

## Maternal Parenting Style and Adjustment in Adolescents with Type I Diabetes

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**Objective** To investigate the cross-sectional relationship between maternal parenting style and indicators of well-being among adolescents with diabetes. **Methods** Seventy-eight adolescents (ages 11.58–17.42 years,  $M = 14.21$ ) with type 1 diabetes and their mothers separately reported perceptions of maternal parenting style. Adolescents reported their own depressed mood, self-efficacy for managing diabetes, and diabetes regimen adherence. **Results** Adolescents' perceptions of maternal psychological control were associated with greater depressed mood regardless of age and gender. Firm control was strongly associated with greater depressed mood and poorer self-efficacy among older adolescents, less strongly among younger adolescents. Adolescents' perceptions of maternal acceptance were associated with less depressed mood, particularly for girls and with better self-efficacy for diabetes management, particularly for older adolescents and girls. Maternal reports of acceptance were associated only with adherence. **Conclusions** Maternal parenting style is associated with well-being in adolescents with diabetes, but this association is complex and moderated by age and gender.

**Key words** adolescence; childhood illness; depressive symptoms; parenting style; self-efficacy; type 1 diabetes.

The family context is important for understanding how children adjust to and manage chronic illnesses such as diabetes (Hauser, DiPlacido, Jacobson, & Willett, 1993; Seiffge-Krenke, 1998). Children with chronic illness benefit from a cohesive family environment (Hanson et al., 1989), where parents are responsive and accepting (McKernon et al., 2001). Such families can be characterized by a parenting style of acceptance and firm control that is flexibly adapted to the needs of the developing child (Beveridge & Berg, 2007; Davis et al., 2001). During adolescence, the challenge for families is to maintain a level of involvement in diabetes management that supports the adolescent's growing independence and autonomy, while making certain that daily diabetes management tasks are completed competently (Anderson, Ho, Brackett, & Laffel, 1999; Sheeber, Hops, & Davis, 2001; Wiebe et al., 2005; Wysocki et al., 1996). In an approach consistent with current models of child development (Steinberg & Morris, 2001), we suggest that families meet

this challenge through a transactional process in which adolescents express needs for autonomy and an increasing capacity for managing diabetes independently, while parents respond with varying levels of warmth and firm control (Anderson & Coyne, 1991; Beveridge & Berg, 2007).

Parenting style is likely to be an important component of parent-adolescent diabetes transactions. Frameworks for describing optimal parenting derived from the general parenting typology literature (Baumrind, 1991; Bean, Barber, & Crane, 2006), and interpersonally-based approaches (Beveridge & Berg, 2007) suggest that an optimal parenting style is characterized by high acceptance, firm control of the child's behavior, and low control of the child's thoughts and feelings (i.e., low psychological control). This general parenting literature is consistent with findings that better management of diabetes occurs when adolescents view parents as supportive and available as collaborators (Anderson et al., 1999; Wiebe et al., 2005), but not as intrusive or

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controlling (Wiebe *et al.*, 2005). The present study examined whether aspects of maternal parenting style are associated with adolescent well-being in the context of diabetes management.

The original parenting typology work of Baumrind and others examined two dimensions underlying parenting style (e.g., control vs. warmth) to arrive at three different typologies: permissive, authoritarian, and authoritative (Baumrind, 1966). However, because many parents do not fall into one specific typology, theorists have moved toward a dimensional approach which allows evaluation of dimensions both uniquely and in concert (Bean *et al.*, 2006). Three dimensions of parenting style that have been repeatedly identified in the literature were examined in the present study: (a) psychological control (regulating an adolescent's thoughts and opinions through guilt and criticism), (b) firm control (managing the adolescent's behavior by closely monitoring activities and setting behavioral limits), and (c) acceptance (parental demonstrations of love and support). Psychological control has been consistently associated with greater depression (Barber, Stolz, & Olsen, 2005), whereas parenting styles characterized by high acceptance and moderate levels of firm control are associated with a range of positive child outcomes (e.g., less depression, greater self-efficacy, and adherence to parental standards; Barber *et al.*, 2005; Baumrind, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). In contrast, parenting styles characterized by high control (especially psychological control) but low acceptance, and those that are specifically low in firm control, are associated with externalizing behaviors (Forehand & Nousiainen, 1993; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994).

Despite an extensive literature on the importance of parenting style for a broad range of child outcomes, there has been little examination of whether parenting style is associated with diabetes outcomes during adolescence. This is surprising, particularly in light of the balancing act parents face, of remaining involved in their child's diabetes care, while nurturing his or her developing autonomy and independent diabetes care. In a study of children (4 to 10-year olds), Davis *et al.* (2001) found mothers' reports of acceptance were associated with greater adherence to the diabetes regimen. Reports of parental restrictiveness (similar to excessive firm control) were associated with poorer glycemic control, perhaps suggesting that parents exert more firm control when management is not going well. During the adolescent years, older children may come to view

psychological and/or firm control as intrusive and developmentally inappropriate relative to younger children; such perceptions are associated with poor psychosocial adjustment and adherence among adolescents with diabetes (Berg *et al.*, 2007; Wiebe *et al.*, 2005). Older adolescents may be more likely to experience poorer well-being, when they perceive parents as psychologically controlling or intrusively firmly controlling.

Girls may also be more responsive to parenting style than are boys. Appraisals of maternal control among female adolescents with diabetes are associated with poorer adherence (Wiebe *et al.*, 2005) and higher depression (Berg *et al.*, 2007) relative to males. This may reflect girls' tendency to be attuned to interpersonal relationship quality to a greater degree than boys, and thereby more vulnerable to the interpersonal features of parenting style and associated parent-child diabetes transactions (Cyranowski, Frank, Young, & Shear, 2000; Oldehinkel, Veenstra, Ormel, de Winter, & Verhulst *et al.*, 2006; Sheeber *et al.*, 2001). Thus, the beneficial aspects of acceptance and the detrimental aspects of psychological control on adolescent well-being may be especially apparent among girls.

Multiple indicators of well-being have been identified in the literature that either limit or support the adolescent's ability to manage diabetes (depressive symptoms, adherence, and self-efficacy). Depressive symptoms frequently accompany childhood diabetes (Kovacs, Goldston, Obrosky, & Bonar, 1997). Increased depressive symptoms may limit the child's ability to cope with diabetes stressors and adhere to the medical regimen leading to problems in glycemic control (Dantzer, Swendsen, Maurice-Tison, & Salamon, 2003; Korbel, Wiebe, Berg, & Palmer, 2007; La Greca, Follansbee, & Skyler, 1990). Children with diabetes also experience lower levels of perceived competence and self-efficacy than healthy children, which may impair adherence to the medical treatment (Jacobson *et al.*, 1997; Ott, Greening, Palardy, Holdreby, & DeBell, 2000). Adherence is important to consider during adolescence as it is typically poorer during this period (Johnson *et al.*, 1992).

The purpose of the present study was to examine aspects of adolescent well-being (depressive symptoms, self-efficacy for diabetes management, and adherence) and the associations with adolescents' and mothers' perceptions of three dimensions of maternal parenting style (psychological control, firm control, and acceptance). Consistent with the literature on child and adolescent development (Papp, Cummings, & Goeke-Morey, 2005), we predicted that maternal acceptance would be associated

with lower levels of depressive symptoms, higher self-efficacy, and better adherence. As detailed earlier, a successful adolescent transition to greater self-reliance and individuation is fostered by a collaborative relationship between parent and child, rather than a relationship characterized by psychological control or by age-inappropriate levels of firm control (Beveridge & Berg, 2007; Wiebe et al., 2005). Thus, we predicted that psychological control would be associated with higher depressive symptoms, and lower self-efficacy and adherence. In addition, we examined whether child age moderates the association of parenting style and well-being in an adolescent sample. We predicted that firm control would be associated with lower depressive symptoms, better adherence, and higher self-efficacy for younger adolescents, who are age-appropriately more dependent on their parents. In contrast, we predicted that older adolescents would experience negative outcomes with firm control, because it may damage voluntary mother–adolescent collaboration and autonomy-seeking. Finally, in addition to age, we explored gender as a moderator of the relationships between parenting style and adolescent well-being, predicting that the positive and negative aspects of parenting style for adjustment would be more apparent for girls than boys. No hypotheses were generated regarding analyses conducted to examine higher-order (e.g., 2-way or 3-way) interactions, given the small sample size in this study, to reduce the likelihood of a Type 2 error (Aiken & West, 1991).

## Method

### Participants

Participants were 78 mother–child dyads (41 males, 37 females) from the follow-up phase of a larger study of maternal involvement in diabetes management (see Palmer et al., 2004; Wiebe et al., 2005 for descriptions of initial study). The original study included 127 dyads diagnosed with diabetes for at least 1 year. Mothers were specifically recruited for participation because they are the primary caregivers in families with chronically ill children (Quittner et al., 1998). Participants in the initial study were mailed an invitation to participate in a follow-up phase (which occurred at an average of 16.06 months later); 61% returned a signed informed consent form and completed a mailed packet of questionnaires. Adolescents who did versus those who did not participate in the follow-up were equivalent on all current study measures available (i.e., samples did not differ on socioeconomic status, marital status, depression, adherence;  $p > .2$ ). Parenting style and self-efficacy were

not measured in the initial study). All procedures described were approved by the Institutional Review Board at University of Utah.

Adolescent participants ranged in age from 11.58 to 17.42 years (mean age 14.21). Glycosolated hemoglobin values from medical records were available on only 53 participants; average levels,  $M (SD) = 8.66\% (1.41\%)$ , were above American Diabetes Association recommendations (Parnes et al., 2004). Mothers' mean age was 40.21 ( $SD = 5.84$ ), they were largely European-American (99%), and comprised a well-educated group with 46.1% completing at least a bachelor's degree and 39.7% completing some college. The sample averaged 4.18 on the Hollingshead Index, indicating a minor professional, medium business class sample.

### Constructs Measured In Adolescents and Mothers Parenting Style

Adolescents completed the 30-item Child Report of Parent Behavior Inventory (CRPBI; Schaefer, 1965a; Schludermann & Schludermann, 1970). This is a long-standing and well-respected measure of parenting in the developmental psychology literature that continues to predict child adjustment (Bean et al., 2006; Gray & Steinberg, 1999; Sheeber et al., 2001). It has a replicable three-factor structure and excellent reliability and validity across cultures (Barber et al., 2005; Schludermann & Schludermann, 1970, 1983). Adolescents used a 1 (*does not describe her at all*) to 6 (*describes her very well*) scale to describe their mothers across three domains: psychological control (e.g., “is less friendly with you if you do not see things her way,”  $\alpha = .90$ ), firm control (“insists that you must do exactly as you are told,”  $\alpha = .81$ ), and acceptance (“enjoys doing things with you,”  $\alpha = .93$ ). Mothers reported their own parenting style using the parent version of the same scale (PRPBI; Schaefer, 1965b). Internal consistencies for the subscales ranged from excellent for the acceptance subscale ( $\alpha = .90$ ) to adequate for the psychological control and firm control subscales ( $\alpha = .81$ ; .77), respectively.

### Constructs Measured in Adolescents Only

#### Depressed Mood

The 27-item Children's Depression Inventory (CDI) assessed depressed mood (Kovacs, 1985). Adolescent participants endorsed one of three graduated responses for each item such as, “All bad things are my fault; many bad things are my fault; bad things are not usually my fault.” Items are scored 0–2 with a higher total score indicating greater depressed mood. The CDI has strong internal consistency and test–retest reliability in

**Table I.** Correlations (Pearson *r*) and Means (*SD*)

	Child PC	Child FC	Child ACC	Maternal PC	Maternal FC	Maternal ACC	Child depressed mood	Adherence	Self-efficacy	M ( <i>SD</i> )
Age (months)	.11	.04	-.13	-.05	-.01	-.17	.32**	-.05	.17	170.53 (20.21)
Gender	.10	.01	-.05	.01	.14	-.05	-.16	-.11	.03	.53 (.50)
Child PC	–	.41**	-.32**	.42**	.29**	-.23*	.29**	-.16	.01	26.53 (11.02)
Child FC		–	-.34**	.15	.41**	-.12	.16	.08	-.14	37.52 (8.73)
Child ACC			–	-.27*	-.18	.32**	-.26*	.19	.33**	45.55 (10.94)
Maternal PC				–	.01	-.37**	.12	-.05	-.07	24.31 (6.44)
Maternal FC					–	-.21	-.01	-.10	.06	38.90 (5.89)
Maternal ACC						–	-.16	.24*	-.10	48.37 (6.77)
Child depressed mood							–	-.32**	-.26*	7.73 (6.93)
Adherence								–	-.06	3.74 (.56)
Self-efficacy									–	60.84 (9.09)

Note: PC, Psychological control; FC, Firm control; ACC, Acceptance.

\* $p < .05$ , \*\* $p < .01$ .

adolescents (Elgar & Arlett, 2002). In the current study, internal consistency was excellent ( $\alpha = .90$ ).

### Self-efficacy for Diabetes Management

Adolescents reported their level of confidence in being able to accomplish important aspects of diabetes management using a 12-item scale. Items such as “Avoid having low blood sugar reactions” were rated on a 6-point scale ranging from 1 (*very sure I can't*) to 6 (*very sure I can*). Items were drawn from the longer 35-item form of the Adolescent Self Efficacy for Diabetes Management scale (SEDM; Grossman, Brink, & Hauser, 1987). The scale was shortened for the present study to reduce subject burden, minimize redundancy and maximize relevance to current diabetes regimens. Internal consistency of the shortened scale was good ( $\alpha = .89$ ).

### Adherence to Diabetes Regimen

To assess adherence in the past month, adolescents completed the 14-item Self-Care Inventory (La Greca et al., 1990). Participants rated their adherence on a 5-point scale 1 (*never did it*) to 5 (*always did it without fail*) to items such as “Administering insulin at the right time.” If the item did not apply to the participants’ diabetes regimen, a nonapplicable option was available. All participants completed at least 80% of the scale items; adherence scores were computed by averaging applicable items ( $\alpha = .73$ ).

## Results

### Preliminary Analyses

As shown in Table I, adolescent and maternal reports of parenting style were moderately correlated. Adolescent reports of maternal acceptance were associated with lower depressive symptoms and higher self-efficacy, whereas reports of psychological control were associated with

higher depressive symptoms. Older adolescents were more likely to report depressive symptoms.

### Parenting Style Associations with Adolescent Well-being

Regression analyses investigated the association between parenting style and adolescent depressed mood, self-efficacy, and adherence, with age and gender as potential moderators. In these analyses, continuous independent variables were standardized as Z-scores, and age was centered at the sample mean to form interaction terms. This strategy reduces the potential for multicollinearity and eases interpretation of results (Cohen, Cohen, West, & Aiken, 2003). For each regression, adolescent-reported parenting style, gender, and age were entered as predictors in Step 1. In Step 2, interactions (or cross products) between (a) adolescent-reported parenting style and gender (coded 0 for females, 1 for males) and (b) adolescent-reported parenting style and age were entered as predictors (Aiken & West, 1991). A sequential entering procedure was used to allow interpretation of main effects if interactive effects were not found.

### Psychological Control

The first series of analyses examined psychological control as a predictor (Table II). Adolescent reports of maternal psychological control were associated with greater symptoms of depression, regardless of age and gender. Consistent with the developmental literature, main effects revealed that older adolescents and females reported more symptoms of depression than did younger adolescents and males. Age and gender did not exert main effects on self-efficacy or adherence, and did not moderate associations of psychological control with any outcome.

**Table II.** Multiple Regression Analyses Predicting Adolescent Depression and Self-Efficacy from Parenting Style by Sex and Age ( $N = 78$ )

	Adolescent depression		Adolescent self-efficacy	
	SE	$\beta$	SE	$\beta$
<b>Predictor variables</b>				
<b>Psychological control</b>				
<b>Step 1</b>				
Psychological control	(.72)	.28**	(1.05)	-.01
Gender	(1.43)	-.22*	(2.10)	.01
Age	(.04)	.31**	(.05)	.17
	$\Delta R^2 = .22$		$\Delta R^2 = .03$	
	$F(3, 74) = 6.82^{***}$		$F(3, 74) = .74$	
<b>Step 2</b>				
Psychological control $\times$ gender	(1.65)	-.15	(2.41)	.09
Psychological control $\times$ age	(.04)	.15	(.05)	-.15
	$\Delta R^2 = .02$		$\Delta R^2 = .02$	
	$F(5, 72) = 4.39^{**}$		$F(5, 72) = .69$	
<b>Firm control</b>				
<b>Step 1</b>				
Firm control	(.74)	.15	(1.03)	-.15
Gender	(1.48)	-.20	(2.06)	.01
Age	(.04)	.33**	(.05)	.18
	$\Delta R^2 = .16$		$\Delta R^2 = .05$	
	$F(3, 74) = 4.76^{**}$		$F(3, 74) = 1.34$	
<b>Step 2</b>				
Firm control $\times$ gender	(1.46)	-.20	(2.00)	.08
Firm control $\times$ age	(.04)	.22*	(.06)	-.31**
	$\Delta R^2 = .06$		$\Delta R^2 = .09$	
	$F(5, 72) = 4.07^{**}$		$F(5, 72) = 2.45^*$	
<b>Acceptance</b>				
<b>Step 1</b>				
Acceptance	(.73)	-.23*	(.98)	.36**
Gender	(1.45)	-.20	(1.94)	.02
Age	(.04)	.31**	(.05)	.21
	$\Delta R^2 = .19$		$\Delta R^2 = .16$	
	$F(3, 74) = 5.81^{**}$		$F(3, 74) = 4.60^{**}$	
<b>Step 2</b>				
Acceptance $\times$ gender	(1.42)	.30*	(1.81)	-.30*
Acceptance $\times$ age	(.04)	-.17	(.05)	.32**
	$\Delta R^2 = .07$		$\Delta R^2 = .14$	
	$F(5, 72) = 4.98^{**}$		$F(5, 72) = 5.94^{***}$	

Note: PC, Psychological control; FC, Firm control; ACC, Acceptance.

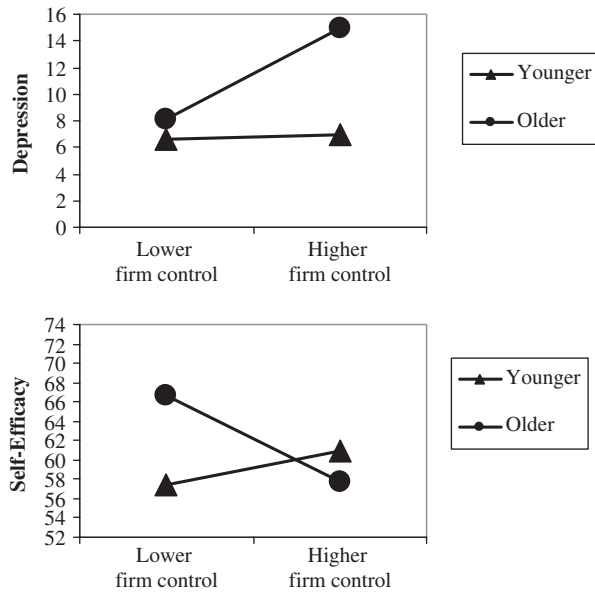
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Adolescents' reports of psychological control were unrelated to self-efficacy or adherence<sup>1</sup>.

<sup>1</sup>Assumptions underlying regression analysis were tested in all cases and results indicated that residuals were slightly negatively skewed in the analyses with self-efficacy for diabetes management as the dependent variable. Regression analyses are robust and modest deviation from assumptions of multiple regression analyses rarely result in deductive error (Cohen et al., 2003), however, replication of results will strengthen inferential conclusions presented in the current study.

### Firm Control

Adolescents' reports of firm control were not associated with depressive symptoms or self-efficacy in Step 1, but a significant firm control  $\times$  age interaction was found for both outcomes in Step 2. Predicted values for these interactions were calculated from the regression equation by substituting scores one standard deviation above and below the mean (Aiken & West, 1991; Cohen et al., 2001). As shown in Fig. 1, firm control was associated with higher depressive symptoms and lower self-efficacy



**Figure 1.** Predicted means for the adolescent reported maternal firm control  $\times$  age interactions predicting adolescent depressive symptoms and adolescent self-efficacy for diabetes management.

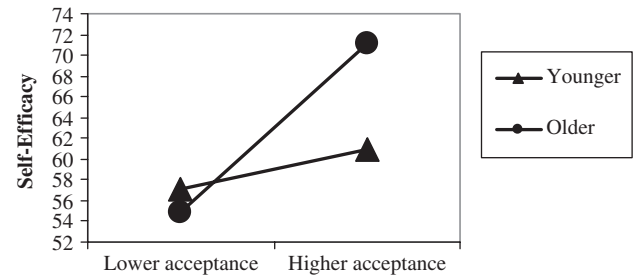
among older more than younger adolescents. Adolescent reports of firm control were not moderated by gender in relation to any outcome and were unrelated to adherence.

### Acceptance

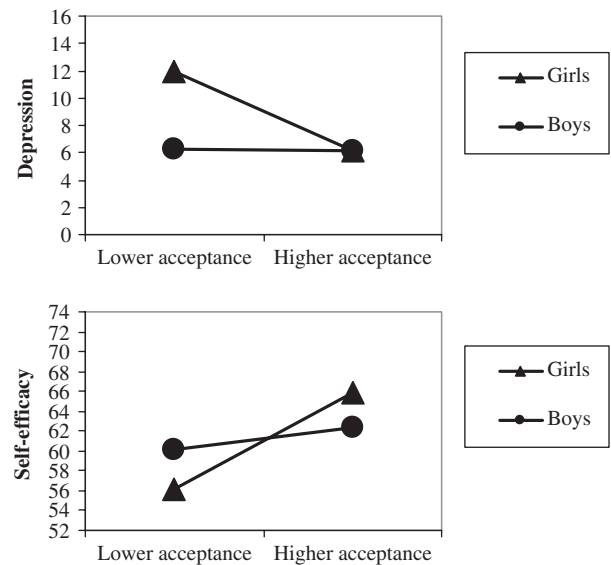
As expected, adolescent-reports of maternal acceptance were associated with both lower depressive symptoms and higher self-efficacy, and these associations were moderated by age and/or gender. Higher levels of acceptance were associated with higher self-efficacy, particularly among older adolescents (Fig. 2) and girls (Fig. 3), and with lower depressive symptoms among girls but not among boys (Fig. 3). Adolescent reports of acceptance were unrelated to adherence.

### Additional Analyses

Adolescent reports of firm control were associated with negative outcomes (e.g., higher depression, lower self-efficacy) among older adolescents, whereas reports of psychological control were associated with negative outcomes (i.e., higher depressive symptoms) regardless of age. A follow-up analysis was conducted to investigate whether older adolescents perceive firm control as more similar to traditionally detrimental forms of parental control (i.e., psychological control) than do younger adolescents. A regression examining the interaction of adolescent-reported firm control and age, with gender as a covariate, was conducted predicting adolescent-reported



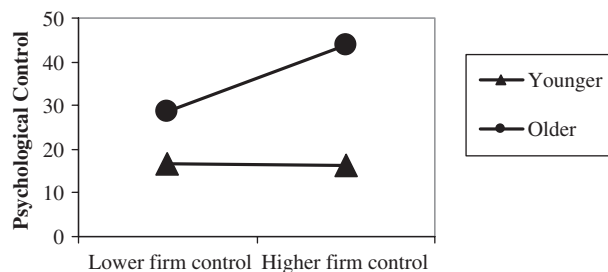
**Figure 2.** Predicted means for the adolescent reported maternal acceptance by age interaction predicting adolescent self-efficacy for diabetes management.



**Figure 3.** Predicted means for the adolescent reported acceptance  $\times$  gender interactions predicting adolescent depressive symptoms and adolescent self-efficacy for diabetes management.

psychological control as the dependent variable. For older adolescents, perceptions of firm control and of psychological control were positively associated; for younger adolescents, however, firm control and psychological control were unrelated ( $R^2 = .25$ ;  $F(4, 73) = 7.27$ ,  $p < .001$ ; Fig. 4). These findings suggest older adolescents in our sample construed the maternal parenting styles firm control and psychological control as more similar than did their younger counterparts, which may have contributed to the tendency for firm control to be associated with more depressive symptoms among older adolescents.

A parallel series of analyses was conducted using maternal reports of parenting style as the predictor variables. Maternal reports of psychological control and firm control were unrelated to all outcomes ( $p$ 's  $> .05$ ).



**Figure 4.** Predicted means for the adolescent reported firm control  $\times$  age interaction predicting adolescent perception of maternal psychological control.

Maternal reports of acceptance interacted with age to predict adherence ( $\beta = -.24$ ;  $p < .05$ ), however, the  $F$ -value for the overall model was marginally significant in this case ( $p = .08$ ) so this result should be treated with caution. Higher maternal-reported acceptance was associated with better adherence among younger but not older adolescents (predicted mean adherence for higher vs. lower maternal acceptance was 4.02 vs. 3.53 among younger adolescents, and 3.73 vs. 3.74 among older adolescents). This result in particular is a replication of Davis' and colleagues (2001) findings among a younger sample. We also investigated whether maternal reports of firm control were associated with maternal reports of poorer adherence among the adolescents. We found no evidence that this was the case.<sup>2</sup>

## Discussion

The present study supports a relationship between parenting style and adolescent well-being in the family context of adolescent diabetes. Psychological control was associated with elevated depressed mood in adolescents, consistent with research reported by Barber and colleagues (2005). The negative association between this intrusive, rejecting form of parenting, and depressed mood occurred regardless of age or gender in this sample. Psychological control in parenting may be a risk factor for depressed mood among chronically ill adolescents.

Adolescents' reports of firm control were also associated with higher levels of depressive symptoms, as well as with poorer self-efficacy, but these associations

<sup>2</sup>A typological parenting approach, testing interactions between adolescent-reported and mother-reported parenting styles such as high firm control combined with high acceptance, was also tested here but no significant results were found; this may be due to the small sample size and incumbent difficulty detecting higher-order interactions in such samples (Cohen et al., 2003).

occurred only among older youth. Perhaps firm control among these older teens is experienced as an infringement on efforts to achieve autonomy and self-reliance (Larson & Richards, 1994), reflected in the present study via reduced self-efficacy for diabetes management and higher depressive symptoms. Firm control, when perceived by an older adolescent who is ready for more independence, may be interpreted by such adolescents as unwanted interference (Wiebe et al., 2005). In contrast, firm control among younger adolescents who require more maternal assistance may be experienced as supportive, and may provide the scaffolding necessary to achieve competence and self-reliance as children mature. Consistent with the hypothesis that firm control is experienced more adversely as teens develop, older adolescents perceived firm control and psychological control as more comparable than did younger adolescents. This finding is consistent with views that firm control may not consistently promote well-being across contexts and age (Steinberg, Lamborn, Dornbusch, & Darling, 1992; Steinberg & Morris, 2001), and may partially explain its association with higher depressive symptoms in older adolescents. It is important to note that this does not explain associations of firm control with self-efficacy, as psychological control was unrelated to self-efficacy for diabetes in the present study. More research is necessary to understand differing patterns of associations among psychological control, firm control, and well-being, but the present study provides further evidence of the need to consider the child's age when evaluating parenting practices.

In contrast to controlling styles, maternal acceptance was generally associated with better well-being. Girls and older children, in particular, reported higher self-efficacy when mothers were accepting. Greater prevalence of depressed mood among females during adolescence is well-documented among healthy samples (Petersen, Sarigiani, & Kennedy, 1991) and girls with diabetes (Korbel et al., 2007; La Greca, Swales, Klemp, Madigan, & Skyler, 1997). The present findings point to maternal acceptance as an important protective factor against depression for at-risk girls. Close relationships with parents may also support feelings of self-efficacy, particularly when these relationships are positive during early adolescence, a period characterized by heightened conflict with parents (Steinberg & Morris, 2001).

It was surprising that adolescents' perceptions of maternal parenting style did not predict adherence to the diabetes regimen. This may be because parenting style was measured at a general level, whereas adherence was

specific to the diabetes context. It is not uncommon for diabetes-specific parenting variables to be associated with adherence when general parenting variables are not (Ellis *et al.*, 2007). Self-efficacy for diabetes management was also specifically related to the diabetes context, however, this construct included the adolescents' sense of mastery concerning diabetes management tasks. Such self-esteem related feelings may be more likely to be influenced by general parenting style than specific diabetes management behaviors. For older adolescents, firmly controlling parenting may be experienced as indicating maternal doubts about competency for diabetes management (Wiebe *et al.*, 2005). Interpreting firm control in this way may impact older adolescents' self-efficacious beliefs. Subsequent studies may benefit from examining how broad parenting styles relate to other emotional and behavioral components of adolescent diabetes management.

In contrast to adolescent-reported parenting, maternal reports of parenting style generally failed to predict adolescent well-being. The single exception replicated the finding of Davis *et al.* (2001) that maternal reports of acceptance were associated with adherence among children (close in age to the younger teens in the present sample). Parent and adolescent reports of parenting style correlate only modestly during adolescence (Tein, Roosa, & Michaels, 1994), suggesting parents and teens experience parenting behaviors in distinct ways. It is possible that it is the child's experience of parenting that is most important to consider during adolescence (Allen *et al.*, 2006; Barber & Harmon, 2002), particularly in relation to internalized experiences such as depressive symptoms. We also cannot rule out that the results could reflect shared method variance and our correlational methodology. For example, adolescents who are experiencing depressive symptoms may perceive and report their parent's style in a more negative light.

The results should be interpreted in the context of some limitations. First, this study is cross-sectional, with longitudinal research needed to confirm that the associations discussed here change over time as part of an autonomy development process in the context of families impacted by chronic illness. Due to the cross-sectional nature of the data, we cannot determine whether mother's parenting styles are contributing to the adolescent's well-being or whether aspects of the adolescent's well-being and diabetes-management are eliciting mother's particular parenting style. It is likely that these are reciprocal influences and transactional in nature. Ongoing longitudinal work, in our laboratory

and others, will be better able to address the notion of causality and interaction between mothers and adolescents over time. Second, study methods were self-report. Laboratory studies of actual parent-child interactions could further elucidate which parenting behaviors specifically relate to adjustment and diabetes-specific outcomes. Third, given the number of tests conducted it is possible that some findings were significant due to chance and should be treated with caution until replicated. Fourth, the sample was primarily European-American and middle class. Future research should include ethnically and socioeconomically diverse samples, particularly given the impact of culture and ethnicity on parenting practices (Davis *et al.*, 2001; Bean *et al.*, 2006). Finally, we only examined maternal parenting style; fathers' parenting practices may be associated with different aspects of adolescent well-being, and may moderate the associations of maternal parenting style with well-being.

Implications for clinical and medical practice suggest that, in the potentially stressful family context of diabetes management, adolescents' perceptions of maternal acceptance may provide an important buffer that supports adolescent well-being. Interventions that facilitate close and warm relationships among parents and children, while minimizing instances of psychological control, may prove useful. Although younger children appear to benefit from clear and consistent discipline and monitoring (*i.e.*, aspects of firm control), helping parents adjust their involvement so that it is not perceived as too controlling or intrusive may be important for older teens (Wiebe *et al.*, 2005). Interventions such as those based on Behavioral Family Systems theory might be useful for improving family communication and ameliorating difficulties that arise, when parents in families with adolescents with diabetes use psychological control or age-inappropriate levels of firm control (Wysocki *et al.*, 2006). Consideration of the central need for adolescents' efforts to achieve autonomy may be particularly important during early to mid-adolescence as behaviors that may have been viewed positively by a younger child may seem intrusive to an older adolescent.

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