

Brief Report: Friendships of Adolescents with and without Diabetes

Vicki S. Helgeson, PhD Kerry A. Reynolds, BA, Adam Shestak, BS, and Stephanie Wei, BA
Carnegie Mellon University

Background Friendships of adolescents with chronic illness have been rarely studied. **Objective** To compare the friendships of boys and girls with diabetes with those between healthy adolescents. **Methods** One hundred and thirty-eight adolescents were interviewed at summer camps. Participants indicated their number of close friends and rated friendships for support and conflict. Participants described aspects of their same-sex and other-sex friendships that they liked and disliked. **Results** Adolescents with diabetes have friendships that are similar to those between healthy adolescents, with a few exceptions. **Conclusions** Emotional support may be especially valued by girls with diabetes, whereas differences among friends may be less valued among adolescents with diabetes.

Key words Adolescence; Diabetes; Friendships; gender.

Numerous studies of children with diabetes have focused on whether children suffer greater psychosocial difficulties or psychopathology than healthy children. Results from case-control studies are equivocal: the most recent reviews of the literature in this area have concluded that it is unclear whether diabetes is associated with an increased incidence of psychopathology (Hauser, Jacobson, Benes, & Anderson, 1997; Thomas & Hauser, 1998).

One area of normal adolescent development that has not been adequately examined by previous studies is relationships with peers. More attention has been paid to children's family relationships (Amer, 1999; Gowers, Jones, Kiana, North, & Price, 1995; Wamboldt & Wamboldt, 2000), but little attention has been paid to peer relationships (Patterson & Garwick, 1998). Peer relationships are a primary social context for adolescents. In fact, peer support may be more important than family support for older adolescents. One study showed that family support and peer support predicted fewer behavioral problems among children with or without diabetes who were less than 12.5 years old, but only peer support predicted fewer behavioral problems among those older than 12.5 (Varni, Babini, Wallander, Roe, & Frasier, 1989). Whereas families are the primary source

of diabetes-related support, peers may be the primary source of emotional support (La Greca et al., 1995; Thomas & Hauser, 1998).

During adolescence, most children establish a network of friends. Little is known about how health status influences the formation and characteristics of these friendships. One study examined the friendships of 14-year-olds with and without diabetes and followed the adolescents for 4 years (Seiffge-Krenke, 2000). In some ways, the friendships of adolescents with and without diabetes were similar. For example, both groups of adolescents reported similar numbers of close friends. However, some differences emerged. Healthy adolescents reported more intimacy and affection in their friendships than did adolescents with diabetes.

When examining differences in friendships between children with and without diabetes, it also is important to consider the effect of gender. Numerous studies of healthy children show that girls report more supportive relationships than boys and that friends are a greater source of intimacy and emotional closeness for girls than boys (Camarena, Sarigiana, & Petersen, 1990; Golombok & Fivush, 1994; Kuttler, La Greca, & Prinstein, 1999). Girls define friendship by self-disclosure and boys define

All correspondence concerning this article should be addressed to Vicki S. Helgeson, Department of Psychology, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, Pennsylvania 15213. E-mail: vh2e@andrew.cmu.edu.

Journal of Pediatric Psychology 31(2) pp. 194–199, 2006

doi:10.1093/jpepsy/jsj009

Advance Access publication March 3, 2005

Journal of Pediatric Psychology vol. 31 no. 2 © The Author 2005. Published by Oxford University Press on behalf of the Society of Pediatric Psychology. All rights reserved. For permissions, please e-mail: journals.permissions@oupjournals.org

friendship through shared activities (McNelles & Connolly, 1999). Little research has examined whether diabetes alters these sex differences.

There were two goals of this study: First, to compare adolescents with and without diabetes to determine whether they differ in number of friends, friend support, and conflict with friends. Second, to identify aspects of friendships that adolescents like and dislike. The researchers examined whether responses differ as a function of health status (diabetes or not) and sex.

Method

Participants

Participants included 71 (30 male, 41 female) adolescents with type 1 diabetes and 67 (30 male, 37 female) healthy adolescents. (The researchers did not specifically collect information on whether the children had type 1 or type 2 diabetes. However, the researchers contacted the camp director, who stated that nearly all, if not all, children would have had type 1 diabetes. She estimated that 99% had type 1 diabetes.) Most adolescents were Caucasian (91% of diabetes; 96% healthy). Ages ranged from 11 to 17.

Recruitment

All recruitment and study procedures were approved by the Institutional Review Board of Carnegie Mellon University. The American Diabetes Association provided a list of the names and addresses of adolescents attending a diabetes camp in Western Pennsylvania. The researchers sent letters to families, describing the study and inviting adolescents to participate. Adolescents either returned a signed consent form by mail or signed up for the study during camp registration (the first day of camp). Of 99 campers, 71 participated.

The researchers recruited healthy controls from two sources. First, the researchers mailed letters of invitation to adolescents who attended sports day camps at Carnegie Mellon University. Of 110 letters sent, 45 returned signed consent forms. Second, the researchers contacted a nearby college that had a summer art camp. The director of the program publicly announced the study to camp participants, and 22 campers volunteered to participate.

Procedure

All interviews were conducted in person and lasted about 15 min. Participants were first asked several demographic questions. Then a relationship inventory was administered, and participants were asked several open-ended questions about their friendships.

Instruments

Background Variables

The researchers asked participants their age, the number of bedrooms in their house, and the number of people who lived in their house. As a proxy for socioeconomic status (SES), the number of people per bedroom was calculated. The researchers assessed activity level by asking campers the number of organized athletic activities in which they were involved and how many days per week they engaged in physical activities.

Relationships

First, the researchers asked adolescents to indicate the number of people that they considered to be good friends. (One child reported that he had 200 friends. The researchers repeated the question and he retained his original answer. With the exception of this participant, the distribution of number of friends ranged from 2 to 28 ($M = 9$, $Mdn = 8$). Instead of removing the outlier, the researchers recoded his response to be the next highest value.) The researchers then administered four subscales from the Network of Relationships Inventory (Furman, 1996): nurturance (care-taking behavior), intimacy (self-disclosure), support, and conflict. Internal consistencies ranged from .74 to .84. Because the self-disclosure, support, and nurturance scales were highly related to one another (r s ranged from .41 to .68), the researchers combined these three scales into a single support index. They examined the conflict scale separately because it was unrelated to the other three scales. Also, they developed a diabetes-specific self-disclosure scale for the campers with diabetes. Adolescents with diabetes were asked to what extent they disclosed their illness to peers, discussed their feelings about having diabetes, and informed peers what to do in the event of hypoglycemia. The internal consistency of this scale was 0.70.

The researchers asked four open-ended questions about friendships with peers. They asked participants to tell them what they liked about their same-sex friendships, that is, what they got out of them. The researchers then asked what bothered them most about their same-sex friendships. The researchers asked the same two questions of other-sex friendships.

Coding of Open-Ended Questions

The researchers reviewed the responses to the liked and disliked aspects of friendship and created a set of 13 coding categories for likes and 17 coding categories for dislikes. Two of the authors then independently categorized each response. The interrater reliability, calculated

Table I. Same-Sex Likes and Dislikes

	Total percentage	Percentage breakdown				Significant differences		
		Diabetes		Healthy		Health status	Sex	Health × sex
		Male	Female	Male	Female			
Likes								
Companionship	51.8	53.3	52.5	63.3	40.5	ns	ns	ns
General emotional support	28.5	10.0	55.0	16.7	24.3	.05	.01	.05
Shared interests, activities	21.9	36.7	5.0	43.3	10.8	ns	.01	ns
Honest/loyal	18.4	14.3	28.2	3.8	21.9	ns	.10	ns
Self-disclosure	18.2	10.0	10.0	13.3	37.8	.10	.05	ns
Similarities	16.8	3.3	17.5	13.3	29.7	ns	.05	ns
Dislikes								
General negative personality trait	23.1	34.8	19.4	12.0	27.0	ns	ns	.05
Untrustworthy	23.1	8.7	33.3	12.0	29.7	ns	.01	ns
Argumentative, conflict	19.0	4.3	16.7	36.0	18.9	.05	ns	.10
Too serious	10.7	4.3	11.1	4.0	18.9	ns	.10	ns
Arrogant	9.1	17.4	5.6	16.0	2.7	ns	.05	ns
Judgmental	9.1	8.7	8.3	8.0	10.8	ns	ns	ns

Table II. Other-Sex Likes and Dislikes

	Total percentage	Percentage breakdown				Significant differences		
		Diabetes		Healthy		Health status	Sex	Health × sex
		Male	Female	Male	Female			
Likes								
Companionship	39.2	42.9	38.5	38.5	37.5	ns	ns	ns
Differences are good	28.0	14.3	30.8	23.1	40.6	.05	.10	ns
General positive personality trait	25.6	32.1	28.2	23.1	18.8	ns	ns	ns
Honest/loyal	18.4	14.3	28.2	3.8	21.9	ns	.05	ns
General emotional support	17.6	21.4	25.6	7.7	12.5	ns	ns	ns
Easygoing, laid back	13.6	0.0	17.9	3.8	28.1	ns	.01	ns
Dislikes								
General negative personality trait	29.4	22.7	36.4	20.8	33.3	ns	ns	ns
Too serious	12.8	31.8	0.0	20.8	6.7	ns	.01	ns
Lack emotional support	9.2	4.5	24.2	0.0	3.3	ns	ns	ns
Cannot relate	8.3	13.6	3.0	12.5	6.7	ns	ns	ns
Rejecting	8.3	9.1	12.1	12.5	0.0	ns	ns	ns
Judgmental	8.3	0.0	9.1	12.5	10.0	ns	ns	ns

with the kappa statistic, was 0.84 for same-sex likes, 0.81 for same-sex dislikes, 0.83 for other-sex likes, and 0.74 for other-sex dislikes. The most common likes and dislikes for same-sex friends are summarized in Table I, and the most common likes and dislikes for other-sex friends are summarized in Table II.

Results

Comparisons of Health Status and Sex on Background Variables

The researchers conducted health status (diabetes, healthy) by sex analyses of variance on the background

variables to determine whether the two groups of campers were similar. There were no group differences in ethnicity. There were significant main effects of health status, $F(1, 134) = 52.84, p < .05$, and sex, $F(1, 134) = 4.71, p < .05$, on participants' age. Adolescents with diabetes were older ($M = 13.89$) than healthy adolescents ($M = 12.51$), and females were older ($M = 13.41$) than males ($M = 12.97$). There were no effects of health status or sex on SES ($M = 1.21$). Among adolescents with diabetes, there was no sex difference in age at diagnosis.

There was a main effect of health status on the number of organized athletic activities, $F(1, 134) = 6.66, p < .05$,

such that campers with diabetes participated in fewer activities ($M = 1.68$) than healthy campers ($M = 2.21$). This was not surprising to the researchers as most healthy adolescents were recruited from sports camps. There also was a main effect for sex, $F(1, 134) = 5.73$, $p < .05$, such that girls participated in more activities ($M = 2.17$) than boys ($M = 1.63$). The researchers asked adolescents to indicate how many days a week they engaged in vigorous physical activity. There was an unexpected health status by sex interaction, $F(1, 134) = 5.60$, $p < .05$. Among boys, campers with diabetes participated in more physical activity ($M = 5.67$) than healthy campers ($M = 4.67$), but among girls, campers with diabetes participated in fewer days of activity ($M = 5.02$) than healthy campers ($M = 5.32$). Thus, the researchers statistically controlled for age and physical activity in all analyses.

Effect of Health Status and Sex on Relationships

A health status by sex analysis of covariance revealed a marginally significant effect of health status on number of friends, $F(1, 132) = 3.54$, $p = .06$. Adolescents with diabetes identified more friends ($M = 10.21$) than healthy adolescents ($M = 8.00$). There was a main effect of health status on the support index, $F(1, 132) = 3.80$, $p = .05$, indicating that adolescents with diabetes reported more support ($M = 3.92$) than the comparison group ($M = 3.68$). There also was a main effect of sex, $F(1, 132) = 33.36$, $p < .001$, such that females reported more support ($M = 4.10$) than males ($M = 3.49$). There were no effects of health status or sex on conflict. There was no sex difference in the diabetes self-disclosure index.

Positive and Negative Aspects of Friendships

The researchers asked campers to identify the positive and negative features of their same-sex and other-sex friendships. Campers identified 13 same-sex likes, 15 same-sex dislikes, 12 other-sex likes, and 17 other-sex dislikes. Many of these behaviors had low frequencies. To reduce the number of analyses and to provide a more representative picture of the data, the researchers examined the six most frequently identified likes and dislikes in same-sex and other-sex friendships. The proportion of each sex, separated by health status, that identified these likes and dislikes is summarized in Tables I and II. The researchers used logistic regression analysis to test whether health status or sex, or the interaction of the two, predicted the naming of a feature. Age and physical activity were statistically controlled in these analyses.

Same-Sex Likes

The most frequently named like was companionship. This was mentioned by over half of participants and equally by males and females as well as adolescents with and without diabetes. The second most frequently named like was emotional support. There were main effects of health status and sex ($\beta = 1.10$, $p < .05$; $\beta = 1.62$, $p < .001$, respectively), which were qualified by a health status by sex interaction ($\beta = 2.11$, $p < .05$). The sex difference in emotional support was larger among adolescents with diabetes than healthy adolescents and notably high among girls with diabetes (55%). The third most frequently mentioned like was shared interests and activities. There was a main effect of sex ($\beta = -2.17$, $p < .001$), such that males identified this feature more (40.0%) than females (7.8%) across both groups. The fourth feature named was valuing a friend who was honest or loyal, which was mentioned equally by both groups of males and females. The fifth feature named was self-disclosure. There was a main effect of sex ($\beta = 1.00$, $p < .05$), such that girls named this feature more than boys. Similarities was the sixth most frequently identified feature. There was a main effect of sex ($\beta = 1.29$, $p < .05$), such that more females (23.4%) than males (8.3%) across both groups expressed an appreciation for the similarities in same-sex friendships.

Same-Sex Dislikes

The category of dislikes that was most prevalent was general negative personality traits. This category consisted of a variety of idiosyncratic traits (e.g., nerdy and goofy), none of which was mentioned frequently enough to merit its own category. There was a significant health status by sex interaction ($\beta = -1.99$, $p < .05$), such that it was named most frequently by males with diabetes and healthy females. The second most frequently mentioned dislike was untrustworthiness. There was a sex difference ($\beta = 1.55$, $p < .01$) in the direction of females citing this feature more often (31.5%) than males (10.4%) across both groups. The third most frequently identified dislike was being argumentative. There was a health status difference ($\beta = -1.42$, $p < .05$), such that being argumentative was mentioned more by healthy adolescents than adolescents with diabetes. The fourth most frequently identified dislike was being too serious, which did not significantly differ by group or sex. The fifth most frequently mentioned dislike was arrogance. There was a sex difference ($\beta = -1.61$, $p < .05$), with males naming this feature (16.7%) more than females (4.1%) across both groups. There were no health status or sex differences on the sixth feature—friends being too judgmental.

Other-Sex Likes

The most frequently mentioned like of the other sex was companionship, a finding similar to the findings for the same sex. There were no health status or sex differences. The second most frequently identified positive feature of other-sex friendships was differences being good. There was a health status effect ($\beta = -0.10$, $p = .05$), such that healthy adolescents were more likely than adolescents with diabetes to say differences were good. The third most frequently identified strength of other-sex friendships was positive personality traits (e.g., caring, nice, smart). No health status or sex differences appeared. A friend who was honest or loyal was identified fourth, more so by females (25.4%) than males (9.39%), $\beta = 1.11$, $p < .05$. Emotional support was the fifth most frequently named feature, and it was mentioned equally by adolescents with and without diabetes. Females were more likely (22.5%) than males (1.9%) to report that they valued the easygoing, laid back nature of other-sex friends ($\beta = 2.73$, $p = .01$).

Other-Sex Dislikes

The most frequently identified dislike was a negative personality trait that was too specific to constitute its own category, a finding similar to the findings for same-sex friends. There were no effects of health status or sex. The next most frequently mentioned dislike of other-sex friendships was that friends were too serious. This was mentioned more frequently by males (26.1%) than females (3.2%; $\beta = -2.76$, $p < .001$). There were no health status or sex differences on any of the next four features: lack of emotional support, feeling that one could not relate to the person, finding the friend rejecting, and finding the friend to be judgmental.

Discussion

In this article, the researchers sought to compare the friendships of adolescents with diabetes with those of healthy adolescents. The researchers did not find any evidence that adolescents with diabetes suffered negative consequences to their friendships because of their disease status. Instead, adolescents with diabetes reported more close friends and reported that they received more support from their friends than healthy adolescents. Adolescents with diabetes and healthy adolescents experienced similar levels of conflict in their friendships. Thus, there is certainly no evidence that diabetes impedes friendship formation and development. In fact, it is possible that adolescents who have diabetes experience a greater need for support from their friends. Mobilizing this support may draw established

friends closer and may help initiate new friendships. Further work will need to investigate this possibility.

When examining the aspects of friendship that adolescents liked and disliked, the researchers found that adolescents with diabetes reported likes and dislikes that were similar to those of healthy adolescents. The characteristic most frequently identified as a liked aspect of friendship was companionship. It was identified equally often by adolescents with and without diabetes and by boys and girls. Thus, companionship is an important aspect of friendship for all types of adolescents.

A few differences emerged in the liked and disliked aspects of friendship when comparing adolescents with diabetes with healthy adolescents. Girls with diabetes were more likely than boys with diabetes or healthy adolescents to identify emotional support as a liked aspect of same-sex friendships (55%). Thus, the sex difference in emotional support found in previous research may be magnified in the case of a chronically ill child. Support from friends may be important to girls with diabetes.

Healthy adolescents were more likely than adolescents with diabetes to indicate that differences were a liked aspect of other-sex friendship. Adolescents with diabetes may avoid focusing on differences because they feel that their disease status differentiates them from their peers. Differences may not be viewed as positively by adolescents with diabetes.

In addition to comparing the friendships of adolescents with diabetes with those of healthy adolescents, the researchers compared boys' and girls' friendships. Girls reported greater support from friends and valued similarity and self-disclosure more than boys, whereas boys reported liking shared interests and activities more than girls, findings that are consistent with that found in previous work (Kuttler et al., 1999; Lempers & Clark-Lempers, 1993; Thomas & Daubman, 2001). There also was some evidence that girls placed a higher value on loyalty and trust in their friendships than did boys. Both boys and girls identified girls as serious and boys as laid back.

There are several limitations to this study. First, the researchers used campers as participants. Although the researchers asked adolescents about friendships at home rather than friendships at camp, it is possible that individuals who attend camps may have different types of friendships than individuals who do not attend camps. Second, the healthy sample came primarily from athletic camps. Third, the sample contained primarily Caucasian adolescents. Thus, generalizability to other groups is limited. Future work should examine adolescents with diabetes and healthy adolescents who may be more

representative of the population. Lastly, the findings on open-ended responses should be interpreted with caution because the researchers conducted many analyses. The researchers consider these analyses exploratory as little research has investigated how health status might influence adolescent friendship. The researchers emphasize the consistency in the overall pattern of findings rather than emphasize one or two isolated significant effects.

Overall, the results of this study provide an important window into the similarities and differences in friendships between healthy adolescents and those with diabetes. In general, the results of this study indicate that adolescents with diabetes have friendships that are similar to those of healthy adolescents, with only a few exceptions, and confirm previous research on gender.

Acknowledgments

This study was supported, in part, by a Small Undergraduate Research Grant (SURG) award given to the fourth author by Carnegie Mellon University. Portions of the data were presented in a poster at the 2002 Annual Meeting of the Society of Behavioral Medicine in Washington, DC.

Received May 26, 2004; revisions received July 20, 2004, October 27, 2004, and January 19, 2005; accepted January 31, 2005

References

- Amer, K. S. (1999). Children's adaptation to insulin dependent diabetes mellitus: A critical review of the literature. *Pediatric Nursing*, 25, 627–639.
- Camarena, P. M., Sarigiana, P. A., & Petersen, A. C. (1990). Gender-specific pathways to intimacy in early adolescence. *Journal of Youth and Adolescence*, 19, 19–32.
- Furman, W. (1996). The measurement of friendship perceptions: Conceptual and methodological issues. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 41–65). New York: Cambridge University Press.
- Golombok, S., & Fivush, R. (1994). *Gender development*. New York: Cambridge University Press.
- Gowers, S. G., Jones, J. C., Kiana, S., North, C. D., & Price, D. A. (1995). Family functioning: A correlate of diabetic control. *Journal of Child Psychology and Psychiatry*, 36(6), 993–1001.
- Hauser, S. T., Jacobson, A. M., Benes, K. B., & Anderson, B. J. (1997). Psychosocial aspects of diabetes mellitus in children and adolescents: Implications and interventions. In N. Alessi (Ed.), *Handbook of child and adolescent psychiatry, Volume IV: Varieties of development*. New York: Wiley.
- Kuttler, A. F., La Greca, A. M., & Prinstein, M. J. (1999). Friendship qualities and social-emotional functioning of adolescents with close, cross-sex friendships. *Journal of Research on Adolescence*, 9, 339–366.
- La Greca, A. M., Auslander, W. F., Greco, P., Spetter, D., Fisher, E. B., & Santiago, J. V. (1995). I get by with a little help from my family and friends: Adolescents' support for diabetes care. *Journal of Pediatric Psychology*, 20(4), 449–475.
- Lempers, J. D., & Clark-Lempers, D. S. (1993). A functional comparison of same-sex and opposite-sex friendships during adolescence. *Journal of Adolescent Research*, 8(1), 89–108.
- McNelles, L. R., & Connolly, J. A. (1999). Intimacy between adolescent friends: Age and gender differences in intimate affect and intimate behaviors. *Journal of Research on Adolescence*, 9(2), 143–159.
- Patterson, J. M., & Garwick, A. W. (1998). Coping with chronic illness: A family systems perspective on living with diabetes. In G. A. Werther & J. M. Court (Eds.), *Diabetes and the adolescent* (pp. 3–34). Melbourne, Victoria: Miranova.
- Seiffge-Krenke, I. (2000). Diversity in romantic relations of adolescents with varying health status: Links to intimacy in close friendships. *Journal of Adolescent Research*, 15, 611–636.
- Thomas, J. J., & Daubman, K. A. (2001). The relationship between friendship quality and self-esteem in adolescent girls and boys. *Sex Roles*, 45, 53–65.
- Thomas, A. M., & Hauser, S. T. (1998). Psychosocial challenges and issues. In G. A. Werther & J. M. Court (Eds.), *Diabetes and the adolescent* (pp. 35–55). Melbourne, Victoria: Miranova.
- Varni, J. W., Babini, L., Wallander, J. L., Roe, T. F., & Frasier, S. D. (1989). Social support and self-esteem effects on psychological adjustment in children and adolescents with insulin-dependent diabetes mellitus. *Child and Family Behavior Therapy*, 11(1), 1–17.
- Wamboldt, M. Z., & Wamboldt, F. S. (2000). Role of the family in the onset and outcome of childhood disorders: Select research findings. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 1212–1225.