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Dyadic Measures of the Parent-Child Relationship During the Transition to Adolescence and Glycemic Control in Children with Type 1 Diabetes

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Abstract

To identify aspects of family behavior associated with glycemic control in youth with type 1 diabetes mellitus (T1DM) during the transition to adolescence, we studied 121 9- to 14-year-olds (M = 12.1 yrs) and their parents, who completed the Diabetes Family Conflict Scale (DFCS) and the Diabetes Family Responsibility Questionnaire (DFRQ). From the DFRQ, we derived 2 dyadic variables, frequency of agreement (parent and child concurred exactly on who was responsible for a task) and frequency of discordance (parent and child had completely opposite reports of who was responsible). To examine the relationship between these variables and age, we divided the cohort into Younger (n = 57, M = 10.6 yrs) and Older (n = 64, M = 13.5 yrs) age groups. Family conflict was significantly related to glycemic control in the entire cohort and in both the Younger and Older age groups. However, only in the Younger (pre-teen) group was Agreement about responsibility for diabetes tasks related to glycemic control, with higher Agreement associated with better glycemic control. Findings suggest that Agreement about sharing of diabetes management responsibilities may be an important target for family-based interventions with pre-teen youth to optimize glycemic control during their transition to adolescence.

Introduction

Type 1 diabetes mellitus (T1DM), the second most common chronic illness of childhood after asthma, has a complex medical management regimen which requires multiple daily injections of insulin, pricking a finger several times a day to monitor blood glucose levels, and adjusting insulin dosages based on the child's blood glucose level, food intake, and physical activity (Silverstein et al., 2005). These behavioral tasks are carried out in order to keep blood glucose levels as close to normal as possible. Adherence to the diabetes regimen is important because blood sugar levels kept as close to normal as possible, from as early in the disease course as possible, help to prevent or delay the devastating long-term complications of T1DM, such as blindness, kidney disease, amputations, heart attacks and stroke (DCCT Research Group, 1993; EDIC Research Group, 2001). Moreover, adhering to these regimen requirements is especially challenging when they intersect and clash with developmentally typical behaviors encountered at different stages of child development (Anderson & Brackett, 2005; Piazza-Waggoner et al., 2008).

Optimal glycemic control is the most difficult to establish and maintain during the early adolescent period because of the normal ‘insulin resistance’ that occurs during puberty (Amiel, Sherwin, Simonson, Lauritano, & Tamborlane, 1986). In addition to this basic biological phenomenon, the normal developmental tasks of early adolescence involving transitions in family roles and peer relationships often interfere with adherence to the diabetes treatment regimen (Anderson & Auslander, 1989; Wysocki et al., l996). Young adolescents frequently seek a new level of separation from their parents, while simultaneously intensifying attachments to peers (Levitt, Guacci-Franco, & Levitt, 1993).

Recent family studies of youth with T1DM have documented an erosion of parental involvement and support for diabetes management tasks during the early adolescent years (Anderson, Auslander, Jung, Miller, & Santiago, 1990; Anderson, Ho, Brackett, Finkelstein, & Laffel, 1997; Skinner, Murphy, & Huws-Thomas, 2005; Schilling, Knafl, & Grey, 2006; Wysocki et al., 1996). Moreover, empirical research has documented a steady decrease in adherence to diabetes treatment during early adolescence (Johnson, Silverstein, Rosenbloom, Carter, & Cunningham, 1986; Harris et al., 2000). However, empirical studies have also shown that young adolescents who have more parental involvement, monitoring, and teamwork in their diabetes management tend to achieve and maintain better diabetes outcomes (Anderson et al., 1997; Allen, Tennen, McGrade, Affleck, & Ratzan, 1983; Ingersoll, Orr, Herrold, & Golden, 1986; Palmer et al., 2004; Wiebe et al., 2005).

In the general child development literature, it is well-documented that conflict between parents and children often increases during the transition to adolescence (Holmbeck, 1996). Both diabetes-specific family conflict and general family conflict have been associated with poor adherence and poor glycemic control during the early adolescent years (Anderson et al., 2002; Hauser et al., 1990). In a qualitative study of transfer of diabetes management responsibilities and conflict in parent-child dyads over the adolescent period, Schilling et al. (2006) reported that parents of 8- to 11-year-old children with diabetes took active steps to transfer responsibility for diabetes management to their children, with only moderate amounts of conflict. Moreover, parents of 12- to 15-year-old youth continued to transfer increasing amounts of responsibility to their children despite increasing levels of conflict in the dyad.

Because of the deterioration in glycemic control, increase in family conflict, and the shifts that occur in how parents and their older school-aged children share responsibilities for the complex tasks demanded in the daily management of T1DM, behavioral interventions to enhance health outcomes in youth with T1DM have recently focused on the parent-child dyad (Anderson, Brackett, Ho, & Laffel, 1999; Ellis et al., 2005; Wysocki, Harris, Buckloh, Mertlich, et al., 2006.).

Dyadic measures provide a perspective into family relationships that is not possible with self-report measures that are limited to personal behavior or with global assessments of family functioning (Cook & Kenny, 2006). In an effort to identify aspects of family behavior associated with glycemic control in youth with T1DM during the transition to adolescence, we measured diabetes-specific parent-child conflict and parent-child dyadic agreement and disagreement regarding which specific family member had primary responsibility for a range of different diabetes management tasks critical to health outcomes in young adolescents. We hypothesized that better glycemic control would be associated with lower diabetes-specific family conflict, higher dyadic agreement and lower dyadic discordance in youth with T1DM and their parents. We also sought to explore age-related differences in how these family behaviors were associated with glycemic control in the 9- to 14-year-old youth in this study.

Method

Participants

Children with T1DM and their primary caregivers were recruited from four large pediatric tertiary care diabetes centers in Boston, MA, Chicago, IL, Houston, TX, and Jacksonville, FL, to participate in a multi-site pilot and feasibility study of an intervention designed to optimize family adaptation to childhood diabetes during late childhood and early adolescence. The participating parent/guardian was the adult primarily responsible for the child's diabetes management; only one parent participated per family. The data reported here were derived from the baseline assessment, which occurred prior to assignment of families to different treatment groups.

Trained research staff at each site reviewed medical record data to identify eligible patients with upcoming clinic appointments. Eligible families were then recruited both at clinic visits and by telephone. In order to examine age differences in diabetes–specific family interactions over the transition to early adolescence, we recruited youth between 9 and 14.5 years of age at baseline. Other youth eligibility criteria included: T1DM duration of at least 1 year; insulin dose of at least 0.5 units/kg/day; at least 2 clinic visits at the diabetes center during the past year; mean hemoglobin A1c (HbA1c) less than 13.0% during the prior 8 months; no other major chronic disease or cognitive disability; and no psychiatric hospitalization within the prior 6 months. Enrollment criteria for parents/guardians included: at least a 5th grade reading fluency in English; no diagnosis of psychosis, substance use disorder, major depression, or bipolar disorder; no psychiatric hospitalization in the prior 6 months; and a working telephone service. Because the intervention to be tested in this pilot study required participants to engage in family problem-solving processes, parents and youth with depression or serious mental health diagnoses were excluded. All parents or legal guardians signed institution-approved informed consent forms and all youth assented to participate in the study using each center's approved procedures.

A total of l67 eligible families were invited to participate in the study and 131 (79%) initially agreed to participate. However, 10 families declined participation when contacted to schedule the baseline assessment, resulting in a final sample of 121 families (73%), with 29-31 families at each of the four clinical sites. Because this pilot and feasibility study was designed to assess the ability of the research team at each of the four sites to implement a clinic-based intervention with a representative sample of families at each site, we did not perform power analyses to establish the final sample size.

Procedure

Trained, two-person interviewing teams who were not affiliated with the clinics conducted the baseline assessments in families' homes with the parent and youth. Parents and youth completed several assessment measures simultaneously, but with different interviewers and in different rooms to allow for privacy of responses. Data from two of the psychosocial assessment instruments completed at the baseline assessment will be reported here. These two measures are the Diabetes Family Responsibility Questionnaire (Anderson et al., 1990) and the Diabetes Family Conflict Scale (Hood, Butler, Anderson, & Laffel, 2007). Parents and youth also both completed the following assessment measures: the Pediatric Quality of Life Inventory (PedsQL) Generic Core Scales and Diabetes Module (Varni, Seid, & Kurtin, 2001; Varni et al., 2003); the Hypoglycemia Fear Survey-Worry Subscale (Cox, Irvine, Gonder-Frederick, Nowacek, & Butterfield, l987); and the Blood Glucose Monitoring Communication survey (Hood, Butler, Volkening, Anderson, & Laffel, 2004). Youth also completed the Beck Depression Inventory for Children (Beck, Beck, & Jolly, 2001) or the Children's Depression Inventory (Kovacs, 1985); the Diabetes Management Self-Efficacy Scale (Iannotti et al., 2006); and several surveys assessing youth perception of parenting style and involvement (Barber, 1996; Jackson, Henriksen, & Foshee, 1998; Nansel, Rovner, et al., 2008; Smetana & Asquith, 1994). Parents also completed the Child Maturity Scale (Hartos, Eitel, & Simons-Morton, 2001); the Confusion, Hubbub, and Order Scale (CHAOS) (Matheny, Wachs, Ludwig, & Phillips, 1995); and the Diabetes Management Outcomes Expectations scale (Iannotti et al., 2006). For a complete description of the pilot and feasibility intervention study, see Nansel, Anderson, et al., 2008.

Measures

Diabetes Family Responsibility Questionnaire (DFRQ)—The DFRQ is a 17-item questionnaire that measures parent involvement in diabetes management tasks (Anderson et al., 1990). For each of the 17 diabetes management tasks, respondents rated the responsibility for the task as belonging primarily to the child (1), shared about equally between child and parent (2), or belonging primarily to the parent (3). Higher scores indicate increasing levels of parent responsibility for diabetes management. Acceptable internal consistency and test-retest reliability have been previously reported (Anderson et al., 1990). The alpha coefficients for the present sample were adequate, with alpha of .67 for parents and alpha of .73 for youth.

Derived dyadic variables: Within each family, we compared the parent and child responses to each of the 17 items on the DFRQ, following the method for deriving dyadic variables described by Anderson et al. (1990). This method captures extreme reports as recommended for the DFRQ and yields two derived dyadic variables: agreement and discordance. Agreement occurred when the child and parent agreed exactly in their report of who had responsibility for a specific diabetes management task (e.g., both respondents reported that the parent had primary responsibility for the task). Discordance occurred when the child and the parent had the exact opposite report of who had responsibility for a specific diabetes management task (e.g., one person reported that the parent had primary responsibility and the other person reported that child had primary responsibility). The number of items for which there was exact parent-child agreement was summed to obtain a total agreement score. Similarly, the number of items for which there was parent-child discordance (exact opposite reports) was summed to obtain a total discordance score. Therefore, agreement and discordance scores could range from 0 to 17.

Table 1 illustrates dyadic agreement and discordance per item on the DFRQ according to parent and child response following the method suggested by Anderson and colleagues (1990). Agreement occurred when the child and parent agreed exactly in their report of who takes responsibility for a specific diabetes management task; this is represented in the 3 cells along the left-to-right diagonal. Discordance occurred when the report of responsibility was completely opposite between the parent and child; this is represented in two cells, the upper right corner and the lower left corner. A third scenario exists, in which a dyad could have partial agreement (or partial discordance) in their responses for a specific diabetes management task. For example, this would occur if one person said that the parent had primary responsibility and the other person said that the responsibility was shared. This is represented by the remaining cells in the table (the empty cells).

Diabetes Family Conflict Scale (DFCS)—Youth and parents completed a 15-item version of the Diabetes Family Conflict Scale (Hood et al., 2007; Rubin, Young-Hyman, & Peyrot, l989). Each parent and child indicated the amount of family conflict that occurred for each of 15 aspects of diabetes management. The score is the sum of the items on which any amount of conflict was endorsed. Alphas reported for the scale have been strong: youth = .85, parent = .81 (Hood et al., 2007). The alpha coefficients for the present sample were .90 for parents and .95 for youth.

Glycosylated hemoglobin (HbA1c)—This blood test estimates average glycemic concentration over the prior 2 to 3 months (Chase, 2006). The patients attended their regular diabetes clinic appointment approximately two weeks after the in-home baseline assessment. Patient blood samples were obtained by fingerstick at their regular clinic appointments. Samples were shipped to a central lab at the Joslin Diabetes Center for processing using the Tosoh High Performance Liquid Chromatography 2.2 method (Tosoh Corporation, Foster City, CA). Joslin is a reference laboratory for this assay, which has been standardized against the Diabetes Control and Complications (DCCT) reference laboratory; the reference range is 4.0 to 6.0%.

Statistical Analysis

Statistical analyses were conducted using SAS (version 8.2 for Windows, SAS Institute, Inc., Cary, NC). Univariate analyses were examined first. An alpha level of .05 was used to determine statistical significance. The Younger and Older Cohorts were compared using t tests. Pearson correlations were used to examine relationships between age, HbA1c, dyadic *agreement*, dyadic *discordance*, and diabetes-specific family conflict. A regression model was constructed to control for the complex relationships between variables, with the goal of further establishing the factors associated with glycemic control in this sample.

Results

The mean age of the 121 youth was 12.1 ± 1.6 years; 50% of youth were female. The study sample was ethnically and racially diverse, with 71% Caucasian, 12% African American, 10% Hispanic, and 7% reporting ‘Other or mixed’ ethnicity. The mean duration of diabetes was 5.4 ± 3.1 years and the mean HbA1c was 8.4 ± 1.4%. Pubertal status, by Tanner staging, was available for 73% of the sample. Of these 88 youth, 32% were pre-pubertal (Tanner I), 56% were pubertal (Tanner II-IV), and 13% were post-pubertal (Tanner V). The mean age of pre-pubertal, pubertal, and post-pubertal youth was 10.7 ± 1.1 years, 12.0 ± 1.4 years, and 13.8 ± 0.6 years, respectively. The subset of youth with no Tanner staging data (n=33) was significantly older than the 88 youth with Tanner staging data (12.9 ± 1.5 years vs. 11.8 ± 1.6 years, $p < .001$) and had a smaller proportion of females (33% vs. 56% female, $p < .03$).

To explore age-related differences in family behaviors between pre-pubertal and pubertal youth, we divided the sample into two groups. Because Tanner staging data were only available for 73% of the sample, and because of the differences in age and gender between those with and without Tanner staging data, we used age as a proxy for pubertal status when defining the two age groups. The Younger Cohort (n = 57) included youth under 12 years of age and the Older Cohort (n = 64) included youth 12 years and older. This division was consistent with the mean age of pubertal youth (12.0 ± 1.4 years). Indeed, when considering only the 88 youth with Tanner staging data, the Younger Cohort was 50% pre-pubertal and 50% pubertal and the Older Cohort was 10% pre-pubertal, 63% pubertal, and 28% post-pubertal ($\chi^2 = 24.8$, $p < .0001$).

The mean age of the 57 youth in the Younger Cohort was l0.6 ± 0.7 years and the mean age of the 64 youth in the Older Cohort was 13.5 ± 0.7 years. There were no significant differences between the two groups with respect to gender, duration of diabetes, or HbA1c. Table 2 displays characteristics of the entire sample and the Younger and Older Cohorts. Almost all of the participating parents/guardians were mothers (n = 111, 91%); of the remaining adults, there were 8 fathers (7%), 1 stepmother (1%), and 1 grandmother (1%). A majority of parents/guardians had some education beyond high school: 14% had a graduate degree, 32% had a college degree, 35% had some college education, 17% had a high school diploma, and 3% had less than a high school diploma.

The dyadic variable of *agreement*, derived from the DFRQ, was not significantly correlated with age (r = .15, p = .10), nor did *agreement* differ significantly between age cohorts (Table 3). However, *discordance* about sharing of responsibility was significantly inversely correlated with age (r = −.24, p = .007), with greater *discordance* associated with younger age, and there was significantly more discordance in the Younger Cohort than in the Older Cohort (t = 3.09, p = .003) (Table 3). Parent-reported diabetes-specific family conflict was positively correlated with youth age (r = .21, p = .02). However, when comparing the two age groups, although the mean conflict score was higher in the Older Cohort than in the Younger Cohort, the difference was not significant (see Table 3).

Pearson correlations indicated a significant relationship between parent-report of diabetes-specific family conflict and glycemic control for the entire sample of families (r = .36, p < .0001), as well as for families in the Younger Cohort (r = .28, p = .04) and in the Older Cohort (r = .41, p = .0007), with higher levels of reported conflict related to higher (worse) HbA1c levels in all groups (Table 4). However, we did not find a similar pattern of relationships between youth-report of diabetes-specific family conflict and HbA1c. The correlation between HbA1c and conflict as reported by youth in the younger cohort was not significant (r = .15, p = .27). Also, the correlation between HbA1c and conflict as reported by youth in the older cohort was not significant (r = .23, p = .06). Another recent investigation has also reported a relationship between parental report of family behavior and adolescent HbAlc but not between adolescent report of family behavior and HbAlc (Cameron et al, 2008). Thus, a decision was made to focus only on parent-report of conflict in the planned analyses by age group.

Dyadic *agreement* was significantly correlated with HbA1c levels in the entire sample (r = −.21, p < .02), with greater dyadic *agreement* related to lower (better) HbA1c levels. A breakdown by age cohort revealed that only in the Younger Cohort was dyadic *agreement* related to HbA1c levels (r = −.32, p < .02). Dyadic *agreement* and HbA1c levels were not significantly correlated for families in the Older Cohort. Dyadic discordance was not significantly correlated with HbA1c for the entire sample or for either age cohort. These relationships are reported in Table 4.

To further explore the relationship between dyadic *agreement*, diabetes-specific family conflict, and glycemic control in this sample, we constructed a multivariate model with HbA1c as the dependent variable. Age group, gender, diabetes duration, parent-report of diabetes-specific family conflict, and dyadic *agreement* were entered simultaneously in the model as independent variables. In a significant model, the independent variables accounted for 20% of the variance in HbA1c ($R^2 = .20$, F = 5.77, p < .0001). Parent-report of family conflict and dyadic *agreement* were the only independent predictors of HbA1c when controlling for potential confounders. Less family conflict (p = .0003) and greater dyadic *agreement* (p = .02) were associated with lower HbA1c (Table 5).

Discussion

The primary aim of this study was to explore the relationships between glycemic control, diabetes-specific family conflict, and the dyadic measures of *agreement* and *discordance* with respect to the sharing of diabetes management responsibilities in families with 9- to 14-year-old youth with T1DM. In our sample from 4 clinical sites, there was significantly higher *discordance* for parent-child dyads in the younger, pre-teen cohort when compared with *discordance* in parent-child dyads in the older cohort. This suggests that abrupt changes in family-sharing of diabetes management responsibilities are likely beginning to occur in the pre-teen age cohort. This finding is consistent with the qualitative research of Schilling et al. (2006) who also reported that parents begin to transfer responsibilities for diabetes management children in late childhood, around 8 to 11 years of age.

Moreover, a relationship between *agreement* around responsibility-sharing and glycemic control was found only for dyads in the Younger Cohort (9 to 11 years). In other words, only in the pre-teen cohort did we find a relationship between parent-child *agreement* with respect to responsibility-sharing and glycemic control, with dyads with higher *agreemen*t having youth in the best glycemic control. It is possible that *agreement* was significantly related to HbA1c only for this younger cohort because in the older, young teen cohort, glycemic control was more likely to be impacted by pubertal hormones (Amiel et al., 1986). Supporting this conclusion is the significant difference in the proportion of pubertal or post-pubertal youth in the two age cohort. When considering only the 88 youth with available Tanner staging data, the Younger Cohort was 50% pubertal and 0% post-pubertal whereas the Older Cohort was 63% pubertal and 28% post-pubertal.

In our entire sample, as well as within each age cohort, higher levels of parent-reported diabetes-specific family conflict were related to worse glycemic control in the youth. Other investigations have also found that higher levels of family conflict are related to worse glycemic control (Miller & Drotar, 2003). It has also been reported that family conflict with respect to diabetes management increases significantly from late childhood over the transition to adolescence (Anderson et al., 2002; Wysocki, Harris, Buckloh, Wilkinson, et al., 2006). In this sample of cross-sectional data, age was positively correlated with parent-report of diabetes-specific family conflict. However, although parents in the Older Cohort reported more conflict than parents in the Younger Cohort, the difference was not statistically significant.

Whereas dyadic measures of family behavior in diabetes can illuminate how key aspects of the parent-child relationship are changing over the transition to adolescence (Lerner et al., 1996), our study has several limitations. First, we derived dyadic variables from self-report data, rather than from direct behavioral observations of interactions between parents and their 9- to 14-year-old children with T1DM. Moreover, our findings are based on cross-sectional data. Longitudinal studies are needed to prospectively track differences in dyadic measures in cohorts of older children transitioning to adolescence and their parents. Finally, some of the significant correlations in our results are modest and await replication in other longitudinal or prospective studies. Despite these limitations, our study does identify diabetes-specific aspects of the parent-child relationship that are linked to glycemic outcomes and provides important information for future research in this area. Moreover, it is noteworthy that recent findings from a large European study of over 2,000 adolescents and parents reported cross-sectional data very consistent with that of the present study (Cameron et. al, 2008)

Our findings have several clinical implications. Studying parent-child dyadic variables can help to identify “potentially modifiable” family variables, such as clear communication with respect to responsibility-sharing for diabetes tasks which can be targeted in family-based interventions to optimize the glycemic control of youth in this vulnerable developmental period (Butler et al., 2008). Cameron and colleagues have observed that while many researchers have documented the relationship between family structure (eg. number of parents in the home) and metabolic outcomes in adolescents with diabetes, “…these aspects of family structure…are most intractable and least amenable to intervention by health professionals, and these investigators state that their finding of a relationship between discrepancies in parent and adolescent reports of responsibility for diabetes tasks '…demonstrated the importance of family dynamics in determining metabolic outcomes in Type 1 diabetes." (2008, p. 467). Because most youth with T1DM are seen by a multidisciplinary team every three months for regular diabetes follow-up care (Silverstein et al., 2005), our findings suggest that clinicians engage older children and their parents in direct discussions about handling the transfer of responsibility for diabetes management tasks. . Our findings along with those of Cameron and colleagues (2008) suggest that pediatric diabetes clinicians should initiate discussions with transitioning youth and their parents in order to clarify who in the family is taking responsibility for the many different tasks involved in managing diabetes. The most recent "Standards for the Care of Children and Adolescents with Type 1 Diabetes" of the American Diabetes Association recommends the following during the adolescent period: "continuing to involve parents appropriately with shared management… finding the degree of parental involvement that is comfortable for all involved, without risking deterioration in glycemic control from over- or under-involvement" (Silverstein et al., 2005, p. 190). Our findings expand this recommendation to suggest that as youth with T1DM approach adolescence (at approximately 9- to 11-years-old), the diabetes team should begin to engage parent-child dyads in discussions of how management responsibilities for diabetes tasks will be shared in the family and the optimal transfer of responsibilities over the early-adolescent age period within each unique family system.

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Table 1

Derivation of Dyadic Variables of Agreement and Discordance According to Child and Parent Response for each DFRQ Item

		Parent report		
Child report		(1) Child	(2) Shared	(3) Parent
	(1) Child	Agreement		Discordance
	(2) Shared		Agreement	
	(3) Parent	Discordance		Agreement

Note. Empty cells represent partial agreement between parent and child.

Note. This table depicts how the variables of agreement and discordance are derived for a parent-child dyad for a single item on the DFRQ. This process is repeated for each of the 17 items on the DFRQ and the individual item values are summed to arrive at the total agreement and discordance scores.

Table 2

Participant Characteristics for the Entire Sample and by Age Cohort

	All Participants (N = 121)	Younger Cohort (n = 57)	Older Cohort (n = 64)	P*
Gender (% female)	50	54	45	.32
Age (years)	12.1 ± 1.6	10.6 ± 0.7	13.5 ± 0.7	
Diabetes duration (years)	5.4 ± 3.1	5.2 ± 2.6	5.6 ± 3.6	.41
HbA1c (%)	8.4 ± 1.4	8.2 ± 1.4	8.7 ± 1.3	.08

*Younger vs. Older Cohort

Table 3

Means and Standard Deviations for Total Parent-Child Dyadic Agreement and Discordance and Total Parent-reported Diabetes-Specific Family Conflict for the Entire Sample and by Age Cohort

	All Participants (N = 121)	Younger Cohort (n = 57)	Older Cohort (n = 64)	P*
AGREEMENT about sharing of responsibility	9.3 ±2.6	8.9 ± 2.9	9.7 ± 2.2	.08
DISCORDANCE about sharing of responsibility	0.77 ± 1.06	1.09 ± 1.25	0.50 ± 0.77	.003
Diabetes-specific family CONFLICT (parent-report)	6.4 ± 3.5	5.9 ± 3.5	6.8 ± 3.4	.16

*Younger vs. Older Cohort

Table 4

Correlation of HbA1c with Dyadic Agreement, Dyadic Discordance, and Parent-reported Diabetes-Specific Family Conflict for the Entire Sample and by Age Cohort

	All Participants (N = 121)		Younger Cohort (n = 57)		Older Cohort (n = 64)	
HbA1c with	**r**	**p**	**r**	**p**	**r**	**p**
Dyadic Agreement	−.21	.02	−.32	.02	−.16	NS
Dyadic Discordance	.12	NS	.22	NS	.12	NS
Diabetes-Specific Conflict	.36	<.0001	.28	.04	.41	.0007

Table 5

Summary of Regression Analysis for Variables Predicting Youth HbA1c (N=121)

Variable	B	SE B	β
Age group (younger vs. older)	0.41	0.23	.15
Gender (female vs. male)	0.24	0.23	.09
Diabetes duration	0.05	0.04	.12
Diabetes-specific family conflict	0.12	0.03	.32*
Dyadic agreement	−0.11	0.05	−.20**

Note. Variables were entered simultaneously into the model ($F = 5.77$, $R^2 = .20$, $p < .0001$).

*p = .0003.

**p = .02