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## Family Environment Scale parental ratings of conflict among Latino families of depressed adolescents with type 1 diabetes

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### Abstract

**Objective:** Family conflict is related to depression, difficulties with treatment adherence and glycemic control, in adolescents with type 1 diabetes (T1D). We examined the psychometric properties of a parent-rated family conflict measure and the most frequent behaviors endorsed by caregivers of these youths.

**Method:** Participants were 51 caregivers (86.27% women) of adolescents (aged 12–17) with T1D, recruited during a psychotherapy study for youth depression. Both (caregivers and youths) completed questionnaires during the eligibility evaluation. Caregivers completed the Conflict subscale of the Family Environment Scale, considering to what extent its items described their whole family or its majority.

**Results:** The most frequent indicators of conflict where becoming upset, displaying anger openly, believing that something can be achieved by speaking loudly, and criticizing and fighting, although not physically. Internal consistency for the subscale when rating conflict indicators in a dichotomous format was .69 and .76 when rated in an ordinal format. Conflict scores correlated moderately and significantly ( $p < .05$ ) with other measures completed by youths and caregivers. Caregivers of youths with the worst glycemic control reported the highest levels of conflict. The subscale also showed a satisfactory sensitivity to change by reflecting a significant reduction in caregivers' reports of family conflict after adolescent group treatment.

**Conclusion:** Our results confirm the frequent occurrence of conflict (especially verbal conflict) in these families and document the psychometric properties of a measure for its assessment, which may be useful in studies that examine the impact of family conflict in both youth depression and diabetes.

### Resumen

El conflicto familiar se vincula a la depresión, la pobre adherencia al tratamiento y el descontrol glucémico en adolescentes con diabetes tipo 1 (DT1). Examinamos las propiedades psicométricas de una medida de conflicto familiar puntuada desde la óptica parental y las conductas más frecuentes endosadas por los(as) cuidadores(as) de estos(as) jóvenes.

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Participaron 51 cuidadores/as (86.27% mujeres) de jóvenes (12–17 años) con DT1, reclutados(as) para un estudio de psicoterapia para la depresión juvenil. Ambos(as) completaron cuestionarios durante la evaluación inicial. Los(as) cuidadores(as) contestaron la subescala de Conflicto del *Family Environment Scale*, considerando en qué medida sus premisas describían la familia completa o su mayoría.

Los indicadores de conflicto más frecuentes fueron alterarse, mostrar abiertamente el enojo, creer que se logra algo alzando la voz, criticarse y pelearse (no físicamente). La consistencia interna de la subescala puntuando sus reactivos de manera dicótoma fue de .69 y de .76 al puntuarlos en formato ordinal. Las puntuaciones de conflicto correlacionaron moderada y significativamente ( $p$  .05) con otras medidas completadas por cuidadores(as) o adolescentes. Los(as) cuidadores(as) de jóvenes con peor control glucémico reportaron mayor conflicto. La subescala también mostró sensibilidad al cambio, reflejando una reducción significativa en el reporte parental de conflicto familiar tras el tratamiento grupal juvenil.

Nuestros hallazgos confirman la ocurrencia frecuente de conflicto (especialmente verbal) en estas familias y documentan las propiedades psicométricas de un instrumento para evaluarlo que puede ser útil en estudios que examinan su impacto tanto en la depresión juvenil como en la diabetes.

### Indexing Terms

Family Environment Scale; family conflict; diabetes; adolescents; depression

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### Introduction

Treatment for Type 1 Diabetes (T1D) in adolescents requires glucose monitoring, daily insulin use, dietary restrictions, and regular exercising (1). This may elicit conflict and disruption in family balance and routine (2, 3). Data from the Department of Health suggest a higher T1D prevalence in youth from Puerto Rico compared to the US and a highest diabetes-related mean annual per patient health cost for the 10–14 years old age group (4). Diabetes is more frequent at lower income/education levels (5). By 2015, most Puerto Rican youth lived in households under US poverty threshold (58%), in families that received public assistance (52%), in areas of concentrated poverty (84%), in single-parent families (59%), and with parents (57%) who lack secure employment (6). These community and family well-being indicators, which were the worst among the US, suggest both a significant economic burden and an interpersonal stress climate, which may be fertile ground for conflict in many families.

About 9.5 in each 1000 children living in Puerto Rico by 2015 were confirmed by child protection services as victims of maltreatment (6950 cases and 27,691 investigations, from a population of 732,415 children), and about 31% of them were aged 11 to 17 years old (7). The perpetrator of maltreatment was a parent in 92.5% of all instances. Physical and psychological abuse was present in 27% and 52% of the cases, respectively (7). In a survey conducted with a representative sample of adolescents from public and private schools from Puerto Rico (year 2012–2013), 13.2% reported living within a conflictive family environment (8).

Given the importance of diabetes-related family dynamics and parental support, pediatric T1D has been characterized as a family disease (9). Demands from T1D regimen are framed within a context where technological and philosophical developments on chronic diseases treatment carry a possible increase in family stress and conflict (10). In adolescence this adds to other challenges such as youth desire for autonomy, and concerns from caregivers with respect to the self-care abilities of their children (11).

Conflict levels in families of T1D adolescents may be higher than in those without a T1D youth (9). Family conflict has also been linked to adolescent depression, even among Puerto Rican families of non-T1D youth (12, 13). Williams et al. (14) reported an association between depression in caregivers and their daughters, as well as among family conflict and glycemic control. Youth reported more conflict with caregivers when their glycosylated hemoglobin (HbA1c) levels and depressive symptoms were higher. Among parents of T1D young girls, 87% acknowledged having family conflicts (15). About 73% identified diabetes management as a primary concern. Moore et al. (9) found that half of the parents in their study reported having arguments, anger, and stressful relations with their children.

When transitioning into adolescence, the tasks related to T1D management shift from caregivers to youth (16). Parental supervision and keeping track of youth diabetes knowledge are important in transferring disease management tasks (17). Nonetheless, parental involvement is another source of family conflict (18). Weinger, O'Donnell, and Ritholz (19) found that T1D youth may resent caregivers' constant supervision of their self-care activities. Adolescents may perceive caregivers' concerns as intrusive, leading to poor communication. Besides, some caregivers blame their children for being careless with self-care, inducing a sense of incomprehension and anger in youth (19).

These findings highlight parental involvement as a crucial element of T1D management in children and also stress out the bidirectional nature of its effective management. As family interactions are highly shaped around T1D-related concerns, it is critical to understand caregiver's perspective on family functioning, particularly conflict levels. Studies on T1D-related family conflict has been mostly conducted in the US or Europe. Research conducted in Puerto Rico reflects a gap in this area, particularly for the absence of validated measures to assess conflict in families with a T1D youth.

The first known measure for assessing conflict among these families was the Conflict subscale of the Diabetes Responsibility and Conflict Scale (DRCS), developed by Rubin et al. (20). Caregivers complete this measure rating 15 management tasks on a 5-point scale (1 = *Never* to 5 = *All the Time*). Internal consistency for parental ratings on this subscale have been reported to range from .59 (21) to .90 (22). Significant correlations have been found between this Conflict subscale and the one from the Family Environment Scale (FES), supporting its validity (20).

Currently, the most widely used scale to assess conflict in families of T1D youth is the Diabetes Family Conflict Scale (DFCS), based on Rubin et al. (20, 23) original scale. According to Anderson et al. (24), the first measure initially named DFCS had 17 items rated on a 3-point scale (1 = *Always hassle* to 3 = *Never hassle*) and its internal reliability

was .90. Hood et al. (25) recently revised the DFCS, reporting robust psychometric properties for the 19-item DFCS-R, rated on a new 3-point scale (1 = *Almost never* to 3 = *Almost always*). Its internal consistency in caregivers ranges from .76 (26) to .90 (27). Unfortunately, these scales have never been adapted for Puerto Rican families, nor an indigenous measure has been developed.

We explored parental perception of conflict in families of depressed Latino youth with T1D, and assessed the psychometric properties of the measure used to explore that perception: the Conflict subscale of the FES. We examined its internal consistency, concurrent and construct validity, and sensitivity to change. We expected an internal consistency  $\geq .70$ , significant associations with measures related to family environment and other conflict-related constructs, as well as significant pre- vs. post-treatment differences in scores after adolescent's group therapy.

## Method

### Participants

This study is part of a major research project which explored the initial efficacy of a Cognitive-Behavioral Treatment (CBT) for depressed T1D youth. We analyzed secondary data from that main study collected during eligibility assessments conducted in Spanish between February 2013 and April 2015. Participants were 51 parents of Latino youth with T1D (29 females) aged 12 to 17 ( $\bar{x} = 15.26$  when considering the exact age in years, months and days). Most caregivers (94.11%) and youth (98.04%) were Puerto Ricans, 66.67% lived in urban zone, 43.14% lived in the San Juan Metropolitan Area, and 66.67% of adolescents attended public schools. Their mean HbA1c value, based on their last private laboratory test prior to enrollment, was 9.14 (range: 5.76 to 17.70). Mean time elapsed since T1D diagnosis was 6 years. Youth presented moderate to severe depressive symptoms, with mean Children's Global Assessment Scale (C-GAS) scores of 55.76. Adolescents must obtain a Children's Depression Inventory score  $\geq 13$  or a score  $\geq 44$  in the clinician-rated measure (Children's Depression Rating Scale-Revised) for inclusion in the main study. Psychotic symptoms, history of bipolar disorder, last-year substance abuse/dependence, and imminent suicide risk were among exclusion criteria. A detailed description of the main study, its goals and procedures, is presented elsewhere (28).

Most families (72.55%) were from medium-low or low socioeconomic status. Mean household size was four members (range from 2 to 7). Primary caregivers were mostly (86.27%) women. About 45.10% of youth lived with both parents, while 29.41% and 13.73%, respectively, lived at homes in which parents were either divorced or separated. Caregivers' age ranged between 32 and 58 years old ( $\bar{x} = 43.45$ ,  $SD = 6.59$ ). Around 56.86% had full-time employments and 11.76% had part-time jobs. Their mean education was 14.63 ( $SD = 2.47$ ) years.

### Procedure

Information about the main study was disseminated in T1D clinics, newspapers, and the radio, and by distributing printed materials at educational activities. Participants were

recruited at diabetes summer camps and educational activities, and through service providers' referrals, and referrals from school personnel and other participants. Caregivers completed by phone an application form to participate. After assessing preliminary criteria, youth and caregiver were appointed to an in-person evaluation. After obtaining consent/ assent, participants completed interview-administered and self-report instruments. The study was approved by IRB offices from the UPR Río Piedras (1112-005) and UPR Medical Science Campus (A9530112).

## Measures

**Socio-demographic Data Form.**—We collected data about adolescents' biological sex, age, ethnicity, employment status, grade, type of school attended, and time elapsed since T1D diagnosis. Caregivers provided much the same information (the first four items), as well as details about their specific job, level of education, and the socioeconomic status of their families.

**Glycemic Control.**—In addition to acquiring each participant's most recent results from private laboratories, HbA1c values were obtained through tests conducted in laboratory facilities at the UPR Medical Sciences Campus. The latter tests' results were coded into three categories corresponding to high, moderate, and low glycemic control (see Table 4).

**Cuestionario sobre la Calidad del Equipo Terapéutico (CCET).**—This 14-item measure assesses the quality of group therapists' in-session work based on youth reports (29). We used its Total score and the Communication Style subscale, which have excellent reliability.

**Diabetes Family Behavior Scale (DFBS).**—The 47-item DFBS (30) is rated based on the frequency (from 1 = *All the time* to 5 = *Never*) in which behaviors that help or hinder the patient occur (31). Items assess perceived support with T1D regimen tasks, as well as general aspects such as communication with healthcare providers. Higher scores reflect more social support. McKelvey et al. (30) reported an alpha of .86 for the whole scale, .81 for the Guidance/Control subscale, and .79 for the Warmth-Caring subscale. We used a parent-rated version (alpha = .77).

**Anhedonia, Interpersonal and Activity Alterations Scale (ANEDINA by its Spanish acronym).**—It contains parent-rated versions of three subscales from the Depression Symptoms Spectrum Assessment Inventory (DSSAI), developed to assess youth symptoms (32). The ANEDINA was validated for use in the main study. The internal consistency of its (sub)scales ranges from .79 to .96 (33).

**Burden Assessment Scale (BAS).**—This scale assesses the burden of caring a relative with a health condition (34). We asked caregivers to complete it considering their burden regarding youth depression. Its internal reliability was .90 (35).

**Barriers to Adherence Questionnaire (BAQ).**—It assesses the frequency of environmental and cognitive events that may hinder self-care (36). We used a parent-rated version, whose internal consistency was .80 (37).

**Beck Depression Inventory-II (BDI-II).**—Using this scale, we assessed depressive symptomatology in caregivers. Its internal reliability was .91 (35).

**Child Behavior Checklist (CBCL).**—We administered CBCL subscales from the Internalizing and Externalizing broad-band scales. Their alpha values ranged from .68 (Somatic Complaints) to .88 (Aggressive Behavior) (38, 39).

**Children-Global Assessment Scale (C-GAS).**—It consists of a single score that ranges from 1 (most impaired) to 100 (healthiest). It has shown good inter-rater reliability (.83 to .91) as well as concurrent and discriminate validity in PR (40).

**Family Environment Scale-Conflict Subscale (FES-CS).**—Parents completed the 9-item FES-CS (41), which evaluates the degree in which members express anger and interactions that stimulate anger. In previous research with children (42, 43) satisfactory alpha coefficients for parent ratings on the FES have been reported. Estévez-López et al. (44) reported an alpha as high as .86 for the FES-CS using a Spanish adaptation that has also been used with T1D adolescents (45). The only known studies reporting the reliability of the FES-CS when rated by caregivers of youth with T1D found coefficients from .68 (46) to .74 (22). FES scores converge with other assessments of the family system (47). Supporting FES-CS discriminate validity, mothers have reported higher conflict levels in families of children with conduct problems (48). FES-CS scores have correlated in the expected direction with youth violent behavior, depression, anxiety, loneliness, self-esteem, life satisfaction, and health-related quality of life (42, 45, 46, 49, 50). We used a Spanish version of the FES-CS adapted for Puerto Rico.

## Data Analyses

We obtained descriptive statistics per item when rated in ordinal (OF) and dichotomous formats (DF). We assessed internal consistency using Cronbach's alpha. We also computed mean inter-item correlations (MIIC), corrected item-subscale correlations (CISC), and alpha values if items were removed (ASID). Concurrent validity was analyzed using Pearson's product-moment correlations ( $p < .05$ ) between FES-CS scores and scores from two ANEDINA subscales and the subscales of the CBCL-Externalizing scale. Construct validity was assessed through the association between the Conflict scores and other measures completed by caregivers or youth, and by examining mean differences in FES-CS scores among families of adolescents with different levels of glycemic control using ANCOVA (with ANEDINA-Total, caregiver's education and age, and C-GAS scores as covariates). Finally, we used a paired-sample *t*-test ( $N=48$ ,  $p < .05$ ) comparing pre- and post-treatment scores in the FES-CS to assess its sensibility to change after a group-format CBT for depression in youth.

## Results

The most frequent indicators of conflict (in both scoring formats) were losing temper, displaying anger openly, believing something is achieved by raising the voice, criticizing each other, and fighting a lot (Tables 1 and 2). When rated in DF (Table 2), the first two were endorsed by over half of the sample, and the third by a 47%. The item on hitting each other



had the lowest mean. Yet, more parents endorsed the item on throwing objects than items 21 or 24. Mean score on the FES-CS using the standard DF ratings was of 3.12 ( $SD = 2.17$ ).

FES-CS internal consistency was .76 when rating its items using a 4-point OF (1 to 4): *Definitely true*, *Mostly true*, *Mostly false*, and *Definitely false*. MIIC was .27. CISC varied from .20 to .64. Items that would improve FES-CS reliability should they be removed were #6 (*We rarely display anger openly*) and #27 (*Raising our voice gets us nowhere*). Internal consistency was .69 when rating items in a DF (*True* or *False*). MIIC was .20. CISC varied between .12 and .60. Again, if deleting any of (or both) items 6 and 27, reliability would improve, achieving the expected standard (.70).

Supporting its concurrent validity, FES-CS scores significantly correlated with parent-rated Social Hypersensitivity/Suspiciousness, Hostility/Resistance, Delinquent Behavior and Aggressive Behavior in youth (Table 3). Overall, its correlations with CBCL-Externalizing scale scores were of .52 (OF) and .47 (DF), respectively ( $p < .001$ ). Evidencing its construct validity, Conflict scores (in both formats) significantly converged with variables such as parental depression and burden. These also correlated positively with adolescent depression-related variables, such as anhedonia, activity alterations, isolation/passivity, and overall interpersonal problems. Conflict scores significantly correlated with CBCL-Internalizing scores (.41 and .36, for OF and DF, respectively;  $p < .01$ ), as well as with Anxious/Depressed and Withdrawn scores. However, only scores based on DF ratings were associated with youth somatic complaints. Conflict scores were also related with parent-rated barriers to adherence in insulin regimen experienced by youth, although only DF-based scores correlated with total BAQ scores ( $r = .25$ ,  $p < .05$ ). As additional evidence of its concurrent and construct validity, FES-CS scores significantly diverged from parental support in youth T1D management (Warmth-Caring scores). Besides, FES-CS scores were inversely related to youth's first impression about the quality of therapists' teamwork (CCET-Total; see Table 3), particularly about their communicational style, with coefficients ( $p < .001$ ) of -.44 (OF) and -.51 (DF), respectively.

We examined potential group differences in demographic variables, and tested any correlation among CS scores and demographics before conducting ANCOVA tests. Caregivers' education correlated with both OF ( $r = .36$ ,  $p < .01$ ) and DF ( $r = .27$ ,  $p < .05$ ) Conflict scores. Caregivers of adolescents with HbA1c values  $\geq 9.50$  (Group 3) had a significantly higher age ( $p = .018$ ) than those with HbA1c values between 7.50 and 9.49 (Group 2). Separate ANCOVA tests revealed an overall significant effect for both DF-based ( $p = .005$ ) and OF-based ( $p = .008$ ) scores. FES-CS mean score was higher among families of adolescents from Group 3, compared to families of youth from the other two groups (Table 4). Finally, parent-rated family conflict showed a statistically significant reduction after group-format CBT (Table 5).

## Discussion

Mean FES-CS scores were similar to those reported in other studies with T1D youth (22, 45). Losing temper, displaying anger openly, and raising the voice to achieve something were the most frequently reported conflict-related behaviors. Verbal fights and criticism

were also common, contrary to hitting each other, a behavior reported to occur in only 14% of the families. Caregivers informed the throwing objects behavior in 1 out of 4 families. Some members may found this a less direct form of aggression used to “canalize” their most intense frustrations without necessarily harming others. Notably, in most homes (86%) family members initially tried to smooth things over during a disagreement (item 21) and avoided (78%) trying to be superior to (or impose on) others (item 24). This suggests that Latino families of T1D youth may be open to learn healthy communication and active listening skills to avoid initiating/reinforcing conflictive dynamics typically arising upon initial criticism, shouting, or verbally aggressive remarks by any member.

Regarding FES-CS internal consistency, most items performed adequately, supporting its cohesiveness. Reliability coefficients using both rating formats were appropriate and compared favorably with previous studies analyzing parent ratings in families of T1D youth (22, 46) or children with other conditions (51, 52). As expected, the OF resulted in higher reliability. Items 6 and 27 underperformed compared with others in their CISC. Item 6 (*Displaying anger openly*) performance may be due to its lack of specificity regarding under which conditions (and in which ways) it is prudent to openly express anger within the family. Specifically, this item does not distinguish between expressing anger assertively (with respect), aggressively, or in a passive-aggressive way, nor if only verbal or also physical expressions are included (i.e., throwing objects to “openly” express anger). Regarding item 27 (*Thinking that raising our voice gets us somewhere*), item wording may have prevented caregivers to distinguish between *shouting* and employing a firm although respectful voice tone when disciplining and giving commands. Only the latter is among recommended child-rearing practices.

Although limited by our sample size, our results support not only the internal reliability but also the concurrent and construct validity, as well as sensitivity to change of the parent-rated FES-CS in families of youth with T1D and depression. Conflict scores correlated with parental depression and burden, assessments of adolescents internalizing and externalizing problems, parent-rated total scores of adolescent depression, as well as with all ANEDINA sub-scores, including those assessing specific youth interpersonal problems. CS scores in both formats (DF-based and OF-based) were helpful to discriminate among families of youth with different HbA1c levels. FES-CS seems appropriate for assessing the impact of interventions on the family environment of T1D youth in agreement with literature requiring evaluations that do not rely only on patients self-reports. FES-CS is the only scale that currently supplies the need for a valid, reliable, and sensitive assessment of conflict among families of T1D youth from Puerto Rico. Although group-format CBT for depression is not focused on family dynamics, communication and active listening skills, assertive training, and the need for a social support network, were emphasized during the intervention. It was reasonable, thus, to expect some pre to post changes in conflict scores to the extent that adolescents applied those skills at home.

Aggressive and passive-aggressive communication styles may be more common than assertive ones, particularly in families of youth with T1D and depression, as opposed to families of non-depressed T1D youth or non-T1D depressed adolescents. In a literature review on family stressors and its effect on glycemic control, Tsiouli et al. identified family



conflict as one of the main contributors to deterioration in youth adherence to treatment, which would be expected to be further aggravated by the lack of warmth that stems from family dysfunctional interactions such as frequent aggressive communication (3). In fact, our results showed that higher levels of conflict were related to lower warmth-caring scores (DFBS) and higher barriers to adherence in adolescents, particularly regarding insulin use. This is consistent with studies in which parental criticism and authoritarian parenting has been found to promote less youth collaboration, affecting diabetes management and control (10).

Psychosocial interventions for Latino adolescents with T1D and their caregivers are needed to target conflict-related behaviors using evidence-based psychoeducation, practice healthy communication skills in a supportive and non-judgmental environment, and provide guidance on strategies aimed to prevent/diminish destructive behaviors and verbally aggressive dynamics. Further studies should examine the sensitivity to change of the FES-CS based on both youth and parent ratings, but particularly after completion of interventions targeting both T1D adolescents' and their caregivers' outcomes. Research aimed to identify additional correlates and the best predictors of conflict among families of Latino adolescents with T1D could also contribute to ease the burden of this population and to develop such interventions.

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**Table 1**

Descriptive and Internal Consistency Statistics ( $\alpha = .76$ ) for the Conflict Subscale Items when Scored Using an Ordinal Format (1 to 4)

Items	<i>M</i>	<i>SD</i>	<i>CISC</i>	<i>ASID</i>
3. We fight a lot (Not physically)	2.24	.93	.64	.71
6. We rarely become openly angry	2.61	.87	.20	<b>.78</b>
9. We get so angry that we throw things	1.94	.93	.48	.74
12. We hardly ever lose our temper	2.63	.85	.50	.73
15. We often criticize each other	2.24	.84	.60	.72
18. Sometimes we hit each other	1.43	.78	.30	.76
21. If we disagree, we try to smooth things over	1.73	.75	.58	.72
24. We often try to one-up or out-do each other	1.73	.90	.52	.73
27. Raising our voice will not get us anywhere	2.33	1.03	.26	<b>.78</b>

*Note.* Items are numbered as administered in the 27-item Family Relational Index of the Family Environment Scale. Reversed scoring was applied to items 6, 12, 21, and 27 to compute descriptive statistics and subscale scores with higher scores meaning higher conflict levels. *M* = Mean; *SD* = Standard Deviation;  $\alpha$  = Cronbach's alpha; *CISC* = Corrected Item-Subscale Correlation; *ASID* = Alpha of the Subscale if Item Deleted

**Table 2**

Descriptive and Internal Consistency Statistics ( $\alpha = .69$ ) for the Conflict Subscale Items when Scored Using a Dichotomous Format (True or False)

Items	<i>M</i>	<i>SD</i>	<i>CISC</i>	<i>ASID</i>
3. We fight a lot (Not physically)	.37	.49	.60	.61
6. We rarely become openly angry	.55	.50	.12	<b>.71</b>
9. We get so angry that we throw things	.24	.43	.44	.64
12. We hardly ever lose our temper	.59	.50	.40	.65
15. We often criticize each other	.41	.50	.52	.62
18. Sometimes we hit each other	.14	.35	.29	.67
21. If we disagree, we try to smooth things over	.14	.35	.29	.67
24. We often try to one-up or out-do each other	.22	.42	.50	.63
27. Raising our voice will not get us anywhere	.47	.50	.17	<b>.70</b>

*Note.* Items are numbered as administered in the 27-item Family Relational Index of the Family Environment Scale. Reversed scoring was applied to items 6, 12, 21, and 27 to compute descriptive statistics and subscale scores, with higher scores meaning higher amount of conflict-related behaviors. *M* = Mean; *SD* = Standard Deviation;  $\alpha$  = Cronbach's alpha; *CISC* = Corrected Item-Subscale Correlation; *ASID* = Alpha of the Subscale if Item Deleted.



**Table 3**

Association of Family Conflict with Other Clinically Meaningful Parent-Rated Variables

Variables	Conflict (Format A)	Conflict (Format B)
ANEDINA Total (Youth Depression)	.49 <sup>***</sup>	.47 <sup>***</sup>
Anhedonia	.43 <sup>***</sup>	.41 <sup>**</sup>
Activity Alterations	.46 <sup>***</sup>	.43 <sup>**</sup>
Interpersonal Alterations	.46 <sup>***</sup>	.45 <sup>***</sup>
Isolation/Passivity	.39 <sup>**</sup>	.41 <sup>***</sup>
Hostility/Resistance	.35 <sup>**</sup>	.26 <sup>*</sup>
Social Hypersensitivity/Suspiciousness	.46 <sup>***</sup>	.49 <sup>***</sup>
Parental Burden	.41 <sup>***</sup>	.35 <sup>**</sup>
Parental Depression	.42 <sup>***</sup>	.43 <sup>***</sup>
CBCL Withdrawn	.29 <sup>*</sup>	.22 <sup>a</sup>
CBCL Anxious/Depressed	.34 <sup>**</sup>	.35 <sup>**</sup>
CBCL Somatic Complaints	.29 <sup>*</sup>	.19 <sup>a</sup>
CBCL Delinquent Behavior	.45 <sup>***</sup>	.40 <sup>**</sup>
CBCL Aggressive Behavior	.50 <sup>***</sup>	.46 <sup>***</sup>
Barriers to Adherence-Insulin Use	.30 <sup>*</sup>	.35 <sup>**</sup>
Quality of Group Therapists' Teamwork	-.41 <sup>**</sup>	-.45 <sup>***</sup>
DFBS Warmth Caring	-.46 <sup>***</sup>	-.45 <sup>***</sup>

Note. Format A=1 to 4; Format B=True or False; CBCL=Child Behavior Checklist; ANEDINA= Anhedonia, Interpersonal and Activity Alterations Scale; DFBS=Diabetes Family Behavior Scale;

<sup>a</sup>*p* .10;

<sup>\*</sup>*p* .05;

<sup>\*\*</sup>*p* .01;

<sup>\*\*\*</sup>*p* .001

**Table 4**

Comparison of Mean Family Conflict Scores among Groups Defined by Glycemic Control Level

Variable	Group 1 <i>M (SD)/ EMM (SE)</i>	Group 2 <i>M (SD)/ EMM (SE)</i>	Group 3 <i>M (SD)/ EMM (SE)</i>	<i>F</i>	Contrasts <sup>a</sup>
Conflict Score (OF)	17.88 (4.06)/ 17.44 (.92)	18.38 (5.73)/ 17.60 (.97)	20.22 (4.01)/ 21.33 (.91)	5.37**	1, 2 <3
Conflict Score (DF)	2.65 (2.00)/ 2.45 (.44)	2.75 (2.44)/ 2.41 (.47)	3.89 (1.97)/ 4.38 (.44)	6.07**	1, 2 <3

*Note.* Observed means (*M*) are followed by standard deviations (*SD*) in parenthesis. Parental ratings of youth depression, caregivers' education and age, and adolescents' global functioning scores (rated by clinical evaluators) were used as covariates. *F* = Fisher test for analysis of covariance; *EMM* = Estimated Marginal Means; *SE* = Standard Error; Group 1 = Glycosylated hemoglobin values (HbA1c) lower than 7.50 (*n* = 17); Group 2 = HbA1c values between 7.50 and 9.49 (*n* = 16); Group 3 = HbA1c values of 9.50 or higher (*n* = 18); OF = Scores computed based on the sum of individual items rated in an Ordinal Format (1 to 4); DF = Scores computed based on the sum of individual items rated in the standard Dichotomous Format (*True of False*).

<sup>a</sup>Identical results for multiple comparisons (*p* .05) were found with either Bonferoni or Sidak adjustment methods for confidence intervals of the mean differences.

\*\*  
*p* .01 (two-tailed)

**Table 5**

## Sensitivity to Change of the Conflict Subscale after a Cognitive-Behavioral Group Intervention

Variable <sup>a</sup>	Pre-Treatment <i>M (SD)</i>	Post-Treatment <i>M (SD)</i>	Paired-sample <i>t</i> -test
Conflict Score (OF)	18.60 (4.63)	17.33 (4.33)	2.322*
Conflict Score (DF)	3.00 (2.15)	2.33 (2.15)	2.318*

*Note.* *SD*= Standard Deviation; *M*= Mean; OF = Subscale scores computed based on the sum of individual items rated in an Ordinal Format (1 to 4); DF = Subscale scores computed based on the sum of individual items rated in the standard Dichotomous Format (*True* of *False*);

<sup>a</sup> = For analyses about sensitivity to change, *N* = 48;

Cohen's *d* (effect size) = 0.335 for both pre-post differences.

\* *p* .05 (two-tailed)