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Mother and Adolescent Representations of Illness Ownership and Stressful Events Surrounding Diabetes

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Objective To assess the extent to which adolescents with diabetes and their mothers appraise diabetes as a shared entity across adolescence through (a) assessing appraisals of illness ownership and their relationship to joint responsibility for daily diabetes tasks, (b) exploring whether appraisals of shared illness ownership are associated with congruent views of what is stressful about diabetes, and (c) examining whether age-related declines occur in these shared appraisals across adolescence. **Methods** One hundred twenty-seven adolescents (ages 10–15 years, $M = 12.8$) and their mothers completed an interview that probed appraisals of illness ownership, the most stressful events surrounding diabetes in the past week, and a questionnaire regarding who was responsible for performing diabetes-related tasks. **Results** Dyads, most frequently, agreed that diabetes was a “shared” entity. Shared appraisals of illness ownership reflected the greater joint responsibility of mothers and children in daily diabetes tasks. Shared appraisals of illness ownership were not related to congruent reports of diabetes stressful events, and incongruence in appraisals of stressful events was common. With age adolescents reported less shared illness ownership and congruence regarding stressful events, age differences were not seen in mothers’ reports. **Conclusions** Although diabetes is often appraised as a social entity, adolescents and their mothers experience different aspects of the disease as stressful, especially as adolescents age, and become more independent in performing diabetes-related tasks.

Key words adolescent illness; congruence; dyadic coping; stress; type 1 diabetes.

Chronic illnesses such as diabetes have a substantial impact on not only the child with the illness, but also the family (Hauser, DiPlacido, Jacobson, Willett, & Cole, 1993; La Greca et al., 1995). Family members provide emotional support to children with diabetes, as well as instrumental support with food preparation, administering insulin injections, and exercise (La Greca et al., 1995; Mellin, Neumark-Stainzer, & Patterson, 2004), although this support may decline across adolescence (Anderson, Auslander, Jung, Miller, & Santiago, 1990). In addition to assisting adolescents with diabetes tasks, adolescents and their mothers report that most diabetes stressors are shared together in some way, rather than

individually experienced, indicating that families may experience similar diabetes-related events as they work together to manage the disease (Berg et al., 2005; Wiebe et al., 2005).

This extensive family involvement in chronic disease management has led researchers to conceptualize the illness as a “shared” entity where family members perceive of the illness as their own (i.e., shared illness ownership) rather than appraising the illness as the adolescent’s own issue (Berg et al., 2005; Hauser et al., 1993). This shared illness ownership may arise as parents and children share in the daily tasks of managing the disease. However, no research has explicitly examined

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whether equal responsibility for diabetes tasks is one way in which families come to appraise the illness as shared. In this study, we explored the relationship between diabetes responsibility (who is responsible for completing specific diabetes tasks, from the child alone to equally the child and the parent, to the parent alone) and illness ownership appraisals (cognitive appraisals in which adolescents and mothers appraise the overall illness as the adolescent's own issue or something that is shared within the family). The study also examines whether congruence in shared illness ownership appraisals is associated with similar experiences of diabetes-related stressors (Fig. 1). Finally, the study explored whether age-related declines occur in the experience of diabetes as a shared illness across adolescence, reflecting the shifts in the parent-child relationship (Steinberg & Silk, 2002) and parental involvement in diabetes (Anderson et al., 1990).

Although there is evidence that parents and adolescents may appraise diabetes ownership as shared (Berg, Meegam, & Deviney, 1998; Bodenmann, 2005; Lyons, Mickelson, Sullivan, & Coyne, 1998), how these appraisals come about has been unclear. Hauser et al. (1993) found that families with adolescents who have diabetes viewed the illness as something that was shared by the entire family,

as they expressed a "we're in this together" attitude and used interdependent language such as "we" statements, rather than "I" statements when discussing the illness. Additional research has shown that adolescents with diabetes and their mothers often engage in collaborative-coping strategies in which both are involved as a team to meet the demands of illness-related stressors (Berg et al., 2005; Wiebe et al., 2005). However, the relationship between sharing responsibility for diabetes tasks and appraisals of illness ownership as shared has not been explored. With the growing emphasis in the literature on the social nature of coping with diabetes, understanding if, and how, families come to view the illness as shared becomes increasingly important. We posit that one way in which families may come to view the illness ownership as shared is through the joint responsibility for diabetes management tasks (La Greca et al., 1995), especially early in adolescence when family members may be particularly involved in diabetes management (Anderson et al., 1990) (Fig. 1).

Shared illness ownership appraisals may also be associated with congruent adolescent-mother perspectives regarding stressful events surrounding the disease (Fig. 1). That is, conceptualizing the illness as "shared" may provide a context for greater knowledge and communication regarding the stressful events surrounding

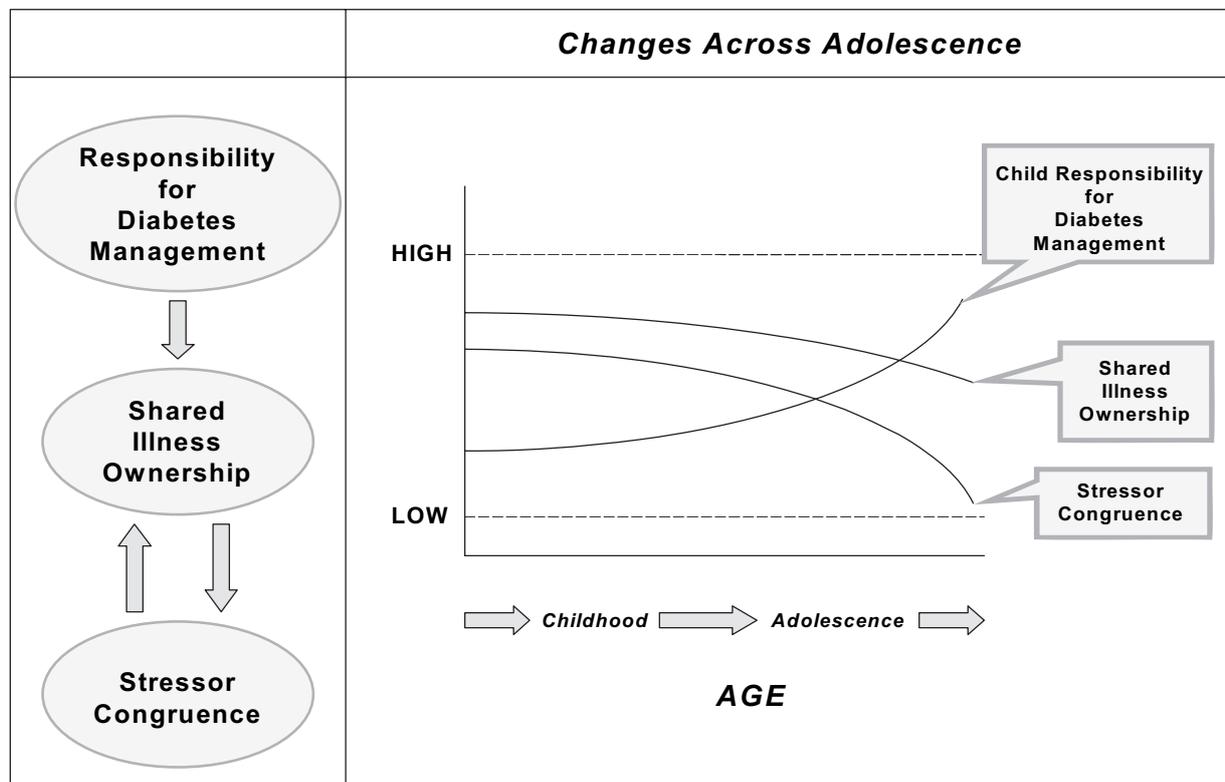


Figure 1. A model of diabetes as a shared entity across adolescence.

the illness. In addition, reciprocal relations may occur such that through daily similar experiences about stressful events, the dyad may come to view the illness as shared. Past research has shown the potential for congruent perspectives regarding illness ownership and stressful events; however, the relationship between these two constructs has not been examined. For example, Law (2002) found substantial overlap in the representations of diabetes held by mothers and children, and Hauser et al. (1993) reported that families overwhelmingly viewed diabetes as a "family issue." These results suggest that there will be substantial congruence in views of illness ownership between mothers and their children. About stressful events, research has found that adolescents and parents both report frequent stressors surrounding metabolic control; however, parents also mention events, such as conflict regarding management, worries about long-term complications of the disease, supervising or monitoring the child outside the home, and meal planning (Delamater, Kurtz, Bubb, White, & Santiago, 1987; Mellin et al., 2004; Seiffge-Krenke, 2001). In this study, we explore whether appraisals of illness ownership as a shared entity may provide a context for greater similarity in the experience of stressful events surrounding diabetes than appraisals of the illness as an individual entity (Fig. 1). Clinically, understanding whether adolescents and mothers who appraise the illness as shared experience similar or different, stressors may inform health care teams as they assist families in coping with potential stressors to come to a more mutual understanding of the disease.

These appraisals of diabetes as a shared entity may decline with age across adolescence. During adolescence, a major life task is to develop autonomy and identify more with peer groups (Grotevant & Cooper, 1986; Grotevant, 1998; Steinberg & Silk, 2002). As part of this process of growing independence, adolescents take on greater responsibility in managing the disease independently, and joint responsibility for diabetes tasks declines (Anderson et al., 1990; Wiebe et al., 2005). In addition, adolescents begin to identify more with peer groups (Steinberg & Silverberg, 1986) and spend less time in the physical presence of their parents (Larson & Richards, 1991). Because these developmental shifts, adolescents and their mothers may be less likely to appraise the illness as shared and less likely to have congruent perspectives regarding the stressful events surrounding the disease. Therefore, although shared illness ownership appraisals may be frequent and may relate to congruent experiences of illness-related stressors, appraisals of diabetes as a shared entity and agreement

regarding diabetes-related stressors are likely to decline across adolescence (Fig. 1).

In summary, this study builds upon prior research by examining whether a shared sense of illness ownership comes from greater joint responsibility for diabetes tasks and is related to greater congruence in the report of stressful illness-related events across adolescence (Fig. 1). The study adds to prior conceptualizations of diabetes as a social entity (Berg et al., 2005; Hauser et al., 1993; Wiebe et al., 2005) by probing mothers' and adolescents' actual appraisals of illness ownership, as well as providing one potential means by which shared illness ownership appraisals may come about (i.e., through joint responsibility for diabetes tasks). Additionally, the study provides new information regarding the possible relationships between shared illness ownership appraisals and congruent experiences in diabetes stressful events. Congruence in diabetes stressful events was assessed by asking mothers and adolescents to report the most stressful events of the past week and comparing their coded events by empirically derived categories. The model guiding the study predicted that joint responsibility for performing diabetes management tasks would relate to shared appraisals of illness ownership and that shared illness ownership would relate to greater stressor congruence. In addition, the potential decline in shared appraisal of diabetes was explored by comparing dyads where children ranged in age from 10 to 15 years old. This age range was chosen, because it captures a key period of autonomy development (Steinberg & Silk, 2002) and reflects a period of typical difficulties in managing diabetes (Anderson, Ho, Brackett, Finklestein, & Lafrel, 1997).

Method

Participants

Participants included 127 children and their mothers from a preexisting data set of mother-child dyads (Palmer et al., 2004; Wiebe et al., 2005). We focused on mother-adolescent dyads as research suggests that fathers are largely uninvolved in diabetes management (Seiffge-Krenke, 2001). Children were 10–15 years of age ($M = 12.85$, $SD = 1.71$; 52% male, 48% female), diagnosed with type 1 diabetes for at least 1 year ($M = 4.52$, $SD = 2.86$), and were on an intensified diabetes regimen ($M = 3.51$ injections and 4.64 blood glucose tests per day). Mothers ranged in age from 28.7 to 58.7 ($M = 47.1$, $SD = 5.7$), were largely Caucasian (97%), married (86%), had at least some college education (88%), reported a relatively high annual income (over 60% indicating an annual household

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income of over \$50,000), with average Hollingshead index of 4.18, indicating a medium business, minor professional class sample. This sample represents 68% of participants who expressed interest in participating in the study; reasons for nonparticipation included time, distance, and transportation problems. Individuals who did not complete the study gave permission for access to medical records and did not differ from the study sample in age, illness duration, or metabolic control, $t_s < 1.69$, $p_s > .09$, suggesting that the sample was representative of the larger population of adolescents with diabetes from which it was drawn. Further details regarding the sample are found in Wiebe et al. (2005) and Palmer et al. (2004). The interview involving illness ownership was added shortly after the study commenced, thus analyses involving this question involve only 111 dyads.

Procedure

All procedures were approved by the institutional review board at the University of Utah. After providing informed consent/assent at their clinic visit, mothers and adolescents were either immediately scheduled for the laboratory session or contacted by telephone within 1 week to set up an appointment to complete the study. Participants were asked to complete survey packets at home and were instructed not to discuss their answers to the items with one another and to complete the packets independently. Participants also completed a 2-h laboratory session at the university in which mothers and adolescents in separate rooms independently completed the stress and coping interview and additional questionnaires. The dyads then completed together the qualitative interview involving illness ownership. The protocol was administered by graduate and undergraduate psychology students who were trained extensively to administer the interviews in such a way that reduced the chance that participants would feel pressure to answer in patterns consistent with social standards or study hypotheses. These students were only allowed to run participants through the protocol after their consistency and competency in administering the procedures were verified by the study's primary investigators. The measures described represent a subset of those included in the packets (for additional details, see Palmer et al., 2004; Wiebe et al., 2005).

Measures

Diabetes Responsibility of Management Tasks

The responsibility subscale from the Diabetes Responsibility and Conflict Scale (DRCS; Rubin, Young-Hyman, & Peyrot, 1989) consisting of 24 items was used to

determine who is primarily responsible for completing diabetes tasks. Mothers and children rated responsibility ranging from 1 (child does it alone) to 3 (mother and child share equally) to 5 (mother does it alone) point scale. This scale shows declines in maternal involvement during adolescence (Rubin et al., 1989) and displays good reliability (Cronbach's, alphas $> .81$).

Stress and Coping Interview

During the laboratory session, both mothers and adolescents independently completed an audiotaped interview regarding diabetes stress and coping. Following Berg and colleague's (Berg et al., 1998; Meegan & Berg, 2001) dyadic coping protocol, mothers and adolescents were separately asked to describe in detail the most stressful diabetes event they had experienced during the past week. If participants could not think of a stressful diabetic event, they described the most stressful event that occurred to them that week. Participants were then asked to think about how the event was handled and to report three things that they thought, felt, or did to deal with the event. This process was repeated for the second most stressful diabetes event of the week. Adolescents and mothers overwhelmingly described diabetes stressors (93% of adolescent's stressors were diabetes related, and 96% of mothers' stressors were diabetes related). All stressors were used in this study.

Qualitative Coding of Stressful Events

The stressful events of both mothers and children were examined qualitatively to determine content and congruence. To develop the coding system stressful events were first transcribed onto cards for ease of sorting and categorizing. Stressful events were read and re-read by the first and second author to identify categories of the most frequent type of stressful events experienced. Eleven categories of stressful event types were created (see Table I for definitions and examples). These categories were drawn from prior research on stressful events reported by adolescents (Delamater et al., 1987), parents of adolescents with diabetes (Mellin et al., 2004), and both mothers and adolescents with the illness (Seiffge-Krenke, 2001). However, this coding adds additional specificity to much broader coding systems used in the past (Delamater et al., 1987) and has the ability to explicitly compare both mothers and adolescents stressors within these more detailed categories of stressors.

Each stressful event could be assigned multiple stressor categories to capture all of the aspects of the event rather than requiring coders to decide what was the most stressful aspect of the event. This reduced the chance that dyads were coded as incongruent, because

Table 1. Coding Categories for Content Analysis of Diabetes Stressors

Category	Examples
Metabolic control	My blood sugar was 44 I got home at night and I was really high
Food management	I wanted to eat cake at the party with my friends I forgot to eat a snack and had a low
Exercise management	He ran too hard at soccer and so he went low I was at gym class running and had a low
Testing, injections, blousing, keeping records	I forgot to test my blood sugar all day long Forgets to test blood because she does it so often. Usually forgets in the morning
Forgetting or losing diabetes supplies	We got half way to school and realized that we had forgotten to bring his insulin I couldn't find my meter anywhere
Insulin reaction	I had an insulin reaction and had to be hospitalized
Management away from home and family	We were at the movie and I had to give my shot alone I was over at my friend's house and didn't dare ask for a snack
Problems dealing with the medical team	We could not get an appointment to see the doctor The doctor accused me of not testing, and I have been
Negative affect related to diabetes	I felt embarrassed that I had to give my shot in front of my friends I just feel so bad for him that he has this disease
Family conflict over diabetes	My mom and I got in a fight because I didn't test I argue with her constantly because she refuses to do her nightly shot
Transfer of diabetes responsibility	He should take more responsibility for the care I tried to start doing my shots all on my own, but I forgot when to do them
Other	I switched insulin types I thought that I had lost my meter, but hadn't

they focused on slightly different aspects of the same event. Thus, coding decisions involved whether each of the 11 categories were present or absent for each participant's response. The first and second author coded 20% of the sample together for interrater reliability (kappa of 0.86 indicated excellent reliability); the remaining stressful events were coded by the first author.

An aggregate measure of congruence was calculated by adding the total number of stressor categories that were congruently appraised as present across both the mothers' and adolescent's events and dividing this number by the total number of stressor categories mentioned across the stressors. For example, a mother may have mentioned two stressful events that involved metabolic control, diet, and exercise. Her adolescent may have mentioned two events that only involved metabolic control. In this example, there was one stressor code mentioned congruently (metabolic control) of three total stressor categories mentioned by the dyad (metabolic control, diet, and exercise), resulting in a congruence score of .33.

Illness Ownership

After the session, mothers and adolescents together were asked "When you think of diabetes issues, do you think of them as [adolescent's name]'s issues to deal with, as [mom's name]'s issues to deal with, or even as a larger

family issue to deal with?" Research assistants directed these questions toward both mother and child, who were encouraged to give their own response to the questions.

Coding of illness ownership was done from videotapes. First, two coders categorized both the mothers' and the children's responses as the *child's issues*, the *mother's issues*, *both mother's and child's issues*, or the *whole family's issue*. Next, coders determined whether the dyad was incongruent in appraisals or *congruent-child's issue* to deal with, *congruent-mother's issue* to deal with, or *congruent shared*—which included both the child's and the mother's issue to deal with and the whole family's issue to deal with. Additionally, coders determined whether one member of the dyad changed their response in response to the other member of the dyads answer. This was done to help capture the possibility that one member of the dyad's response unduly influenced the answer of the other member of the dyad. Changes in appraisals occurred very rarely (only 3 participants changed their response), indicating that participants often responded independently. Two trained research assistants, along with the first author independently coded 20% of the sample to obtain adequate interrater reliability (kappas ranging from 0.84 to 1.0), after which the two research assistants divided the remaining dyads equally and completed the coding.

Results

Gender differences were examined in all of the analyses discussed below and were not significant for appraisals of "Illness Ownership," stressor categories, or congruence ($ps >.08-.94$). Therefore, all analyses reported below do not include gender. In addition, congruence and individual appraisals of illness ownership, as well as congruence and individual reports of stressors experienced during the past week, were not significantly related to duration of illness ($ps >.13$). Therefore, the analyses are reported without illness duration covaried.

Mother and Adolescent Perceptions of Illness Ownership

Consistent with our hypotheses, both mothers and adolescents indicated most frequently that diabetes was a shared issue (70.9% mothers, 52.8% children), followed by the child's issue only (18.1% mothers, 32.3% children), and least frequently as the mother's issue only (3.9% mothers, 3.1% adolescents). In rare cases, only one member of the dyad responded to the interviewer's question, or one member did not give a codeable response (e.g., "I'm not sure"). In these cases, no codes were given (7.1% mothers, 11.8% adolescents). Mother-adolescent dyads most frequently were congruent and viewed diabetes as a shared issue (49.6%), followed by incongruent appraisals (21.3%), and least frequently as congruent indicating that it was the child's issue only (16.5%). In cases where either the adolescent or the mother did not respond to the question, a congruence judgment could not be made (12.6%). Thus, diabetes was largely considered by both mothers and adolescents as a shared issue, and nearly half of the dyads were congruent in this assessment.

Appraisals of Illness Ownership and Stressful Events and Diabetes Responsibility

To explore the first step in our model, whether appraisals of shared illness ownership related to joint responsibility for diabetes tasks, analysis of variances (ANOVAs) with illness ownership appraisals as the independent variable and reports of who was responsible for completing diabetes related tasks as the dependent variable were utilized. Adolescents who appraised illness ownership as shared were more likely to report equal responsibility for diabetes management with their mothers than adolescents who appraised the illness as their own issue, $F(1, 105) = 27.5, p < .00$ ($M = 2.75$ shared appraisal, $M = 2.22$ adolescent's issue). Mothers who appraised the illness as shared were also more likely to report equal responsibility for diabetes tasks than mothers who appraised the illness as the adolescent's own issue,

$F(1, 110) = 16.6, p < .00$ ($M = 2.82$ shared appraisal, $M = 2.37$ adolescent's issue).

Congruence in illness ownership appraisals was also related to reports of diabetes responsibility. Supportive of the model, dyads who congruently appraised the illness as shared had adolescents who were more likely to report equal responsibility for management tasks than those who congruently appraised the illness as the adolescent's own issue, $F(2, 107) = 9.79, p < .00$ ($M = 2.70$ shared appraisal, $M = 2.15$ adolescent's issue appraisal). In addition, dyads who congruently appraised the illness as shared also had mothers who were more likely to report equal responsibility for management tasks than those who congruently appraised the illness as the adolescent's own issue, $F(2, 107) = 13.95, p < .00$ ($M = 2.88$ shared appraisal, $M = 2.30$ adolescent's issue appraisal).

Relation Between Congruence in Illness Ownership and Stressful Events

To explore the next step in the model, whether shared appraisals of illness ownership related to stressor congruence, an ANOVA with the nominal congruence measure of "Illness Ownership" as the independent variable and the continuous variable of the proportion of congruent stressors of the week as the dependent variable was utilized and was not significant, $F(3, 99) = 1.63, p > .18$. Thus, inconsistent with our model, congruence with respect to illness ownership was not associated with reporting more similar types of stressful events during the week.

Congruence regarding the type of stressful event mentioned by mothers and adolescents was modest. Specifically, the proportion of congruent stressors mentioned by the dyads ranged from 0.00 to 0.50, with a mean of 0.21 ($SD = 0.14$). Thus, only approximately one fifth of the stressful events mentioned by the dyads were congruent regarding the type of stressors experienced during the past week.

Types of Stressful Events Experienced by Mothers and Adolescents

To explore in a more detailed manner the lack of congruence in diabetes-related stressors, further analyses were completed. The frequency with which mothers and adolescents mentioned the 11 categories of stressors across the two stressful events is depicted in Fig. 2. Stressors concerning metabolic control, food management, injecting and testing, and management issues away from home were most frequently mentioned by mothers and adolescents. Dependent t tests were utilized to determine where mothers and their adolescents differed in the presence of particular types of stressors.

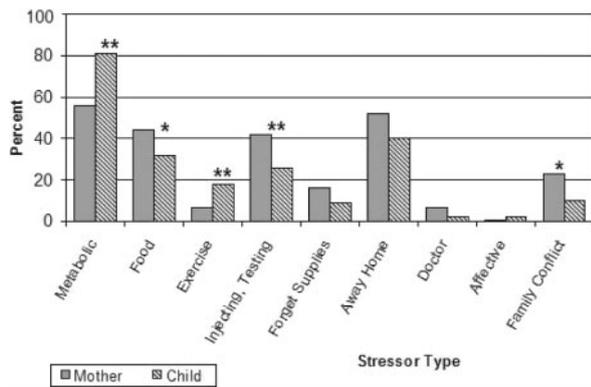


Figure 2. Most stressful events of the past week. *Dependent *t*s, $p < .05$; ** $p < .01$.

Mothers mentioned issues surrounding food management, $t(1, 124) = 1.97, p < .05$; family conflict, $t(1, 124) = 3.01, p < .00$; and injecting and testing, $t(1, 124) = 2.91, p < .00$, during the past week more frequently than their children. Adolescents mentioned issues of metabolic control, $t(1, 124) = 4.70, p < .00$, and exercise management, $t(1, 124) = 2.91, p < .00$, more frequently than their mothers. Therefore, adolescents and mothers had different perspectives regarding the most stressful diabetes-related events, which may explain the modest amount of congruence in stressors experienced in the past week.

Age-Related Differences in Illness Ownership and Stressors

To examine age differences in both mothers' and adolescents' appraisals of "Illness Ownership," separate ANOVAs for mothers and children were utilized with the illness ownership categories (adolescent's own issue, mother's own issue, or a shared issue) as the independent variable and the continuous variable of adolescent age as the dependent variable. There were no significant age differences in mother's appraisals of illness ownership ($p > .70$). However, age differences did appear in adolescents' appraisals of illness ownership, $F(2, 108) = 6.6, p < .00$. Post hoc Scheffé tests revealed that children who appraised the illness as their own issue to cope with were older ($M = 13.5$) than adolescents who appraised the illness as a shared entity ($M = 12.6$), $p < .05$, or as their mother's issue to deal with ($M = 10.9$), $p < .01$. Age differences in congruence on illness ownership were not significant ($p > .17$).

To explore possible age differences in congruence between mothers and adolescents as to their stressful events in the past week, a bivariate correlation between adolescent's age in months and the proportion of

congruent stressors mentioned during the past week was utilized. Analyses revealed that younger adolescents and their mothers were more likely to nominate the same types of events as most stressful than were older adolescents and their mothers ($r = -.16, p .03$).

Discussion

Consistent with our hypotheses and the previous findings of Hauser et al. (1993), the results revealed that diabetes was frequently congruently appraised as a shared entity, rather than only the adolescent's issue. The view that illness ownership is shared by a social unit supports the growing emphasis on the importance of viewing illness as shared within close relationships (Heijmans, de Ridder, & Bensing, 1999; Lyons et al., 1998; Schmalzing & Sher, 2000). Consistent with our model, the data also suggest that dyads who appraise the illness as shared may come to such appraisals as they are working together to manage illness-related tasks. Therefore, in addition to providing supportive evidence for the emerging view of illness as a social entity (Berg et al., 2005; Hauser et al., 1993; Wiebe et al., 2005), our results also are important in showing a possible mechanism by which families come to view diabetes as shared (i.e., joint responsibility for diabetes management tasks). Clinically, our findings suggest that when adolescents and their families perceive the illness as a shared entity, health care professionals should be aware of the likelihood that the family and adolescent are completing management tasks jointly. In these cases, it may be necessary to direct management suggestions toward not only the adolescent, but also the family unit. Additional longitudinal research is needed and ongoing in our laboratory to understand the developmental process of coming to a shared illness representation and how a shared view may relate to other contextual variables (e.g., arise of a warm and trusting parent-adolescent relationship).

Although diabetes was frequently appraised as a social entity, shared illness ownership did not relate to congruent reports of illness-related stressors. Our data suggest that even when dyads congruently appraise illness ownership as shared, they may not experience similar types of stressors as they cope with the disease. We found that incongruence in stressful events was common, even within dyads who perceived the illness as shared. Mothers more often reported stressors involving diet management, forgetting to test or take injections, and interpersonal conflict than their adolescents. Somewhat surprisingly, children nominated stressors involving metabolic control as being the most stressful event

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in the past week far more frequently than did their mothers. Although past research has documented that metabolic control is a frequent stressor for diabetic children (Delamater et al., 1987; Seiffge-Krenke, 2001), mother's lower reports may be because of her lack of knowledge as children may not tell their mothers about the frequency of metabolic control problems to avoid conflicts over mismanagement.

These descriptive data regarding what is stressful to mothers and adolescents may be important information to consider when conceptualizing diabetes as a social entity and when working clinically with mothers and their adolescents with diabetes. Although mothers and adolescents may appraise illness ownership as shared, researchers and health care teams should be sensitive to the possibility that adolescents and mothers may experience different stressors surrounding the disease. The stressful events reported indicated that mothers and adolescents have different perspectives as to what is stressful about managing the disease and may provide physicians with the information necessary to work with families in anticipating and coping with specific types of stressors (Aspinwall & Taylor, 1997). For instance, mothers and adolescents mentioned managing the disease away from home as stressful, perhaps because adolescents spend more time away from their parents (Larson & Richards, 1991) with less monitoring or supervision. Health care teams may respond to this stressor by helping families with checklists of items to pack, guidelines for how to manage the disease while away from home, and suggestions of how to remind adolescents to perform critical management tasks while away. Further, mothers and adolescents may be assisted by a greater understanding of what aspects of the disease are stressful to each other and how to anticipate and collaborate with each other on how to prevent and cope with these events (Aspinwall & Taylor, 1997). Our results are restricted to the four most stressful illness-related events reported for the prior week, and research is ongoing to examine the daily stressful events experienced by mothers and adolescents.

The pattern of age differences in appraisals regarding the social nature of diabetes and its management indicate that age differences are more prominent in adolescents' appraisals than in mothers. Age differences in illness ownership categories were suggestive of a developmental shift in adolescents from viewing the illness as the mother's issue, a shared issue, and finally the adolescent's issue only. Such a shift would be consistent with developmental work suggesting that adolescence is a time in which independence from parents occurs (Grotevant, 1998). Although the process of adolescents appraising the illness

as their own issue is likely natural and healthy, parental involvement in collaborating and supporting older adolescents in a nonintrusive manner is still beneficial as parental uninvolvedness is associated with poor psychosocial and physiological outcomes (Berg et al., 2005; Wiebe et al., 2005; Wysocki, 1993).

Mothers did not show such age-related differences in their appraisals of illness ownership, suggesting that they may experience a developmental "lag" behind that of their adolescents in their expectations for independence (Dekovic, Noom, & Meeus, 1997; Feldman & Quatman, 1988). That is, our data suggest that regardless of age and the increasing responsibility that children take for their diabetes management (Palmer et al., 2004), mothers continued to view the illness as shared, whereas adolescents increasingly begin to view the illness as their own issue. This difference in appraisals may be adaptive, as mothers may stay involved in diabetes care for a longer period, ensuring proper management. However, in some cases, adolescents may experience their mothers continuing perception of shared ownership as intrusive, which may relate to conflict. Therefore, helping mothers and adolescents to understand each other's perspectives regarding illness ownership may be beneficial clinically in reducing misunderstandings and potential conflict. Similarly, age differences were also found in stressor congruence such that younger children and their parents were more likely to nominate the same type of stressor than older adolescents. Although stressor congruence in general was quite low, suggesting that mothers and adolescents have different perspectives about what is stressful about diabetes, with age, this congruence was even lower.

The data should be interpreted in the context of limitations that may have influenced the results of the study (especially the high perceptions of shared illness ownership) and limit the generalizability of the findings. First, dyads were interviewed together when asked to appraise illness ownership. The response of one member of the dyad may have influenced the other's response to the question (e.g., mothers influencing children). However, mitigating this methodological concern is the amount of incongruence present in appraisals of illness ownership. Furthermore, the procedure of interviewing the dyad together is consistent with trying to understand illness perceptions within the social network (Hauser et al., 1993). In addition, although this study built upon prior research that conceptualizes diabetes as a social entity by exploring actual appraisals, illness ownership was only measured with a single interview item. Future research with multiple metrics of illness ownership is

needed. Second, the congruence measure of stressful events was not indicative of whether or not the dyad actually mentioned the same event during the past week, but rather, whether they mentioned the same categories of events. Currently, a daily diary study is under way that will determine whether or not dyads appraise the same event as stressful on a given day. This study suggests that congruence is similarly low on a daily level of analysis (Beveridge et al., 2005). Additionally, the interviews and measures were not randomized throughout the study protocol, therefore, responses to the illness ownership question may have been influenced by prior responses to what was stressful about the illness in the past week, who was involved in these stressors, and who was primarily responsible for diabetes management. Finally, this study was completed with a sample that primarily consisted of highly educated Caucasian families whose adolescents maintained relatively low HbA1c levels. It is possible that families within different socioeconomic statuses, ethnically diverse populations, and who have adolescents with poorer metabolic control may have different appraisals of illness ownership and the stressful events experienced when managing diabetes.

In conclusion, diabetes is an illness that is most often appraised as a social entity in which family members take on responsibility for its management but may experience different stressful events related to the disease. Our results strengthen the suggestion that diabetes is socially "owned" (Berg et al., 2005; Hauser et al., 1993) but also indicates that researchers and clinicians should be sensitive to the possibility that individuals within social units may experience the disease quite differently. Future research should be built upon this study by exploring the frequency with which different types of daily diabetes stressors occur for mothers and adolescents. This future research direction may lead to a more complete picture of what mothers and adolescents appraise as stressful about the illness and may be an important clinical tool for physicians and others involved in the care of adolescents with diabetes and their mothers.

Acknowledgments

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