

DEVELOPMENTAL EXPECTATIONS AND ADOLESCENT TYPE 1 DIABETES
MANAGEMENT IN LATINO AND CAUCASIAN FAMILIES

APPROVED BY SUPERVISORY COMMITTEE

Deborah Wiebe, PhD

Crista Donewar, PhD

Jami Gross-Toalson, PhD

DEDICATION

I would like to thank the members of my Graduate Committee, my family, and friends for all of their unconditional love and support.

DEVELOPMENTAL EXPECTATIONS AND ADOLESCENT TYPE 1 DIABETES
MANAGEMENT IN LATINO AND CAUCASIAN FAMILIES

by

SARANYA EASWAR SUNDARAM

THESIS

Presented to the Faculty of the School of Health Professions

The University of Texas Southwestern Medical Center

Dallas, Texas

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF REHABILITATION COUNSELING

Copyright © 2013

by

Saranya Easwar Sundaram

All Rights Reserved

Abstract

BACKGROUND: Transfer of responsibility for diabetes management is important across adolescence. It may contribute to poorer adherence and family conflict if unmatched to adolescent development. Research has primarily studied Caucasian samples, which may have different expectations for autonomy compared to Latino samples. This study examined developmental expectations for independence in both general and diabetes-related tasks in age- and sex-matched samples of Caucasian and Latino youth with type 1 diabetes.

SUBJECTS: Participants included 118 10- to 15-year-old Caucasian and Latino adolescents with type 1 diabetes [$M (SD) = 13.24 (1.69)$ years; 54% female] and their mothers.

METHOD: Participants independently completed questionnaires measuring expectations for independence, diabetes responsibility and conflict, and adherence to diabetes management. In addition, adolescents completed an inventory measuring depressive symptoms, and HbA1c levels were obtained through medical records.

RESULTS: Mothers and adolescents held different expectations for the age at which adolescents should make independent decisions about general and diabetes-related activities. In the overall sample, adolescents expected independence at younger ages for prudential activities, but at older ages for diabetes activities than did parents. These mother-adolescent differences occurred in different domains across ethnicity; Caucasians displayed mother-adolescent differences in expectations for diabetes activities, while Latinos displayed differing expectations for prudential activities. In the overall sample, expectations were associated with mother-reported conflict, but were minimally correlated with parental diabetes responsibility. Younger age expectations for prudential items were associated with poorer diabetes outcomes, but age expectations for

personal and diabetes items were generally unrelated to diabetes outcomes. In contrast to expectations, associations of developmental expectations with diabetes responsibility, conflict, and outcomes were similar across Caucasian and Latino youth.

DISCUSSION: Findings support that there were differing age expectations between parents and adolescents in prudential and diabetes-related activities. Different factors may influence how these expectations were associated with parental responsibility, conflict, and diabetes outcomes.

Keywords: developmental expectations, autonomy, adolescents, ethnicity, Caucasian, Latino, responsibility, conflict, diabetes.

DEVELOPMENTAL EXPECTATIONS AND ADOLESCENT TYPE 1 DIABETES	5
-----------------------------------------------------------	---

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION	9
CHAPTER TWO: REVIEW OF THE LITERATURE	13
CHAPTER THREE: METHOD	23
CHAPTER FOUR: RATIONALE, AIMS, AND STATISTICAL ANALYSES PLAN ...	29
CHAPTER FIVE: RESULTS	31
CHAPTER SIX: DISCUSSION	37
REFERENCES	45

LIST OF TABLES

TABLE 1	57
TABLE 2	58
TABLE 3	59
TABLE 4	60
TABLE 5	61
TABLE 6	62

LIST OF APPENDICES

APPENDIX A	.....	63
APPENDIX B	.....	65
APPENDIX C	.....	67
APPENDIX D	.....	69
APPENDIX E	.....	71
APPENDIX F	.....	72
APPENDIX G	.....	73
APPENDIX H	.....	74
APPENDIX I	.....	76
APPENDIX J	.....	78

LIST OF ABBREVIATIONS

DRS – Diabetes Responsibility Scale

DCS – Diabetes Conflict Scale

SCI – Self Care Inventory

CDI – Children's Depression Inventory

HbA1c – Glycosolated hemoglobin (indicates metabolic control)

CHAPTER ONE

Introduction

Type 1 diabetes is a common pediatric chronic illness that is difficult yet important to manage during adolescence. It has a complex treatment regimen that requires the coordination of insulin injections with blood glucose monitoring, diet, and exercise, with the goal of maintaining relatively normal blood glucose levels. This regimen is especially difficult to manage during adolescence, when increasing independence is combined with the dysregulating effects of pubertal hormones on blood glucose levels (Anderson, Ho, Brackett, & Laffel, 1999; Anderson et al., 2002; Bryden et al., 2001; Hood et al., 2009; Wysocki et al., 1996). Adherence and blood glucose control tend to decline during this developmental period (Anderson, Brackett, Ho, & Laffel, 2000; Schilling, Knafl, & Grey, 2006), which is concerning because patterns of diabetes management that are carried into adulthood are commonly established during adolescence (Giordano, Patrila, Banion, & Neuenkirchen, 1992), and because elevated blood glucose levels associated with poor diabetes management may contribute to severe long term complications (The Diabetes Control and Complications Trial Research Group, 1993). Thus, it is important to understand the crucial factors that undermine or facilitate better diabetes management during adolescence.

The difficulties of managing type 1 diabetes during adolescence may partially occur because adolescents are attempting to develop autonomy while managing a serious illness that could benefit from parental involvement. Parents play an important role in managing type 1 diabetes. They can teach their children successful diabetes care and how to continue managing the complex daily monitoring and maintenance of diabetes-related tasks throughout adolescence

and adulthood. However, parental involvement tends to decline during adolescence and premature declines are associated with poorer diabetes management (Anderson, Ho, Brackett, Finkelstein, & Laffel, 1997). In addition, differing parent-adolescent expectations for the responsibility of diabetes care may undermine adherence (Holmbeck & O'Donnell 1991) and contribute to diabetes-related conflict, which itself is associated with poorer diabetes outcomes (Anderson et al., 2002). Therefore, it is important to understand factors that contribute to the manner in which responsibility for diabetes management is transferred from parent to child across adolescence.

The manner in which the responsibility for diabetes care is transferred may reflect broader aspects of autonomy development, particularly parents' and adolescents' developmental expectations for independence. Parents and adolescents form "norms" for the desired independence of different developmental tasks, which establish their expectations for the future (Daddis & Smetana, 2005). These expectations for independence form not only in personal domains (e.g., what clothes to wear), but also in prudential domains (e.g., when to drink alcohol), where independence may have negative health and/or safety consequences. Adolescents and parents may differ in their developmental expectations for independence. For example, adolescents expect independence in personal and prudential domains at earlier ages than do parents, with earlier expectations for personal versus prudential items (Daddis & Smetana, 2005). In the general literature, these differing expectations were associated with heightened parent-adolescent conflict (Feldman & Quatman 1988).

A limited body of literature has examined developmental expectations for diabetes tasks, but has neither linked expectations directly to the transfer of responsibility for diabetes

management nor to parent-adolescent diabetes-related conflict. From the existing literature, parents report that their children should be independent for diabetes management skills earlier than both children and physicians report (Wysocki et al., 1992). One aim of the present study was to examine whether differing developmental expectations for independence in diabetes management between parents and adolescents were associated with parental responsibility, conflict, and adherence.

Culture and ethnicity have been established as potent factors in shaping developmental expectations (Feldman & Quatman, 1988), but there is limited understanding of how ethnicity is related to expectations for independence in diabetes and to parent-child diabetes responsibilities and conflicts. Culture has often been examined as reflecting two dimensions: individualism (i.e., cultures that focus on the concerns of oneself and emphasize personal autonomy) (Hofstede, 1980) and collectivism (i.e., cultures that focus on interdependence within a group and emphasize obedience and conformity) (Triandis, 1995). Some studies suggest that those from collectivist cultures have later developmental expectations (Feldman & Quatman, 1988; Feldman & Rosenthal, 1990; Fuligni, 1998; Roer-Strier & Rivlis, 1998; Rosenthal & Bornholt, 1988). The existing literature on adolescent diabetes management has primarily focused on Caucasian families, possibly due to a higher Caucasian prevalence of diabetes compared to minority populations (Delamater et al., 1999; Onkamo, Väänänen, Karnonen, & Tuomilehto, 1999). Nevertheless, type 1 diabetes has become increasingly prevalent worldwide, including among minority populations such as Latinos (Onkamo et al., 1999). In this study, we explored the contrast between developmental expectations among Caucasian and Latino families, who represent individualistic and collectivist cultures, respectively.

The overarching goal of the present study was to understand how developmental expectations for independence were related to diabetes management in Caucasian and Latino adolescents. There were three specific aims. The first aim examined whether mothers and adolescents held different developmental expectations for general (i.e., personal, prudential) and diabetes-related activities. The second aim examined how these expectations were related to parent-adolescent responsibilities and conflicts surrounding diabetes management. The third aim explored whether these associations differed between Caucasian and Latino families.

CHAPTER TWO

Review of the Literature

Type 1 Diabetes

Type 1 diabetes mellitus is a common pediatric chronic illness affecting approximately 1.7 per 1,000 individuals under the age of 20, with 13,000 newly diagnosed children each year in the United States (Libman, Songer, & LaPorte, 1993; “National diabetes fact sheet,” 2011). Type 1 diabetes is most commonly diagnosed in Caucasian youth (Delamater et al., 1999; Onkamo et al., 1999), but is increasing worldwide by approximately 3% per year, including among ethnic minority groups such as Latinos (Carter, Pugh, & Monterrosa, 1996). Type 1 diabetes is a condition in which pancreatic beta cells are destroyed, leading to an inability to produce insulin and ultimately to complete insulin deficiency (Daneman, 2006; National Institute of Health, 2011). While the exact cause of type 1 diabetes is still undetermined, it is most likely caused by the autoimmune destruction of pancreatic beta cells. Beta cells produce the hormone insulin, which is necessary to metabolize glucose, a simple sugar, and provide energy to cells. Without insulin, glucose builds up in the bloodstream, while body tissue starves. Hence, individuals with type 1 diabetes must use an exogenous source of insulin everyday for the rest of their lives to survive.

Treatment and management of type 1 diabetes is complex and demanding, with the goal being to keep blood glucose levels as close to normal as possible. This requires an exogenous source of insulin to be delivered through injections or an insulin pump multiple times a day, with some children requiring as many as six to seven insulin injections per day in order to maintain good glycemic control (Silverstein et al., 2005). Metabolic control refers to the degree to which

type 1 diabetes is properly managed, and is primarily measured through glycosylated hemoglobin (HbA1c). HbA1c reflects the average blood glucose level over an approximate 60- to 90-day period, with lower HbA1c levels reflecting better metabolic control. The latest treatment recommendations suggest that adolescents with type 1 diabetes should have HbA1c levels $< 7.5\%$ (American Diabetes Association, 2011; Sacks et al., 2002; Silverstein et al., 2005). Adherence reflects the degree to which an individual's behavior is in accordance with the recommended treatment behaviors. Individuals with type 1 diabetes are recommended to follow a multitude of daily management behaviors, which include coordinating the appropriate amount and timing of insulin administration with frequent blood glucose monitoring and healthy dietary intake and physical activity (American Diabetes Association, 2008). Adherence can be fairly difficult during adolescence, but is important because it has been shown to predict metabolic control (Hood et al., 2009).

The mismanagement of diabetes can cause dysregulation of blood glucose levels and both acute and long-term complications. Acute complications of diabetes include hypoglycemia (i.e., low blood glucose), hyperglycemia (i.e., high blood glucose), and diabetic ketoacidosis (DKA). DKA occurs when insufficient insulin is taken, leading to lack of an energy source. As a result, the body burns fat for energy and produces ketones, which are toxic acids that builds up in the blood and can cause coma or death if not treated. Long-term complications of diabetes include diabetic retinopathy (i.e., blindness), nephropathy (i.e., kidney failure), and limb amputations (Delamater, 2000; Silverstein et al., 2005). There has been clear evidence that maintaining relatively normal metabolic control (i.e., HbA1c levels $< 7.5\%$) can reduce the risk of these long-term consequences [The Diabetes Control and Complications Trial Research Group, 1993; The

Diabetes Control and Complications Trial (DCCT)/Epidemiology of Diabetes Interventions and Complications (EDIC) Research Group, 2001].

Managing Type 1 Diabetes During Adolescence

Type 1 diabetes is difficult to manage at any age, but particularly so during adolescence. Cross sectional studies suggest older age is associated with poorer metabolic control (Kakleas, Kandyla, Karayianni, & Karavanaki, 2009; Kovacs, Goldston, Obrosky, & Iyengar, 1992), lower adherence (Anderson et al., 2000; Schilling et al., 2006), higher parent-child conflict (Delamater, 2007; Collins, Laursen, Mortensen, Luebker, & Ferreira, 1997; Montemayor & Hanson, 1985), and higher depressive symptoms (Grey, Davidson, Boland, & Tamborlane, 2001; Kovacs, Goldston, Obrosky, & Bonar, 1997; Kovacs, Obrosky, Goldston, & Drash, 1997). This evidence of poor diabetes management is concerning because patterns of management are commonly established during adolescence and often extend into adulthood (Giordano et al., 1992).

The reasons for such deterioration are believed to reflect the many biopsychosocial changes occurring during adolescence. During this time, pubertal maturation occurs (Goran & Gower, 2001) in combination with increasing cognitive and emotional maturity. Adolescents are challenged with the developmental tasks of successfully adapting to a changing body image, peer pressure, increasing autonomy from parents, and forming their identities, along with the self-management of diabetes (Delamater, 1999; Silverstein et al., 2005). These biopsychosocial changes also simultaneously occur with decreases in parental involvement and responsibility for diabetes management (Anderson et al., 1997; Drotar & Ievers, 1994), which makes it more difficult to regulate blood glucose levels (Silverstein et al., 2005). Because adolescents spend

approximately 40% less time with their parents than during childhood (Larson & Richards, 1991), parents may be unable to take the same active role as they have in the past.

The transfer of responsibility for diabetes management from parent to adolescent can detrimentally affect self-management. Children gradually assume more responsibility for diabetes-related tasks during adolescence as they mature (Anderson et al., 1997; La Greca, Follansbee, & Skyler, 1990; Palmer et al., 2004). Declines in parental involvement have been associated with poorer adherence and metabolic control (Weissberg-Benchell et al., 1995; Wysocki et al., 1996; Wysocki et al., 2009), and interventions that maintain higher parental responsibility have been shown to minimize this deterioration (Anderson et al., 1990, Anderson et al., 1997). Despite such evidence that parental involvement is important, there have also been inconsistent findings that did not find any links between parental involvement and self-care behavior or metabolic control (Miller & Drotar, 2003; Wiebe et al., 2005).

Such inconsistency may suggest that transfer of responsibility can be problematic in some contexts. First, transfer of responsibility may be problematic primarily when it occurs prematurely before the adolescent has the necessary skills to manage diabetes independently (Palmer et al., 2004; Palmer et al., 2009; Wysocki et al., 1992). In the parent-adolescent dyad, adolescents may not feel they have autonomy while the parent believes they do. In other dyads, adolescents may believe they have more control of diabetes-related tasks in comparison to their parents (Holmbeck & O'Donnell, 1991). Second, it is possible that there is a lack of communication regarding who is responsible for diabetes-related tasks, such that neither the adolescent nor the parent assumes responsibility for diabetes management (Anderson et al., 1997). For example, if parents reduce their level of responsibility for diabetes-related tasks but

the adolescent does not begin to assume responsibility for those diabetes management tasks, then a number of important diabetes self-management responsibilities may simply not be completed, resulting in poorer metabolic control (Giordano et al., 1992; Riesch, 1997).

The timing and process of transfer of responsibility may also relate to parent-child conflicts surrounding diabetes management, which are shown to be associated with poorer diabetes outcomes (Auslander, Anderson, Bubb, Jung, & Santiago, 1990; Delamater, 2007; Hood, Butler, Anderson, & Laffel, 2007). However, the factors that may contribute to such conflict have not been well established. Thus, understanding the process by which transfer of responsibility for diabetes management from parent to child occurs may help identify possible triggers of conflict that influence discrepancies between the parent-adolescent dyad and undermine diabetes care.

Developmental Expectations and Type 1 Diabetes Management

The smoothness of the transition of responsibility may reflect the expectations for independence of developmental tasks held by parents and children (Dekovic, Noom, & Meeus, 1997). Parents and adolescents form “norms” for the desired independence of different developmental tasks, which set their expectations for the future (Daddis & Smetana, 2005). These developmental expectations reflect parents’ and adolescents’ inherent developmental theories and serve as a basis by which parents and adolescents evaluate and respond to each other’s behaviors. The developmental expectations of parents may be particularly important during adolescence because new behaviors appear during this time of rapid change, but there are few, consistent guidelines for age-appropriate behavior (Feldman & Quatman, 1988; Rosenthal & Bornholt, 1988).

Within the context of different roles and life experiences, parents' and adolescents' expectations for certain behaviors can be seen as a reference zone for what is thought to be appropriate and provide a framework for evaluating future behavior (Feldman & Quatman, 1988). These expectations for independence form not only in personal domains (e.g., what clothes to wear), but also in prudential domains (e.g., when to drink alcohol). Expectations for independence in prudential domains may have negative health or safety consequences.

How are developmental expectations formed? Findings suggest that parents' and adolescents' expectations may vary depending on the information and experiences they have been exposed to, such as cultural transmission (Dekovic et al., 1997). The role of parents has essentially been seen as conservative, with mothers and fathers generally invested in protecting and promoting the safe growth and development of their child (Feldman & Quatman, 1988). Though parents and adolescents may share similar cultural backgrounds, they can differ significantly in their roles, experiences, and perceptions, which may cause conflicting expectations for age-appropriate behaviors during adolescence (Dekovic et al., 1997). For example, research has shown that adolescents expect to have independence in prudential domains at earlier ages than do parents (Daddis & Smetana, 2005). In the general literature, differing expectations across parent and adolescent were related to heightened conflict (Feldman & Quatman, 1988).

A limited literature has examined developmental expectations for diabetes-related tasks. There is evidence, however, that parents expect their children to be independent for 33 of 38 diabetes-related skills earlier than both physicians and children report (Wysocki et al., 1992). These differing expectations suggest that professionals, parents, and children may have

contradictory expectations for independent self-management of adolescent diabetes care (Wysocki, Meinhold, Cox, & Clarke, 1990). Such discrepant expectations between parents and adolescents for the responsibility for maintaining diabetes-related tasks can lead to parent-adolescent conflict (Weinger, O'Donnell, & Ritholz, 2001), and higher levels of conflict are associated with poorer metabolic control (Anderson et al., 1999; Auslander et al., 1990; Delamater, 2007; La Greca, et al., 1995) and poorer adherence (Anderson et al., 1999).

Role of Ethnicity in Type 1 Diabetes Management

Type 1 diabetes is understudied in the Latino population, which is unfortunate given the increasing proportion of the United States population that identifies as Latino. Latinos are the most prevalent ethnic minority group in the United States, accounting for approximately 15.4% of the total population (Pew Hispanic Center, 2010a). According to the national census, the population rose about 8% overall from 2000 to 2008, with Latinos accounting for approximately 51.3% of the increase (Pew Hispanic Center, 2010a). One third of the Latino population is under the age of 18 (US Census, 2007) and it is predicted that one in every five children will be of Latino origin by the year 2020 (Federal Interagency Forum on Child and Family Statistics, 2002). Although type 1 diabetes is more prevalent in Caucasians, the incidence of type 1 diabetes in Latino adolescents is approximately 13.8 per 100,000 individuals (Lawrence, et al., 2009) and is steadily increasing. Latino populations are believed to be at risk for negative behavior and mental health outcomes, in general (Joiner, Pérez, Wagner, Berenson, & Marquina, 2001; Romero, Martinez, & Carvajal, 2007), and to have poorer metabolic control and adherence to type 1 diabetes (Davis et al., 2001; Delamater et al., 1999; Kirk et al., 2008; Lawrence et al., 2009; Wang, Wiebe, & White, 2011). Therefore, this population is at higher risk for developing

diabetes-related complications (Black, Ray, & Markides, 1999; Lawrence, et al., 2009).

Furthermore, Latino populations appear to have elevated HbA1c levels by .5% compared to Caucasian populations (Kirk et al., 2008). The reasons for these differences are unclear, but may reflect a combination of cultural factors, poorer diabetes management, and poorer access to health care (Kirk et al., 2008).

Developmental expectations for independence reflect values that are important within different cultural contexts (Rosenthal & Bornholt, 1988). Cultural values associated with ethnicity or national origin may be salient in shaping ideas and expectations for development (Feldman & Quatman, 1988). The norms and values of a culture can be mirrored in parental developmental theories and have been shown to influence the ideas of age-appropriate behaviors for autonomy (Rosenthal & Bornholt, 1988). Evidence suggests that culture has a stronger association with parental ideas and beliefs about parenting than parents' educational experience, prior parenting knowledge, parent gender, child gender, and family socioeconomic status (Feldman & Quatman, 1988). Cultural values of adolescents may also influence their age expectations for autonomy (Feldman & Rosenthal, 1991).

Cultures vary in their individual versus collective orientation, and this culturally-bound variable may be related to adolescent and parent developmental expectations. The individualistic orientation, commonly exemplified by American culture, conventionally focuses on the concerns of oneself and emphasizes personal autonomy (Hofstede, 1980). Independence is seen as positive and adaptive (Feldman & Rosenthal, 1990). Conversely, the collectivist orientation focuses on interdependence within a group and tends to reject the pressures and influences from outside of the group. Collectivist cultures emphasize obedience, conformity, and more

interdependence between family members and place collective needs above individuality (Feldman & Rosenthal, 1991; Triandis, 1995). Parent and adolescent expectations for independence differ between individualistic versus collectivist cultures, with more collectivist cultures having older age expectations for autonomy (Feldman & Quatman, 1988; Feldman & Rosenthal, 1990; Fuligni, 1998; Roer-Strier & Rivlis, 1998; Rosenthal & Bornholt, 1988).

Although developmental expectations have been studied across cultures, we are not aware of any research examining these issues in the context of neither Latinos nor of diabetes management. One study examining adolescent independence for diabetes management in Latino parent-adolescent dyads found family involvement to be important to Latino youth with type 1 diabetes, and family support for diabetes care mediated the relationship between adolescent responsibility and adherence (Hsin, La Greca, Valenzuela, Delamater, & Moine, 2010). This finding suggests that Latino youth who are more independently responsible for their diabetes care may have poorer adherence due to decreased family support for diabetes care. However, this study did not include a non-Latino youth comparison sample, and did not examine factors that predict independence in diabetes management.

Cultural influences on family relationships may also affect how Latina mothers facilitate diabetes management for their adolescents (Halgunseth, Ispa, & Rudy, 2006). Latinos significantly value family support, familism (i.e., the feelings of loyalty, reciprocity, and solidarity shown to other members of the family and the view of family as an addition to one's self) (Cortes, 1995), and this influence been shown to reflect better physical and emotional health in Latino adolescents (Dumka, Roosa, & Jackson, 1997; Hill, Bush, & Roosa, 2003). Latino families also value their children's respect, *respeto*, (i.e., respecting the importance to parents

that their children make family the center of their lives), which is exemplified through Latino family parenting practices and how Latino parents insist their child respect parent authority.

Taken together, these cultural values may relate to the manner in which parents are involved in diabetes management, expectations for independence, and diabetes related conflict.

CHAPTER THREE

Method

Participants

Data for this study were drawn from a larger study examining type 1 diabetes management between Caucasian and Latino adolescents. Participants included 118 Caucasian and Latino adolescents between 10- and 15-years-old ($M = 13.24$, $SD = 1.69$) with type 1 diabetes and their mothers. They were recruited from the outpatient endocrinology clinic at Children's Medical Center Dallas if they had been diagnosed with type 1 diabetes for at least one year ($M = 4.62$, $SD = 2.84$), self-identified as either Caucasian or Latino ethnicity, and could read and speak English or Spanish. Mother figures were recruited since they are frequently the primary caregivers in families of children with chronic illness (Quittner et al., 1998). For each adolescent, one maternal figure was allowed to participate. Adolescents were required to be living with their participating maternal figure greater than 50% of the time. Step-mothers or adopted mothers were eligible if the adolescent had lived with them for at least one year.

Demographic information of the sample was collected through a combination of maternal figure report, geographic identifiers via publicly available census information, and medical records. Descriptive information for the sample and ethnic group variability will be reported in the results section. Of the 247 qualifying individuals approached, 48% agreed to participate in the study. Adolescent participants were relatively evenly split by gender (54% female). Forty-eight percent of adolescents self-identified as Latino, and English was the primary language spoken at home in 72% of the families. For Latino parents that identified a country of origin outside of the United States, 84% indicated Mexico, with two families from Puerto Rico, and one

family each from Argentina, Bolivia, El Salvador, and Guatemala. For Latino parent-adolescent dyads overall, 12% included both mothers and adolescents born outside of the United States, 57% included mothers born outside of the United States while their adolescents were born in the United States, and 31% included both mothers and adolescents born in the United States.

Twenty-five of the participating adolescents were on an insulin pump, with the remainder being treated with a multiple daily injections regimen (MDI). Mothers of adolescents reported that physicians had recommended a range of 3-8 insulin injections and 3-12 blood glucose checks each day. The bulk of participating families reported having insurance, which covered medical expenses for the treatment of diabetes (94%). Approximately 35% of those families reported Medicaid as their primary insurance provider, while 43% reported their insurance was provided through a parent's employment, 3% used a private insurance provider, and 19% reported "other" as their means of insurance. Mothers were primarily biological (92%) and married (75%), and 73% of families reported living in two-parent households with the participating child's father.

Procedure

Participants were recruited for the study at their outpatient diabetes clinic and were given consent and assent forms to review preceding their scheduled research laboratory appointment. They were reminded the week and day before their session. Prior to their session, they signed informed consent and assent forms and were given the opportunity to ask any questions. During their session, mothers and adolescents independently completed a structured interview and questionnaire measures on a computer. For those measures where a Spanish version was unavailable, the measure was translated and back translated from English to Spanish by bilingual

research staff. All participants were given precise instructions on how to complete the online surveys. For those who reported discomfort in completing measures on the computer, paper versions of the questionnaires were provided. After the completion of the one-time assessment, each parent and adolescent participant received a \$40 gift card.

Questionnaire Measures

Copies of all measures used can be found in Appendices A-J.

Expectations for independence. Parents and adolescents completed a teen timetable that measured expectations for at what age (1 = *Before Age 12* to 6 = *Never*) the adolescent should experience freedom or independence in different domains such as personal items (e.g., choose what music to listen to), prudential items (e.g., drink alcohol), diabetes items (e.g., choose when to test blood glucose levels, decide own insulin dose, and choose who knows you have diabetes).

Diabetes responsibility. In this study, a revised version of the responsibility items from the Diabetes Responsibility and Conflict Scale (Rubin, Young-Hyman, & Peyrot, 1989) was incorporated in order to assess the perceptions of responsibility for 23 aspects of diabetes management (e.g., who determines the insulin dose, who tests blood sugar, who talks to teachers about diabetes). Mothers and adolescents reported each item on a scale of 1 to 5 (1 = *child does it alone*, 3 = *mother and child share equally*, to 5 = *mother does it alone*). This scale has been found to be sensitive to the maternal involvement declines that arise during adolescence (Palmer et al., 2004; Rubin et al., 1989), and has shown high agreement between mother and child ($r = .75, p < .001$; Wiebe et al., 2005) and good reliability ($\alpha < .79$; Palmer et al., 2004; Rubin et al., 1989).

Diabetes conflict. The Diabetes Conflict Scale was used to assess parent-adolescent conflict surrounding 15 diabetes tasks (Rubin et al., 1989), with higher scores indicating more diabetes-related conflict. Participants rated the level of conflict on each diabetes item in the past month using a 1 (*almost never*) to 3 (*almost always*) scale.

Adherence. The Self-Care Inventory (SCI) (La Greca, Swales, Klemp, & Madigan, 1988) is a measure of adherence that includes all aspects of the type 1 diabetes regimen, including monitoring blood glucose levels, administering insulin, exercise, and diet. Adolescents were asked to indicate adherence to their regimen over the previous month on a scale of 1 (*never did it*) to 5 (*always did this as recommended without fail*). Mothers reported how well their child adhered to the suggested regimen. This 16-item measure has commonly been used in research with children and adolescents diagnosed with type 1 diabetes because it provides an efficient assessment of adherence to the current standards for diabetes care. This measure has been correlated with metabolic control indices (La Greca et al., 1990) and demonstrated solid internal consistency in the present study ($\alpha = .85$ for adolescent report overall, .86 in Latino adolescents, and .85 in Caucasian adolescents).

Adolescent depressive symptoms. The Children's Depression Inventory (CDI) (Kovacs, 1985) is a 27-item scale measuring depressive symptoms in children and adolescents. Adolescents rated their depressive symptoms over the previous two weeks on a 3-point scale (0 = *I am sad one in a while*, 1 = *I am sad many times*, 2 = *I am sad all the time*). Total scores can range from 0 to 54, with higher scores indicating greater symptomology. This measure has been normed on children ranging from 7- to 17-years-old and has high internal consistency and test-retest reliability ($\alpha s > .71$). This scale has commonly been used in research with children and adolescents with type 1 diabetes (Kovacs, et al. 1990).

Metabolic control. Metabolic control for adolescents was obtained through the glycosylated hemoglobin (HbA1c) levels recorded in adolescents' medical records as part of their outpatient clinic visits. HbA1c reports the average blood glucose level for the preceding 2-

to 3-month period, and is currently the gold standard to gauge whether diabetes treatment goals are being maintained. Higher levels of HbA1c are indicative of poorer metabolic control. The present study used HbA1c measures from the participant's clinic visit that occurred nearest to their laboratory visit. The average HbA1c level for the overall sample ($M = 8.55$) was higher than the recommended level provided by the American Diabetes Association, but there was not a significant difference between ethnic groups.

CHAPTER FOUR

Rationale, Aims, and Statistical Analyses Plan

Aim 1

To examine whether mothers and adolescents overall held different developmental expectations for general (i.e., personal, prudential) and diabetes-related activities, paired-sample t-tests were conducted for each domain. It was hypothesized that mothers would have older expectations than adolescents for personal and prudential items, but younger expectations than adolescents for diabetes-related activities.

Aim 2

To examine how these expectations were related to parent-adolescent responsibilities and conflicts surrounding diabetes management, and to the quality of diabetes management (i.e., adherence and metabolic control), correlations among all variables were initially examined. It was expected that adolescents' and mothers' developmental expectations for diabetes would be related to their own reports of parental responsibility for diabetes management, with older expectations being related to higher levels of parental responsibility. It was not expected that adolescent-mother differences in developmental expectations would be related to parental responsibility for diabetes; rather, these differences were expected to be related to higher reports of diabetes-related conflict. Finally, if mother-adolescent differences in expectations were associated with heightened conflict, these differences were also hypothesized to be associated with poorer diabetes management.

Aim 3

To examine whether these associations differ across Caucasian and Latino families, a series of *t*-tests and regression analyses were conducted. Independent sample *t*-tests were conducted to determine ethnic differences in levels of expectations (i.e., mother report, adolescent report, and mother-adolescent difference scores). Regression analyses that examined associations of developmental expectations with responsibility and conflict, as well as with diabetes management outcomes, were conducted using ethnicity as a moderating variable. Relative to Aim 1, given the later expectations for autonomy in collectivist cultures, it was expected that Latino adolescents and mothers would have later expectations for independence than their Caucasian counterparts. It was also hypothesized that there would be larger mother-adolescent differences in developmental expectations in Latinos, given that the Latina mothers in our sample were mostly immigrants while their adolescents were first generation Americans (i.e., born in the United States), which suggests that mothers' expectations would more strongly reflect their Latina collectivist values compared to adolescents' expectations, potentially increasing conflict. Relative to Aim 2, it was hypothesized that older expectations would be related to higher parental responsibility regardless of ethnicity. Given cultural values related to strong and harmonious family relationships and respect for parental authority, it was expected that differing expectations would be less linked to conflict in Latino versus Caucasian families, but that when conflict existed, it would more disruptive to diabetes management.

CHAPTER FIVE

Results

Preliminary Analyses

Preliminary analyses indicated there were no ethnic group differences on most demographic and illness variables. Specifically, groups did not differ on adolescent age, gender, time since diagnosis, or insulin pump status. However, Caucasian families had higher median family income than Latino families $t(107) = 4.66, p = .001$. There were also ethnic differences in reports of insurance, $\chi^2(1, N = 112) = 19.44, p < .00$, with Caucasian adolescents reporting more non-public insurance (e.g., insurance through their parents employment) and Latino families using more public insurance (e.g., Medicaid).

Developmental Expectations for Independence in General and Diabetes Activities

The first aim of this study was to examine whether mothers and adolescents held different developmental expectations for general and diabetes-related activities. Paired-samples t -tests (see first column of Table 1) were used to compare the means between adolescents' and mothers' report for each domain of developmental expectations (i.e., personal, prudential, diabetes blood glucose, diabetes insulin, and diabetes social). Overall, adolescents and mothers significantly differed on developmental expectations in prudential, insulin, and diabetes social domains. Mothers held older age expectations for prudential activities, while adolescents held older age expectations for managing their insulin and disclosing to others about their diabetes.

Adolescent and Mother Developmental Expectations Associations with Responsibility, Conflict, and Diabetes Outcomes

The second aim of this study was to examine how developmental expectations were related to parent-adolescent responsibilities and conflicts surrounding diabetes management, and to the quality of diabetes management. Correlation analyses were used to explore the relationships of adolescent and mother expectations with parent-adolescent diabetes responsibilities and conflicts (Table 2), and with diabetes management outcomes (see Table 3). Given that adolescents and mothers held different age expectations across a number of domains, and that such differences could contribute to conflict between parents and adolescents, we created a difference score to capture the extent to which mothers and adolescents were discrepant in their developmental expectations. This difference score was computed by subtracting mother expectations from adolescent expectations in each domain. Thus, higher numbers indicate mothers held older expectations than their adolescent. Correlations for adolescent and mother reports of developmental expectations, and for discrepancies in their expectations, are reported in separate sections in each table.

Developmental Expectations Associated with Diabetes Responsibility and Conflict.

Increased adolescent-reported age expectations for managing blood glucose was associated with higher levels of both adolescent and mother reports of parental responsibility. This association is consistent with the notion that adolescents' developmental expectations play a role in the manner in which diabetes responsibility is transferred from parent to child during adolescence.

However, there were no statistically significant associations between mother reports of

developmental expectations and parental responsibility for diabetes. Mother-adolescent differences in expectations were also not significantly correlated with parental responsibility.

Developmental expectations were consistently associated with mother reports of diabetes-related conflicts, although such associations were not seen for adolescent-reported conflicts with mother and father. Mother reports of conflict were lower when adolescents reported older age expectations for prudential and insulin activities, and when mothers had younger age expectations for diabetes social activities. Not surprisingly, the most statistically significant associations with maternal reports of heightened conflict occurred when mothers and adolescents held discrepant developmental expectations.

Developmental Expectations Associated with Metabolic Control, Adherence, and Depressive Symptoms. Somewhat surprisingly, the most consistent pattern of associations between developmental expectations and diabetes outcomes occurred for expectations in the prudential domain. Mothers' older age expectations for prudential items were significantly associated with better metabolic control, better adherence, and lower depressive symptoms. Similar, albeit fewer statistically significant associations were found for adolescent expectations for prudential items. Importantly, adolescents who reported older expectations for managing blood glucose also displayed better adherence, according to both mother and adolescent report. Furthermore, when mothers and adolescents held more discrepant age expectations for blood glucose activities, they reported lower levels of adherence.

Ethnic Differences in Associations of Developmental Expectations with Diabetes**Responsibility, Conflict, and Outcomes.**

The third aim of this study was to examine whether there were ethnic differences in levels of developmental expectations, and in associations of developmental expectations with diabetes responsibility, conflict, and outcomes. Mother-adolescent differences in expectations varied between ethnicity (see second and third columns of Table 1). Caucasian dyads differed on diabetes management expectations, with Caucasian mothers reporting younger age expectations than their adolescents. Conversely, Latino dyads differed in the prudential domain, with Latina mothers reporting older age expectations than their adolescents. There were no ethnic group differences between Latino and Caucasian adolescent reports of developmental expectations (see Table 4). However, Latina mothers expected adolescents to be independent for managing blood glucose, $t(108) = -2.12, p < .00$, and insulin, $t(107) = -2.12, p < .00$, at older ages than did Caucasian mothers. There were no ethnic group differences between Latinos and Caucasians for adolescent and mother reports of diabetes responsibility. However, Latina mothers, $t(106) = -3.89, p < .00$, and adolescents, $t(115) = -2.36, p < .02$, reported more diabetes conflicts with each other than did their Caucasian counterparts. Finally, there were no ethnic group differences for the outcome variables of adherence, depression, and metabolic control.

Regression analyses were used to evaluate whether there were interactions between ethnicity and adolescent, mother, or mother-adolescent differing developmental expectations, and whether these interactions predicted responsibility, conflict, adherence, depression and metabolic control. Prior to conducting these analyses, the need to consider age and gender as covariates in the analyses was examined. As reported in Table 5, older adolescents reported

younger age expectations for prudential, blood glucose, and insulin items. Increased adolescent age was also significantly correlated with lower parental responsibility, lower levels of adolescent-reported conflict with father, and higher levels of mother-reported conflict. Furthermore, increased adolescent age was significantly associated with poorer adherence and metabolic control. As reported in Table 6, female adolescents held older expectations for managing insulin, $t(111) = -2.42, p < .02$, had lower mother reports of parental responsibility, $t(108) = 1.04, p < .04$, reported poorer adherence, $t(114) = 2.08, p < .04$, than their male counterparts. Thus, regression analyses examining whether ethnicity was a moderator of associations between developmental expectations and diabetes responsibility, conflict, and management outcomes were conducted while covarying age and gender in the analyses.

Interaction terms were created by multiplying the mean centered developmental expectations variable with the dummy coded ethnicity variable. In separate analyses for each outcome variable, predictor variables (i.e., ethnicity and developmental expectations) and covariates (i.e., age and gender) were entered in Step 1 and the interaction term between developmental expectations and ethnicity was entered in Step 2. The total variance, change in variance, standard error, beta, and significance value were examined for each term in the regression analyses.

Overall, there were very few significant interactions between ethnicity and developmental expectations. Specifically, three out of 135 interactions tested were found to be significant, demonstrating that any interaction found is likely to be a chance effect. These findings suggest that there were no systematic ethnic differences in the manner in which developmental expectations are associated with diabetes parental responsibility, conflict and

management outcomes. Although there were various significant associations related to ethnicity in developmental expectations, these expectations appeared to work the same way between ethnicity.

CHAPTER SIX

Discussion

The present study is the first to examine developmental expectations for adolescent type 1 diabetes management in an ethnically diverse sample of Latino and Caucasian families. The findings of this study support suggestions of existing literature indicating that parents and adolescents hold different beliefs regarding the desired pacing for independence in different developmental tasks (Daddis & Smetana, 2005). Findings also confirm and extend research by Holmbeck and O'Donnell (1991) who found that, in general, differing perceptions and expectations about development occur in the parent-adolescent dyad and play a role in child developmental outcomes.

Developmental Expectations for Independence in General and Diabetes Activities

In the overall sample, mothers reported younger expectations for several diabetes management activities and older expectations for prudential activities compared to their adolescents. This finding is consistent with predictions based on prior literature (Dekovic et al., 1997), and demonstrates that parents and adolescents develop different expectations presumably as a result of their differing experiences, information, and roles. Parent-adolescent differences in prudential expectations have generally been explained by the parents' role being to protect and promote safe growth and development of the child (Daddis & Smetana, 2005). In this manner, it is interesting that the present study found that parents held younger expectations for several diabetes activities than adolescents. This finding suggests that mothers expect autonomy for their child's diabetes management earlier in development, and may not consider independently

managing diabetes to be a risk to their child's safety in the same way they view independence in prudential activities.

Adolescent and Mother Developmental Expectations Associations with Parental Responsibility

Developmental expectations were hypothesized to be important for diabetes management because they may shape the manner in which diabetes responsibilities are transferred from parent to adolescent (e.g., do mothers' younger expectations for diabetes management contribute to premature transfer of responsibility to her adolescent?). There was some—albeit limited—support for this notion. Adolescents who held older age expectations for blood glucose management displayed higher levels of parental responsibility for diabetes care by both adolescent and mother report. Research has found blood glucose management activities to be a central component to effective diabetes regulation (Hood et al., 2009), which may be more observable to parents as they discern whether their adolescent can be responsible for independently managing their diabetes. However, the lack of associations between parental responsibility and mother reports of expectations or between parental responsibility and adolescent reports of expectations in all other domains raises questions about this interpretation.

Adolescent and Mother Developmental Expectations Associations with Diabetes Conflict

Mother and adolescent developmental expectations were also theorized to be important because differing expectations may result in heightened family conflict, which is often associated with poorer diabetes management (Auslander et al., 1990; Delamater, 2007). The present findings support that some of this conflict may reflect differing developmental expectations. Specifically, when mothers and adolescents held differing expectations for prudential activities,

and for several diabetes activities, mothers reported heightened conflict. This suggests that age expectations held by adolescents and parents may play out in ways that affect family dynamics. The fact that these associations were seen only for mother reports of conflict suggests several ideas. First, mothers may feel more at conflict compared to their adolescents when both adolescents and mothers differ on expectations for diabetes care. Second, parents may feel more sensitive to, and bothered by, the conflicts that occur within the context of parenting when compared to adolescents (Veroff & Feld, 1970). In any case, the findings do suggest that differing age expectations may play a role in some aspects of diabetes conflict between parents and adolescents.

Adolescent and Mother Developmental Expectations Associations with Diabetes Outcomes

We also examined whether developmental expectations were associated with diabetes-related outcomes. It was expected that if mother-adolescent differences in expectations were associated with heightened conflict, there would also be associations with poorer diabetes management. Interestingly, when adolescents and mothers held older age expectations for prudential activities, adolescents displayed better diabetes management outcomes relatively consistently (i.e., they displayed better adherence across reporter, better metabolic control, and lower depressive symptoms). Adolescents who reported older age expectations for blood glucose management also displayed better adherence by both mother and adolescent report, while higher discrepancies between mother and adolescent for blood glucose age expectations were associated with poorer adherence. Thus, age expectations may matter for diabetes management in predictable ways.

It is interesting that significant age expectation associations with outcomes occurred specifically in the non-diabetes area of the prudential domain, as well as for the diabetes blood glucose domain. Developmental expectations for prudential activities may reflect broader family rules related to adolescent freedoms that can crucially affect diabetes management (e.g., parents may have firmer rules with their teen about spending more time at home, which could allow parents to help facilitate more consistent diabetes care). Blood glucose monitoring has been found to be a crucial component to diabetes management (Hood et al., 2009), which may explain the significant associations for expectations in this domain of diabetes management, but not in other domains.

Ethnic Differences in Associations of Developmental Expectations with Diabetes

Responsibility, Conflict, and Outcomes

A final aim of the study was to determine if Caucasian and Latino families held differing age expectations, or displayed differing patterns of associations between expectations and important indicators of adjustment. There were interesting patterns across ethnicity in these developmental expectations. Specifically, Caucasian mothers not only had younger expectations than Caucasian adolescents for diabetes activities, but they also had younger expectations than did Latina mothers. Latina mothers, on the other hand, had older expectations than their adolescents for prudential activities, and displayed larger parent-adolescent discrepancies for prudential expectations than did Caucasians. These differing expectations could result Caucasian and Latino parents and adolescents having different information and experiences related to their culture. These differing expectations may further suggest that parents and adolescents, even of similar cultural backgrounds, differ in their roles, experiences, and perceptions causing

discrepant expectations (Dekovic et al., 1997). As previously stated, the parents' role has generally been to protect and promote safe growth and development of their child (Feldman & Quatman, 1988). Findings that mothers in general, and Latina mothers in particular, have older expectations for prudential activities, suggest they may perceive these activities as potentially having negative consequences and therefore being a risk to their child's safety.

These patterns are consistent with the pediatric diabetes literature conducted on mostly Caucasian samples. Previous findings suggest mothers may have premature expectations for adolescent diabetes management autonomy, as evidenced by their belief that their child may be capable of independently managing their diabetes care up to one year earlier than physicians believe (Wysocki et al., 1992). In addition, these patterns add support to the literature that parents from collectivist orientations (i.e., the Latino culture in the present study) have later expectations for autonomy than those from individualistic orientations (Feldman & Quatman, 1988; Feldman & Rosenthal, 1990; Fuligni, 1998; Roer-Strier & Rivlis, 1998; Rosenthal & Bornholt, 1988).

Interestingly, however, there was no evidence of ethnic differences in how developmental expectations were associated with important indices such as responsibility, conflict, diabetes management, or psychosocial adjustment across ethnicity. The lack of moderation effects for ethnicity suggests that parental responsibility, diabetes conflict, and diabetes outcomes were not so much affected by differing expectations across ethnicity, but may be affected by other factors. These findings are consistent with the literature that indicated Latino family involvement and support is important to Latino adolescents with type 1 diabetes in the same way involvement and support have been important for Caucasian adolescents (Hsin et al., 2010). These findings also

support research suggesting that Latino adolescents raised in the United States tend to desire or expect the same levels of independence and behavioral autonomy as their Caucasian counterparts raised in mainstream American families (Martinez, 2006).

Limitations and Implications

The present study has several limitations that should be considered when interpreting the results. Although the current sample was diverse, the sample size was relatively small which may have affected power to discern small effects. The study may also be limited by a possibly select sample, given that only 48% of the eligible individuals agreed to participate in the study. There may have been selection biases that we are not aware of that may have affected the results. Because the data were cross-sectional and correlational, causation remains unclear. For example, adolescents may develop their age expectations for diabetes management out of their experiences of being given responsibility, rather than the hypothesized direction of expectations driving responsibility. The Latino sample in the present study included mothers from various countries of origin that may have affected certain results; thus, future studies should incorporate homogeneity in cultural orientation in order to infer associations with parenting (Zimmer-Gembeck & Collins, 2003). Finally, the questionnaire measures used for Spanish-speaking Latinos in this study may pose a limitation. While the measures were carefully translated and back translated from English to Spanish, they were developed for English speakers and may have lost some authenticity during translation.

Latino parents have been found to have restrictions for a range of independent activities, including adolescent television watching (Blair, Blair, & Madamba, 1999), which is considered more of a personal than a prudential activity in the present study, suggesting the idea of

“ambiguously personal activities” (Sher-Censor, Parke, & Coltrane, 2011). These activities are those adolescents may perceive as personal choice, but their parents may feel are more prudential (Roche et al., 2013). The idea and meaning of “ambiguously personal activities” in reference to a developmental expectation domain should be further understood as it could influence what activities make up which domains, as well as autonomy associations with outcomes. The number of associations between age, developmental expectations, and diabetes outcomes suggests age may be an influential factor in parent and adolescent expectations. Future studies should include larger age ranges, as an older adolescent population may provide a better comparison for understanding these associations over time. Gender was also shown to be a factor in certain findings. Future research should examine the differing expectations for diabetes management between males and females and their parents in the context of varying cultural principles, which may elucidate previous inconsistent findings. In addition, replicating the study with different individualistic and collectivist cultures would also prove useful in understanding associations regarding ethnicity and culture.

These results of the present study may be useful for facilitating better diabetes management in a clinical setting, specifically in aiding physicians who may experience differing expectations, compared to the families they work with, as adolescents transition to more independently managing their diabetes. As previously stated, parents believe their child can independently manage their diabetes approximately one year earlier than do physicians and children (Wysocki et al., 1992). These findings, accompanied by the findings in the present study, may help physicians understand how to better understand parents and adolescents beliefs,

specifically of various ethnicities, and inform them of proper diabetes care and the risks of mismanagement.

References

- American Diabetes Association (2011). Standards of Medical Care in Diabetes. *Diabetes Care*, 34(1), S11-S61.
- Anderson B. J., Ho J., Brackett J. B., Finkelstein D., & Laffel L. M. (1997). Parental involvement in diabetes management tasks: relationships to blood glucose monitoring adherence and metabolic control in young adolescents with insulin-dependent diabetes mellitus. *Journal of Pediatric Psychology*, 130, 257–265.
- Anderson B. J., Brackett J. B., Ho J. B., & Laffel M. B. (1999). An office-based intervention to maintain parent-adolescent teamwork in diabetes management: impact on parent involvement, family conflict, and subsequent glycemic control. *Diabetes Care*, 22, 713–721.
- Anderson, B. J., Brackett, J. B., Ho, J. B., & Laffel, L. M. (2000). An intervention to promote family teamwork in Diabetes management tasks: Relationships among parental involvement, adherence to blood glucose monitoring, and glycemic control in young adolescents with type 1 diabetes. In D. Drotar (Ed.), *Promoting Adherence to medical treatment in chronic childhood illness: Concepts, methods, and interventions* (pp. 347–365). Mahwah, NJ: Lawrence Erlbaum.
- Anderson B. J., Vangsness L., Connell A., Butler D., Goebel-Fabbri A., & Laffel L. M. (2002). Family conflict, adherence, and glycemic control in youth with short duration type 1 diabetes. *Diabetic Medicine*, 19, 635–642.
- Anderson, B. J. (2009), Psychosocial care for young people with diabetes. *Pediatric Diabetes*, 10, 3–8.

- American Diabetes Association. (2008). Standards of medical care in diabetes. *Diabetes Care*, 31, S12–S54.
- Auslander W. F., Anderson B. J., Bubb J., Jung, K. C., & Santiago, J. V. (1990). Risk factors to health in diabetic children: A prospective study from diagnosis. *Health and Social Work*, 15, 133–142.
- Bámaca-Colbert, M. A., Umaña-Taylor, A. J., Espinosa-Hernández, E., & Brown, A. M. (2012). Behavioral autonomy age expectations among Mexican-origin mother–daughter dyads: An examination of within-group variability. *Journal of Adolescence*, 35, 691–700.
- Black S. A., Ray L. A., & Markides K. S. (1999). The prevalence and health burden of self-reported diabetes in older Mexican Americans: findings from the Hispanic established populations for epidemiologic studies of the elderly. *American Journal of Public Health*, 89, 546–552.
- Blair, S. L., Blair, M. C. L., & Madamba, A. B. (1999). Racial/ethnic differences in high school students' academic performance: Understanding the interweave of social class and ethnicity in the family context. *Journal of Comparative Family Studies*, 30, 539–555.
- Bryden K. S., Peveler R. C., Stein A., Neil A., Mayou R. A., & Dunger D. B. (2001). Clinical and psychological course of diabetes from adolescence to young adulthood: a longitudinal cohort study. *Diabetes Care*, 24, 1536–1540.
- Carter, J. S., Pugh, J. A., & Monterrosa, A. (1996). Non-insulin-dependent diabetes mellitus in minorities in the United States. *Annals of Internal Medicine*, 125(3), 221–232.
- Centers for Disease Control and Prevention. (2011) *National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States*.

- Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.
- Collins, W. A., Laursen, B., Mortensen, N., Luebker, C., & Ferreira, M. (1997). Conflict processes and transitions in parent and peer relationships: Implications for autonomy and regulation. *Journal of Adolescent Research*, 12, 178–198.
- Cortes, D. E. (1995). Variations in familism in two generations of Puerto Ricans. *Hispanic Journal of Behavioral Sciences*, 17(2), 249-255.
- Daddis C. & Smetana J. (2005). Middle-class African American families' expectations for adolescents' behavioural autonomy. *International Journal of Behavioral Development*, 29, 371–381.
- Daneman, D. (2006). Type 1 diabetes. *Lancet*, 367, 847-858.
- Dashiff, C. J., McCaleb, A., & Cull, V. (2006). Self-care of young adolescents with type 1 diabetes. *Journal of Pediatric Nursing*, 21(3), 222-232.
- Davis, C., Delamater, A. M., Shaw, K. H., La Greca, A. M., Eidson, M., Perez-Rodriguez, J. E. ... Nemery, R. (2001). Brief report: Parenting styles, regimen adherence, and glycemic control in 3- to 10-year-old children with diabetes. *Journal of Pediatric Psychology*, 26, 123–129.
- Deković, M., Noom, M. J., & Meeus, W. (1997). Expectations regarding development during adolescence: Parental and adolescent perceptions. *Journal of Youth and Adolescence*, 26(3), 253-272.

Delamater, A. M., Shaw, K. H., Applegate, E. B., Pratt, I. A., Eidson, M., Lancelotta, G. X., ...

Richton, S. (1999). Risk for metabolic control problems in minority youth with diabetes.

Diabetes Care, 22, 700–705.

Delamater A. M. (2000). Quality of life in youths with diabetes. *Diabetes Spectrum*, 13, 42–46.

Delameter, A. M. (2007). Psychological care of children and adolescents with diabetes. *Pediatric*

Diabetes, 8, 340-348.

Drotar D. & Ievers C. (1994). Age differences in parent and child responsibilities for

management of cystic fibrosis and insulin-dependent diabetes mellitus. *Journal of*

Development and Behavioral Pediatric, 15, 265–272.

Dumka, L. E., Roosa, M. W., & Jackson, K. M. (1997). Risk, conflict, mothers' parenting, and

children's adjustment in low-income, Mexican immigrant, and Mexican American

families. *Journal of Marriage and Family*, 59 (2), 309-323.

Federal Interagency Forum on Child and Family Statistics. (2002). *America's children: Key*

national indicators of well-being. Washington, DC: Government Printing Office.

Feldman, S. S., & Quatman, T. (1988). Factors influencing age expectations for adolescent

autonomy: A study of early adolescents and parents. *Journal of Early Adolescence*, 8,

325- 343.

Feldman, S. S., & Rosenthal, D. A. (1991). Age expectations of behavioural autonomy in Hong

Kong, Australian, and American youth: The influence of family variables and

adolescents' values. *International Journal of Psychology*, 26, 1-23.

Fuligni, A. J. (1998). Authority, autonomy, and parent–adolescent conflict and cohesion: A study

of adolescents from Mexican, Chinese, Filipino, and European backgrounds.

- Developmental Psychology, 34, 782–792.
- Goran, M. I., & Gower, B. A. (2001). Longitudinal study on pubertal insulin resistance. *Diabetes*, 50, 2444–2450.
- Giordano B. P., Petrila A., Banion C. R., & Neuenkirchen G. (1992). The challenge of transferring responsibility for diabetes management from parent to child. *Journal of Pediatric Health Care*, 6, 235–239.
- Grey, M., Davidson, M., Boland, E., & Tamborlane, W. (2001). Clinical and psychosocial factors associated with achievement of treatment goals in adolescents with diabetes mellitus. *Journal of Adolescent Health*, 28, 377–385.
- Halgunseth, L. C., Ispa, J. M., & Rudy, D. (2006). Parental control in Latino families: An integrated review of the literature. *Child Development*, 77(5), 1282–1297.
- Helgeson, V. S., Reynolds, K. A., Siminerio, L., Escobar, O., & Becker, D. (2008). Parent and adolescent distribution of responsibility for self-care: Links to health outcome. *Journal of Pediatric Psychology*, 33, 497–508.
- Hill, N. E., Bush, K. R., & Roosa, M. W. (2003). Parenting and family socialization strategies and children's mental health: Low-income, Mexican-American and Euro-American mothers and children. *Child Development*, 74(1), 189–204.
- Hofstede, G. (1980). *Culture's consequences*. Beverly Hills, CA: Sage Publications.
- Holmbeck, G. N., & O'Donnell, K. (1991). Discrepancies between perceptions of decision making and behavioral autonomy. In R. L. Paikoff (Ed.), *Shared views in the family during adolescence: New directions for development* (pp. 51–69). San Francisco, CA: Jossey-Bass.

- Hood, K. K., Butler, D. A., Anderson, B. J., & Laffel, L. M. (2007). Updated and revised Diabetes Family Conflict Scale. *Diabetes Care*, *30*(7), 1764–1769.
- Hood, K. K., Peterson, C. M., Rohan, J. M., & Drotar, D. (2009). Association between adherence and glycemic control in pediatric type 1 diabetes: A meta-analysis. *Pediatrics*, *124*(6), 1171-1179.
- Hsin, O., La Greca, A. M., Valenzuela, J., Delamater, A. M., & Moine, C. T. (2010). Adherence and glycemic control among Hispanic youth the type 1 diabetes: Role of family involvement and acculturation. *Journal of Pediatric Psychology*, *35*(2), 156-166.
- Joiner, T. E., Perez, M., Wagner, K. D., Berenson, A., & Marquina, G. S. (2001). On fatalism, pessimism, and depressive symptoms among Mexican-American and other adolescents attending an obstetrics-gynecology clinic. *Behaviour Research and Therapy*, *39*, 887–896.
- Kakleas, K., Kandyla, B., Karayianni, C., & Karavanaki, K. (2009). Psychosocial problems in adolescents with type 1 diabetes mellitus. *Diabetes & Metabolism*, *35*, 339–350.
- Kirk, J. K., Passmore, L. V., Bell, R. A., Venkat Narayan, K. M., D’Agostino, R. B., Arcury, T. A., ... Quandt, S. A. (2008). Disparities in A1C levels between Hispanic and Non-Hispanic white adults with diabetes. *Diabetes Care*, *31*(2), 240-246.
- Kovacs, M. (1985). The Children’s Depression Inventory (CDI). *Psychopharmacology Bulletin*, *21*, 995–998.
- Kovacs, M., Iyengar, S., Goldston, D., Stewart, J., Obrosky, D. S., & Marsh, J. (1990). Psychological functioning of children with insulin-dependent diabetes mellitus: A longitudinal study. *Journal of Pediatric Psychology*, *15*, 619-632.

- Kovacs M., Goldston D., Obrosky D. S., Iyengar S. (1992). Prevalence and predictors of pervasive noncompliance with medical treatment among youths with insulin-dependent diabetes mellitus. *Journal of American Academy in Child Adolescent Psychiatry*, 31(6), 1112-1119.
- Kovacs M., Goldston D., Obrosky D.S., & Bonar L. K. (1997). Psychiatric disorders in youths with IDDM: rates and risk factors. *Diabetes Care*, 20, 36-44.
- Kovacs M., Obrosky D. S., Goldston D., & Drash A. (1997). Major depressive disorder in youths with IDDM: a controlled prospective study of course and outcome. *Diabetes Care*, 20, 45-51.
- La Greca, A. M., Swales, T., Klemp, S., & Madigan, S. (1988). *Self care behaviors among adolescents with diabetes*. Paper presented at the Ninth Annual Sessions of the Society of Behavioral Medicine, Boston.
- La Greca, A. M., Follansbee, D., & Skyler, J. S. (1990). Development and behavioral aspects of diabetes management in youngsters. *Children's Health Care*, 19, 132-139.
- La Greca A. M., Auslander, W. F., Grecco, P., Spetter, D., Fisher Jr., E. B., & Santiago, J. V. (1995). I get by with a little help from my family and friends: Adolescents support for diabetes care. *Journal of Pediatric Psychology*, 20, 449-476.
- Larson, R. W., & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Development*, 62, 284-300.
- Lawrence, J. M., Mayer-Davis, E. J., Reynolds, K., Beyer, J., Pettitt, D. J., D'Agostino R. B. ... Hamman, R. F. (2009). Diabetes in Hispanic American youth: Prevalence, incidence,

- demographics, and clinical characteristics: the SEARCH for Diabetes in Youth Study. *Diabetes Care*, 32, S123–S132.
- Libman I., Songer T., & LaPorte R. (1993). How many people in the U.S. have IDDM? *Diabetes Care*, 16, 841-842.
- Marsiglio, W., Amato, P., Day, R. D., & Lamb, M. E. (2001). Scholarship on fatherhood in the 1990s and beyond. In R. M. Milardo (Ed.), *Understanding families into the new millennium: A decade of review* (pp. 392–410). Lawrence, KS: NCFR and Alliance Communication Group.
- Martinez, C. R. (2006). Effects of differential family acculturation on Latino adolescent substance use, *Family Relations*, 55, 06–317.
- Miller, V. A., & Drotar, D. (2003). Discrepancies between mother and adolescent perceptions of diabetes-related decision-making autonomy and their relationship to diabetes-related conflict and adherence to treatment. *Journal of Pediatric Psychology*, 28, 265–274.
- Montemayor, R., & Hanson, E. A. (1985). A naturalistic view of conflict between adolescents and their parents and siblings. *Journal of Early Adolescence*, 5, 23–30.
- Onkamo, P., Väänänen, S., Karnonen, M., & Tuomilehto, J. (1999). Worldwide increase in incidence of type 1 diabetes – the analysis of the data published on incidence trends. *Diabetologia*, 42, 1395-1403.
- Palmer, D. L., Berg, C. A., Wiebe, D. J., Beveridge, R., Korbel, C., Upchurch, R., ... Donaldson, D. L. (2004). The role of autonomy and pubertal status in understanding age differences in maternal involvement in diabetes responsibility across adolescence. *Journal of Pediatric Psychology*, 29(1), 35–46.

Palmer, D. L., Berg, C. A., Butler, J., Fortenberry, K., Murray, M., Lindsay, R., ... Wiebe, D. J.

(2009). Mothers', Fathers', and Children's Perceptions of Parental Diabetes

Responsibility in Adolescence: Examining the Roles of Age, Pubertal Status, and

Efficacy. *Journal of Pediatric Psychology*, 34(2), 195–204.

Pew Hispanic Center. (2010). *Statistical portrait of Hispanics in the United States*. Retrieved

from <http://pewhispanic.org/factsheets/factsheet.php?FactsheetID=58>.

PubMed Health. (2011, June). *Type 1 diabetes*. Retrieved from

<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001350/>.

Quittner, A. L., Espelage, D. L., Opiari, L. C., Carter, B., Eid, N., & Eigen, H. (1998). Role

strain in couples with and without a child with a chronic illness: Associations with

marital satisfaction, intimacy, and daily mood. *Health Psychology*, 17, 112–124.

Riesch S. K. (1997). Parent-adolescent communication in nondistressed families. *Annual Review*

of Nursing Research, 15, 123–154.

Roche, K. M., Caughy, M. O., Shuster, M. A., Bogart, L. M., Dittus, P. J., & Franzini, L. (2013).

Cultural orientations, parental beliefs and practices, and Latino adolescents' autonomy

and independence. *Journal of Youth Adolescence*.

Roer-Strier, D. & Rivlis M. (1998). Timetable of psychological and behavioural autonomy

expectations among parents from Israel and the former Soviet Union. *International*

Journal of Psychology, 33(2), 123-135.

Romero, A. J., Martinez, D., & Carvajal, S. C. (2007). Bicultural stress and adolescent risk

behaviors in a community sample of Latinos and non-Latino European Americans.

Ethnicity & Health, 12, 443–463.

- Rosenthal, D. & Bornholt, L. (1988). Expectations about development in Greek- and Anglo-Australian families. *Journal of Cross-Cultural Psychology*, 19(1), 19-34.
- Rubin, R. R., Young-Hyman, D., & Peyrot, M. (1989). Parent-child responsibility and conflict in diabetes care. *Diabetes*, 38(Suppl 2), 28.
- Ruiz, J. M., Steffen, P., & Smith, T. B. (2013). Hispanic Mortality Paradox: A Systematic Review and Meta-Analysis of the Longitudinal Literature. *American Journal of Public Health*, 103(3), e52-e60.
- Sacks D. B., Bruns D. E., Goldstein D. E., Maclaren N. K., McDonald J. M., & Parrott M. (2002). Guidelines and recommendations for laboratory analysis in the diagnosis and management of diabetes mellitus. *Clinical Chemistry*, 48, 436-472.
- Sher-Censor, E., Parke, R. D., & Coltrane, S. (2011). Perceptions of Mexican-American adolescents and parents regarding parental autonomy promoting: divergent views and adolescents' adjustment, *Journal of Early Adolescence*, 31(5), 671-693.
- Silverstein J., Klingensmith G., Copeland, K., Plotnick, L., Kaufman, F., Laffel, L. ... Clark, N. (2005). Care of children and adolescents with type 1 diabetes. *Diabetes Care*, 28, 186-212.
- Schilling L., Knafl K., & Grey M. (2006). Changing patterns of self management in youth with type 1 diabetes. *Journal of Pediatric Nursing*, 21(6), 412-424.
- The Diabetes Control and Complications Trial Research Group. (1993). The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *The New England Journal of Medicine*, 329, 977-986.

The Diabetes Control and Complications Trial (DCCT)/Epidemiology of Diabetes Interventions

and Complications (EDIC) Research Group. (2001). Beneficial effects of intensive therapy of diabetes among adolescents: outcomes after the conclusion of the Diabetes Control and Complications Trial (DCCT). *Journal of Pediatrics*, 139, 804–812.

Triandis, H. C. (1995). *Individualism and collectivism*. Boulder, CO: Westview Press.

U.S. Census. (2007). *Minority population tops 100 million*. Retrieved June 1, 2007 from

<http://www.census.gov/Press-Release/www/releases/archives/population/010048.html>.

Veroff, J. & Feld, S. (1970). *Marriage and work in America: A study of motives and roles*. New York, NY: Van Nostrand Reinhold Company.

Wang, J. T., Wiebe, D. J., & White, P. C. (2011). Developmental trajectories of metabolic control among White, Black, and Hispanic youth with type 1 diabetes. *Journal of Pediatrics*, 159(4), 571-576.

Weinger K., O'Donnell K. A., & Ritholz M. D. (2001). Adolescent views of diabetes-related parent conflict and support: a focus group analysis. *Journal of Adolescent Health*, 29, 330–336.

Weissberg-Benchell J., Glasgow A. M., Tynan W. D., Wirtz, P., Turek, J., & Ward, J. (1995). Adolescent diabetes management and mismanagement. *Diabetes Care*, 18, 77–82.

Weissberg-Benchell, J. (2009). Collaborative involvement of primary and secondary caregiver associations with youths' diabetes outcomes. *Journal of Pediatric Psychology*, 34(8), 869-81

Wiebe, D. J., Berg, C. A., Korbel, C., Palmer, D. L., Beveridge, R. M., Upchurch, R., ...

Donaldson, D.L. (2005). Children's appraisals of maternal involvement in coping with

- diabetes: Enhancing our understanding of adherence, metabolic control, and quality of life across adolescence. *Journal of Pediatric Psychology*, 30, 167–178.
- Wysocki T., Meinhold P. A., Cox D. J., & Clarke W. L. (1990). Survey of diabetes professionals regarding developmental changes in diabetes self care. *Diabetes Care*, 13, 65-68.
- Wysocki, T., Meinhold, P. A., Abrams, K. C., Barnard, M. U., Clarke, W. L., Bellando, B. J., ... Bourgeois, M. J. (1992). Parental and professional estimates of self-care independence of children and adolescents with IDDM. *Diabetes Care*, 15, 43–52.
- Wysocki, T., Taylor, A., Hough, B. S., Linscheid, T. R., Yeates, K. O., & Naglieri, J. A. (1996). Deviation from developmentally appropriate self-care autonomy: Association with diabetes outcomes. *Diabetes Care*, 19, 119-125.
- Wysocki, T., Nansel, T. R., Holmbeck, G. N., Chen, R., Laffel, L. M., Anderson, B. J., & Weissberg-Benchell, J. (2009). *Journal of Pediatric Psychology*, 34(8), 869-881.
- Zayas, L. H. (1994). Hispanic family ecology and early childhood socialization: Health care implications. *Family Systems Medicine*, 12(3), 315-325.
- Zimmer-Gembeck, M. J., & Collins, W. A. (2003). Autonomy development during adolescence. In G. R. Adams & M. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 175–204). Oxford: Blackwell.

Table 1

Paired Samples t-Test in Overall Sample and Within Ethnic Groups

Developmental Expectations Domain	Overall				Caucasian				Latino			
	Adolescent <i>M (SD)</i>	Mother <i>M (SD)</i>	<i>t</i>	<i>df</i>	Adolescent <i>M (SD)</i>	Mother <i>M (SD)</i>	<i>t</i>	<i>df</i>	Adolescent <i>M (SD)</i>	Mother <i>M (SD)</i>	<i>t</i>	<i>df</i>
Personal Items	2.63 (1.01)	2.68 (1.11)	-0.41	108	2.67 (1.01)	2.68 (1.17)	-0.06	59	2.59 (1.01)	2.69 (1.03)	-0.58	48
Prudential Items	3.86 (0.84)	4.02 (0.64)	-1.71*	96	3.94 (0.80)	3.93 (0.63)	0.03	57	3.75 (0.89)	4.14 (0.65)	-2.62*	38
Diabetes Blood Glucose Items	2.64 (1.47)	2.44 (1.22)	1.10	105	2.65 (1.46)	2.25 (0.96)	1.95	59	2.62 (1.49)	2.70 (1.47)	-2.42	45
Diabetes Insulin Items	2.83 (1.70)	2.42 (1.38)	1.86*	103	2.87 (1.71)	2.17 (1.09)	2.74*	58	2.78 (1.71)	2.74 (1.64)	0.10	44
Diabetes Social Items	2.21 (1.30)	1.82 (1.11)	2.34*	111	2.31 (1.32)	1.81 (1.04)	2.43*	60	2.08 (1.27)	1.86 (1.20)	0.88	50

Note. * = $p < .05$, ** = $p < .001$

Table 2

Correlation Matrix Between Developmental Expectations with Diabetes Responsibility and Diabetes Conflict

	Responsibility (A)	Responsibility (M)	Conflict (A for M)	Conflict (A for F)	Conflict (M)
Adolescent					
Personal	.08	.15	-.01	.02	-.08
Prudential	.13	.10	-.07	-.01	-.38**
Diabetes Blood Glucose	.24*	.29**	.06	-.02	-.12
Diabetes Insulin	.22	.16	-.03	.06	-.20*
Diabetes Social	-.12	-.06	-.03	-.06	-.08
Mother					
Personal	.06	-.04	.02	.05	.03
Prudential	.19	.18	.11	.08	-.12
Diabetes Blood Glucose	.15	.15	.09	.08	.19
Diabetes Insulin	.08	.06	.07	.03	.11
Diabetes Social	.03	.04	-.01	.02	.27**
Mother-Adolescent Differences					
Personal	-.03	-.18	.00	-.01	.06
Prudential	-.05	-.05	.16	.03	.24*
Diabetes Blood Glucose	-.13	-.19	.00	.04	.20*
Diabetes Insulin	-.11	-.11	.06	-.06	-.20
Diabetes Social	.11	.08	.02	.06	.24*

Note. M = Mother report; F = Father report; A = Adolescent report.

Note. * = $p < .05$, ** = $p < .001$.

Table 3

Correlation Matrix Between Developmental Expectations with Metabolic Control, Adherence, and Depressive Symptoms

Developmental Expectation Domain	Adherence (A)	Adherence (M)	Depression (A)	HbA1c
	Adolescent			
Personal	.02	-.06	-.11	-.07
Prudential	.26**	.17	-.33**	.17
Diabetes Blood Glucose	.27**	.20*	-.08	.10
Diabetes Insulin	.15	.03	-.08	-.11
Diabetes Social	.06	-.02	-.02	.07
Developmental Expectation Domain	Mother			
	Mother-Adolescent Differences			
Personal	-.03	-.09	-.10	-.12
Prudential	.20*	.21*	-.20*	-.30**
Diabetes Blood Glucose	-.10	-.05	-.01	.01
Diabetes Insulin	-.15	-.16	-.00	-.01
Diabetes Social	-.07	-.09	.02	-.04
Developmental Expectation Domain	Mother-Adolescent Differences			
	Mother-Adolescent Differences			
Personal	-.03	-.02	.01	-.07
Prudential	-.10	-.08	.17	-.05
Diabetes Blood Glucose	-.29**	-.21*	.07	-.09
Diabetes Insulin	-.19*	-.12	.07	.05
Diabetes Social	-.08	-.04	.02	-.10

Note. M = Mother report; F = Father report; A = Adolescent report.

Note. * = $p < .05$, ** = $p < .001$.

Table 4

Descriptive Information for Overall Sample and Between Ethnic Groups

	Overall Sample <i>N</i> = 118 <i>M</i> (<i>SD</i>)	Caucasian <i>N</i> = 62 <i>M</i> (<i>SD</i>)	Latino <i>N</i> = 56 <i>M</i> (<i>SD</i>)
Adolescent Developmental Expectations			
Personal	2.63 (1.01)	2.66 (1.01)	2.53 (0.98)
Prudential	3.86 (0.84)	3.89 (0.87)	3.69 (0.93)
Diabetes Blood Glucose	2.64 (1.47)	2.64 (1.45)	2.60 (1.44)
Diabetes Insulin	2.83 (1.70)	2.86 (1.69)	2.69 (1.66)
Diabetes Social	2.21 (1.30)	2.33 (1.32)	2.05 (1.25)
Mother Developmental Expectations			
Personal	2.68 (1.11)	2.68 (1.17)	2.67 (1.03)
Prudential	4.02 (0.64)	3.92 (0.63)	4.12 (0.61)
Diabetes Blood Glucose	2.44 (1.22)	2.25 (0.96)*	2.74 (1.45)*
Diabetes Insulin	2.42 (1.38)	2.15 (1.09)*	2.70 (1.58)*
Diabetes Social	1.83 (1.11)	1.81 (1.04)	1.84 (1.20)
Mother-Adolescent Developmental Expectations Differences			
Personal	0.54 (1.37)	0.01 (1.45)	0.11 (1.28)
Prudential	0.15 (0.88)	-0.00 (0.83)*	0.39 (0.92)*
Diabetes Blood Glucose	-0.19 (1.81)	-0.40 (1.58)	0.07 (2.06)
Diabetes Insulin	-0.41 (2.27)	-0.70 (1.96)	-0.04 (2.60)
Diabetes Social	-0.37 (4.68)	-0.50 (1.61)	-0.22 (1.76)
Adolescent report of responsibility	2.66 (0.61)	2.65 (0.65)	2.67 (0.55)
Mother report of responsibility	3.04 (0.57)	2.98 (0.64)	3.13 (0.47)
Adolescent report of conflict with mother	1.79 (0.62)	1.66 (0.62)*	1.93 (0.60)*
Adolescent report of conflict with father	1.54 (0.65)	1.48 (0.60)	1.61 (0.70)
Mother report of conflict with adolescent	1.66 (0.51)	1.51 (0.42)**	1.87 (0.54)**
Adolescent report of adherence	4.04 (0.68)	4.09 (0.57)	3.97 (0.78)
Mother report of adolescent adherence	3.91 (0.73)	3.82 (0.74)	4.01 (0.72)
Adolescent report of depressive symptoms	8.36 (6.09)	7.69 (5.32)	9.11 (6.83)
HbA1c	8.55 (1.55)	8.35 (1.43)	8.77 (1.67)

Note. * = $p < .05$, ** = $p < .001$.

Table 5

Correlation Matrix Between Developmental Expectations with Age

	<i>r</i>
Adolescent Developmental Expectations	
Personal	-.06
Prudential	-.20*
Diabetes Blood Glucose	-.20*
Diabetes Insulin	-.20*
Diabetes Social	.02
Mother Developmental Expectations	
Personal	.06
Prudential	-.10
Diabetes Blood Glucose	.04
Diabetes Insulin	.05
Diabetes Social	.21*
Mother-Adolescent Differences Developmental Expectations	
Personal	.09
Prudential	.17
Diabetes Blood Glucose	.23*
Diabetes Insulin	.18
Diabetes Social	.00
Outcome Variables	
Adolescent report of responsibility	-.53**
Mother report of responsibility	-.48**
Adolescent report of conflict with mother	-.12
Adolescent report of conflict with father	-.31**
Mother report of conflict with adolescent	.20*
Adolescent report of adherence	-.25**
Mother report of adolescent adherence	-.29**
Adolescent report of depressive symptoms	.15
HbA1c	.20*

Note. * = $p < .05$, ** = $p < .001$.

Table 6

Descriptive Information for Overall Sample and Between Gender Groups

	Male <i>N</i> = 54 <i>M</i> (<i>SD</i>)	Female <i>N</i> = 64 <i>M</i> (<i>SD</i>)
Adolescent Developmental Expectations		
Personal	2.49 (0.95)	2.69 (1.03)
Prudential	3.77 (0.87)	3.84 (0.92)
Diabetes Blood Glucose	2.58 (1.39)	2.66 (1.49)
Diabetes Insulin	2.39 (1.45)*	3.13 (1.78)*
Diabetes Social	2.21 (1.45)	2.20 (1.21)
Mother Developmental Expectations		
Personal	2.55 (0.94)	2.78 (1.23)
Prudential	3.91 (0.63)	4.10 (0.62)
Diabetes Blood Glucose	2.41 (1.20)	2.53 (1.26)
Diabetes Insulin	2.30 (1.34)	2.49 (1.37)
Diabetes Social	1.82 (1.07)	1.83 (1.15)
Mother-Adolescent Developmental Expectations Differences		
Personal	0.18 (1.30)	0.09 (1.44)
Prudential	0.11 (0.87)	0.20 (0.90)
Diabetes Blood Glucose	-0.21 (1.59)	-0.18 (2.00)
Diabetes Insulin	-0.11 (1.99)	-0.69 (2.49)
Diabetes Social	-0.39 (1.75)	-0.36 (1.63)
Adolescent report of responsibility	2.73 (0.60)	2.60 (0.61)
Mother report of responsibility	3.16 (0.57)*	2.94 (0.56)*
Adolescent report of conflict with mother	1.83 (0.68)	1.75 (0.58)
Adolescent report of conflict with father	1.58 (0.70)	1.51 (0.62)
Mother report of conflict with adolescent	1.68 (0.46)	1.65 (0.55)
Adolescent report of adherence	4.18 (0.58)*	3.92 (0.74)*
Mother report of adolescent adherence	3.88 (0.75)	3.94 (0.72)
Adolescent report of depressive symptoms	7.75 (5.61)	8.88 (6.48)
HbA1c	8.81 (1.68)	8.33 (1.41)

Note. * = $p < .05$, ** = $p < .001$.

Appendix A

Expectations for Independence Time Table—Adolescent Version

Instructions: In families, kids experience different levels of freedom at different ages. We want to know how this experience is for you. Please tell us at what age you expect to do the following behaviors. If you already do it, please tell us at what age you started. Choose "never" if you think that this is something you will never be able to do.

	Before Age 12	12-13	14-15	16-17	Age 18 or older	Never
Choose whether to do assigned chores	1	2	3	4	5	6
Decide what time to get up in the morning	1	2	3	4	5	6
Choose whether to clean your room	1	2	3	4	5	6
Choose what TV shows or movies to watch	1	2	3	4	5	6
Decide how to talk to parents (argue, talk back)	1	2	3	4	5	6
Choose what clothes you wear even if parents disapprove	1	2	3	4	5	6
Smoke cigarettes	1	2	3	4	5	6
Choose what music to listen to	1	2	3	4	5	6
Come home at night late as you want	1	2	3	4	5	6
Choose whether to use good manners	1	2	3	4	5	6
Decide how to spend your free time	1	2	3	4	5	6
Choose your own friends even if parents disapprove	1	2	3	4	5	6
Choose to do things with friends rather than family	1	2	3	4	5	6
Talk using slang or curse words	1	2	3	4	5	6
Drink beer, wine, or other alcohol	1	2	3	4	5	6
Decide how to spend your own	1	2	3	4	5	6

money (allowance, gift money)						
Go out on a date	1	2	3	4	5	6
Choose when to do homework	1	2	3	4	5	6
Stay home alone at night when parents are out	1	2	3	4	5	6
Choose what books or magazines to read	1	2	3	4	5	6
Go on an overnight trip with males and females, without supervision	1	2	3	4	5	6
Choose your own hairstyle even if parents disapprove	1	2	3	4	5	6
Decide when to give yourself an insulin injection	1	2	3	4	5	6
Decide your own insulin dose	1	2	3	4	5	6
Handle high blood sugar on your own, without parents knowing or supervising	1	2	3	4	5	6
Handle low blood sugar on your own, without parents knowing or supervising	1	2	3	4	5	6
Test your own blood sugar with no one watching	1	2	3	4	5	6
Choose when to test your blood sugar	1	2	3	4	5	6
Choose who knows you have diabetes	1	2	3	4	5	6
Talk to people at school (teachers, nurse) about your diabetes on your own	1	2	3	4	5	6

Appendix B

Expectations for Independence Time Table—Parent Version

Instructions: In families, kids experience different levels of freedom at different ages. We want to know how this experience is for you. Please tell us at what age you expect to do the following behaviors. If you already do it, please tell us at what age you started. Choose "never" if you think that this is something you will never be able to do.

	Before Age 12	12-13	14-15	16-17	Age 18 or older	Never
Choose whether to do assigned chores	1	2	3	4	5	6
Decide what time to get up in the morning	1	2	3	4	5	6
Choose whether to clean his/her room	1	2	3	4	5	6
Choose what TV shows or movies to watch	1	2	3	4	5	6
Decide how to talk to parents (argue, talk back)	1	2	3	4	5	6
Choose what clothes he/she wears even if parents disapprove	1	2	3	4	5	6
Smoke cigarettes	1	2	3	4	5	6
Choose what music to listen to	1	2	3	4	5	6
Come home at night as late as he/she wants	1	2	3	4	5	6
Choose whether to use good manners	1	2	3	4	5	6
Decide how to spend his/her free time	1	2	3	4	5	6
Choose his/her own friends even if parents disapprove	1	2	3	4	5	6
Choose to do things with friends rather than family	1	2	3	4	5	6
Talk using slang or curse words	1	2	3	4	5	6

Drink beer, wine, or other alcohol	1	2	3	4	5	6
Decide how to spend his/her own money (allowance, gift money)	1	2	3	4	5	6
Go out on a date	1	2	3	4	5	6
Choose when to do homework	1	2	3	4	5	6
Stay home alone at night when parents are out	1	2	3	4	5	6
Choose what books or magazines to read	1	2	3	4	5	6
Go on an overnight trip with males and females, without supervision	1	2	3	4	5	6
Choose his/her own hairstyle even if parents disapprove	1	2	3	4	5	6
Decide when to give himself/herself an insulin injection	1	2	3	4	5	6
Decide his/her own insulin dose	1	2	3	4	5	6
Handle high blood sugar on his/her own, without parents knowing or supervising	1	2	3	4	5	6
Handle low blood sugar on his/her own, without parents knowing or supervising	1	2	3	4	5	6
Test his/her own blood sugar with no one watching	1	2	3	4	5	6
Choose when to test his/her blood sugar	1	2	3	4	5	6
Choose who knows he/she has diabetes	1	2	3	4	5	6
Talk to people at school (teachers, nurse) about his/her diabetes on his/her own	1	2	3	4	5	6

Appendix C

Diabetes Responsibility Scale (DRS)—Adolescent Version

Instructions: For each of the following parts of your diabetes care, circle the number that **best describes** the way **you handle things at home**.

1 = I do it alone

2 = I do most

3 = I share equally with my parents

4 = My parent does most

5 = My parent does it alone

	I alone	Mostly myself	Equally	Mostly parent	Parent alone
1. Who remembers when to give insulin?	1	2	3	4	5
2. Who decides to take more or less insulin according to results of blood sugar tests?	1	2	3	4	5
3. Who calculates the insulin or bolus (pump) dose?	1	2	3	4	5
4. Who gives insulin shots or boluses (pump)?	1	2	3	4	5
5. Who decides to rotate injection or pump sites?	1	2	3	4	5
6. Who remembers when blood sugar should be tested?	1	2	3	4	5
7. Who tests blood sugar?	1	2	3	4	5
8. Who keeps track of blood sugar results?	1	2	3	4	5
9. Who makes sure you carry sugar in case of a low blood sugar reaction?	1	2	3	4	5
10. Who notices early signs of a low blood sugar reaction?	1	2	3	4	5
11. Who's in charge of taking care of low blood sugar reactions?	1	2	3	4	5
12. Who decides what to eat at meals and snacks at home?	1	2	3	4	5
13. Who decides what to eat away from home (such as at school, movies, parties)?	1	2	3	4	5
14. Who figures out the number of carbohydrates in meals and snacks?	1	2	3	4	5
15. Who decides when you exercise?	1	2	3	4	5

16.	Who talks to teachers or school personnel about your diabetes?	1	2	3	4	5
17.	Who talks to friends about your diabetes?	1	2	3	4	5
18.	Who talks to relatives about your diabetes?	1	2	3	4	5
19.	Who makes sure you have supplies (such as insulin, syringes, testing, or pump supplies)?	1	2	3	4	5
20.	Who checks expiration dates on insulin and supplies?	1	2	3	4	5
21.	Who examines your feet and makes sure your shoes fit?	1	2	3	4	5
22.	Who notices differences in health, such as weight changes or signs of infection?	1	2	3	4	5
23.	Who remembers to make appointments with doctors and dentists?	1	2	3	4	5

Appendix D

Diabetes Responsibility Scale (DRS)—Parent Version

Instructions: For each of the following parts of your child's diabetes care, circle the number that **best describes** the way **you handle things at home**.

1 = Child does it alone

2 = Child does most

3 = Child and parent share equally

4 = Parent does most

5 = Parent does it alone

	Child does it	Mostly child	Equally	Mostly parent	Parent does it
1. Who remembers when to give insulin?	1	2	3	4	5
2. Who decides to take more or less insulin according to results of blood sugar tests?	1	2	3	4	5
3. Who calculates the insulin or bolus (pump) dose?	1	2	3	4	5
4. Who gives insulin shots or boluses (pump)?	1	2	3	4	5
5. Who decides to rotate injection or pump sites?	1	2	3	4	5
6. Who remembers when blood sugar should be tested?	1	2	3	4	5
7. Who tests blood sugar?	1	2	3	4	5
8. Who keeps track of blood sugar results?	1	2	3	4	5
9. Who makes sure your child carries sugar in case of a low blood sugar reaction?	1	2	3	4	5
10. Who notices early signs of a low blood sugar reaction?	1	2	3	4	5
11. Who's in charge of taking care of low blood sugar reactions?	1	2	3	4	5
12. Who decides what to eat at meals and snacks at home?	1	2	3	4	5

13.	Who decides what to eat away from home (such as at school, movies, parties)?	1	2	3	4	5
14.	Who figures out the number of carbohydrates in meals and snacks?	1	2	3	4	5
15.	Who decides when your child exercises?	1	2	3	4	5
16.	Who talks to teachers or school personnel about your child's diabetes?	1	2	3	4	5
17.	Who talks to friends about your child's diabetes?	1	2	3	4	5
18.	Who talks to relatives about your child's diabetes?	1	2	3	4	5
19.	Who makes sure your child has supplies (such as insulin, syringes, testing, or pump supplies)?	1	2	3	4	5
20.	Who checks expiration dates on insulin and supplies?	1	2	3	4	5
21.	Who examines your child's feet and makes sure your child's shoes fit?	1	2	3	4	5
22.	Who notices differences in health, such as weight changes or signs of infection?	1	2	3	4	5
23.	Who remembers to make appointments with doctors and dentists?	1	2	3	4	5

Appendix E

Diabetes Conflict Scale (DCS)—Adolescent Report of Mother

Instructions: For each of the following parts of your diabetes care, circle the number that best describes how much you have argued or hassled with your **MOTHER** about it **DURING THE PAST MONTH**.

1 = Almost Never
2 = Sometimes
3 = Almost Always

		Almost Never	Sometimes	Almost Always
1.	Remembering to give insulin shots or boluses (pump):	1	2	3
2.	Taking more or less insulin depending on results.	1	2	3
3.	Remembering to check blood sugars.	1	2	3
4.	Giving shots or boluses (pump).	1	2	3
5.	Results of blood sugar monitoring.	1	2	3
6.	Taking care of diabetes when away from home.	1	2	3
7.	Meals and snacks.	1	2	3
8.	Taking care of low blood sugar.	1	2	3
9.	Taking care of high blood sugar.	1	2	3
10.	Exercising.	1	2	3
11.	Handling emotions (such as feeling mad or sad) related to diabetes.	1	2	3
12.	Logging blood sugar results.	1	2	3
13.	Rotating injection sites or infusion sites (pump).	1	2	3
14.	Changes in health (like weight or infections).	1	2	3
15.	Other areas of conflict? (please specify): _____			

Appendix F

Diabetes Conflict Scale (DCS)—Adolescent Report of Father

Instructions: For each of the following parts of your diabetes care, circle the number that best describes how much you have argued or hassled with your **FATHER** about it **DURING THE PAST MONTH**.

1 = Almost Never
 2 = Sometimes
 3 = Almost Always

		Almost Never	Sometimes	Almost Always
1.	Remembering to give insulin shots or boluses (pump):	1	2	3
2.	Taking more or less insulin depending on results.	1	2	3
3.	Remembering to check blood sugars.	1	2	3
4.	Giving shots or boluses (pump).	1	2	3
5.	Results of blood sugar monitoring.	1	2	3
6.	Taking care of diabetes when away from home.	1	2	3
7.	Meals and snacks.	1	2	3
8.	Taking care of low blood sugar.	1	2	3
9.	Taking care of high blood sugar.	1	2	3
10.	Exercising.	1	2	3
11.	Handling emotions (such as feeling mad or sad) related to diabetes.	1	2	3
12.	Logging blood sugar results.	1	2	3
13.	Rotating injection sites or infusion sites (pump).	1	2	3
14.	Changes in health (like weight or infections).	1	2	3
15.	Other areas of conflict? (please specify): _____			

Appendix G

Diabetes Conflict Scale (DCS)—Mother Report of Adolescent

Instructions: For each of the following parts of your diabetes care, circle the number that best describes how much you have argued or hassled with your child about it **DURING THE PAST MONTH.**

1 = Almost Never
 2 = Sometimes
 3 = Almost Always

		Almost Never	Sometimes	Almost Always
1.	Remembering to give insulin shots or boluses (pump):	1	2	3
2.	Taking more or less insulin depending on results.	1	2	3
3.	Remembering to check blood sugars.	1	2	3
4.	Giving shots or boluses (pump).	1	2	3
5.	Results of blood sugar monitoring.	1	2	3
6.	Taking care of diabetes when away from home.	1	2	3
7.	Meals and snacks.	1	2	3
8.	Taking care of low blood sugar.	1	2	3
9.	Taking care of high blood sugar.	1	2	3
10.	Exercising.	1	2	3
11.	Handling emotions (such as feeling mad or sad) related to diabetes.	1	2	3
12.	Logging blood sugar results.	1	2	3
13.	Rotating injection sites or infusion sites (pump).	1	2	3
14.	Changes in health (like weight or infections).	1	2	3
15.	Other areas of conflict? (please specify): _____			

Appendix H

Self Care Inventory (SCI)—Adolescent Report

Instructions: Please rate each of the items according to how well you followed your recommended regimen for diabetes care in the past month . Use the following scale:							
	1 = Never did it						
	2 = Sometimes followed recommendations; mostly not						
	3 = Followed recommendations about 50% of the time						
	4 = Usually did this as recommended; occasional lapses						
	5 = Always did this as recommended without fail						
	NA = Not applicable to my regimen						
In the past month, how well have you followed recommendations for:		Never	Sometimes	50%	Usually	Always	NA
1.	Checking blood glucose with monitor?	1	2	3	4	5	NA
2.	Glucose recording?	1	2	3	4	5	NA
3.	Checking ketones in blood or urine when blood glucose level is high?	1	2	3	4	5	NA
4.	Administering correct insulin dose?	1	2	3	4	5	NA
5.	Administering insulin at right time?	1	2	3	4	5	NA
6.	Adjusting insulin intake based on blood glucose values?	1	2	3	4	5	NA
7.	Eating the proper foods or counting all	1	2	3	4	5	NA

	carbohydrates eaten?						
8.	Eating meals/snacks on time?	1	2	3	4	5	NA
9.	Carrying quick-acting sugar to treat reactions?	1	2	3	4	5	NA
10.	Coming in for appointments?	1	2	3	4	5	NA
11.	Wearing a medic alert ID?	1	2	3	4	5	NA
12.	Exercising regularly?	1	2	3	4	5	NA
13.	Reading food labels?	1	2	3	4	5	NA
14.	Treating low blood glucose?	1	2	3	4	5	NA
15.	Counting carbohydrates correctly?	1	2	3	4	5	NA
16.	Calculating insulin doses based on carbohydrate content of meals or snacks?	1	2	3	4	5	NA

Appendix I

Self Care Inventory (SCI) Mother Report

Instructions: Please rate each of the items according to how well your child followed his/her recommended regimen for diabetes care in the past month . Use the following scale:							
	1 = Never did it						
	2 = Sometimes followed recommendations; mostly not						
	3 = Followed recommendations about 50% of the time						
	4 = Usually did this as recommended; occasional lapses						
	5 = Always did this as recommended without fail						
	NA = Not applicable to my child's regimen						
In the past month, how well has your child followed recommendations for:		Never	Sometimes	50%	Usually	Always	NA
1.	Checking blood glucose with monitor?	1	2	3	4	5	NA
2.	Glucose recording?	1	2	3	4	5	NA
3.	Checking ketones in blood or urine when blood glucose level is high?	1	2	3	4	5	NA
4.	Administering correct insulin dose?	1	2	3	4	5	NA
5.	Administering insulin at right time?	1	2	3	4	5	NA
6.	Adjusting insulin intake based on blood glucose values?	1	2	3	4	5	NA
7.	Eating the proper foods or counting all carbohydrates eaten?	1	2	3	4	5	NA

8.	Eating meals/snacks on time?	1	2	3	4	5	NA
9.	Carrying quick-acting sugar to treat reactions?	1	2	3	4	5	NA
10.	Coming in for appointments?	1	2	3	4	5	NA
11.	Wearing a medic alert ID?	1	2	3	4	5	NA
12.	Exercising regularly?	1	2	3	4	5	NA
13.	Reading food labels?	1	2	3	4	5	NA
14.	Treating low blood glucose?	1	2	3	4	5	NA
15.	Counting carbohydrates correctly?	1	2	3	4	5	NA
16.	Calculating insulin doses based on carbohydrate content of meals or snacks?	1	2	3	4	5	NA

Appendix J

Children's Depression Inventory (CDI)

Kids sometimes have different feelings and ideas.

This form lists the feelings and ideas in groups. From each group of three sentences, pick one sentence that describes you **best** for the past two weeks. After you pick a sentence from the first group, go on to the next group.

There is no right answer or wrong answer. Just pick the sentence that best describes the way you have been recently. Put a mark like this **X** next to your answer. Put the mark in the box next to the sentence that you pick.

Here is an example of how this form works. If you read books a lot, you would probably check the first sentence, like this.

Example:

- | |
|----------------------------------------------------------------|
| <input checked="" type="checkbox"/> I read books all the time. |
| <input type="checkbox"/> I read books once in a while. |
| <input type="checkbox"/> I never read books. |

Remember, in each box, pick out the one sentence that describes you best in the PAST TWO WEEKS.

Item 1

- ☐ I am sad once in a while.
- ☐ I am sad many times.
- ☐ I am sad all the time

Item 2

- ☐ Nothing will ever work out for me.
- ☐ I am not sure if things will work out for me.
- ☐ Things will work out for me O.K.

Item 3

- ☐ I do most things O.K.
- ☐ I do many things wrong.
- ☐ I do everything wrong.

Item 4

- ☐ I have fun in many things.
- ☐ I have fun in some things.
- ☐ Nothing is fun at all.

Item 5

- ☐ I am bad all the time.
- ☐ I am bad many times.
- ☐ I am bad once in a while.

Item 6

- ☐ I think about bad things happening to me once in a while.
- ☐ I worry that bad things will happen to me.
- ☐ I am sure that terrible things will happen to me.

Item 7

- ☐ I hate myself.
- ☐ I do not like myself.
- ☐ I like myself.

Item 8

- ☐ All bad things are my fault.
- ☐ Many bad things are my fault.
- ☐ Bad things are not usually my fault.

Item 9

- ☐ I do not think about killing myself.
- ☐ I think about killing myself but I would not do it.
- ☐ I want to kill myself.

Item 10

- ☐ I feel like crying every day.
- ☐ I feel like crying many days.
- ☐ I feel like crying once in a while.

Item 11

- ☐ Things bother me all the time.
- ☐ Things bother me many times.
- ☐ Things bother me once in a while.

Item 12

- ☐ I like being with people.
- ☐ I do not like being with people many times.
- ☐ I do not want to be with people at all.

Item 13

- ☐ I cannot make up my mind about things.
- ☐ It is hard to make up my mind about things.
- ☐ I make up my mind about things easily.

Item 14

- ☐ I look O.K.
- ☐ There are some bad things about my looks.
- ☐ I look ugly.

Item 15

- ☐ I have to push myself all the time to do my schoolwork.
- ☐ I have to push myself many times to do schoolwork.
- Doing schoolwork is not a big problem.

Item 16

- ☐ I have trouble sleeping every night.
- ☐ I have trouble sleeping many nights.
- ☐ I sleep pretty well.

Item 17

- ☐ I am tired once in a while.
- ☐ I am tired many days.
- ☐ I am tired all the time.

Item 18

- ☐ Most days I do not feel like eating.
- ☐ Many days I do not feel like eating.
- ☐ I eat pretty well.

Item 19

- ☐ I do not worry about aches and pains.
- ☐ I worry about aches and pains many times.
- ☐ I worry about aches and pains all the time.

Item 20

- ☐ I do not feel alone.
- ☐ I feel alone many times.
- ☐ I feel alone all the time.

Item 21

- ☐ I never have fun at school.
- ☐ I have fun at school only once in a while.
- ☐ I have fun at school many times.

Item 22

- ☐ I have plenty of friends.
- ☐ I have some friends but I wish I had more.
- ☐ I do not have any friends.

Item 23

- ☐ My schoolwork is alright
- ☐ My schoolwork is not as good as before.
- ☐ I do very badly in subjects I used to be good in.

Item 24

- ☐ I can never be as good as other kids.
- ☐ I can be as good as other kids if I want to.
- ☐ I am just as good as other kids.

Item 25

- ☐ Nobody really loves me.
- ☐ I am not sure if anybody loves me.
- ☐ I am sure that somebody loves me.

BIOGRAPHICAL SKETCH

Saranya Sundaram
ssundaram1341@gmail.com

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
Austin College	B.A.	2007	Psychology
The University of Texas Southwestern School of Health Professions	M.R.C.	2013	Rehabilitation Counseling

Positions and Employment

June 2011-July 2011	Applied Psychology Group of Texoma <i>Position: Scorer</i>
August 2011-August 2012	UT Southwestern Medical Center Bryan M. Williams Student Center <i>Position: Student Assistant, August 2011-August 2012</i>
September 2013-Present	UT Southwestern Medical Center Department of Psychiatry <i>Position: Psychometrist I</i>
September 2013-Present	UT Southwestern Medical Center Department of Psychiatry UT Dallas Center for Brain Health <i>Position: Research Assistant</i>

Clinical Experience

August 2012-February 2013	University of Texas Southwestern Medical Center Neuropsychology <i>Position: Graduate Student Intern</i>
August 2012-August 2013	University of Texas Southwestern Medical Center University Rehabilitation Services <i>Position: Graduate Student Intern</i>
February 2013-August 2013	University of Texas Southwestern Medical Center School of Health Professions Personal and Social Adjustment Training Group (PSAT) <i>Position: Graduate Student Intern</i>
August 2013-September 2013	UT Southwestern Medical Center Department of Psychiatry and University of Texas at Dallas Center for Brain Health <i>Position: Graduate Research Assistant</i>
August 2011-Present	Children's Medical Center and University of Texas Southwestern Medical Center Department of Psychiatry <i>Position: Graduate Research Assistant</i>

Presentations, Publications, and Awards

Sundaram, S.E. & Helfrich, M. (2011, April). Effects of misinformation on memory with enhanced and non enhanced lineups. Poster presented at the Southwestern Psychological Association 2011 Conference, San Antonio, TX.

Sundaram S.E., Wiebe, D. J., & White, P. (2013, April). Developmental expectations and adolescent type 1 diabetes management in Hispanic and Caucasian families. The National Conference in Pediatric Psychology 2013 Conference, New Orleans, LA..

Texas Society of Allied Health Professionals Graduate Student Award, 2012

National Alpha Eta Honor Society, 2013

Professional Memberships

2009-Present	American Psychological Association
2011-Present	National Rehabilitation Association
2012-Present	Dallas Psychological Association