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Spouse Control and Type 2 Diabetes Management: Moderating Effects of Dyadic Expectations for Spouse Involvement

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Abstract

For married patients, chronic illness management often includes involvement of their spouses. We examined expectations regarding spouse involvement in the health of a partner with type 2 diabetes ($N = 139$ couples) from the perspectives of the patient and spouse. Partners' dyadic expectations and spouses' gender were posited to moderate spouses' diet-related control and patients' diet adherence. Among male patients, when both partners shared an expectation for spouse involvement greater diet-related spouse control was associated with better diet adherence of patients. In contrast, when expectations for spouse involvement were not shared, greater spouse control by wives was associated with poorer diet adherence. Dyadic expectations for spouse involvement did not moderate the association between spouse control and diet adherence among female patients. Findings suggest that shared expectations for spouse involvement can facilitate spouses' attempts to improve patients' dietary adherence, especially among male patients and their wives.

Married patients often manage chronic illness within the context of their relationship with their spouses. Traditionally, research examining patients and spouses influence in chronic illness management have focused on the perspective of the individual rather than considering both partners (Berg & Upchurch, 2007). More recently, a dyadic approach emphasizing the relational context has been advanced that explicitly includes both partners' roles in shaping patients' behaviors and outcomes in the management of chronic illness (Berg & Upchurch, 2007). This dyadic approach is based on accumulating knowledge that many spouses share lifestyle habits, appraise chronic illness stressors as "ours" rather than "mine", and engage in joint management efforts (e.g., Bodenmann, 2005; Hippisley-Cox, Coupland, Pringle, Crown, & Hammersley, 2002; Revenson, Kayser, & Bodenmann, 2005). It has been suggested that one cannot fully understand an individual's chronic illness management without considering the potential effect of the other partner and the marriage (Bodenmann, 2005). In this investigation, we explored spouses' concordance in their expectations for whether spouses *should* be involved in their ill partners' health (i.e., *dyadic expectations* regarding spouse involvement). Specifically, we examined whether dyadic expectations for spouse involvement moderated the association between spouses' diet-related control and patients' diet adherence within the context of type 2 diabetes, and whether these associations were further moderated by spouses' gender.

Spouse Control and Health

Spouse control occurs when spouses exert social control, seeking to bring about a change in the behavior of their partner. Social control can be exerted directly through interpersonal interactions or indirectly through social norms (Lewis & Rook, 1999). Social control theory posits that relationships with network members can have a regulatory effect on the behavior of individuals making it less likely for them to engage in risky or deviant behavior (e.g., Rook & Ituarte, 1999; Umberson, 1987).

Social control of health behaviors often has been examined in the context of intimate ties. Spouses most often seek to change behaviors that may place their partners' health at risk (Lewis, Butterfield, Darbes, & Johnston-Brooks, 2004). In couples, social control enacted by a spouse (i.e., spouse control) often has been associated with improvements in targeted health behaviors of partners (e.g., Umberson, 1992; Westmaas, Wild, & Ferrence, 2002). Social control strategies such as being rewarded for engaging in a healthy behavior appear to be effective in bringing about desired behavior change whereas strategies such as being pressured to change a health behavior are associated with persistence of poor health behaviors (Lewis & Rook, 1999) and with hiding unhealthy behaviors (Okun, Huff, August, & Rook, 2007).

In the context of chronic illness, spouses generally have been unsuccessful in promoting intended behavioral changes through social control (e.g., Franks et al., 2006). Social control within a chronic illness setting may be distinct from social control in an otherwise healthy population (e.g., Lewis et al., 2004). For instance, in dyadic studies, spouses of patients with a chronic illness report exerting more health-related control than patients (e.g., Franks et al., 2004; Hong et al., 2005). Thus, spouses may feel obligated or empowered to try to alter patients' health behaviors when the change is recommended by a health care professional. Notably however, such control may not be welcomed or accepted by the partners (e.g., Rook, August, Stephens, & Franks, 2011; Trief et al., 2003).

Recently, studies of social control in close relationships have begun to explore conditions under which social control is related to health outcomes (e.g., August & Sorkin, 2010; Tucker, 2002). Aspects of the relational context such as relationship satisfaction, support, and normative expectations within marriage have been shown to moderate the association between spouse control and patient outcomes. Specifically, receiving direct social control from a partner (e.g., prompting or nagging) was linked with hiding health-risk behaviors, but only among those recipients who were dissatisfied with their relationship (Tucker, 2002). Spouse control was associated with worse treatment adherence among patients recovering from knee surgery when the patient experienced high levels of problematic support from the spouse (e.g., changing the topic, telling patients not to worry; Fekete, Stephens, Druley, & Greene, 2006). In addition, patients with diabetes who expected their spouses to be involved in their health responded with less hostility to diet-related spouse control than patients who did not expect their spouses to be involved in their health (Rook, August, Stephens, & Franks, 2011).

Findings from these early studies underscore the importance of considering the influence of the relational context on the association between social control and health outcomes. Notably however, the relational processes included in these studies reflected only the individual perspective of the recipient of social control. Drawing on the developmental-contextual model of couples coping with chronic illness (Berg & Upchurch, 2007), we investigate partners' correspondence in their independent expectations as to whether one spouse should be involved in the health of the other (i.e., *dyadic expectations* for spouse involvement). Capturing both partners' expectations for spouses' involvement in an ill

partners' health will provide a more complete picture of the role of the larger relationship context in shaping patients' behavioral response to partners' health-related marital interactions in the day-to-day management of diabetes.

Dyadic Expectations for Spouse Involvement

For couples in which one partner is managing a chronic illness, each partner holds expectations as to whether the spouse should be involved in the health of the ill partner (Berg & Upchurch, 2007). When the expectation that a spouse should be involved is shared between partners, health-related spouse control may be more common because the health needs of patients are likely to be addressed by the behaviors of their spouses more generally. In this case, spouses may be more practiced in delivering effective feedback to influence their partners' behaviors. Similarly, patients may better tolerate their partners' attempts to bring about change in their health behavior and respond less vigorously to corrective feedback.

Conversely, when an expectation for spouse involvement is not shared by partners (i.e., patient, spouse, or both do not expect spouse involvement), the presence of spouse control is discordant with at least one partner's expectation. Such discordance between expectations and spouses' action may amplify adverse associations of patient health behaviors with spouse control (Berg & Upchurch, 2007). Spouses who do not expect to be involved but find it necessary to do so, may be more critical in identifying patients' shortcomings in illness management. However, patients may perceive their spouses' unexpected attempts to change their behavior as dominating their self-management (Rook et al., 2011). In such circumstances, spouse control may be perceived by patients as harsher and more severe relative to patients who share an expectation for spouse involvement with their spouses. Importantly, patients' perceptions of harsher forms of spouse control are associated with decreased adherence to the target behavior (Stephens et al., 2010), and with patients hiding the unhealthy behavior (Okun, Huff, August, & Rook, 2007).

It merits mention that partners' expectations for spouse involvement in an ill-partners' health may differ for wives of ill husbands and husbands of ill wives. In particular, married men are more likely than married women to report their spouses as primary agents of social control (August & Sorkin, 2010; Umberson, 1992). Additionally, normative expectations for wives to be involved in their ill husbands' health are likely to exceed expectations for husbands to be involved with their ill wives' health (Rook et al., 2011). Notably, social norms related to marital interdependence suggest that wives more often are attuned to the health needs of their partners than are husbands (Kiecolt-Glaser & Newton, 2001). Specifically, women act as the nutritional gatekeeper for their families more often than do men (Wansink, 2006). Moreover, within a chronic illness context, wives predominate as caretaker and meal planner for spouses with diabetes (Miller & Brown, 2005). Thus for male patients, when one or both partners do not endorse expectations for wife involvement despite gender norms, wives' involvement is likely to be particularly aversive to their ill husbands. Whereas, when both partners share expectations for spouse involvement that are consistent with social norms, wives' diet-related control may be less aversive to male patients. For female patients, however, where husbands' involvement is not as normative, partners' expectations for spouse involvement in an ill partner's health may play a more limited role in shaping female patients' behavioral responses to husbands' diet-related control.

Current Study Aims and Hypotheses

The current study examined the relational context in which diet-related spouse control and patient diet adherence occur when one partner in a marriage has diabetes. Diabetes affects

men and women equally (about 11.8% of men and 10.8% of women over age 20) and is among the 10 leading causes of death of older adults (Centers for Disease Control and Prevention, 2011). It is also a risk factor for other causes of death of older adults (e.g., heart disease; Centers for Disease Control and Prevention, 2011). In addition, diabetes places patients, especially older patients, at risk for a broad range of complications that detract from the length and the quality of their life (Meneilly & Tessier, 2001). For many older patients, poor adherence to treatment recommendations together with co-morbid conditions heightens their risk of developing diabetic complications (e.g., Centers for Disease Control and Prevention, 2011; Halter, 1999).

Dietary management is a central lifestyle component in the management of diabetes (e.g., Lipkin, 1999). Proper diabetes management involves balancing multiple interacting factors, including food choices, physical activity, and medications (American Diabetes Association, 2008; 2011). It is recommended that patients with diabetes monitor their carbohydrate intake and coordinate medication (e.g., insulin) with the carbohydrate content of their meals (American Diabetes Association, 2008, 2011; Choudhary, 2004). Additionally, patients are encouraged to eat whole grains, fruits and vegetables; limit alcohol and high fat foods (e.g., red meats and full-fat dairy products); and maintain a healthy body weight (American Diabetes Association, 2008; 2011; Center for Disease Control and Prevention, 2011; Choudhary, 2004). Patients with type 2 diabetes who are overweight also need to control the total number of calories consumed (American Diabetes Association, 2008, 2011). Many patients with diabetes struggle with diet management, and implementing nutritional changes in highly entrenched dietary habits is often difficult (Beverly, Miller, & Wray, 2008; see also review Magkos et al., 2009). Because patients find it difficult to adhere to their recommended diet, their spouses often are involved in their diet management (e.g., Trief, Ploutz-Snyder, Britton, & Weinstock, 2004; Williams & Bond, 2002).

The primary purpose of the present study was to investigate spouses' diet-related control and patients' dietary adherence in their broader relational context. Consistent with prior research in the context of chronic illness, we expected that spouse control generally would be negatively associated with patient dietary adherence. We anticipated, however, that partners' expectations for spouse involvement would moderate the association between spouses' diet-related control and patients' dietary adherence. We expected that greater spouse diet-related control would be associated with less patient dietary adherence, but the association would be dampened when both partners hold congruent expectations for spouse involvement relative to those who do not (i.e., one or both do not expect that a spouse should be involved in an ill partner's health).

We also explored gender differences in the moderating effect of dyadic expectations for spouse involvement on the association between diet-related spouse control and patient dietary adherence. Given social norms regarding women's caretaking roles within families, we anticipated that male patients and their wives would share dyadic expectations affirming spouse involvement more often than would female patients and their husbands. We expected, further, that the anticipated moderating effect of partners' dyadic expectations for spouse involvement would be amplified when the spouse is a wife. As wives' involvement in husbands' health is normative, incongruent expectations for spouse involvement would compound the negative association of diet-related spouse control and patient dietary adherence. In contrast, for female patients and their husbands, because husband involvement is not as normative, partners' discordant expectations as to whether a husband should be involved in a wife's health were expected to exert little influence on the association of diet-related spouse control and patient dietary adherence.

Methods

Procedures

Participants were recruited through newspaper advertisements, online classified advertisements, and presentations at senior citizen centers. Eligible couples received study questionnaires by mail. Patients and spouses were instructed to complete the questionnaires independently from one another. After completing the self-administered questionnaire, patients and spouses returned their questionnaires using separate stamped return envelopes. Each member of the couple received a \$10 monetary compensation for participation.

Participants

Data were collected as part of a larger study investigating couples' management of diabetes (see August, Rook, Stephens, Franks, 2011; Rook et al., 2011; Stephens et al., 2010). These married pairs are reexamined in the present study with a focus on *partners'* congruence in expectations as to whether a spouse should be involved in a *patient's* health. To be eligible for the larger study, one partner had to have a medical diagnosis of type 2 diabetes and be 50 years of age or older, and the spouse could not be diagnosed with either type 1 or type 2 diabetes and had to reside with the patient. Of 240 couples screened for eligibility, 29 couples did not meet criteria for study participation. Most often, couples were not eligible because both members of the couple were diagnosed with type 2 diabetes ($n = 18$). In addition, two couples declined participation due to serious illnesses. Of the remaining 209 couples, 18 did not return the questionnaires, resulting in a sample of 191 participating couples.

Participants who reported that they did not receive recommendations to modify their diet from their physician ($n = 9$), who had missing data regarding expectations for spouse involvement ($n = 1$), or had more than 20% missing data on diet-related spouse control ($n = 2$) or diet adherence ($n = 3$) were excluded from the present study. The dyads excluded from this study ($n = 15$) did not differ from the sample of 191 couples in patient self-rated health, gender, age, education, income, or years married.

Patients who reported "perfect" or ceiling scores for dietary adherence ($n = 37$) also were excluded. We reasoned that these patients likely had little need to improve their diet, which was the intended behavioral target of this study of spouse control. Compared to patients who did not have ceiling scores on diet adherence, those who did reported higher levels of self-rated health ($n = 37$; $M = 3.35$, $SD = .79$ versus $n = 139$; $M = 2.88$, $SD = .84$) ($t(174) = 3.09$, $p = .002$). These two groups did not differ in terms of spouses' gender, age, education, income, years since diagnosis, years married, or on expectations for spouse involvement. Sample characteristics for the resulting 139 dyads are shown in Table 1.

Measures

Patient dietary adherence—Patients reported their adherence to their recommended diet during the previous month. They were asked the extent to which they "ate healthy foods that helped manage their diabetes, avoided unhealthy foods that interfered with their diabetes management, and stuck to a diet that was recommended by their doctor or health care provider" in the past month on a 4-point scale ranging from 0 (not at all) to 3 (very much). These three items were summed with higher scores indicating greater dietary adherence. These items were created for our larger study and included in another publication investigating spouses' use of positive and negative control strategies (Stephens et al., 2010). The mean score for patient dietary adherence in this sample was 5.9 ($SD = 1.7$; range = 0 – 8; $\alpha = .66$).

Patient report of diet-related spouse control—Spouses' efforts to influence patients' diet choices were measured by three items. Patients reported the extent to which their partner tried in the past month "to get you to eat healthy foods to manage your diabetes, to get you to stop eating unhealthy foods that would interfere with your diabetes management, and to get you to stick to a diet that was recommended by your doctor or health care provider" on a 4-point scale ranging from 1 (not at all) to 4 (very much). These items were summed with higher scores representing greater spouse control. Items for this scale were derived from prior research on control strategies (Lewis & Rook, 1999) and from prior work on spouse control (Franks et al., 2006) and adapted for the diabetes context. The mean score for patient report of diet-related spouse control was 8.8 ($SD = 2.9$; range = 3 - 12; $\alpha = .91$).

Dyadic expectations for spouse involvement—Dyadic expectations for spouse involvement were assessed in two steps. First, each partner rated a single item reporting his or her expectation for spouse involvement in an ill partner's health. For example, female patients and their husbands each responded to the item, "A husband's involvement is essential for the health of his wife" using a 6-point scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). This single item was modified from an item on the "beliefs about relationship norms" scale used by Smith & Goodnow (1999). The aim of this measure was to capture partners' expectations at a dyadic level to represent distinct conditions under which spouse control is provided: 1) both partners agreeing that a spouse should be involved, 2) one or both partners disagreeing that a spouse should be involved. In order to accomplish this task, this single item was first re-coded into a dichotomous variable focusing on whether the response option reflected agreement with the statement that spouse involvement was essential (strongly agree, agree, and slightly agree coded as 1) or disagreement (strongly disagree, disagree, and slightly disagree coded as 0). In order to create a dyadic measure accounting for both partners' level of agreement, in the second step, both partners' scores from step one were used to form a dichotomous variable reflecting partners' agreement that a spouse should be involved in a patient's health. Partners who were congruent in expecting that spouse involvement is essential were coded as a dyad expecting involvement ($n = 106$ dyads). The remaining pairs, comprised of partners where either one partner ($n = 32$ dyads) or both partners ($n = 1$ dyad), indicated that spouse involvement is not essential were coded as a dyad not expecting involvement.

Covariate—Patient self-rated health was measured using a global single item, "How would you rate your overall physical health at the present time?" on a 5-point scale ranging from 1 (poor) to 5 (excellent). Patient years since diagnosis was measured by a self-rated item, "How long has it been since you were diagnosed with Type 2 Diabetes in years and months?"

Analysis Plan

Multiple regression analyses were used to examine the proposed moderating effects of dyadic expectations for spouse involvement and gender on the association between spouse control and patient dietary adherence. For model 1, patient dietary adherence was regressed on self-rated health, years since diagnosis, spouses' gender, diet-related spouse control, and dyadic expectations for spouse involvement to test main effects only. In Model 2, the interaction of spouse control and dyadic expectations for spouse involvement was added to test the proposed moderator, dyadic expectations. To reduce multicollinearity with the interaction term, spouse control was centered at the mean. Partners' dyadic expectations for spouse involvement is a dummy-coded variable so it was not centered (Aiken & West, 1991). A significant interaction effect reflects the anticipated moderating effect of dyadic expectations for spouse involvement on the association between spouse control and patient dietary adherence.

A final model, model 3 examined the additional moderating effect of spouses' gender on the associations among dyadic expectations for spouse involvement, spouse control, and patient dietary adherence. Two-way interactions of diet-related spouse control (predictor) with gender and dyadic expectations for spouse involvement (moderator) with gender were added in this model, followed by the three-way interaction of spouse control, dyadic expectations for spouse involvement and gender (see Dawson & Richter, 2006). A significant three-way interaction effect was then explored in separate analyses by spouses' gender (i.e., for male patients and their wives and for female patients and their husbands).

Results

Before addressing our study aims, we examined bivariate associations among key study constructs and potential covariates in preliminary analyses. At the bivariate level, diet-related spouse control was correlated with patient diet-adherence ($r = .35, p < .001$), though in the direction opposite our expectation. Additional correlations were examined to identify potential covariates including patient and marital characteristics (i.e., patient age, self-rated health, years since diagnosis and years married). Only patient self-rated health was correlated with patient dietary adherence ($r = .16, p = .05$; see Table 2).

Moderating Effects of Dyadic Expectations

We examined our first hypothesis that dyadic expectations for spouse involvement would moderate the association between diet-related spouse control and patient dietary adherence using hierarchical multiple regression analyses. In Model 1, after adjusting for patient self-rated health, years since diagnosis, and spouses' gender, patient diet adherence was associated with diet-related spouse control ($\beta = 0.39, p < .001$), but not with dyadic expectations for spouse involvement. In Model 2, a significant interaction effect of spouse control and dyadic expectations for spouse involvement was detected ($\beta = 0.34, p = .03$; see Table 3). Further analysis of this interaction effect (performed in accordance with procedures recommended by Aiken & West, 1991) suggested that when both partners expect spouse involvement, more diet-related spouse control was associated with greater dietary adherence. In contrast, among partners who do not share expectations affirming spouse involvement, spouse control was not associated with patients' dietary adherence (see Figure 1).

Moderating Effects of Spouses' Gender

Before addressing our second hypothesis regarding the moderating effect of spouses' gender, we explored differences in congruence of partners' expectations for spouse involvement by spouses' gender. Male patients and their wives were more likely to share an expectation affirming spouse involvement than were female patients and their husbands ($\chi^2 = 3.68, p = .05$). Specifically, the majority of male patients and their wives 82% (73 of 89) were comprised of partners who shared an expectation affirming that a wife's involvement in a husband's health is essential. However, only 67% (33 of 50) of female patients and their husbands were comprised of partners who shared the expectation that it is essential for a husband to be involved in a wife's health.

We then tested the additional moderating effect of spouses' gender on the associations of dyadic expectations for spouse involvement and diet-related spouse control with patient diet adherence using hierarchical multiple regression analysis (performed in accordance with procedures by Dawson & Richter, 2006). In Model 3, two interactions of spouses' gender were added to the previous model, spouses' gender with dyadic expectations for spouse involvement and spouses' gender with diet-related spouse control. None of the 2-way interactions were significant, however. The three-way interaction effect of diet-related

spouse control, dyadic expectations, of spouse involvement and spouses' gender on dietary adherence was significant (see Table 3; $\beta = 1.49$, $p = .01$).

In order to further explore the additional moderating influence of spouse gender, the prior analysis testing the moderating effect of dyadic expectations for spouse involvement was repeated separately by gender. No evidence of a moderating effect of partners' dyadic expectations on the association between diet-related spouse control and patient dietary adherence was found for female patients (see Table 4, right panel, and Figure 2, right panel). Among male patients, however, evidence of moderation was found ($\beta = 0.75$, $p < .001$; see Table 4, left panel, and Figure 2, left panel). Further analysis revealed that when male patients and their wives shared an expectation affirming spouse involvement, diet-related spouse control was positively associated with dietary adherence. Whereas, when male patients and their wives did not share an expectation affirming spouse involvement, diet-related spouse control was inversely associated with dietary adherence (see Figure 2).

Discussion

We examined married partners' congruence in expectations that a spouse *should* be involved in an ill partners' health (i.e., dyadic expectations for spouse involvement) and spouse gender as moderators of the association between spouses' diet-related control and an intended behavioral target of spouse control (e.g., diet adherence). Dyadic expectations for spouse involvement was detected as a moderator of the association between diet-related spouse control and patient dietary adherence. Moreover, additional analyses revealed that the moderating effect of dyadic expectations shaped the association of spouse diet-related control and patient dietary adherence only among male patients and their wives.

Patient Reports of Receiving Diet-Related Spouse Control

The association between patients' reports of dietary adherence and their receipt of diet-related spouse control was in the direction opposite our expectations. In light of findings linking spouse control to poorer health behaviors among patients with a chronic illness, we expected that spouse control would be associated with poorer dietary adherence (Franks et al., 2006; Helgeson, Novak, Lepore, & Eton, 2004). Instead, our findings lend more support to social control theory which posits that spouse control is positively associated with patients' health behavior (e.g., Umberson, 1992; Westmaas et al., 2002).

Our findings that diet-related spouse control was positively associated with the intended behavioral target may reflect patients recall of spouse control strategies. When asked whether their spouse "tried" to influence their diet, patients may have considered a myriad of spouse behaviors. In prior work, positive control strategies (Lewis et al., 2004) or persuasion (Stephens et al., 2009) have been shown to be effective in producing desired behavior changes. Because spouses use positive strategies more often than negative strategies (e.g., Lewis et al., 2004), patients may have largely considered positive control behaviors utilized by their spouses in their reports of receiving diet-related spouse control.

Moderating Effects of Dyadic Expectations and Spouses' Gender

The detected moderating effect of partners' dyadic expectations is consistent with the developmental-contextual model of chronic illness developed by Berg and colleagues (Berg, Meegan, & Deviney, 1998; Berg & Upchurch, 2007), which posits that the relational context shapes health-related interactions (including spouses' efforts to improve patients' diet adherence). Our findings suggest that when both partners agreed that a spouse should be involved, greater spouse control was associated with higher levels of patient dietary adherence. Under circumstances in which both partners concur that a spouse should be

involved, spouses may be more practiced in executing constructive feedback and patients may respond more favorably to corrective feedback (i.e., control).

Gender differences in the moderating effects of partners' dyadic expectations reflect normative gender roles (see Keicolt-Glaser & Newton, 2001). On the whole, the relational context was more dynamic for ill husbands than for ill wives. Congruent with social norms of wives' involvement, when both male patients and their wives expected spouse involvement, wives' control was associated with better diet adherence. In contrast, mismatched expectations for these partners seem to indicate a disconnect between wives' efforts to improve patient adherence and patients' behavioral response to those efforts.

Conversely, no moderating role of partners' expectations for spouse involvement was found for female patients and their husbands. Women's relatively greater attention to their own, in addition to their husbands,' health needs (Keicolt-Glaser & Newton, 2001) may help to explain why husbands' diet-related control had little effect on wives' diet adherence whether or not partners shared an expectation for spouse involvement. Further, it can be argued that husbands may not be as practiced in knowing their partners' needs or in delivering constructive health-related feedback. These social norm differences between husbands and wives may differ in future cohorts of married partners. For current younger couples, increased expectations for husbands' involvement in housework and childcare have been noted (e.g., Claffey & Mickelson, 2009; Askari, Liss, Erchull, Staebell, & Axelson, 2010) and these expectations may extend to health-related interactions among future cohorts of midlife and older married partners. Even still, these findings suggest that joint expectations for spouse involvement produce more constructive health-related interactions when wives are promoting husbands' health than when husbands are promoting the health of wives.

Limitations and Future Directions—Despite the strengths of our dyadic focus on married partners' expectations and the large sample of couples managing diabetes, limitations of our study should be noted. First, couples in this investigation were relatively homogeneous in that most were White, had some college education, had long-term marriages, and reported high levels of marital satisfaction, thereby limiting generalizability to couples who differ in these characteristics. Second, the smaller sample of female patients and their husbands may have limited detection of complex associations among study constructs (e.g., moderating effects). Third, data for this study represented only self-report of patients and their spouses. Future work including biological markers of disease management (e.g., HbA1c) may give further validity to the association between the relational context and health-related marital interactions. Fourth, our measure of dyadic expectations reflected only whether or not partners agree that spouses should be involved in patients' health. Thus, we did not capture differences in levels of agreement (e.g., one partner endorsed strongly agree and the other endorsed slightly agree) or disagreement. This dichotomous approach limits detection of more nuanced differences between patients' and spouses' expectations that may amplify (or attenuate) moderating effects of dyadic expectations for spouse involvement on the association between diet-related spouse control and patient dietary adherence. Finally, this study was cross-sectional and thus we were not able to unpack true directional effects between diet-related spouse control and patient dietary adherence.

Our study contributes to the literature on spouse control in the context of a chronic illness in several ways. Including both partners in our study allowed us to detect an important difference across couples in partners' expectations for spouse involvement (i.e., both share expectations for involvement versus only one expects involvement). This difference was found to shape the interactions of partners, particularly for male patients and their wives. As such, our study underscores the importance of the relational context of marriage in health-related interactions of spouses (see Berg & Upchurch, 2007). Examining the relational

context of marriage may be of particular import as spouse involvement (control) may not be uniformly beneficial for all patients. Attention to additional existing relationships dynamics between marital partners is warranted. In particular, couple-based research and practice interventions should recognize and address the established expectations and negotiations between husbands and wives that guide their involvement in promoting one another's health and well-being.

Implications for Research and Practice—Our findings have implications not only for health-related research with couples and families but also for providers who work with patients and spouses to navigate the difficult task of managing chronic illness on a day to day basis. As most spouses are involved in promoting treatment adherence among their partners managing a chronic illness (e.g., August & Sorkin, 2010; Franks et al., 2004; Trief et al., 2003), interventions aimed at helping spouses do so in a manner that is effective and acceptable to patients is likely to both promote disease management and fortify the marriage. In particular, findings from our study suggest that practitioners who work with partners and families to promote chronic illness management (such as therapists and diabetes educators) should not assume that all types of spouse involvement are welcomed by patients. Rather, involvement by spouses may backfire when partners do not welcome such interactions (e.g. Tucker, 2002). Thus, interventions seeking to promote disease management should be designed to educate and address the needs of both patients and their partners. For instance, psychosocial interventions might assess both partners' expectations for health-related spouse involvement, identify involvement strategies that fit with their expectations, and, when necessary, negotiate compromises when partners' expectations are incongruent.

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Figure 1.
Plot of interaction between diet-related spouse control and dyadic expectations for spouse involvement predicting patient dietary adherence.

Figure 2.

Plot of interaction between diet-related spouse control and dyadic expectations for spouse involvement predicting patient dietary adherence by gender.

Table 1

Sample Characteristics (N = 139).

Variable	Patient	Spouse
	Mean (SD)	Mean (SD)
Age	66.74 (8.00)	66.12 (8.72)
Years of education	13.60 (2.14)	13.77 (2.19)
Self-rated health	2.88 (0.84)	3.63 (0.93)
Ethnicity (% Caucasian)	95%	96%
Gender (% female)	36%	64%
Years since diagnosis	10.47 (8.11)	
Years married	38.84 (14.03)	
Median household income	\$40,000 - \$59,000	

Note: Sample size varies due to missing data.

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Table 2

Correlations of Study Variables (N = 139).

	1	2	3	4	5	6
1 Patient self-rated health	1.00					
2 Years since diagnosis	-0.16	1.00				
3 Spouses' gender	0.12	-0.03	1.00			
4 Spouse control	0.05	0.09	***	1.00		
5 Dyadic expectations	-0.10	0.07	0.17*	0.27***	1.00	
6 Patient dietary adherence	0.16*	-0.08	0.03	0.35***	0.16	1.00

Note:

*** $p < .01$.

* $p < .05$.

*** $p < .001$.

Table 3

Hierarchical Regression of Patient Dietary Adherence on Spouse Control, Dyadic Expectations for Spouse Involvement, and Spouse Gender (N = 139)

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Spouse control	0.23	0.05	*** 0.39	0.05	0.10	0.08	0.60	0.36	1.03
Dyadic expectations	0.39	0.33	0.10	0.60	0.34	0.15	0.42	1.43	0.11
Spouse gender	-0.57	0.30	-0.16	-0.48	0.30	-0.14	-0.50	0.74	-0.14
Spouse control $\times$ Dyadic expectations				0.24	0.11	0.34*	-0.70	0.41	-0.98
Spouse control $\times$ Gender							-0.39	0.22	-1.07
Gender $\times$ Dyadic expectations							-0.13	0.81	-0.04
Spouse control $\times$ Dyadic expectations $\times$ Gender							0.63	0.25	1.49**
R^2	.18			.21			.26		
F for model	5.78***			5.76***			4.95***		

Note: Spouse control as reported by the patient was centered at its mean. Each model controlled for self-report of health and years since diagnosis.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

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Regressions of Patient Dietary Adherence on Spouse Control and Dyadic Expectations for Spouse Involvement, for Male Patients and Female Patients

Table 4

Variable	Male Patients (N = 89)			Female Patients (N = 50)		
	B	SE B	β	B	SE B	β
Spouse control	-0.18	0.14	-0.27	0.27	0.17	0.48
Dyadic expectations	0.65	0.42	0.15	0.33	0.52	0.10
Spouse control $\times$ Dyadic expectations	0.58	0.16	0.75***	-0.13	0.19	-0.19
R ²	.30			.23		
F for model	7.11***			2.59*		

Note: The right and left panels summarize hierarchical regression analyses for male and female patients' respectively in which the patient's dietary adherence was regressed on the covariates (not shown: self-reported health, years since diagnosis), spouse control (centered at its mean), dyadic expectations for spouse involvement, and the interaction of spouse control and dyadic expectations.

***p < .01.
*p < .05.
***p < .001.