ELSEVIER

Journal of Adolescent Health 40 (2007) 36–43

JOURNAL OF ADOLESCENT HEALTH

Original article

The Role of Friendship in the Lives of Male and Female Adolescents: Does Diabetes Make a Difference?

Vicki S. Helgeson, Ph.D.[a,*], Kerry A. Reynolds, Ph.D.[a], Oscar Escobar, M.D.[b], Linda Siminerio, Ph.D.[c], and Dorothy Becker, M.B.B.Ch.[b]

[a]*Carnegie Mellon University, Pittsburgh, Pennsylvania*
[b]*Children's Hospital of Pittsburgh, Pittsburgh, Pennsylvania*
[c]*University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania*

Manuscript received May 17, 2006; manuscript accepted July 18, 2006

Abstract

Purpose: We examined differences in the nature of friendship between adolescents with diabetes and healthy adolescents. We also examined whether friend support and negative relations with friends were related to health for both groups.

Method: We interviewed 127 adolescents with diabetes and 129 healthy adolescents on two occasions, separated by one year. We measured aspects of friendship and psychological health among both groups as well as self-care behavior and metabolic control among adolescents with diabetes. We used logistic regression analysis to predict the presence of friends, repeated measures analysis of covariance to predict changes in friendship over time, and hierarchical multiple regression analysis to examine the relations of friendship to psychological health, self-care behavior, and metabolic control.

Results: Both groups of adolescents were equally likely to have a best friend and boyfriend/girlfriend, but healthy adolescents were more likely to have an other-gender friend. Adolescents with diabetes and healthy adolescents reported similar levels of friend support, but support increased over the year for healthy girls only. Boys with diabetes had the lowest levels of friend support. Negative relations with friends were inversely related to psychological health and predicted a decline in psychological health over time. Negative relations also predicted poor metabolic control and a deterioration of metabolic control over time.

Conclusion: There are similarities and differences in the nature of friendship for adolescents with diabetes compared with healthy adolescents. Friendship serves a protective function for psychological health for both groups and has implications for physical health among those with diabetes.

Keywords: Diabetes mellitus; Type 1; Friends; Adolescent

The development of friendships and romantic relationships is a primary undertaking during adolescence. Little is known about the extent to which health status influences the formation of these relationships [1]. Children with diabetes might have more difficulties establishing and maintaining friendships than healthy children, as the management of diabetes disrupts leisure activities and restricts social activities [2]. One study found that children with more severe disease had more difficulties with peers [3]. People with diabetes need to be self-focused to have good metabolic control, but self-focusing may have adverse effects on relationships. Little research has investigated this issue.

An exception is a study that followed 14-year-old teenagers with and without diabetes for 4 years and found that healthy adolescents were more likely to develop a romantic relationship and to do so sooner than adolescents with

*Address correspondence to: Dr. Vicki S. Helgeson, Department of Psychology, Carnegie Mellon University, Pittsburgh, PA 15213.
E-mail address: vh2e@andrew.cmu.edu

1054-139X/07/$ – see front matter
doi:10.1016/j.jadohealth.2006.07.007

diabetes [1]. Healthy adolescents also had closer relationships than adolescents with diabetes. However, the relationships of girls with diabetes became closer over the 4 years to reach the closeness of their healthy counterparts, whereas the relationships of boys with diabetes did not change over the 4 years. That is, the relationships of boys with diabetes remained impaired compared with healthy boys.

Peer relationships may play an important role in the lives of adolescents with diabetes, influencing their overall psychological well-being as well as the way that they manage their diabetes. Although there is a large body of literature linking peer support to psychological health among healthy adolescents [4–6], little research has examined the implications of relationships with friends for the psychological health of adolescents with diabetes. Instead, the focus has largely been on the family [7–9]. A handful of studies of children with diabetes has examined links between friend support and self-care behavior, sometimes finding a relation of friend support to self-care behavior and sometimes not [10–13].

Thus, the overall goal of this study was twofold. First, we examined whether there were differences in the nature of friendship between healthy adolescents and adolescents with diabetes. Second, we examined whether two aspects of friendship (support, negative relations) related differentially to psychological health for healthy adolescents and adolescents with diabetes. For adolescents with diabetes, we examined the relation of friendship to diabetes-related outcomes, specifically self-care behavior and metabolic control.

We also examined gender differences in friendship and the implications of gender for the relation of friendship to health. Relationships may play a stronger role in females' than males' health. Female adolescents report stronger friendships than males, yet also report more stress associated with relationships than males [14]. Relationships have been said to be a double-edged sword for women, as women not only receive more support from friends than men but also have more people to take care of than men [15]. Diabetes may detract from the female orientation to take care of others, as diabetes requires one to take care of the self. We will examine whether the typical gender differences in friendship found among healthy adolescents generalize to those with diabetes.

Method

Procedure

The study was approved by the Institutional Review Boards of the institutions involved in the study. To be eligible for the study, adolescents had to be in fifth, sixth, or seventh grade. Healthy adolescents could not have a major chronic illness (e.g., cancer, rheumatoid arthritis). Adolescents with diabetes had to be going to Children's Hospital for clinic visits, could not have another major chronic illness, and had to have type 1 diabetes for at least 1 year. Participants could not be from the same family.

Adolescents with diabetes were recruited from an academic children's hospital. We sent letters to all adolescents with type 1 diabetes who were approximately 11 to 13 years old (n = 307) inviting them to participate in the study and to return a postcard if they did not want to be contacted about the study. Only 20 families returned postcards refusing contact about the study. We reached 261 of the 287 families by phone and determined that 90 were not eligible. Of the eligible families, 132 agreed (77%) and 39 refused.

Healthy adolescents were recruited from two sources. First, we recruited 60 families from health fairs. Second, a local pediatric network of physicians identified all families within our age range, divided that total number by the number of letters requested, and, using the quotient (*n*), sent letters to every *n*th family. Of the 156 letters sent, 33 people returned postcards refusing contact about the study. We reached 112 of the remaining 123 families and determined that 93 were eligible. Two-thirds of eligible families (61 of 93) agreed to the study.

The final sample consisted of 132 adolescents with diabetes (70 girls, 62 boys) and 131 healthy adolescents (67 girls, 64 boys). Ages ranged from 10.70 to 14.21 years (M = 12.08; SD = .73). The majority of participants were white (93% diabetes; 91% healthy), and the four-factor Hollingshead index of social status [16] reflected the lower end of technical workers, medium business, and minor professionals. Adolescents with diabetes had the illness between 1 and 13 years (Md = 4.51; M = 4.91, SD = 2.98). Further characteristics of the sample and details of recruitment are described in a previous publication [17].

Adolescents with diabetes were interviewed immediately before or after their clinic appointment in the General Clinical Research Center of the hospital. Healthy adolescents were interviewed in their homes. Before the start of the interview, informed consent to conduct both the initial (Time 1 [T1]) and 1-year follow-up interviews (Time 2 [T2]) was obtained. Interviews with children were conducted out loud with the aid of response cards (e.g., 1 = not at all; 2 = a little; 3 = a lot). Parents completed a questionnaire in a private room while children were being interviewed. The only information from the parent questionnaire relevant to this article is parents' report of demographics and child pubertal status.

One year later (T2), we interviewed 127 (96%) of the children with diabetes and 129 (98%) of the healthy children. Of the five children with diabetes who did not complete the T2 interview, one discontinued the study, two were unreachable, and two were hospitalized. Of the two healthy children who did not complete the T2 interview, one discontinued the study and one was having severe family difficulties.

Instruments

Background. Demographic information, including participant age, race, household structure, parent education, and parent occupation were included on the parent questionnaire. The four-factor Hollingshead index was used to measure social status [16]. Body mass index was computed from height and weight measured at the clinic for children with diabetes and by portable stadiometer and digital scale at the homes of healthy children.

Tanner stage. The parent version of Carskadon and Acebo's [18] self-report of pubertal status (based on Petersen et al's [19] Pubertal Development Scale) was used. Parent ratings are strongly correlated with child and pediatrician ratings of Tanner stages [18]. There were missing data on this measure for four healthy adolescents and five adolescents with diabetes as those parents did not complete that portion of the questionnaire. For adolescents with diabetes, we used the physician rating of Tanner stage. Physician ratings were highly correlated with parent self-report, *Spearman's rho* = .71, $p < .001$.

Friendship. At T1, we asked adolescents whether or not they had a best friend, whether they had an other-gender friend, and whether or not they had a boyfriend/girlfriend. They responded yes/no to each question.

At both T1 and T2, we administered the Berndt and Keefe [20] friendship questionnaire. This instrument contains six scales: companionship, intimacy, instrumental support, self-esteem enhancement, conflict, and dominance. It has excellent reliability and validity. Because the positive aspects of friendship were highly intercorrelated at T1 (*r*s ranged from .47 to .72, all $p < .001$) and T2 (*r*s ranged from .52 to .74, all *p*s $< .001$), we standardized the four scales, summed them, and took the average to form an overall support index. The two negative aspects of friendship (conflict and dominance) were correlated at T1 ($r = .66$, $p = .001$) and T2 ($r = .62$, $p < .001$), but were unrelated to the positive aspects of friendship. Thus, we took the average of these two scales to form an overall negative relations index. The internal consistency of the items comprising the support scale was .90 at both T1 and T2; the internal consistency of the items comprising the negative relations scale was .82 at T1 and .80 at T2.

Psychological health. Depressive symptoms were measured with the abbreviated form of the Children's Depression Inventory (CDI) [21,22]. The CDI is well validated, has high internal consistency, and high test-retest reliability. The alphas in this study were .73 at T1 and .70 at T2. We measured anxiety with the seven items from the Revised Children's Manifest Anxiety Scale that were unique to anxiety when the instrument was factor analyzed with the CDI [23]. Because we reduced the number of items, we changed the true/false format to three-point scales (not at all true, sort of true, very true of me) to increase item variance. The alphas in this study were .68 at T1 and .72 at T2. Finally, we measured anger with the three-item subscale from the Differential Emotions Scale [24]. This scale has high validity and high test-retest reliability. We changed the response format to a three-point scale to make the items consistent with the anxiety items. The alpha was .76 at both T1 and T2.

We administered the global self-worth and social competence subscales from the Self-Perception Profile for Children [25] at T1 and T2. Distinct domains of competence have been demonstrated through factor analysis [25]. The alphas were acceptable at T1 (self-worth .75; competence .76) and T2 (self-worth .75; competence .67).

Because these five psychological health subscales were modestly to moderately correlated at T1 (*r*s ranged from .22 to .50) and at T2 (*r* ranged from .20 to .57), we standardized the individual scales, summed them, and took the average to form a composite psychological health index (Table 1).

Table 1
Health outcomes measured

Psychological health index
Children's Depression Inventory
Revised Children's Manifest Anxiety Scale
Anger Scale of Differential Emotions Scale
Global self-worth
Social competence
Self-care behavior
Metabolic control (A1c)

Diabetes outcomes. We used the 14-item Self-Care Inventory [26], which reflects how well respondents followed their physician's recommendations for diabetes-related behaviors, including glucose testing, insulin administration, diet, and exercise. Previous research validated this instrument by comparing it with specific self-care behaviors obtained from 24-hour recall interviews [27]. Responses to each item are made on five-point scales (1 = never do it; 5 = always do this as recommended). We added eight more contemporary items, five of which were taken from Weissberg-Benchell et al [28]: made up blood tests results because numbers were too high, made up blood test results because did not really test, took extra insulin because ate inappropriate food, skipping injections, and eating foods that should be avoided; and three of which we developed (skipping meals, rotating injection sites, measuring food). Negative items were rated on a five-point scale (1 = never; 5 = always), but reverse coded before summing to form the self-care index. The alphas were high at T1 (.78) and T2 (.82). Our revised 22-item measure correlated .94 with the original scale.

We collected hemoglobin A_{1C} (HbA_{1C}) test results from medical records corresponding to the appointment during which we interviewed the adolescent. HbA_{1C} is an indicator of metabolic control over the past 3 months. The average

HbA_{1C} value was 8.04 (SD = 1.31) at T1 and 8.53 (SD = 1.54) at T2.

Data analysis

First, we examined whether there were group differences in T1 background variables. There were no group differences in gender, age, race, or household structure. However, there were group differences on body mass index (BMI; $t(261) = 2.64$, $p < .01$), Tanner stage ($t(257) = 2.97$, $p < .01$), and social status ($t(261) = 2.94$, $p < .01$). Adolescents with diabetes had a higher BMI, a higher Tanner stage, and were from lower status families. Thus, we controlled for BMI, Tanner stage, and social status in all analyses (because Tanner stage was not available for four healthy participants, they were excluded from all analyses.) Longer disease duration was not related to the psychological health index or metabolic control but was related to worse self-care behavior only at T1, $r = -.23$, $p < .01$.

We used logistic regression to determine whether there were group and gender differences in the presence of a best friend, an other-gender friend, and a boyfriend/girlfriend at T1. To determine whether there were group and gender differences in support and negative relations over time, we conducted a repeated measures group by gender by time multivariate analysis of covariance. Group and gender were between-subjects factors, and time (T1, T2) was the repeated measure.

We used hierarchical multiple regression analysis to examine the relations of support and negative relations to the three health outcomes (Table 1) at both T1 and T2. We entered the three covariates on the first step of the analysis; group, gender, support and negative relations on the second step; the group by support, group by negative relations, gender by support, and gender by negative relations interactions on the third step; and the three-way interactions on the fourth step. Variables were centered before computing interaction terms to reduce multicollinearity. When predicting the T2 health outcomes, we statistically controlled for the T1 health outcome on the first step of the equation. In this way, we were predicting changes in health over time. When predicting diabetes outcomes, the effects of group were omitted from the analyses.

Results

Effects of group and gender on friendship at T1

Overall, 92% of adolescents reported a best friend, and there were no group or gender differences. There was a group difference in the presence of an other-gender friend (beta = .77, SE = .34, $p < .05$; odds ratio = 2.15), such that 86% of healthy adolescents but only 76% of adolescents with diabetes reported an other-gender friend. Overall, 31% of the sample reported a boyfriend/girlfriend, and there were no group or gender differences.

The multivariate analysis of support and negative relations revealed an overall effect for gender, $F(1, 244) = 16.86$, $p < .001$, and a marginally significant gender by group by time interaction, $F(1, 244) = 2.39$, $p = .09$. Univariate analyses revealed main effects of gender for both support, $F(1, 245) = 31.12$, $p < .001$, and negative relations $F(1, 245) = 5.06$, $p < .05$, such that females reported more supportive friendships compared with males, and males reported more negative relations with friends compared with females at both times of assessment. Univariate analyses also revealed that the three-way interaction was significant for support, $F(1, 245) = 4.13$, $p < .05$, but not negative relations. As shown in Figure 1, friendship support is relatively stable over the course of the year for all groups except healthy females; for healthy females, support in-

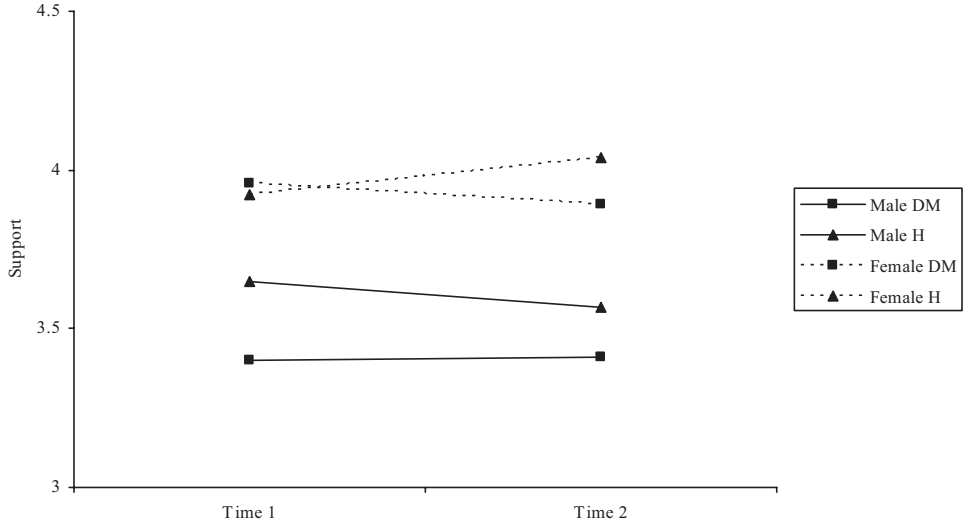

Figure 1. Changes in support over time for males with diabetes, healthy males, females with diabetes, and healthy females.

Table 2
Final equation from hierarchical regressions predicting psychological health

	Beta	SE	Change in R^2	Cumulative R^2
Time 1 psychological health				
Step 1				
Social status	.00	.00		
Tanner stage	−.05	.05		
Body mass index	−.02+	.01	.04	.04
Step 2				
Sex	−.20*	.10		
Group	−.09	.08		
Support	.12+	.07		
Negative relations	−.36***	.07	.11	.15
Step 3				
Gender × support	−.29*	.13		
Gender × negative relations	−.00	.14		
Group × support	.09	.12		
Group × negative relations	−.08	.14	.02	.17
Time 2 psychological health				
Step 1				
Time 1 psychological health	.53***	.05	.36	.36
Step 2				
Social status	−.00	.00		
Tanner stage	−.01	.04		
Body mass index	−.01	.01	.02	.38
Step 3				
Gender	−.18*	.08		
Group	−.03	.07		
Support	−.08	.06		
Negative relations	−.16**	.06	.03	.41

SE = standard error of beta.
+$p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

creases. At both times of assessment, females report greater support than males, with males with diabetes revealing the lowest levels of support. A planned contrast of males with diabetes to the other three groups revealed significantly lower levels of support ($p < .001$) at both times of assessment.

Relations of support and negative relations to health

Psychological health. As shown in Table 2, gender predicted T1 psychological health (males better), negative relations predicted poor psychological health, and support marginally predicted better psychological health. There also was a support by gender interaction. Separate regressions for males and females showed that support predicted better psychological health for males (beta = .29, $p < .001$) but not females (beta = −.01, $p = .89$). At T2, gender predicted changes in psychological health over time (males better), and negative relations predicted a deterioration in psychological health over time. There were no effects of support, and none of the interactions were significant.

Self-care behavior. For adolescents with diabetes, there were no effects of support or negative relations on self-care behavior at either T1 or T2.

Metabolic control. As shown in Table 3, negative relations were significantly related to poor metabolic control at T1. At T2, both gender (females) and negative relations predicted a rise in A_{1C} over time.

Discussion

The nature of friendship

In terms of the existence of friends, children with diabetes were equally likely to have a best friend compared with healthy children, but were somewhat less likely to report the existence of an other-gender friend. Although these data are a long way from Seiffge-Krenke's [1] work that suggested adolescents with diabetes have more difficulty developing romantic relationships, the difference here is consistent with the idea that other-gender relationships may pose more difficulties for children with diabetes. Yet, our data showed no group differences in the existence of a boyfriend or girlfriend at this young age. Future research should explore the development of other-gender relationships for children with diabetes as they get older.

There were no group differences in friend support or negative relations with friends, but typical gender differences prevailed. Consistent with previous research, girls reported more support than boys, and boys reported more negative interactions than girls [29]. Over the year, however, support from

Table 3
Final equation from hierarchical regressions predicting metabolic control

	Beta	SE	Change in R^2	Cumulative R^2
Time 1 metabolic control				
Step 1				
Social status	−.02+	.01		
Tanner stage	.20	.14		
Body mass index	.03	.03	.09	.09
Step 2				
Sex	−.38	.28		
Support	.32+	.19		
Negative relations	.35*	.18	.05	.14
Time 2 metabolic control				
Step 1				
Time 1 metabolic control	.67***	.08	.44	.44
Step 2				
Social status	−.02*	.01		
Tanner stage	.22+	.12		
Body mass index	.03	.02	.04	.48
Step 3				
Sex	.57*	.25		
Support	.19	.17		
Negative relations	.59***	.15	.07	.55

SE = standard error of beta.
$+p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

friends increased for healthy girls but not girls with diabetes. The increase in support over time for healthy girls is consistent with the literature that shows girls spend an increasing amount of time with friends over adolescence [30]. The fact that girls with diabetes did not show this same increase suggests that the self-focus required of managing diabetes may interfere with the development of the other-orientation that emerges during adolescence for girls [31]. The multiple aspects of the diabetes regimen may tie girls with diabetes more closely to family and interfere with the development of more intense peer relationships.

At both times of assessment, boys with diabetes reported the lowest levels of support—lower than girls with diabetes and healthy boys and girls. These findings are consistent with Seiffge-Krenke's [1] finding that boys with diabetes seem to be somewhat impaired in terms of peer relationships. Because illness implies weakness and weakness is inconsistent with the male gender role, boys with a chronic illness such as diabetes may find it more difficult to share their illness with friends. In the end, their friendships may not be as close as those of healthy boys.

Associations of peer relations to health

Friendships seemed to have the same implications for psychological health for children with diabetes as they did for healthy children. Of the two aspects of friendship examined, negative relations was the more robust predictor of psychological health. Negative relations were related to poor psychological health at baseline and predicted an increase in difficulties over time.

There was evidence that support predicted psychological health at baseline, but only for males. The lack of an association for females may reflect the idea that relationships are a double-edged sword for women [15]. Relationships can be both a resource (i.e., source of support) and a source of stress (i.e., source of responsibility) for females. It is somewhat surprising that peer support could be associated with any costs for females at this young age. Yet, other studies of adolescents have shown that females who have a more relational orientation are vulnerable to relationship stressors [32]. Future research should determine how and why peer relationships are less helpful for females during adolescence.

Negative relations with peers were cross-sectionally related to poor metabolic control and predicted deterioration in metabolic control over time. The stress associated with difficulties in peer relationships might directly affect blood glucose levels or might interfere with self-care behavior, which then affects metabolic control. Our data are less supportive of this latter explanation, as there was no association between peer relationships and the self-care behavior index. It is possible, however, that negative interactions with peers might directly affect specific behaviors that children with diabetes need to perform to have good metabolic control—specific behaviors not captured by an overall index. For example, peers may tempt adolescents with diabetes to eat forbidden foods or miss glucose tests to attend a social function. Adolescents are more vulnerable to social pressures from friends to engage in a course of action that would detract from good self-care behavior than younger children [33].

Conclusions, limitations, and clinical implications

In sum, there were similarities and differences in the friendships of adolescents with and without diabetes. There were no group differences in the presence of a best friend or boyfriend/girlfriend, but adolescents with diabetes were somewhat less likely to have an other-gender friend. There were no group differences in friend support at study start, but friend support increased over time for healthy girls but not girls with diabetes. Friendship quality was linked to psychological health for both groups of adolescents and had implications for metabolic control among those with diabetes.

There were several limitations to this study. First, the children with diabetes were sampled from a single clinic. Second, there was a low level of minority representation and little representation of people from lower social statuses. These issues reduce the generalizability of the findings.

Despite these limitations, this study adds to an area in which there is very little research and suggests that clinicians who work with children with diabetes should consider the nature of peer relationships in addition to family relationships. Time should be spent identifying the ways in which diabetes might interfere with friendship development—especially in the case of boys—and finding solutions to those difficulties. Difficulties with peers should be considered a potentially important source of stress that can affect diabetes-related outcomes. Interventions that incorporate friends, such as the one by Greco et al [34], may be one way to address these concerns.

Acknowledgments

The authors acknowledge the support of grant R01 DK60586 from the National Institutes of Health to conduct this work. The authors are grateful to Pamela Snyder for supervising the day-to-day functioning of this project and to Merrie Cousins, Ta'Sharee Grant, Michelle Merriman, Elizabeth Muia, Erin Nowak-Vache, Vivian Rodriguez, Laura Viccaro, and Heather Whitman for their assistance with this research. We also acknowledge the support of the clinic staff and the GCRC of Children's Hospital of Pittsburgh.

References

[1] Seiffge-Krenke I. The capacity to balance intimacy and conflict: differences in romantic relationships between healthy and diabetic adolescents. In: Shulman S, Collins WA, eds. Romantic Relationships in Adolescents: Developmental Perspectives. San Francisco, CA: Jossey-Bass Inc.; 1997:53–67.

[2] Beck S, Smith LK. Personality and social skills assessment of children, with special reference to somatic disorders. In: Karoly P, ed. Handbook of Child Health Assessment: Biopsychosocial Perspectives. New York, NY: John Wiley and Sons; 1988:149–72.

[3] Alderfer MA, Wiebe DJ, Hartmann DP. Predictors of the peer acceptance of children with diabetes: social behavior and disease severity. J Clin Psychol Med Settings 2002;9(2):121–30.

[4] Gauze C, Bukowski WM, Aquan-Assee J, et al. Interactions between family environment and friendship and associations with self-perceived well-being during early adolescence. Child Dev 1996;67:2201–16.

[5] Keefe K, Berndt TJ. Relations of friendship quality to self-esteem in early adolescence. J Early Adolesc 1996;16:110–29.

[6] Wentzel KR, McNamara CC. Interpersonal relationships, emotional distress, and prosocial behavior in middle school. J Early Adolesc 1999;19:114–25.

[7] Charron-Prochownik D, Becker D. Factors affecting adherence. In: Court JM, Werther GA, eds. Diabetes and the Adolescent. Melbourne, Australia: Miranova, 1998.

[8] Patterson JM, Garwick AW. Coping with chronic illness: a family systems perspective on living with diabetes. In: Werther GA, Court JM, eds. Diabetes and the Adolescent. Melbourne, Australia: Miranova, 1998:3–34.

[9] Wamboldt MZ, Wamboldt FS. Role of the family in the onset and outcome of childhood disorders: select research findings. J Am Acad Child Adolesc Psychiatry 2000;39:1212–25.

[10] Kyngas H, Hentinen M, Barlow JH. Adolescents' perceptions of physicians, nurses, parents and friends: help or hindrance in compliance with diabetes self-care? J Adv Nurs 1998;27:760–9.

[11] La Greca AM, Auslander WF, Greco P, et al. I get by with a little help from my family and friends: adolescents' support for diabetes care. J Pediatr Psychol 1995;20(4):449–75.

[12] Bearman KJ, La Greca AM. Assessing friend support of adolescents' diabetes care: the Diabetes Social Support Questionnaire–Friends version. J Pediatr Psychol 2002;27:417–28.

[13] Skinner TC, Hampson SE. Social support and personal models of diabetes in relation to self-care and well-being in adolescents with type I diabetes mellitus. J Adolesc 1998;21:703–15.

[14] Thomas JJ, Daubman KA. The relationship between friendship quality and self-esteem in adolescent girls and boys. Sex Roles 2001;45:53–65.

[15] Belle D. Gender differences in the social moderators of stress. In: Barnett R, Beiner L, Baruch GK, eds. Gender and Stress. New York, NY: Free Press, 1987:257–77.

[16] Hollingshead AB. Four Factor Index of Social Status. New Haven, CT: Yale University; 1975.

[17] Helgeson VS, Viccaro L, Becker D, et al. Diet of adolescents with and without diabetes: trading candy for potato chips? Diabetes Care 2006;29:982–7.

[18] Carskadon MA, Acebo C. A self-administered rating scale for pubertal development. J Adolesc Health 1993;14:190–5.

[19] Petersen AC, Crockett L, Richards M, et al. A self-report measure of pubertal status: reliability, validity, and initial norms. J Youth Adolesc 1988;17:117–33.

[20] Berndt TJ, Keefe K. Friends' influence on adolescents' adjustment to school. Child Dev 1995;66:1312–29.

[21] Kovacs M. The Children's Depression Inventory (CDI). Psychopharmacol Bull 1985;21:995–8.

[22] Kovacs M. Children's Depression Inventory: Technical Manual. North Tonawanda, NY: Multi-Health Systems, Inc., 2001.

[23] Stark KD, Laurent J. Joint factor analysis of the Children's Depression Inventory and the Revised Children's Manifest Anxiety Scale. J Clin Child Psychol 2001;30:552–67.

[24] Izard CE, Libero DZ, Putman P, et al. Stability of emotion experiences and their relations to traits of personality. J Pers Soc Psychol 1993;64(4):847–60.

[25] Harter S. Manual for the Self-Perception Profile for Children. Denver, CO: University of Denver, 1985.

[26] La Greca AM, Swales T, Klemp S, Madigan S. Self-Care Behaviors among Adolescents with Diabetes. 1988. Paper presented at the Ninth Annual Convention of the Society for Behavioral Medicine.

[27] Greco P, La Greca AM, Auslander WF, et al. Assessing adherence in IDDM: a comparison of two methods. Diabetes 1990;40:108A (suppl 2).

[28] Weissberg-Benchell J, Wirtz P, Glasgow AM, et al. Adolescent diabetes management and mismanagement. Diabetes Care 1995; 18(1):77–82.

[29] Kuttler AF, La Greca AM, Prinstein MJ. Friendship qualities and social-emotional functioning of adolescents with close, cross-sex friendships. J Res Adolesc 1999;9:339–66.

[30] Polce-Lynch M, Myers BJ, Kilmartin CT, et al. Gender and age patterns in emotional expression, body image, and self-esteem: a qualitative analysis. Sex Roles 1998;38(11/12): 1025–48.

[31] Hill JP, Lynch ME. The intensification of gender-related role expectations during early adolescence. In: Brooks-Gunn J, Petersen, C, eds. Girls at Puberty. New York, NY: Plenum Press, 1983:201–28

[32] Reynolds KA, Helgeson VS, Seltman H, et al. Impact of interpersonal conflict on individuals high in unmitigated communion. J Appl Soc Psychol 2006;In press.

[33] Thomas AM, Peterson L, Goldstein D. Problem solving and diabetes regimen adherence by children and adolescents with IDDM in social pressure situations: a reflection of normal development. J Pediatr Psychol 1997;22:541–61.

[34] Greco P, Pendley JS, McDonell K, Reeves G. A peer group intervention for adolescents with type 1 diabetes and their best friends. J Pediatr Psychol 2001;26:485–90.