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Type 2 Diabetes: A Couples Study on Spousal Relationship and Health Behaviors

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Abstract

This study is designed to examine how the spousal relationship is related to the health behavior of people with type 2 diabetes. Participants consisted of 21 persons with type 2 diabetes and their spouses. Both patients and spouses completed a brief questionnaire that consisted of questions related to health behavior, partner communication, and marital quality. We hypothesized that when spouses engage in more positive diabetes behaviors, patients will engage in better self-care behavior, have higher self-efficacy, and have higher well-being. We also hypothesized that patient and spouse active engagement will be associated with better patient outcomes, whereas patient and spouse protective buffering will be associated with worse patient outcomes. We hypothesized that relationship quality and communal coping would be associated with better patient outcomes. Results showed that spouse positive behaviors were related to better patient self-care behaviors, and spouse negative behaviors were related to lower levels of patient self-efficacy. Neither positive nor negative behaviors were associated with patient well-being. Active engagement was related to better patient self-care behaviors but not patient well-being. There was some suggestion that protective buffering was related to a couple of poor patient outcomes. Marital satisfaction was related to some indicators of patient well-being, but communal coping was associated to better self-care behaviors. These results suggest that spouses may have an impact on how patients take care of their diabetes.

Type 2 Diabetes: A Couples Study on Spousal Relationship and Health Behaviors

Diabetes mellitus affects more than 23 million Americans and is the fifth deadliest disease in the United States. Diabetes mellitus is a chronic illness in which the body does not properly produce or use insulin. Insulin is a hormone that is necessary for converting sugar and other food into energy for daily use. There are two types of diabetes. The first type of diabetes is type 1 diabetes, and is relatively rare. Type 1 diabetes occurs when the body's immune system destroys pancreatic beta cells. Pancreatic beta cells are the cells in the body that produce insulin. People with type 1 diabetes must have insulin delivered into their bodies by injection or pump. The second type of diabetes, type 2 diabetes, is much more common. Type 2 diabetes usually occurs because the body develops insulin resistance. This means the cells in the body do not use insulin properly or the body does not produce sufficient amounts of insulin. Type 2 diabetes is associated with older age, family history of diabetes, obesity, physical inactivity and race (American Diabetes Association, 2008). Although type 1 diabetes is not limited to children and type 2 diabetes is not limited to adults, type 1 diabetes usually affects children and type 2 diabetes usually develops in adulthood. The focus of this research is on type 2 diabetes.

The management of type 2 diabetes involves making drastic lifestyle changes. People with type 2 diabetes have to change their diets and the amount of physical activity they perform. In addition, people with type 2 diabetes have to test their blood glucose levels and closely monitor these levels on a regular basis. In order to maintain an optimal level of blood glucose, people have to take oral medication or administer insulin. Without either, blood glucose levels increase. Research has shown that long term high blood glucose levels are associated with devastating complications (American Diabetes Association, 2008). People with diabetes who have poor blood glucose control are more prone to having nerve damage, eye problems, kidney

disease and amputations. Thus, it is important to find ways to help people with diabetes take better care of themselves to maintain optimal blood glucose control.

Adherence to proper self-care is a significant problem for two reasons. First, diabetes is mostly an invisible problem, meaning that people with diabetes, may not know they have this incurable disease. Second, people who have diabetes might not understand that there are harmful effects of having high blood sugar levels because the consequences are not immediate. Thus, people with diabetes may not be motivated to adhere to proper self-care behaviors.

Factors that are associated with good self-management of type 2 diabetes belong to one of four broad categories: characteristics of patients, nondisease-related stress, characteristics of the doctor, and characteristics of social networks (Fisher et al., 1998). Past studies have identified several characteristics of patients, including the way patients' understand diabetes and their concern about controlling symptoms, that are predictive of self-management behaviors (Hemera et al., 1988; Toobert & Glasgow, 1994). People with diabetes who have to manage other stressors may not have the time or energy to adhere to and follow the recommendations for proper self-management behavior (Peyrot, McMurry, & Hedges, 1988). Research has shown that physician attitudes about diabetes and diabetes management are associated with patient self-care behaviors. For instance, patient self-care behaviors are positively associated with physicians' beliefs about how serious diabetes is and how important glucose control is, physicians' expertise in diabetes, and the way physicians communicate with patients (Anderson & Zimmerman, 1993; Ho, Marger, Beart, Yip, & Shekelle, 1997; Johnson, 1992). However, much less attention has been devoted to the issue of social support among adults with type 2 diabetes (Trief, Grant, Elbert, & Weinstock, 1998). Thus, this is the focus of the present investigation. Below, we briefly review the literature on social support and diabetes.

Family Support and Chronic Illnesses

Emotional, instrumental, and informational support are the three main types of social support that are usually provided to patients with chronic diseases. Emotional support includes providing empathy, care, love and trust. Instrumental support includes aid in money, time, or labor. Informational support includes advice, suggestions, directives and information.

Studies have shown that patients with chronic illnesses receive different kinds of social support from different people. One study suggests that people with type 1 diabetes receive emotional and instrumental support from their family and informational support primarily from health care staff (Aalto, Uutela, & Aro, 1997). It is not clear which kind of support is most strongly related to adherence. A study that examined the relation of emotional and instrumental support to adherence among 86 patients with rheumatoid arthritis, showed that emotional support provided more motivation to improve adherence than instrumental support (Taal, Rasker, Seydel, & Wiegman, 1993).

Each of these kinds of support can be further divided into general support or disease-specific support. General support is support that is provided overall and does not pertain to a particular disease. Disease-specific support is support that is provided in the context of the specific disease. For example, general support includes listening or assisting in everyday problems, whereas diabetes-specific support includes helping with insulin injections, reminding to take medication, helping to monitor blood glucose, eating meals and exercising with the person with diabetes.

Studies have shown that both general support and disease-specific support from family members and friends are related to better self-care behaviors among people with diabetes. For instance, one study of 80 people with diabetes showed that patient satisfaction with general

support from family members and friends was associated with better self-care behaviors but only during times of stress (Griffith, Field, & Lustman, 1990). During nonstressful times, patient satisfaction with general social support was not associated with self-care behaviors. Two studies of people with diabetes showed that diabetes-specific social support was associated with better self-care behavior (Garay-Sevilla et al., 1995; Toljamo & Hentinen, 2001). Thus, assistance with everyday diabetes-related tasks, as well as, general support may be helpful to those with diabetes.

Some social support research has focused specifically on the spouse relationship and how it is related to self-care behaviors of people with diabetes. Studies have shown that higher marital quality and greater marital intimacy is associated with better self-care behavior (Trief, Ploutz-Snyder, Britton, & Weinstock, 2004; Trief, Wade, Britton, & Weinstock, 2002) and less diabetes-related stress and better diabetes adaptation (Trief et al., 2002; Trief et al., 2004).

Marital quality is a vague and diffuse construct. To more fully understand how marital quality affects self-care behavior, we need to understand more about the specific patient-spouse interactions surrounding self care. Some studies have tried to determine what behaviors are perceived as supportive by patients with diabetes. In a qualitative study of couples, partners were asked to describe what they did to help manage diabetes (Trief et al., 2003). Both patients and spouses provided a number of answers relating to dietary control. For example, spouses assisted in grocery shopping or food preparation, and shared a diet plan. Patients generally perceived these behaviors as helpful. Adjusting to the timing and location of meals, assisting with shots or medication, and checking blood sugar levels also were perceived as beneficial by patients. Reminding in general was considered to be a helpful behavior, whether it was a quick reminder to take medication or to pack extra snacks.

However, the same study showed that some spouse behaviors were considered not supportive. Nagging, criticizing, overprotecting, and preparing inappropriate foods or modeling bad eating habits were viewed as unhelpful behaviors. These kinds of behaviors could reduce the person's sense of independence or exacerbate the person's stress which might then contribute to poorer self-care behaviors.

It is also possible that some spousal behaviors are considered helpful in some circumstances but unhelpful in other contexts. An interview study of people with diabetes showed that there are two main factors that determine if a behavior is considered helpful or not (Bailey & Kahn, 1993). One is "perceived need", which is how people evaluate their need for help in a situation. For instance, when people with diabetes received help during hypoglycemic episodes, the help was perceived as needed. On the other hand, when wakened by spouses who were reminding them to take their morning shot, the help was perceived as unnecessary, unneeded, and unhelpful. A second factor is "perceived spousal motivation", which is the way that people with diabetes evaluate their spouses' reasons for offering help to them. If people with diabetes believe that their spouse is displaying genuine concern for their well-being, the spouse motivation is considered acceptable. On the other hand, if people with diabetes perceive their spouses' behavior as indicating a lack of trust or confidence in their abilities, the motivation was considered to be negative. When people with diabetes viewed spouse help as unnecessary and the spousal motivation as not acceptable, they were more likely to refuse their spouses' offers of help. Help was then viewed as intrusive. In some instances, the help backfired and patients did just the opposite of what was requested. For example, if a husband reminded his wife to eat something, she might respond by delaying her eating. This study showed that people

with diabetes are more likely to view behaviors as helpful when they need help and when they view their spouses' motives as acceptable (Bailey & Kahn, 1993).

Relationship Coping and Chronic Illnesses

The spouse relationship can affect diabetes outcomes not only by supportive or unsupportive interactions but also by how the couples independently or jointly cope with diabetes. How the spouses react to the disease and how the efforts of both members of the couple fit are important in determining what patients will do while they are coping with a chronic disease (Coyne & Smith, 1994). Some couples decide together what needs to be done and how to proceed with the chronic disease. Some spouses take more of a passive role, and other spouses actively try to make changes in the patient's life.

Two main types of relationship-focused coping have been identified (Coyne & Smith, 1991). The first is active engagement. This strategy involves both partners discussing problems, inquiring how the other partner feels about the problem, and utilizing beneficial problem solving methods. A study of 56 couples, in which the husbands suffered myocardial infarctions, examined how relationship-focused coping was associated with patient self-efficacy (Coyne & Smith, 1994). Patient active engagement was related to higher patient self-efficacy. Another study of men who had suffered myocardial infarctions showed that husbands' use of active engagement was associated with a decrease in wives' distress (Coyne & Smith, 1991). Interestingly, these strong associations only occurred among couples with lower marital quality and did not occur in couples with high marital quality.

The second type of relationship-focused coping is protective buffering. Protective buffering is a method that involves denying worries, hiding concerns, and yielding to the partner in order to avoid disagreements and arguments. Studies of men who had suffered myocardial

infarctions showed that husbands' use of protective buffering was related to lower patient efficacy, whereas wife protective buffering was positively associated with patient self-efficacy. Patients' use of protective buffering was associated with an increase in wives' distress. These findings support the idea that the coping styles of both patients and spouses may play an important role in patient self-efficacy and, ultimately, patient adherence.

Another type of relationship-focused coping that has been investigated among those with a chronic illness is communal coping. Communal coping occurs when partners solve problems collectively instead of individually. For example, in the case of diabetes, communal coping implies that both members of the couple consider diabetes to be their joint problem. Communal coping among patients with chronic illnesses may be related to better self-care behaviors because partners and patients might solve problems better together and might be more cooperative with one another. Although research has not examined the link of communal coping to adherence, communal coping has been related to patient outcomes. In a study of men and women with congestive heart failure, communal coping predicted a reduction in heart failure symptoms over a 6-month period (Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008). In this study, communal coping was operationalized as the use of first-person plural pronouns during a discussion about coping with the patient's heart conditions.

Goals and Hypotheses

There were 5 goals of this study. First, we wanted to determine how spouses help their partners take care of their diabetes. To do this, we administered a questionnaire that asked patients to rate how often their partners engaged in a set of behaviors and how helpful or unhelpful those behaviors were. We also asked an open-ended question to elicit other helpful behaviors. We asked spouses the same questions.

Second, we examined the association of positive and negative behaviors to patient self-care behavior, patient self-efficacy and three indicators of patient well-being (depression, perceived stress, and life satisfaction). We hypothesized that when spouses engage in more positive behaviors, patients will take better care of their diabetes than when spouses engage in less positive behaviors. We also hypothesized that positive behaviors would be associated with higher patient self-efficacy and higher patient well-being (i.e. be less depressed, less stressed and more satisfied with their lives). By asking both patients and spouses to evaluate spouse behavior, we can examine the relation between patient perception of spouse behavior and spouse reports of their own behavior. We also will be able to link both patient and spouse perception of spouse behavior to patient outcomes.

Third, we determined how two different relationship coping styles were associated with patient self-care behavior and patient health outcomes. Specifically, we examined both patient and spouse active engagement and protective buffering. We hypothesized that patients who have spouses who engage in more active engagement will have better self-care than patients who have spouses who engage in less active engagement. Spouses who engage in more active engagement will discuss concerns and problems with the patient. For instance, if spouses are engaging in active engagement, they might feel that the patient should eat healthier. The spouse would most probably suggest that the patient eat more fruits and vegetables, which could lead the patient to have a better diet. We also hypothesized that patients who engage in more active engagement will have higher self-efficacy then patients who engage in less active engagement.

By contrast, patients who have spouses who engage in more protective buffering will have worse self-care. If spouses are not openly discussing how they feel about the patients' diabetes, then patients would not know how spouses truly feel. If spouses are not

communicating their concerns about health behavior, then patients are less likely to execute good health behavior. We also hypothesized that patients who have partners who engage in more protective buffering will have lower self-efficacy then patients who have partners who engage in less protective buffering. We hypothesized that patients who engage in more protective buffering will have worse self-care than patients who engage in less protective buffering. Patients who are worried about how their spouses are coping and engage in protective buffering might not ask their spouse for assistance or needed help. For example, a spouse may cook an unhealthy meal and the patient may eat the meal because he or she is afraid of hurting the spouse's feelings. The patient may continue to eat unhealthy meals in order to avoid disagreements which may ultimately lead to worse self-care. For the same reasons, we also hypothesized that patients who engage in more protective buffering will have lower self-efficacy then patients who engage in less protective buffering.

Fourth, we examined whether aspects of the spouse relationship were associated with patient self-care behavior and patient health outcomes. We did this in two ways. First, we examined whether marital satisfaction was associated with better patient self-care behavior, higher self-efficacy, and higher well-being. Happily married couples may receive encouragement and support from their partners to perform new behaviors that may be overwhelming or challenging without support. Secondly, we examined if relationship satisfaction moderated the association of spouse behaviors to patient outcomes. We hypothesized that marital quality will influence the perception of spouse behaviors. In high quality relationships, patients would view behaviors as helpful. For instance, spouses might remind patients to go exercise. Patients in high quality relationships might view this behavior as helpful because they might feel that their spouses truly care about them and want them to take

care of themselves. On the other hand, patients in low quality relationships might view this reminder as not helpful because they might feel that their spouses are trying to control them. Thus, the association of spouse behaviors (positive and negative) to patient outcomes might be stronger among couples who have high than low marital satisfaction.

Fifth, we measured communal coping. We hypothesized that if the patient and partner view diabetes as a joint problem, then the patient will have higher life satisfaction, lower perceived stress and depression, and better self-care. Couples who view diabetes as a joint problem may be highly interdependent. Patients and partners would be motivated to act for the needs of each other. Thus, patients who cope with diabetes in a communal way should receive the necessary support to help them manage their distress, make changes in their life-style and cope with the burdens that diabetes has forced on their lives.

Method

Participants

We enrolled 42 adults (21 females, 21 males) with type 2 diabetes and their spouses from the greater Pittsburgh area. Participants were recruited from the Pittsburgh Diabetes Expo which was held in August 2008. Fifty couples expressed an interest in the study. After the Expo, we tried to contact each of these couples by phone and/or email and were able to reach 33 couples. Of those, 26 couples were determined to be eligible. Eligibility requirements included: married or living with a partner for at least one year, between the ages of 30 and 75, one person in the couple diagnosed with type 2 diabetes for at least one year, and no other current major chronic illness, such as heart disease or cancer. Of the 26 eligible couples, 21 (81%) agreed to participate.

Of the 21 couples, patients' ages ranged from 37 to 71 (M = 58.81; SD = 7.84) and spouses' ages ranged from 35 to 69 (M = 58.25; SD = 10.09). Patients had had diabetes between 1 and 42 years (M = 8.21; SD = 9.39). Patients controlled their diabetes with diet and oral medication only (76%), insulin injections only (5%), or both (19%). The majority of patients were female (62%) and white (81%); 19% were African American. Spouse race was mostly white (76%), followed by African American (19%) and Asian (5%).

Procedure

The study was approved by the Carnegie Mellon University Institutional Review Board. After patients and spouses agreed to participate in the study, we sent them each a consent form. When we received consent forms from both the patient and the spouse, we mailed the questionnaires to the patient and the spouse in individual packets that contained a self-addressed stamped envelope to return to us. Participants were given the choice of completing an on-line or paper and pencil version of the questionnaire. The majority of participants chose the paper and pencil questionnaire (76%).

Instruments

General coping. This 16-item general coping scale was used to measure how patients and spouses cope with stressful events in their life. We examined four subscales: active coping, sharing feelings, distraction, and ventilation. Participants responded to each item on a 4-point Likert scale (1 = not at all, 4= a lot). Higher scores on the subscales suggested more of each coping strategy. Scales had good internal consistencies for both patient and spouse: active coping (α = .71, α = .78); sharing feelings (α = .84, α = .80); distraction (α = .64, α = .71); ventilation (α = .72, α = .57).

W*ell-being*. We administered three measures of well-being to patients and spouses. First, the Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977) was used to measure depressive symptoms over the past week. Participants responded to each of the 20 items on a 4-point Likert scale (1 = none, 4 = most). Higher scores suggested more symptoms of depression. The scale had good internal consistency for patients (α = .89) and spouses (α = .85). Second, the 5-item Life Satisfaction scale (Diener, Emmons, Larsenm & Griffin, 1985) was used to measure how satisfied patients and spouses are with their lives. Participants responded to each item on a 7-point Likert scale (1 = strongly disagree, 7 = completely agree), such that higher scores indicated higher life satisfaction. The scale had good internal consistency for patients (α = .94) and spouses (α = .90). Third, the Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983) was used to measure how much stress participants felt during the past month. Participants responded to each of the 4 items on a 5-point Likert scale (1 = never, 5 = very often). The scale had good internal consistency for patients (α = .71) and spouses (α = .87).

Marital quality. The Personal Assessment of Intimacy in Relationships Inventory (PAIR; Schaefer & Olson, 1981) was used to measure the emotional intimacy between couples. Participants responded to each of the 6 items on a 5-point Likert scale (1 = completely disagree, 5 = completely agree). Higher scores suggested more emotional intimacy. The scale had good internal consistency for patients (α = .83) and spouses (α = .85).

Patient self-efficacy. The patient self-efficacy scale was used to measure how confident patients were with taking care of their diabetes. Patients responded to each of the 10 items on a 5-point Likert scale (1= not at all, 5 = a lot). Higher scores suggested higher self-efficacy. The scale had good internal consistency (α = .79).

Coping. The protective buffering and active engagement relationship coping scales were used (Coyne & Smith, 1991). Both patients and spouses responded to each of the 10 protective buffering items and 5 active engagement items on a 5-point Likert scale (1= never, 5= very often). Higher scores on the subscales suggested that the person engaged in more protective buffering or active engagement. The protective buffering subscale did not have high internal consistency for patients ($\alpha = .56$) but did for spouses ($\alpha = .76$). The active engagement subscale had good internal consistency for patients ($\alpha = .92$) and spouses ($\alpha = .93$).

Supportive and non-supportive spouse behaviors. The Diabetes Family Behavior Checklist (DFBC; Schafer, Glasgow, McCaul & Dreher, 1983) was used to measure supportive and non-supportive spouse behaviors specific to diabetes. Within the DFBC scale there were two subscales: positive behaviors and negative behaviors. Patients were asked how often their spouses engaged in each of the 16 behaviors, and spouses were asked how often they engaged in each of the 16 behaviors on a 5-point Likert scale (1= never, 5 = at least once a day). The positive DFBC scale had good internal consistency for patients ($\alpha = .85$) and spouses ($\alpha = .80$). The negative DFBC had adequate internal consistency for patients ($\alpha = .65$) and spouses ($\alpha = .69$).

Helpful and non-helpful behaviors. Each of these 16 behaviors also were rated as to how helpful they were on a 7-point Likert scale (1 = extremely unhelpful, 7 = extremely helpful). Patients and spouses were allowed to record other behaviors that spouses engaged in that they could rate in terms of helpfulness. The helpfulness of the positive behaviors had good internal consistency for patients ($\alpha = .65$) and spouses ($\alpha = .79$). The helpfulness of the negative behaviors had good internal consistency for patients ($\alpha = .92$) and spouses ($\alpha = .79$).

Communal coping. This scale was created in order to measure how well couples solve problems together. This scale consisted of 3 items: (a) When issues arise about diabetes, whose responsibility is it to try to deal with the issues?, (b) When thinking about diabetes, how do you consider it?, (c) When issues arise about diabetes, whose responsibility would you like it to be? The scale had good internal consistency for patients ($\alpha = .84$) and spouses ($\alpha = .93$).

Self-care behaviors. The Summary of Diabetes Self-Care Activities (SDSCA; Toobert & Glasgow, 1994) was used to measure how well patients with diabetes followed their physician's recommendations for insulin administration, diet, exercise, and other diabetes-related behaviors over the past week. This measure consisted of 12 items. The internal consistency was not high ($\alpha = .57$).

Results

Helpfulness of Behaviors

The first goal of the study was to determine which behaviors were perceived as helpful by patients and spouses. The helpfulness ratings of the positive behaviors are shown in Table 1 and the helpfulness of the negative behaviors are shown in Table 2. As shown in Table 1 and Table 2, the behaviors that were a priori determined to be helpful were perceived as more helpful than the behaviors that were determined a priori to be unhelpful. Three of the four most helpful behaviors according to both patients and spouses were congratulating the patients for sticking to his or her diabetes self-care schedule, eating at the same time with the patient, and praising the patient for following his or her diet. The fourth most helpful behavior for patients was helping the patient decide if changes should be made based on glucose testing results, and the fourth most helpful behavior for spouse was planning family activities so that they will fit in with the patient's diabetes self-care schedule. When we compared patients' and spouses' ratings of the

helpfulness of each behavior, only two differences emerged. Spouses viewed planning family activities so that they will fit in with the patients' diabetes self-care schedule as more helpful than patients, and spouses viewed exercising with the patient as more helpful than patients.

Relation of Spouse Behaviors to Patient Outcomes

The second goal of the study was to examine the link of spouse behaviors to patient outcomes. Before reporting these links, we examined whether patients and spouses differed in their reports of spouse behavior. We conducted a paired t-test on the positive behavior index and found no significant difference between the ratings by patients (M = 2.40) and spouses (M = 2.54; t = -0.86, $p > .05$). We conducted a paired t-test on the negative behavior index and found that patients reported that spouses engaged in more negative behavior (M = 1.82) than spouses reported (M = 1.48; t = 2.90, $p < .05$).

Patient reports. As shown in Table 3, patients' reports of spouse positive behaviors were related to better self-care behavior, but were not associated with patient self-efficacy or any of the three indicators of patient well-being – depression, perceived stress or life satisfaction.

Patients' reports of spouse negative behaviors were not associated with any of the patient outcomes. There was a weak trend suggesting that spouse negative behaviors were related to lower patient self-efficacy, r = -.30, p = .19.

Spouse reports. As shown in Table 3, spouses' reports of their own positive behaviors were related to better patient self-care behavior, but were not associated with other patient outcomes.

Spouses' reports of their own negative behaviors were related to lower patient self-efficacy, but were not associated with patient well-being or patient self-care behaviors.

Relation of Relationship Coping to Patient Outcomes

Patient coping. As shown in Table 4, patient active engagement was associated with higher patient self-efficacy and better self-care behaviors, but was not associated with well-being. Patient protective buffering was marginally associated with lower patient self-efficacy, but was not associated with patient well-being or self-care behaviors.

Spouse coping. As shown in Table 4, spouse active engagement was associated with better patient self-care behaviors, but was not associated with patient well-being or patient self-efficacy. Spouse protective buffering was marginally related to lower patient efficacy, $r = -.33$, $p = .15$, and lower patient perceived stress, $r = -.37$, $p = .10$. However, spouse protective buffering was not associated with patient depression, life satisfaction or self-care behaviors.

Relation of Relationship Coping to Spouse Outcomes

Although we did not have any specific hypotheses about how coping would affect spouse well-being, we examined theses relations on an exploratory basis.

Patient coping. Neither patient active engagement or protective buffering was related to any of the three indicators of spouse well-being.

Spouse coping. Spouse active engagement was not related to any indicator of spouse well-being. Spouse protective buffering was marginally associated with greater spouse depression, $r = .41$, $p = .06$, but was not related to spouse perceived stress or life satisfaction.

Relation of Relationship Satisfaction to Patient Outcomes

Patient reports. As shown in Table 4, patients' reports of relationship quality were related to less depression and marginally related to higher life satisfaction, $r = .32$, $p = .15$. However, relationship quality was not associated with perceived stress, patient self-efficacy or patient self-care behaviors.

Spouse reports. As shown in Table 4, spouses' reports of relationship quality were related to less patient depression and greater patient life satisfaction. However, relationship quality was not associated with perceived stress, patient self-efficacy or patient self-care behaviors.

Relation of Communal Coping to Patient Outcomes

We examined whether patients and spouses differed in their reports of communal coping. We conducted a pair t-test and found a reliable difference between the ratings by patients and spouses ($t = 4.45$, $p < .05$). Spouses perceived diabetes in a more communal way ($M = 2.22$) than patients ($M = 1.73$).

Patient reports. As shown in Table 4, patient communal coping was marginally related to better self-care behaviors, but was not related to patient well-being or patient self-efficacy.

Spouse reports. As shown in Table 4, there was a weak trend showing that spouse communal coping was related to lower patient self-efficacy, $r = -.32$, $p = .16$, but it was not related to patient well-being or patient self-care behaviors.

Relationship Satisfaction as a Moderator of Spouse Behavior to Patient Outcomes

We examined whether relationship satisfaction moderated the association of spouse positive and negative behaviors to the five patient outcomes with multiple regression analysis. For each outcome, we entered relationship satisfaction and positive spouse behaviors on the first step and the interaction between the two on the second step. Each variable was centered first before computing the interaction term. The interaction between relationship satisfaction and spouse positive behaviors predicted life satisfaction ($B = -.76$, $p < .01$), but did not predict any of the other patient outcomes. As shown in Figure 1, positive behaviors by the spouse are associated with higher life satisfaction for low marital satisfaction couples but lower life satisfaction for high marital satisfaction couples. We also examined whether relationship

satisfaction moderated the association of spouse negative behaviors to patient outcomes. The interaction between relationship satisfaction and spouse negative behaviors predicted life satisfaction (B= -.55, $p < .05$), but did not predict any of the other patient outcomes. As shown in Figure 2, spouse negative behaviors are associated with higher life satisfaction for low marital satisfaction couples but lower life satisfaction for high marital satisfaction couples.

Discussion

The first goal of this study was to determine how spouses help their partners take care of their diabetes. In general, patients and spouses agreed on behaviors that were most helpful. The couple of differences that did appear suggest that spouses think that doing activities with patients (e.g., exercising with the patient) are more helpful than patients believe. It also appears that patients perceive that more diabetes-specific behaviors (e.g., helping the patient decide if changes should be made based on glucose testing results) are helpful compared to spouses. It is important for this information to be communicated to spouses. Patients and spouses also agreed on the behaviors that are most unhelpful, largely having to do with criticism and arguments.

The second goal of this study was to see if spouse behaviors were associated with patient self-care behavior, self-efficacy, and well-being. First, we examined both patients' and spouses' reports of spouse behavior and found similar reports of positive behavior but found that patients perceived that spouses engaged in more negative behaviors than spouses perceived. Second, we found that both patients' and spouses' reports of spouse positive behaviors were related to better patient self-care behaviors. This suggests that spouses may be able to have an impact on patients' diabetes management. Spouses who provide assistance with everyday diabetes-related tasks, in particular, may help patients to improve their adherence to the diabetes regimen.

We also found that spouse negative behaviors were related to lower patient self-efficacy, significant in the case of spouse reports but marginal in the case of patient reports. Spouse negative behaviors might make patients feel inadequate and that they are not capable of taking care of their diabetes. For instance, if spouses continuously nag patients about taking their medication, patients might become dependent on spouses' behavior and feel that they are not capable of taking care of diabetes on their own.

However, there was no evidence that spouse behaviors – either positive or negative – were associated with patient well-being. One reason that spouse behaviors were associated with diabetes outcomes but not overall psychological health might be that other factors could play a larger role in patients' lives than diabetes. That is, there might be other determinants of patient well-being aside from diabetes, such as financial strains, marital satisfaction or children.

The third goal of this study was to see if relationship-focused coping was associated with patient outcomes. We examined two different kinds of relationship-focused coping, active engagement and protective buffering. Both patient and spouse active engagement were related to better patient self-care behaviors. Active engagement might be related to better self-care behaviors because active engagement involves couples discussing problems and utilizing beneficial problem solving methods with each other. Thus, spouses can give suggestions and support to patients about completing self-care behaviors. Active engagement was not related to patient well-being, perhaps because discussions about diabetes do not affect patients' overall well-being. Again, there might be other determinants of patients' overall psychological health.

Unlike previous research, there was little evidence that protective buffering, on the part of patients or spouses, was related to patient outcomes. Coyne and Smith (1991; 1994) showed that spouse protective buffering was related to higher patient self-efficacy. There was no

evidence that protective buffering was associated with higher levels of patient self-efficacy in this study. In fact, there was some suggestion that both spouse and patient protective buffering were related to *lower* patient self-efficacy. When patients and spouses keep their thoughts and feelings to themselves, they are not communicating their concerns about diabetes. In this case, patients might not receive the support that they need to take care of their diabetes.

There was a trend indicating that spouse protective buffering was related to lower patient perceived stress. In this case, it appears that spouse protective buffering was operating as spouses intended. When spouses do not discuss their concerns and problems with patients, patients might worry less.

The fourth goal of this study was to examine whether the quality of the spouse relationship was associated with patient outcomes. Patients' and spouses' reports of marital satisfaction were not related to patient self-care behavior or patient self-efficacy but were related to two of the three indicators of well-being: less depression and higher life satisfaction. Having a good marriage may provide people with a sense of identity, a source of self-esteem, or a companion to share activities with, all of which can reduce depression and increase life satisfaction. However, relationship satisfaction, in and of itself, may not be enough to affect diabetes self-efficacy or self-care behaviors.

We had hypothesized that marital satisfaction would moderate the relation of spouse behaviors to patient outcomes such that the relation of spouse positive behaviors to patient outcomes would be stronger for the high marital satisfaction group. In the case of spouse negative behaviors, we hypothesized that negative behaviors would be more strongly related to poor patient outcomes for the low marital satisfaction group. Those who have high marital satisfaction might be able to look beyond the nagging and the criticism to see that spouses are

trying to be helpful. Although we found moderation, the pattern of moderation was not as predicted. Instead, it appeared that more positive and more negative behaviors were associated with higher life satisfaction but only for the low marital satisfaction group. These results suggest that patients in low quality relationships might benefit from any spouse involvement in diabetes – positive or negative.

The fifth goal of this study was to see if communal coping was related to patient outcomes. Although we hypothesized that communal coping would be associated with better patient outcomes, communal coping was not significantly related to any patient outcome, whether reported by patients or spouses. There was a trend suggesting that patient reports of communal coping were related to better self-care behavior. Patients who perceive that their illness is a joint problem might receive more support from spouses to help them engage in needed behavior. One reason that communal coping might not have been related to more patient outcomes is that communal coping could have multiple determinants. We were assuming that communal coping would reflect a collaborative style of interacting that stemmed from a positive relationship. However, communal coping also might be used in couples that have more serious problems or illnesses as a way to manage the illness. In this case, communal coping is a response to problems rather than a way to ameliorate problems. To the extent that both processes are operating, relations of communal coping to patient outcomes would be obscured.

There were several limitations of this study. First, the sample size might have limited our power to detect significant relations. Second, the sample of participants was homogenous with respect to race, limiting the generalizability of the findings. Future research would benefit by examining health behaviors, partner communication, and marital quality in a more racially diverse group. Third, this was a cross-sectional study, which limits our ability to draw causal

inferences. For example, we do not know if spouse positive behavior caused self-care behaviors or self-care behaviors caused spouse positive behavior. In the future, it will be worthwhile to conduct a longitudinal study to evaluate the implications of spouse behavior for patient health outcomes among patients with type 2 diabetes.

These findings can be used to help patients with type 2 diabetes and their spouses better cope with diabetes. Patients with type 2 diabetes and their spouses can be informed about the kinds of behaviors that appear helpful to patients and might encourage better self-care behaviors. Also, both patients and spouses can be encouraged to engage in more active engagement with respect to diabetes.

Taken collectively, these results suggest that spouse behaviors related to diabetes may affect patients' diabetes management and beliefs about their abilities to take care of their diabetes. In addition, communication and discussions about diabetes-related problems may be beneficial to patients' diabetes management. In general, the findings from this study showed that diabetes-specific predictors were associated with diabetes health outcomes and general predictors (e.g. marital satisfaction) were associated with general health outcomes.

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Table 1

Helpfulness Ratings of Positive Behaviors for Patients and Spouses

Positive Behaviors	Patient Mean	Spouse Mean	Significance
1) Congratulate you for sticking to your diabetes self-care schedule?	5.86	6.04	.358
2) Eat at the same time that you do?	5.76	5.71	.903
3) Praised you for following your diet?	5.71	5.67	.883
4) Help you decide if changes should be made based on glucose testing results?	5.05	4.28	.173
5) Plan family activities so that they will fit in your diabetes self-care schedule?	4.90	5.62	.028
6) Buy you things containing sugar to carry with you in case of a hypoglycemic reaction?	4.67	3.95	.159
7) Encourage you to participate in sport activities	4.33	4.86	.224
8) Exercise with you?	4.19	5.14	.054
9) Suggest things that might help you take your diabetes medications on time?	4.19	4.33	.731

Table 2

Helpfulness Ratings of Negative Behaviors for Patients and Spouses

Negative Behaviors	Patient Mean	Spouse Mean	Significance
1) Eat foods that are not part of your diabetic diet?	3.33	2.67	.220
2) Let you sleep later rather than getting up to take your diabetes medication?	3.29	3.52	.668
3) Nag you about testing your glucose level?	3.19	3.14	.939
4) Criticize you for not exercising regularly?	3.10	3.52	.445
5) Nag you about not following your diet?	3.05	3.29	.658
6) Argue with you about your diabetes self-care activities	3.00	2.76	.704
7) Criticize you for not recording the results of glucose tests?	2.81	2.48	.419

Table 3

Correlations between Positive and Negative Behaviors and Patient Outcomes

	Life Satisfaction	Depression	Perceived Stress	Self-Efficacy	Self-care behaviors
Patient Reports					
Spouse positive behavior	-.05	- .05	.08	.19	.60 **
Spouse negative behavior	.01	.12	.12	-.30	.12
Spouse Reports					
Spouse positive behavior	.24	.27	.10	.02	.59**
Spouse negative behavior	-.09	.20	-.02	-.53*	-.23

Note: + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 4

Correlations between Relationship Coping and Patient Outcomes

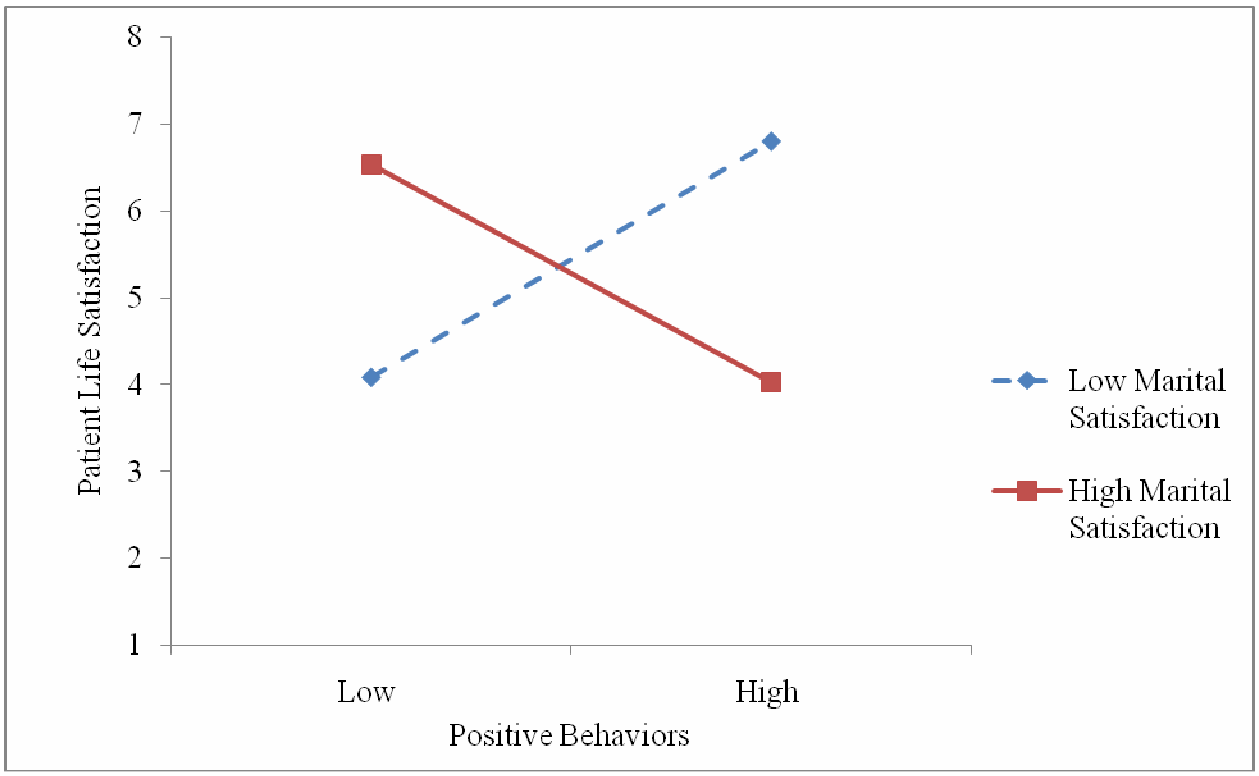
	Life Satisfaction	Depression	Perceived Stress	Self-Efficacy	Self-care behaviors
Patient AE	.07	-.24	.00	.39+	.76***
Patient PB	.16	.03	.16	-.40+	-.29
Spouse AE	.13	.14	-.12	-.11	.52*
Spouse PB	-.27	.12	-.37+	-.33	-.03
Patient MS	.32	-.50*	-.26	-.05	.07
Spouse MS	.67***	-.50*	-.34	-.06	.04
Patient CC	-.04	-.07	-.07	.18	.38+
Spouse CC	.33	-.15	-.27	-.32	-.18

Note: AE = active engagement; PB = Protective buffering; MS = Marital Satisfaction; CC = Communal Coping; + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Figure Captions

Figure 1. The relations of positive behaviors to patient life satisfaction for high and low marital satisfaction groups

Figure 2. The relations of negative behaviors to patient life satisfaction for high and low marital satisfaction groups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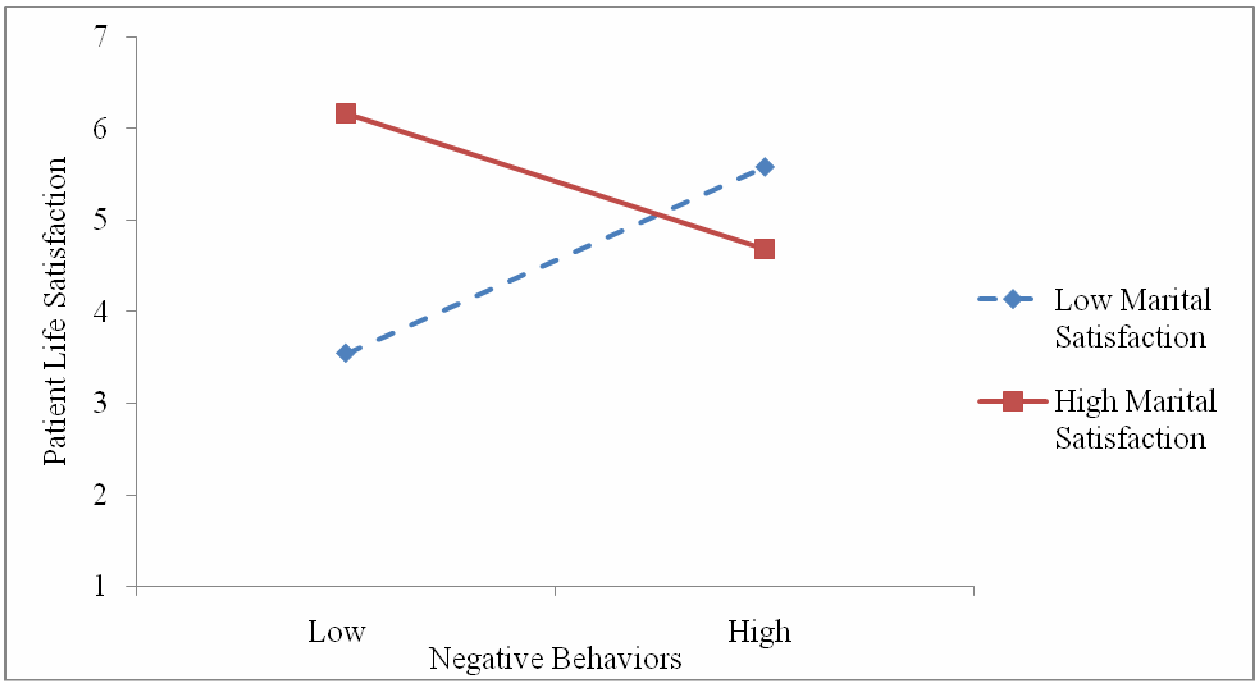
Patient Life Satisfaction
Low
High
Positive Behaviors
Low Marital Satisfaction
High Marital Satisfaction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Patient Life Satisfaction
Low
High
Negative Behaviors
Low Marital Satisfaction
High Marital Satisfaction