi-square value of 7.293 ( $p = .295$ ), indicating the constrained model was not significantly different from the baseline model. Meade (2005) has suggested that chi-square differences are often not detected in samples of less than 100. For this reason, results from the unconstrained model are reported (results from constrained models are available upon request).

To investigate whether certain variables explained the relationship between other predictors and the outcome variable (Baron & Kenny, 1986), mediation was tested. The model's indirect effects were investigated using maximum likelihood bootstrapping with a 95% confidence interval. Two thousand bootstrap samples were extracted to test the mediating relationships and obtain the bias corrected significance levels for the direct, indirect, and total effects (Shrout & Bolger, 2002). Only one indirect effect at the trend level was identified. The relationship between marital conflict and fathers' psychological control was mediated by fathers' caregiver burden at the trend level ( $\beta = 0.084, p = 0.091$ ). This is surprising because the direct

paths from marital conflict to fathers' caregiver burden and from fathers' caregiver burden to fathers' psychological control and from mothers' caregiver burden to mothers' psychological control were all significant; therefore, it appeared that there were indirect effects in the model. These non-significant indirect effects were confirmed with a Sobel test. Further research with a larger sample is needed to further explore mediation to determine if this lack of significance is not due to small sample size.

Finally, one path that included a control variable was significant. Family income was negatively related to marital conflict ( $\beta = -.09, p = .043$ ). Smaller family income was associated with more marital conflict.

### **Discussion**

The purpose of this study was to examine the relationship between the level of metabolic control in CWD, parents' marital conflict and caregiver burden, and parents' use of psychological control. Another purpose was to examine differences in the relationships between study variables for mothers and fathers.

The first hypothesis that higher levels of HbA1c (indicating worse metabolic control) would be related to more marital conflict, more caregiver burden, and higher levels of psychologically controlling parenting was partially supported. As expected, higher levels of HbA1c were also related to fathers' caregiver burden but only at the trend level. It is curious that elevated HbA1c is related to increases in fathers' caregiver burden but not mothers'. This may be because fathers experience more stress in connection to health problems in their children. Many explanations have been offered for this, such as the tradition of play between fathers and children and fathers' concern that their children's health problems may limit opportunities to play with them. Also, fathers often feel more stressed than mothers about providing for the

increased financial needs of children with health concerns (Pelchat et al., 2007). Thus, if fathers recognize that their CWD has worse metabolic control, their caregiver burden may be higher, due to anticipation of increased financial costs should the child need to become hospitalized.

The second hypothesis stated that higher levels of marital conflict would be associated with increased levels of caregiver burden and more frequent use of psychological control. This hypothesis was also partially supported. Marital conflict was associated with an increase in caregiver burden for mothers (trend level) and fathers but was not directly associated with mothers' or fathers' use of psychological control. This study did not confirm the findings of other studies linking marital conflict directly with disrupted parenting and the use of psychological control (Doyle & Markiewicz, 2005; Sturge-Apple et al., 2004). It is possible that with a larger sample size, previous findings would be replicated. Although other researchers have faced similar challenges with sample size, none have used a sample as small as this study, while also using self-reports by parents (Doyle & Markiewicz, 2005; Sturge-Apple et al., 2004). For example, due to sample size considerations, Doyle and Markiewicz (2005) analyzed their data separately with hierarchical multiple linear regressions rather than using structural equation modeling.

Another reason this study may not have found a direct relationship between marital conflict and psychological control is that both measures (marital conflict and psychological control) were self-reported. It is possible that marital conflict and psychological control were under reported since parents may be hesitant to report problems in their marriage or that they parent in a socially undesirable style. Even though the best measure of parental psychological control may be reports from children (Barber, 1996), it may be more helpful in attempting to

identify links between marital conflict and parenting to use a multi-trait, multi-method design with multiple reporters and a variety of measures (Sturge-Apple et al., 2004).

The third hypothesis that more caregiver burden would be related to more frequent use of psychological control was partially supported; there were actor but not partner effects. Increases in mothers' caregiver burden were associated with increases in mothers' use of psychological control, but mothers' caregiver burden did not predict fathers' use of psychological control. Likewise, increases in fathers' caregiver burden were associated with increases in fathers' use of psychological control but were not related to mothers' use of psychological control. This finding is consistent with the spillover hypothesis in that family stress affects parenting behavior (Krishnakumar et al., 2003). Parenting is stressful and when a transitional crisis situation is introduced into the family in addition to previously accumulated family stress, the level of family adaptation can be negatively affected (Lavee et al., 1985). Thus, when parents must simultaneously face the stress of raising a child with diabetes and the stress of marital conflict, they may perceive increased caregiver burden, which, in this study was related to more psychological control by parents. In addition, when parents feel burdened by hassles associated with parenting and conflict in their marriage relationship, they may be at greater risk for using psychological control.

Most research on parenting CWD has focused on authoritarian and authoritative parenting styles (Davis et al., 2001; Harris Mertlich, & Rothweiler, 2001; Pelaez, Field, Pickens, & Hart, 2008; Sherifali et al., 2009). This study contributes to the literature by focusing on an understudied area of parenting; only two other studies of parenting children or adolescents with diabetes that included psychological control as an independent variable were identified (Butler et al., 2007; Mullins et al., 2004). However, no studies of parenting CWD were identified that

examined psychological control as the dependent variable. The link between child characteristics and parent characteristics is bi-directional; therefore, it is crucial to study parenting CWD with this in mind (Sherifali & Ciliska, 2006).

Another contribution of this study is that caregiver burden was examined as a mediator in the relationship between marital conflict and psychological control in parents of CWD.

Previous research has examined the relationship between marital distress and parenting (Webster-Stratton, 1990), but not when mediated by caregiver burden and not in parents raising children with diabetes.

The fourth hypothesis that there would be differences between mothers and fathers in the association between predictor variables and psychological control was partially supported. The relationship between caregiver burden and psychological control was slightly stronger for fathers than mothers. There are few studies on fathers raising children with diabetes.

This study is unique in that mothers and fathers are included separately in the same model. Practices and perceptions relating to daily hassles and stresses of parenting often are different for mothers and fathers. For this reason, researchers have questioned whether previous models could apply to both parents (Sherifali & Ciliska, 2006). Previous studies examined either mothers or fathers in separate models (Butler et al., 2007) or combined mothers and fathers as parents in one model (Sherifali et al., 2009). In this study, mothers' and fathers' psychological control and caregiver burden were correlated. Even when the perceptions of mothers and fathers were examined together, there were still significant paths. The model showed significant results even after taking out the effect of the other parent.

**Limitations**

This study was limited by the small sample size and the purposive sample. A probability sample would enhance generalizability. With a larger sample size, there may be greater possibility of finding more statistical differences.

In this sample, the coefficients for fathers and mothers were slightly different but the differences were not significant. It is possible this also is related to the small sample size (Meade, 2005). Perhaps, with a larger sample, the coefficients would have varied significantly for mothers and fathers. Future research will need to determine whether these differences are found with larger samples.

**Suggestions for Further Study and Intervention**

In future studies of parenting children with diabetes, it may be beneficial to include parents raising healthy children as a control group. This would make it possible to distinguish the effects of normal parental stress from the stress of raising children with type 1 diabetes.

Interventions that target not only general parenting stress but also specific parenting styles and practices may be helpful for parents raising children with type I diabetes (Mullins et al., 2004). To this end, future studies focused on identifying marital needs and caregiver burden of parents raising CWD and that anticipate harmful parenting responses, including psychological control, in raising CWD would be most valuable.

Longitudinal studies that focus on the bi-directionality nature of child characteristics and parenting style would also enhance future intervention efforts (Linville et al., 2010). Studies with more than one time point may be helpful in predicting parenting styles based on child characteristics and designing interventions tailored to the needs of families with CWD.

Interventions should be tailored to the needs of individual families raising CWD. Specifically, interventions that address marital conflict and caregiver burden by providing respite care may be especially beneficial to parents and children. Caring for CWD is often physically and emotionally demanding. Parents may feel burdened by lack of sleep or missed social opportunities due to lack of suitable childcare. When assessing the needs of CWD and their families, parents' need for respite care should be considered. Respite care may support positive parenting by easing marital conflict and caregiver burden.

### **Conclusion**

Type 1 diabetes is a serious disease, especially in children. Although child outcomes have been examined relating to parenting (Sherifali et al., 2009), fewer studies have been done examining parent outcomes in families raising CWD. There are only a few studies where the use of psychological control in parenting children with type 1 diabetes is examined as the outcome. Relationships between metabolic control, marital conflict, caregiver burden, and the harmful parenting style of psychological control have been illuminated in this study. Increased understanding of the relationships between child and parent attributes and the quality of parenting may have an impact on the long-term health of children with diabetes. This study contributes to existing research on parenting children with diabetes. More research is needed for the development of new, effective interventions for children with diabetes and their parents.

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Table 1

*Correlations, Means, and Standard Deviations for Study Variables*

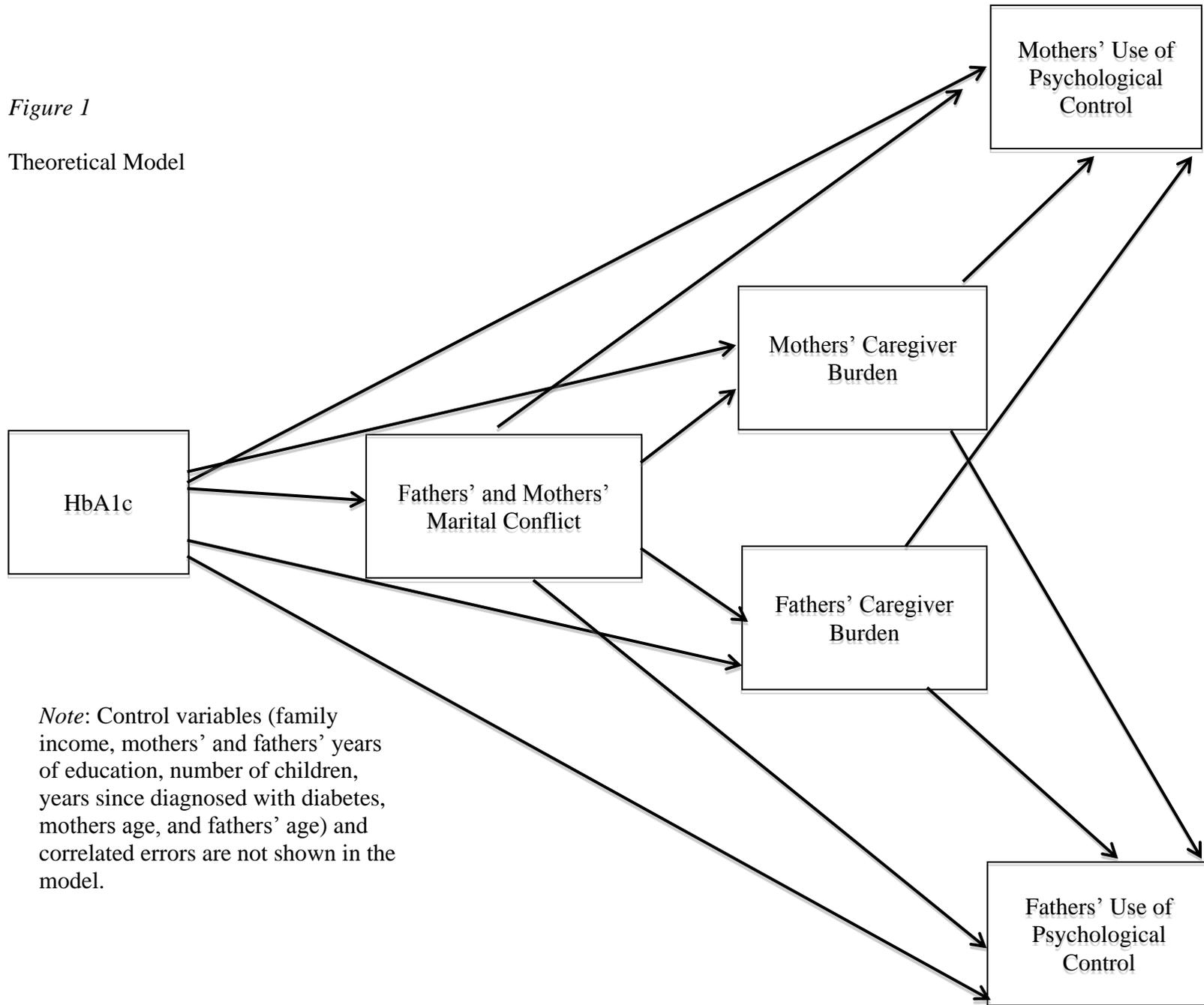
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
1. Mother's Years of Education	—	.55**	.24*	.06	-.15	-.13	.03	.14	.25*
2. Fathers Years of Education		—	.32**	-.10	-.03	.13	.10	.07	.32**
3. Family Income			—	-.02	-.25*	-.02	-.10	-.10	.06
4. Metabolic Control (HbA1c)				—	.17	.06	.41**	.13	.37**
5. Marital Conflict					—	.22*	.37**	.10	.24*
6. Mothers' Caregiver Burden						—	.33**	.35**	.23*
7. Fathers' Caregiver Burden							—	.18	.46**
8. Mothers' Use of Psychological Control								—	.31**
9. Fathers' Use of Psychological Control									—
Means	14.71	15.67	5.39	7.94	1.87	1.83	1.61	1.70	1.73
Standard Deviations	2.73	2.68	1.41	1.02	0.47	0.50	0.45	0.32	0.36

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Figure 1

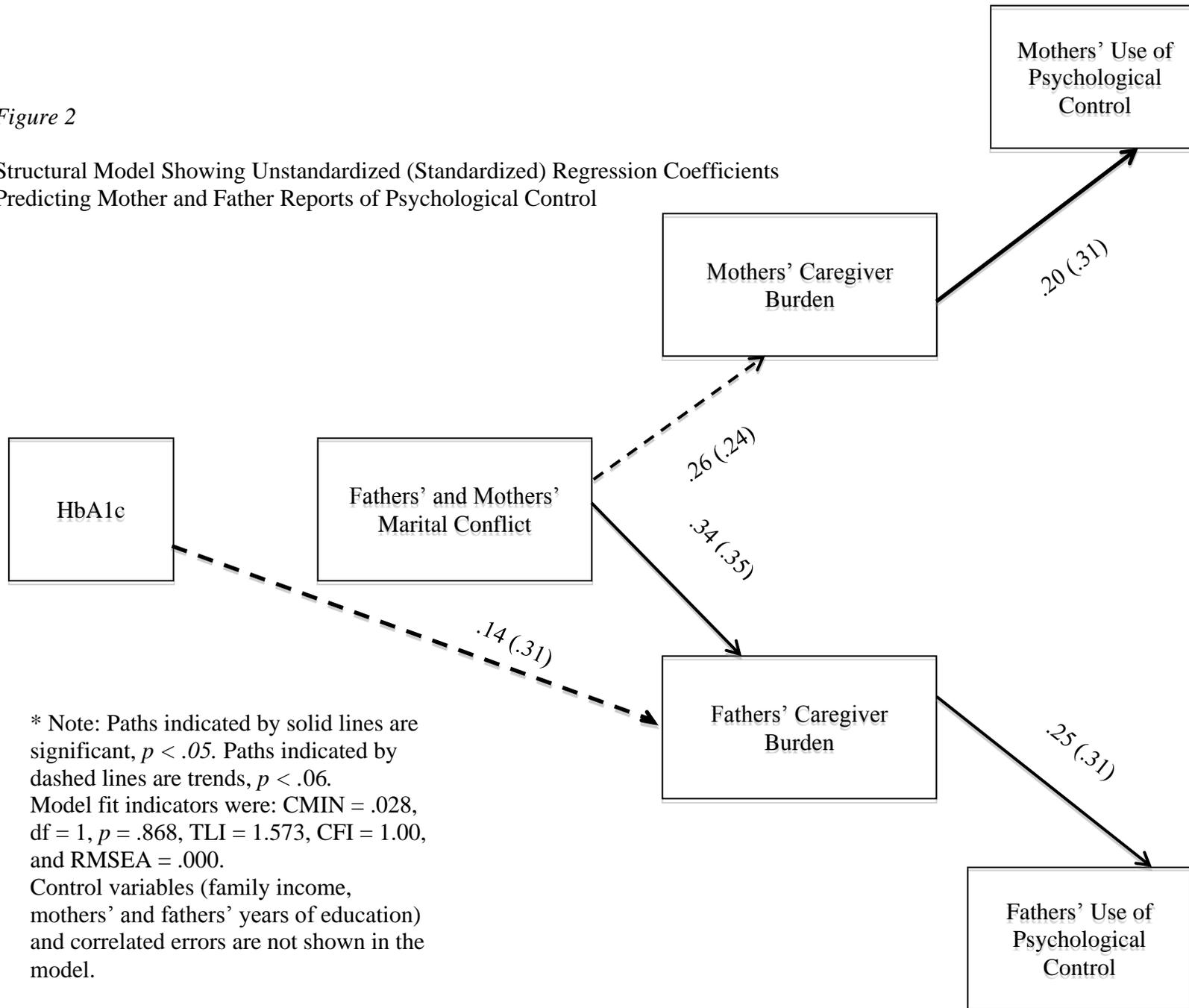
Theoretical Model



*Note:* Control variables (family income, mothers' and fathers' years of education, number of children, years since diagnosed with diabetes, mothers age, and fathers' age) and correlated errors are not shown in the model.

Figure 2

Structural Model Showing Unstandardized (Standardized) Regression Coefficients Predicting Mother and Father Reports of Psychological Control



\* Note: Paths indicated by solid lines are significant,  $p < .05$ . Paths indicated by dashed lines are trends,  $p < .06$ . Model fit indicators were: CMIN = .028,  $df = 1$ ,  $p = .868$ , TLI = 1.573, CFI = 1.00, and RMSEA = .000. Control variables (family income, mothers' and fathers' years of education) and correlated errors are not shown in the model.

Appendix

**Marital Conflict Scale**

Mothers and fathers independently completed the 10-item Porter-O'Leary Scale (Porter & Leary, 1980) to measure marital conflict. The written instructions were: "Please answer all of the following questions to the best of your ability. Please complete this questionnaire in reference to you and your spouse/partner at the present time.

Please rate how often these behaviors happen in your marriage.

1	2	3	4	5
Never	Rarely	Occasionally	Often	Very Often

\_\_\_\_\_ (1) It is difficult in these days of tight budgets to confine financial discussions to specific times and places. How often would you say you and your spouse/partner argue over money matters in front of your children?

\_\_\_\_\_ (2) Children often go to one parent for money or permission to do something after having been refused by the other parent. How often would you say your children approach you or your spouse/partner in this manner with rewarding results?

\_\_\_\_\_ (3) Husbands and wives often disagree on the subject of discipline. How often do you and your spouse/partner argue over disciplinary problems in your children's presence?

\_\_\_\_\_ (4) How often have your children heard you and your spouse/partner argue about the wife's role in the family? (Housewife, working wife, etc.)

\_\_\_\_\_ (5) How often does your spouse/partner complain about your personal habits (drinking, nagging, sloppiness, etc.) in front of your children?

\_\_\_\_\_ (6) How often do you complain to your spouse/partner about his/her personal habits in front of your children?

\_\_\_\_\_ (7) To varying degrees, we all experience almost irresistible impulses in great times of stress. How often is there physical expression of hostility between you and your spouse/partner in front of your children?

\_\_\_\_\_ (8) How often do you and your spouse/partner display verbal hostility in front of your children?

\_\_\_\_\_ (9) How often do you and your spouse/partner display affection for each other in front of your children? (Reverse coded)

\_\_\_\_\_ (13) In every normal marriage there are arguments. What percentage of the arguments between you and your spouse/partner would you say take place in front of your children?

less than 10% \_\_\_\_\_ 10-25% \_\_\_\_\_ 26-50% \_\_\_\_\_ 51-75% \_\_\_\_\_ More than 75% \_\_\_\_\_

**Caregiver Burden Scale**

Mothers and fathers independently completed separate instruments. The written instructions were: “Below is a list of typical everyday events that parents may encounter. Thinking of what it takes to raise all the children in your family, for each item, circle how frequently this generally occurs and then how much of a hassle you find it.

Please rate how much hassle you feel with the following events

- |   | 1         | 2             | 3             | 4          |
|---|-----------|---------------|---------------|------------|
|   | No Hassle | Little Hassle | Medium Hassle | Big Hassle |
| _____ (1) Time not my own                                 |           |               |               |            |
| _____ (2) Overwhelmed                                     |           |               |               |            |
| _____ (3) Financial strain                                |           |               |               |            |
| _____ (4) Change plans                                    |           |               |               |            |
| _____ (6) Don't maintain physical health                  |           |               |               |            |
| _____ (9) Emotionally drained                             |           |               |               |            |
| _____ (10) Rearing children creates conflict and argument |           |               |               |            |
| _____ (11) Isolation                                      |           |               |               |            |
| _____ (14) Loss of sleep                                  |           |               |               |            |
| _____ (15) Physically drained                             |           |               |               |            |
| _____ (16) Caring for children inconvenient               |           |               |               |            |
| _____ (18) Creates conflict with spouse                   |           |               |               |            |
| _____ (20) Children do not get along well                 |           |               |               |            |

**Psychological Control Scale**

Mothers and fathers independently completed separate instruments. The written instructions were: How often do you exhibit the following behaviors with your CHILD WITH DIABETES?

I EXHIBIT THIS BEHAVIOR:

1 = Never

2 = Once in Awhile

3 = About half of the Time

4 = Very Often

5 = Always

\_\_\_ 4. I change the subject whenever my child has something to say.

\_\_\_ 9. I avoid looking at my child when my child has disappointed me.

\_\_\_ 15. I tell my child all the things I have done for him/her.

\_\_\_ 20. I scold and criticize to make our child improve.

\_\_\_ 25. I bring up my child's past mistakes when criticizing him/her.

\_\_\_ 28. If my child has hurt my feelings, I stop talking to my child until she/he pleases me again.

\_\_\_ 31. I act like I know what my child is thinking or feeling.

\_\_\_ 35. I say if you really cared for me, you would not do things that cause me to worry.

\_\_\_ 38. I am less friendly with my child if my child does not see things my way.

\_\_\_ 41. I go back and forth between being warm and critical towards my child.

\_\_\_ 44. I interrupt my child when she/he is speaking.

\_\_\_ 47. I finish my child's sentence whenever he/she talks.

\_\_\_52. I would like to tell my child how to feel or think about things.

\_\_\_56. I blame my child for other family members' problems.

\_\_\_59. I change my moods when I'm with my child.

\_\_\_64. I try to change my child.