



An examination of the communal coping process in recently diagnosed diabetes

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Abstract

Communal coping, which involves a shared illness appraisal and engaging in collaboration when illness-related problems arise, is likely beneficial for individuals with type 2 diabetes. The purpose of this work was to examine the process by which communal coping may lead to such benefits. First, we hypothesized that illness-related interactions characterized by more communal coping would involve greater spouse support provision and greater patient receptivity to support. Second, we hypothesized that such interactions would lead to greater perceived problem resolution and more positive perceptions of the interaction. Third, we expected communal coping to predict changes in long-term diabetes outcomes—increased self-efficacy, improved self-care, and reduced diabetes distress—6 months later. Finally, we predicted that these long-term links would be partially explained by the immediate interaction outcomes. We tested these hypotheses in a sample of 123 persons with recently diagnosed type 2 diabetes and their spouses. Patient and spouse communal coping was observed in the laboratory during a diabetes stressor discussion, and patients reported outcomes immediately after the discussion and 6 months later. Results were largely consistent with hypotheses, but spouse communal coping was more consistently linked to support outcomes, and only patient communal coping was linked to changes in long-term outcomes. This work contributes to the literature indicating

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communal coping is beneficial for individuals with chronic illness and provides insight into the process by which communal coping exerts these effects.

Keywords

Communal coping, diabetes, health, psychological well-being, relationships

Coping with a newly diagnosed chronic illness is a difficult challenge that requires substantial effort and resources and can be cognitively and emotionally taxing. Research in this area has traditionally focused on how individuals cope with the illness on their own (Lazarus & Folkman, 1984), but it is becoming increasingly understood that coping takes place within an interpersonal context (e.g., Afifi, Hutchinson, & Krouse, 2006; Badr, 2004; Badr & Acitelli, 2017; Bodenmann, 1997, 2005; DeLongis & O'Brien, 1990; Revenson, Kayser, & Bodenmann, 2005). For married individuals, sharing the coping process with their spouse may help alleviate some of this burden and improve self-care.

One form of interpersonal coping that is especially likely to be beneficial is communal coping. The definition of communal coping adopted in this work is presented in recent theory (Helgeson, Jakubiak, Van Vleet, & Zajdel, 2017) and reflects and expands on Lyons, Mickelson, Sullivan, and Coyne's (1998) original definition. Specifically, communal coping consists of a shared illness appraisal and collaboration in managing the illness and its demands. A shared illness appraisal is the perception that management of the illness is the responsibility of the partner who has illness (referred to as the "patient") as well as the healthy partner (referred to as the "spouse"). Collaboration consists of joint input, mutual effort, and a team approach to managing the illness, consistent with other researchers' related concept of collaborative coping (Berg, Schindler, & Maharajh, 2008; Berg, Schindler, Smith, Skinner, & Beveridge, 2011). Collaboration can take many forms including discussing illness-related issues; combining efforts, skills, and knowledge to engage in joint problem-solving; and negotiating responsibilities (Berg, Wiebe et al., 2008; Hoppmann & Gerstorf, 2013). The common thread of these behaviors is that they involve joint efforts or involvement of both partners in addressing illness-related issues. When partners collaborate, their roles as patient and spouse are de-emphasized, and they are more equally involved in problem-solving. Both partners actively work together in addressing and adapting to illness demands. Collaboration is distinguished from traditional definitions of social support, which typically involve one person providing resources (e.g., information) to assist a second person with his/her problem.

Although Lyons et al. (1998) developed the construct of communal coping nearly 20 years ago, little empirical work has examined it as they define it. Some measures capture the shared appraisal element (e.g., Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008; Rohrbaugh, Shoham, Skoyen, Jensen, & Mehl, 2012), and others reflect the collaboration component (e.g., Berg, Wiebe et al., 2008). With the exception of work conducted in our laboratory, measures have not reflected both components of the definition.

Communal coping is related to, but distinct from other forms of interpersonal coping. Some forms of interpersonal coping involve constructs related to the collaboration component of the definition of communal coping (e.g., Berg, Wiebe et al., 2008; Bodenmann, 1997, 2005; Coyne & Smith, 1991, 1994). However, these forms of interpersonal coping do not involve a shared appraisal of the illness in their assessment. For instance, Bodenmann's (1997, 2005) common dyadic coping strategy is defined as joint problem-solving, joint information-seeking, sharing of feelings, mutual commitment, and relaxing together. Most of these behaviors reflect the collaboration component of communal coping but also include other behaviors that do not fit the definition of collaboration adopted in this work (e.g., relaxing together). The construct of active engagement, involving the healthy partner in discussions and illness-related problem-solving (Coyne & Smith, 1991), has some overlap with the collaboration component of communal coping but does not articulate that the active engagement of the partner is done jointly with the patient. Empathic coping, the partner accurately perceiving the patient's emotional response to stressors and communicating this understanding (DeLongis & O'Brien, 1990), is also distinct from communal coping. Although likely beneficial for couples, empathic coping neither involves a shared appraisal of the illness nor collaboration in addressing illness-related issues. Thus, the interpersonal forms of coping highlighted above involve varying degrees of overlap with the collaboration element of communal coping. These theories may imply that partners hold a shared illness appraisal, but only communal coping theories explicitly include shared illness appraisal in the definition and empirical assessment. In this way, communal coping is distinct from other interpersonal coping frameworks.

In recent theory (Helgeson, Jakubiak, Van Vleet et al., 2017), we defined communal coping and outlined a process by which communal coping may lead to better psychological well-being, self-care, and health for individuals coping with chronic illnesses. Below we describe a portion of this process, review empirical evidence, and highlight aspects of the theorized process in need of empirical investigation. In reviewing the literature, we draw on other related forms of interpersonal coping that overlap with either the shared appraisal or the collaboration component of the definition. The aims of the current investigation were to test unexplored aspects of this theorized process.

The communal coping process

Communal coping is likely to decrease distress and improve self-care through the unfolding of a unique process that sets the stage for effective illness-related communication and management. First, communal coping is likely to optimize support interactions. When spouses hold a shared illness appraisal, they will be more likely to offer support to patients because they recognize that they play an active role in illness management, and so are not overstepping any bounds by offering such support. When patients have a shared illness appraisal, they should be more receptive to support offered by their spouses as it is perceived as collaboration (i.e., "working together" toward a common goal rather than spouse support or assistance provided to the patient). Support that is perceived as teamwork should be less threatening to patient's self-efficacy compared to traditional one-sided forms of support, which may unintentionally

communicate negative messages about the patient's abilities (Bolger & Amarel, 2007). This support, seen through the lens of a shared appraisal, is more likely to be perceived as collaboration ("teamwork") rather than support offered to the patient. Thus, communal coping should generate illness-related interactions characterized by greater spouse support provision and greater patient receptivity to spouse support.

Although it is theorized (Helgeson, Jakubiak, Van Vleet et al., 2017) that communal coping will lead to optimized support interactions, only one investigation has examined this link. In earlier work involving a subset of the current sample ($n = 70$), patients' self-reported communal coping (reflecting both shared appraisal and collaboration) was linked to self-reports of greater spouse instrumental and emotional support provision. Although an important first step, this work was cross-sectional and self-report in nature. The current investigation aims to extend this work by examining links from communal coping behavior to support provision and receptivity during interactions in the laboratory. This methodology will more directly assess whether interactions characterized by communal coping involve more effective support exchanges.

Because communal coping is likely to generate more open, active illness-related interactions, it should facilitate problem-solving and generate more positive perceptions of the interaction. Couples who cope communally are likely to arrive at more effective resolutions to problems because they will generate more ideas when brainstorming, share responsibility for illness management, pool their resources, and share knowledge with each other to address obstacles to self-care. Thus, they will be better equipped to meet the challenges or demands of the illness than couples who cope more individually. Couple members are also likely to feel more positively about their interaction when patients feel that spouses are providing effective support and spouses feel that patients are receptive to their support. These more positive, productive interactions may explain long-term benefits of communal coping.

Previous work indicates that communal coping is related to better problem-solving. "We-language" (i.e., first-person plural pronouns), which may reflect aspects of a shared illness appraisal, has been linked to better problem-solving among couples in which one person had obsessive-compulsive disorder or panic disorder (Simmons, Chambless, & Gordon, 2008; Simmons, Gordon, & Chambless, 2005). However, this measure does not capture the collaboration element of communal coping. Even less is known about links from communal coping to perceptions of an illness-related interaction. However, indirect evidence can be gleaned from existing work linking communal coping to positive emotional states. In a daily diary assessment with this sample, on days when individuals reported communally coping with diabetes (both shared appraisal and collaboration), they reported more positive mood on that day and on that day compared to the previous day (Zajdel, Helgeson, Seltman, Korytkowski, & Hausmann, 2018). In a daily diary study of men coping with prostate cancer and their wives, mood was better on days that collaboration was reported (Berg, Wiebe et al., 2008). However, neither study assessed outcomes immediately after communal coping occurred. In earlier work involving this sample, partner communal coping behavior during a diabetes stressor discussion, but not own communal coping, was linked to greater perceived problem resolution for both couple-members (Van Vleet, Helgeson, Seltman, Korytkowski, & Hausmann, in press). However, this work did not examine the extent to which perceived problem resolution

explained links from communal coping to long-term outcomes. Moreover, no research has examined links from communal coping to positive perceptions of the interaction. Thus, an aim of the current investigation is to examine links from communal coping to immediate perceived problem resolution and positive perceptions of an illness-related discussion. Another important aim is to examine whether these immediate outcomes explain links of communal coping to long-term self-care and distress.

Over time, communal coping is theorized to increase patient self-efficacy, improve self-care and reduce distress because it equips patients with greater resources to address illness-related problems. The spouse can provide assistance with illness management when obstacles arise. The help offered by spouses will also be unlikely to undermine patients' self-efficacy in managing their illness as it will be perceived as teamwork. The spouse will also be a source of encouragement and companionship, all of which are likely to make the patient feel more capable of illness management and reduce the stress of handling the illness alone. Thus, communal coping should improve patient self-efficacy and self-care and reduce distress over time.

Empirical work has linked communal coping to self-care. In the previously mentioned daily diary study involving this sample, on days that communal coping (both shared appraisal and collaboration) was reported, patients reported better self-care and better self-care compared to the previous day (Zajdel *et al.*, 2018). Partner we-language (potentially reflecting a shared appraisal) during an illness-related interview was also linked to better patient self-care in a cross-sectional analysis (Helgeson, Jakubiak, Seltman, Hausmann, & Korytkowski, 2017). Relatedly, greater spouse we-language has been linked to more successful treatment outcomes (Rentscher, Soriano, Rohrbaugh, Shoham, & Mehl, 2015), and both patient and spouse we-talk have been linked to greater abstinence during treatment for couples involving one spouse who abused alcohol (Hallgren & McCrady, 2015). In a study of children with type 1 diabetes and their parents, diabetes management was best when it was perceived as a responsibility shared by the children and their parents (Helgeson, Reynolds, Siminerio, Escobar, & Becker, 2008), reflecting a shared illness appraisal. However, no existing work has linked communal coping behavior during an illness-related interaction to long-term self-care and self-efficacy.

Some related work has linked aspects of communal coping to less distress. Spouse we-talk has been linked to reduced patient depression in a study of families of women with breast cancer (Robbins, Mehl, Smith, & Weihs, 2013) and reduced depressive symptoms in people coping with type 2 diabetes (Helgeson, Jakubiak, Seltman *et al.*, 2017). Relatedly, in a study of couples coping with type 2 diabetes, daily spousal support was linked with decreased patient distress only when couples appraised diabetes as a shared issue (Stephens *et al.*, 2013).

Overall, existing work suggests that communal coping should be linked to long-term self-efficacy, self-care, and reduced distress. Yet, little attention has been paid to the process by which communal coping exerts such effects. This work aims to address aspects of this theorized process in need of empirical investigation. Specifically, we examine the link from communal coping to concurrent support provision and receptivity, theorized immediate outcomes of communal coping that have been neglected in the literature, and the extent to which immediate outcomes explain links from communal

coping to long-term patient self-care, self-efficacy, and distress. We adopt the previously described definition of communal coping (shared illness appraisal and collaboration) and measure communal coping in the context of a behavioral interaction rather than relying on self-report. We hypothesize that (1) communal coping during the discussion will be linked to greater spouse support provision and patient receptivity to spouse support, (2) communal coping will be related to greater problem resolution and more positive perceptions of the discussion, (3) communal coping will predict improvements in self-efficacy and self-care and reductions in distress over time, and (4) the immediate outcomes of communal coping will partially explain long-term benefits for patients. We focus on long-term patient outcomes in this work because the primary goal of communal coping is to enhance patients' psychological, behavioral, and physical health. This process was examined in a sample of individuals with recently diagnosed type 2 diabetes and their spouses. Since type 2 diabetes is a chronic illness that involves an extensive self-care regimen in which spouses have many opportunities to be involved (i.e., diet, exercise), it provides an ideal context in which to investigate communal coping.

Method

Participants

Participants were 123 persons recently diagnosed with type 2 diabetes and their romantic partners (who we refer to as the "spouse"). To be eligible for the study, patients needed to be diagnosed with type 2 diabetes in the past 5 years, be married (67%) or living with their partner in a marital-like relationship (33%), and have a partner who did not have diabetes. The majority of couples were heterosexual ($n = 119$), two were gay men couples, and two were lesbian couples. Patients had been diagnosed on average for 1.55 years ($SD = 1.41$). Average glycemic control measured by hemoglobin A1c was 6.99 ($SD = 1.71$), which is good and expected given patients' recent diagnoses. Sixty-eight percent of patients were on oral medication only, 7% were on insulin, 12% took both oral medication and insulin, and 15% took no medication. Average age of patients and spouses was 54 years, ranging from 31 to 82. Just over half of the sample was White (59% patients, 55% spouses), with the remainder being largely African American. Average income was \$50,000–\$59,000 per year. Twenty-three percent of patients and 29% of spouses had completed college.

Recruitment and procedure

Participants were recruited from the community via mass transit advertisements, community health fairs, and placement of flyers and brochures in physician offices. Interested persons contacted the study director, were screened for eligibility, and scheduled to complete the study session. Of the 397 people who contacted the study director, 256 were deemed ineligible for participation, largely because they had been diagnosed for longer than 5 years. Of the remaining 141, 4 refused without being able to determine eligibility, 12 refused after screening, and the remaining 125 agreed and completed study procedures. The final sample size was 123, as two couples were dropped from analyses. One

was removed because the couple was intoxicated, the other because the researchers learned upon verification of medical records that the patient had type 1 diabetes. The protocol was conducted with couples in their homes (80%), unless they preferred to come to the university (20%).

The protocol began with separate patient and spouse interviews. Interviews were structured and consisted of the administration of patient self-efficacy, self-care behavior, and diabetes distress measures, and other measures as part of a larger investigation. Afterward, patients and spouses completed questionnaires in which they rated the difficulty of 12 diabetes issues (e.g., diet, exercise, taking medication, visiting the doctor) to prompt them to consider diabetes-related problems.

After questionnaires were collected, the couple was instructed to have a videotaped discussion about the most difficult aspect of managing diabetes for 8 min, with the goal of identifying ways to resolve the problem. Participants were told to continue the conversation until the research assistant returned. After the discussion, both couple members completed a post-discussion questionnaire assessing immediate patient outcomes of communal coping (perceived problem resolution, perceptions of the discussion) and other measures beyond the scope of this investigation. Approximately 6 months later (Time 2), couples were visited again in their homes or returned to the lab and patients completed measures of self-efficacy, self-care, diabetes distress, and other measures as part of the larger investigation.

After couples completed the initial study session and signed consent forms were obtained to permit access to their medical records, date of diagnosis was verified with physician records. At this point, medical records indicated that 4 of the 123 patients in the study were outside the 5-year range (between 5 years and 8.5 years). Comparisons between those whose diagnoses were less than and more than 5 years on demographic variables and all study variables examined in this article revealed no group differences. Thus, the four couples were retained in analyses. Couples were paid for their participation. All study procedures were approved by Carnegie Mellon University and the University of Pittsburgh Institutional Review Boards.

Instruments

Communal coping. Four trained research assistants coded each videotape: two coded the patient and two different research assistants coded the spouse. Coders viewed the entire video once to become familiar with the interaction and then reviewed the video, focusing on the target person they were assigned to watch (either patient or spouse), stopping the video a minimum of every 2 min to take notes indicating behaviors reflecting the codes. Coders were instructed to watch the video as many times as needed until satisfied with their codes and notes, but a minimum of three times. A single interaction typically took between 30 min and 60 min to code. After completing their viewings and notes, each coder provided a single rating reflecting the extent to which the individual communally coped during the entire 8-min conversation. This approach follows procedures outlined by Feeney and colleagues (Collins & Feeney, 2000; Feeney, 2007).

Communal coping in patients was defined as the extent to which the current situation seemed to be a joint problem, from the patient's point of view. The patient talked about

the problem in a way that indicated diabetes was viewed by the patient as a shared problem that they managed together. "We-statements" could be indicative of communal coping (e.g., "We watch what we eat," "We exercise," "We take that class."), but it depended on the content of those statements (i.e., "We don't have anything to talk about" would not reflect communal coping). Thus, coders took into consideration the we-language the person used to talk about the problem, but also the content of those statements as to whether they reflected joint problem-solving or collaboration. A low score indicated that the problem was currently perceived as the patient's individual problem only or a behavior in which the patient engaged in on his/her own. Spouse communal coping was defined in the same way, except from the spouse's point of view. Details on the coding of communal coping and examples can be found in Van Vleet, Helgeson, Seltman, Korytkowski, and Hausmann (in press).

Research assistants rated the extent to which communal coping behavior occurred on a 5-point scale, adopted from Feeney and colleagues' measures (e.g., Collins & Feeney, 2000; Feeney, 2007), which took into consideration both the frequency and magnitude of the behavior: 1 = "Not at all," 2 = "Rare or low quality," 3 = "Occasional or moderate quality," 4 = "Often or high quality," and 5 = "Consistent and highest quality."

When two coders' ratings differed by one point, the average was computed. When differences exceeded one point, or one of the coders selected "Not at all" and the other coder provided any other rating, the issue was resolved via a third-party arbitrated discussion. The coders explained their rationale for their ratings with their detailed notes. The third party made the final decision. Inter-rater reliability for observed communal coping was good (intraclass correlation coefficient [ICC] = .79 for patients and .80 for spouses). This observed communal coping measure was moderately linked to more traditional measures of communal coping, including self-reported communal coping ($r = .34$ for patients, $r = .27$ for spouses, p 's < .01) and we-language used during a diabetes coping interview ($r = .32$ for patients, $r = .20$ for spouses, p 's < .05).

Observed interaction behaviors. In addition to patient and spouse communal coping, spouse emotional support provision, spouse instrumental support provision, and patient receptivity to spouse support were also coded, using the same 5-point rating scale described above. Below are the definitions and inter-rater reliabilities for each observed behavior.

Spouse emotional support provision. Spouse emotional support provision was defined as behaviors that reflect the spouse providing support that was focused on the emotional needs of the patient. This included being sympathetic and responsive, conveying understanding (e.g., "I understand"), reassurance (e.g., "It will be OK, you will be fine."), empathy (e.g., "I understand what you are going through"), validating/acknowledging feelings (e.g., "That must be hard"), providing encouragement (e.g., "Keep up the good work"), and complimenting the patient (e.g., "You are doing a great job"); ICC = .70).

Spouse instrumental support provision. Spouse instrumental support provision was measured as the average of two codes: instrumental support (advice/assistance) and problem-solving behavior. Instrumental support (advice/assistance) was defined as the extent to which the spouse provided actual, tangible assistance to the patient that was

focused on resolving the problem. This included any type of support effort aimed at problem-solving, including making suggestions, giving advice, providing information, and providing concrete help (e.g., offering to take the patient to the doctor; $ICC = .68$). Problem-solving behavior was defined as the extent to which the spouse actively engaged in trying to solve the problem, including negotiation, compromise, and generating ideas that would help to solve the problem (beyond just talking about the problem; $ICC = .72$). Because these two codes were strongly correlated ($r = .68$, $p < .001$) and theoretically tapped similar helping constructs, we combined the two into an index of instrumental support provision.

Patient receptivity to spouse support. Patient receptivity to spouse support attempts was defined as behaviors that convey either nonverbally or verbally that the spouse's input/advice is welcomed, accepted, and appreciated ($ICC = .70$). This included providing more information in response to the spouse's questions and agreeing with or nodding in response to the spouse's comments/suggestions.

Immediate outcomes. After the discussion, patients and spouses completed measures of immediate outcomes.

Perceived problem resolution. Patients completed two items that measured perceived problem resolution: "How much progress did you make in resolving this diabetes problem?" and "Do you think discussing this problem helped to solve it?" Responses were made on a 5-point scale ranging from "None" to "A lot" for the first item and from "Not at all" to "A lot" for the second item. Because the two items were highly correlated ($r = .62$, $p < .001$), and both reflected progress in resolving the diabetes problem, a perceived problem resolution scale was created by averaging the 2 items.

Perceptions of the discussion. A shortened version of Feeney and Cassidy's (2003) measure, originally designed to assess perceptions of adolescent-parent conflict discussions, was used to assess patients' perceptions of the discussion. Patients rated the extent to which six adjectives described their discussion with their partner on a 5-point scale from 1 = "Not at all" to 5 = "Very much." Three adjectives were positive ("pleasant," "cooperative," and "helpful") and three were negative ("argumentative," "disagreeable," and "annoying"). Negative items were reverse-coded and combined with positive items to create a patient positive perceptions of the discussion index ($\alpha = .79$).

Long-term patient outcomes. Patients completed measures of long-term outcomes at Time 1 and Time 2.

Self-efficacy. The self-efficacy subscale of the Multidimensional Diabetes Questionnaire (Talbot, Nouwen, Gingras, Gosselin, & Audet, 1997) was administered at Time 1 ($\alpha = .88$) and Time 2 ($\alpha = .90$). This scale consisted of 7 items, with ratings made on a scale from 0% to 100%, reflecting patients' confidence in executing various aspects of diabetes self-care (e.g., diet, keeping blood sugar under control).

Self-care. Self-care behavior was measured with the Summary of Diabetes Self-Care Activities (Toobert & Glasgow, 1994), which measures dietary intake, exercise/energy

expenditure, and medication adherence. Subscales were standardized and combined into a self-care index, as all subscales reflected self-care behavior ($\alpha = .80$ at Time 1, $\alpha = .81$ at Time 2).

Diabetes distress. The 17-item Diabetes Distress Scale was administered to measure patients' experience of diabetes-related problems in several domains, including emotional burdens (e.g., "Feeling that diabetes is taking up too much of my mental and physical energy every day"), physician distress (e.g., "Feeling that my doctor doesn't know enough about diabetes and diabetes care"), regimen distress (e.g., "Feeling that I am not testing my blood sugars frequently enough"), and interpersonal distress (e.g., "Feeling that friends or family don't appreciate how difficult living with diabetes can be"; Polonsky et al., 2005, $\alpha = .91$ at Time 1, $\alpha = .92$ at Time 2). Responses were made on a 6-point scale, ranging from 1 = "Not a problem" to 6 = "A serious problem."

Overview of the analysis

Before conducting primary analyses, links of demographic variables (race, sex, age, income, education, marital status, length of diagnosis, and relationship length) to communal coping and outcomes were examined. Because patient race was significantly linked with patient communal coping ($t = 2.06$, $p = .04$, indicating White patients engaged in more communal coping than non-White patients), and patient sex was marginally linked with spouse communal coping ($t = 1.82$, $p = .07$, indicating spouses of men engaged in more communal coping than spouses of women), all analyses that examine links of communal coping to immediate and long-term outcomes control for patient race and sex.

First, we examined links of communal coping to spouse support and patient receptivity to spouse support. Second, we investigated links from communal coping to immediate patient outcomes (perceived problem resolution and perceptions of the discussion). Third, we examined links of communal coping to long-term diabetes outcomes at Time 2 (self-efficacy, self-care, diabetes distress), including both patient and spouse communal coping in the regression models and controlling for Time 1 levels of outcomes. Finally, we examined the extent to which immediate outcomes mediated links from communal coping to long-term outcomes.

Results

Descriptive statistics

Descriptive statistics for all study variables are displayed in Table 1. Zero-order correlations among all study variables are shown in Supplementary Table 1. Patient and spouse communal coping behavior was moderately correlated ($r = .50$, $p < .01$).

Is communal coping related to support interactions?

Patient communal coping was marginally linked to greater emotional support provided by the spouse (partial $r = .17$, $p = .07$). Contrary to expectations, patient

Table 1. Descriptive statistics for study variables.

	Mean	SD	Range
Patient communal coping	2.31	1.10	1.00–5.00
Spouse communal coping	2.48	1.11	1.00–5.00
Spouse emotional support	2.46	1.07	1.00–5.00
Spouse instrumental support	2.67	1.07	1.00–5.00
Patient receptiveness to spouse support	2.41	.89	1.00–5.00
Patient perceived problem resolution	3.68	.95	1.00–5.00
Patient positive perceptions of discussion	4.40	.68	2.17–5.00
Patient Time 1 self-efficacy	67.94	20.72	13.57–98.29
Patient Time 1 self-care	.00	.56	–1.44–1.24
Patient Time 1 diabetes distress	2.13	.90	1.00–5.58
Patient Time 2 self-efficacy	65.73	22.65	1.57–100.00
Patient Time 2 self-care	.00	.59	–1.50–1.26
Patient Time 2 diabetes distress	2.10	.92	1.00–4.92

Note. SD = standard deviation.

communal coping was unrelated to spouse instrumental support and patient receptivity to spouse support.

Spouse communal coping was significantly linked to greater spouse emotional support (partial $r = .22, p = .02$) and greater patient receptivity to spouse support (partial $r = .18, p = .05$) but was unrelated to spouse instrumental support.

Is communal coping related to immediate outcomes?

Patient communal coping was significantly linked to greater perceived problem resolution (partial $r = .30, p < .01$) and more positive perceptions of the discussion (partial $r = .34, p < .01$).

Likewise, spouse communal coping was linked to greater perceived problem resolution (partial $r = .35, p < .01$) and more positive perceptions of the discussion (partial $r = .24, p < .01$).

Does communal coping predict long-term diabetes outcomes?

When both patient and spouse communal coping were entered into regression analyses predicting long-term outcomes, controlling for Time 1 values, only patient communal coping predicted marginal increases in self-efficacy, significant improvements in self-care, and significant decreases in diabetes distress at Time 2 (see Table 2).

By contrast, spouse communal coping was unrelated to changes in self-efficacy and diabetes distress at Time 2. Surprisingly, spouse communal coping was linked to declines in self-care ($\beta = -.16, p = .05$). Given this unexpected finding, we further explored the data for outliers that contributed to this association and identified one outlier.¹ When this couple was removed from the analysis, the link from spouse communal coping to changes in self-care was nonsignificant.

Table 2. Regression results examining links from communal coping to long-term outcomes.

	Self-efficacy	Self-care	Diabetes distress
Patient race	.18*	-.04	-.07
Patient sex	-.01	.02	.02
Time 1	.64***	.67***	.75***
Patient communal coping	.15 [†]	.17*	-.21**
Spouse communal coping	-.12	-.12	.09

Note. Values reflect standardized β 's. Time 1 refers to the dependent variable value at Time 1.

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; [†] $p \leq .10$.

Do immediate outcomes of communal coping mediate links to long-term diabetes outcomes?

Next, we examined whether immediate outcomes explained long-term links from communal coping to changes in diabetes outcomes. Because patient communal coping predicted changes in all long-term outcomes and also predicted both immediate outcomes of the discussion, perceived problem resolution and positive perceptions of the discussion were examined as potential mediators in the links from patient communal coping to changes in self-efficacy, self-care, and diabetes distress. Mediation analyses were conducted using PROCESS version 2.16 in SPSS version 23 (Hayes, 2013), controlling for patient race and sex. To maximize power, regression analyses were conducted in which Time 2 outcomes were predicted by Time 1 outcomes. The unstandardized residual was saved and used as the dependent variable in analyses. First, each mediator was examined independently. If both mediators were significant in separate analyses, analyses were conducted that simultaneously included both mediators in the model to determine whether each mediator independently explained the link from patient communal coping to changes in diabetes outcomes. Mediation figures are presented in Supplementary Figures 1 through 3.

Self-efficacy. Results indicated that perceived problem resolution mediated the link from patient communal coping to increases in self-efficacy. The paths from patient communal coping to greater perceived problem resolution (Path a), from perceived problem resolution to increased self-efficacy (Path b), and from patient communal coping to increased self-efficacy (Path c) were all significant. When both patient communal coping and perceived problem resolution were included in the model, the link from patient communal coping to self-efficacy was reduced but remained significant. The significance of the indirect effect of perceived problem resolution on self-efficacy was tested using a bootstrap estimation approach with 5,000 samples (Preacher & Hayes, 2004; Shrout & Bolger, 2002). The indirect effect was significant, as the bootstrapped 95% confidence interval for the indirect effect did not overlap zero ($b = 1.22$, bootstrapped 95% $CI = .45, 2.45$), indicating mediation of perceived problem resolution in the link from patient communal coping to improved self-efficacy.

Results did not indicate mediation of positive perceptions of the discussion in the link from patient communal coping to self-efficacy.

Self-care. However, findings provided no evidence that perceived problem resolution mediated the link from patient communal coping to self-care.

However, findings indicated that positive perceptions of the discussion mediated the link from patient communal coping to improved self-care. The paths from patient communal coping to more positive perceptions of the discussion (Path a), from perceptions of the discussion to improved self-care (Path b), and from patient communal coping to improved self-care (Path c) were significant. When both patient communal coping and positive perceptions of the discussion were included in the model, the link from patient communal coping to self-care became marginal. The indirect effect of positive perceptions of the discussion was significant ($b = .03$, bootstrapped 95% CI = .01, .06), indicating mediation in the link from patient communal coping to improved self-care.

Diabetes distress. Results indicated that perceived problem resolution mediated the link from patient communal coping to decreases in diabetes distress. The paths from patient communal coping to greater perceived problem resolution (Path a), from perceived problem resolution to decreases in distress (Path b), and from patient communal coping to decreased distress (Path c) were significant. When both patient communal coping and perceived problem resolution were included in the model, the link from patient communal coping to distress became nonsignificant. The indirect effect of perceived problem resolution to decreases in distress was significant ($b = -.06$, bootstrapped 95% CI = $-.12, -.02$), indicating perceived problem resolution mediated the link from patient communal coping to decreases in diabetes distress.

Findings also indicated that positive perceptions of the discussion mediated the link from patient communal coping to decreased diabetes distress. The paths from patient communal coping to more positive perceptions of the discussion (Path a), from perceptions of the discussion to decreased distress (Path b), and from patient communal coping to decreased distress (Path c) were significant. When patient communal coping and perceptions of the discussion were both included in the model, the link from patient communal coping to decreased distress became nonsignificant. The indirect effect of perceptions of the discussion was significant ($b = -.05$, bootstrapped 95% CI = $-.13, -.001$), indicating perceptions of the discussion mediated the link from patient communal coping to decreased diabetes distress.

To further explore whether perceived problem resolution or positive perceptions of the discussion played a larger role in explaining the link from patient communal coping to changes in diabetes distress, both immediate outcomes were included in the model. Results revealed that perceived problem resolution, but not perceptions of the discussion, mediated the link from patient communal coping to reduced diabetes distress. When patient communal coping, perceived problem resolution, and perceptions of the discussion were simultaneously included in the model, the link from patient communal coping to decreased distress was nonsignificant, the link from perceived problem resolution to decreased distress remained significant, and the link from positive perceptions of the discussion to decreased distress became marginal. The indirect effect of perceived problem resolution on diabetes distress was significant ($b = -.05$, bootstrapped 95% CI = $-.11, -.01$), while the indirect effect for positive perceptions of the discussion was not ($b = -.04$, bootstrapped 95% CI = $-.11, .02$). Thus, perceived problem resolution

played a larger role in the mediation of patient communal coping behavior to decreases in diabetes distress.

Discussion

The purpose of this work was to better understand the process by which communal coping leads to benefits for persons with recently diagnosed type 2 diabetes. First, we hypothesized that communal coping behavior would breed more supportive diabetes-related interactions—specifically, more support provided by the spouse and greater patient receptivity to spouse support. Second, we predicted that these active, collaborative discussions would facilitate problem-solving and generate positive perceptions of the discussion. Third, we hypothesized that communal coping would lead to improved self-efficacy and self-care and reduced diabetes distress over time. Fourth, we hypothesized that the immediate outcomes of communal coping—perceived problem resolution and positive perceptions of the discussion—would partially explain links to longer-term diabetes outcomes.

Our findings were largely consistent with predictions, although evidence was stronger for some links than others. Consistent with recent theory (Helgeson, Jakubiak, Van Vleet et al., 2017), evidence indicated that both patient and spouse communal coping were related to greater spouse emotional support provision, and spouse communal coping was also related to greater patient receptivity to spouse support. These findings are consistent with other work involving this sample, which linked self-reported communal coping and we-language to patient reports of greater emotional support receipt from spouses (Helgeson, Jakubiak, Seltman et al., 2017). Here, we extend these links to observed communal coping behavior and support in the context of a diabetes conversation. The pattern that spouse communal coping—but not patient communal coping—was linked to greater patient receptivity to spouse support is also somewhat consistent with research that has more consistently linked spouse we-language than patient we-language to patient outcomes (Robbins et al., 2013; Rohrbaugh et al., 2008). Spouse communal coping may be especially beneficial to patients because it communicates that the spouse is willing to be involved in management and that the patient is not facing diabetes alone.

Surprisingly, neither patient nor spouse communal coping behavior was related to spouse instrumental support provision during the discussion. This finding conflicts with work involving couples coping with type 1 diabetes (Helgeson, 2017), and a subset of this sample (Helgeson, Jakubiak, Seltman et al., 2017), which linked self-reports of communal coping to instrumental support. Notably, this previous work measured communal coping and instrumental support by self-report, whereas the current investigation involved more objective measures of communal coping and support behaviors occurring within a diabetes stressor discussion. Thus, previous work linking communal coping and instrumental support may reflect participants' global perceptions of support received from the spouse rather than actual instrumental support provision. However, it is possible that the current research was underpowered to detect such effects. Post hoc power analyses indicated that given the sample size, the current investigation was sufficiently powered to detect more moderate effect sizes ($\beta \geq .25$) for these links, but was likely underpowered to detect effects of the magnitude indicated in results.

As expected, both patient and spouse communal coping behavior were linked to immediate outcomes of the discussion—perceived problem resolution and more positive perceptions of the discussion. That is, communal coping produced its intended effects—when couples worked together, they felt they made progress and felt good about their conversation. We see this as a major contribution of this research. This was the first investigation to examine immediate outcomes of communal coping after it occurred in the lab and to examine immediate outcomes as potential mediators in long-term links to diabetes outcomes. These findings are somewhat consistent with previous research involving this sample that linked daily reports of communal coping to daily reports of mood (Zajdel et al., 2018) and other research on prostate cancer that has linked daily reports of collaboration to daily mood (Berg et al., 2008). The present research extends this work by examining outcomes immediately after communal coping occurred.

Importantly, patients who engaged in more communal coping during the discussion reported improvements in self-care and reductions in diabetes distress. These findings are generally consistent with a growing body of research establishing links from communal coping (Helgeson, Jakubiak, Seltman et al., 2017; Zajdel et al., 2018) and related constructs (Berg et al., 2008; Robbins et al., 2013; Rohrbach et al., 2008, 2012) to better self-care and less distress and extends this work by establishing these links observationally and longitudinally.

Finally, immediate outcomes—perceived problem resolution and positive perceptions of the discussion—partially explained links from communal coping to changes in diabetes outcomes. This was the first investigation to examine potential mediators in the link from communal coping to outcomes, and thus is a key contribution of this work. These findings support the idea that when patients communally cope with diabetes, spouse input is seen in a more positive light and facilitates problem-solving. These immediate benefits may translate into long-term improvements in self-care and well-being.

Taken together, the findings suggest that when either the patient or the spouse engages in communal coping during an illness discussion, spouses provide more emotional support to the patient. Moreover, when spouses engage in more communal coping in these discussions, patients are more receptive to their support. When either partner engages in communal coping during the discussion, patients report feeling that the discussion was more productive and positive in nature. Although both patient and spouse communal coping had these immediate benefits, only patient communal coping was related to changes in long-term diabetes outcomes. This suggests that spouse communal coping is related to somewhat more effective illness-related support exchanges and patient communal coping (but not spouse communal coping) leads to long-lasting benefits for patients.

This work has several important strengths worth highlighting. The use of observational data adds richness to the understanding of communally coping with chronic illness. Little existing observational work exists in this area. This more fine-grained communal coping measure captured both the shared appraisal and collaboration components of the communal coping definition and is more likely to reflect how couples typically handle diabetes issues in their homes than self-report methods. Another strength of this work is that it involved a large, representative community

sample. Couples included in this study were diverse in age, ethnicity, income, and education. Thus, the characteristics of this sample speak to the generalizability of our findings. This is also the first study to examine the immediate outcomes of communal coping; that is, to test whether communal coping in the context of discussing diabetes problems is associated with progress in resolving those problems and feeling positively about the discussion.

While the data in this investigation are longitudinal, allowing us to establish the temporal sequence of communal coping and outcomes, causal claims cannot be made. It will be critical for future work to experimentally manipulate communal coping and assess changes in immediate and long-term outcomes so such claims can be made. Such work would be integral to communal coping interventions.

Although patient communal coping was linked to changes in diabetes outcomes over time, spouse communal coping did not predict changes independent of patient communal coping. One potential explanation for these null findings is that spouse communal coping may take longer than patient communal coping to have long-term effects. As mentioned earlier, the correlation between patient and spouse communal coping was moderate. Therefore, another potential explanation for these null findings may be that communal coping is not beneficial if partners' communal coping behavior is discrepant from one another.

Important next steps for this area include investigating immediate and long-term effects of couples' diabetes-related discussions as they naturally unfold in the home. This would require ecological momentary assessment, so that patients' and spouses' perceptions of the discussion, each other, and mood can be captured in the moment. Little is known about the frequency of such interactions or patients' and spouses' perceptions of such interactions in real time. Such work would provide invaluable insight into the design of communal coping interventions (Donato & Bertoni, 2016). It is also important to better understand how couples come to communally cope with an illness versus coping more independently. Do couples eventually come to an agreement by having direct discussions or is the development of communal coping more nuanced? What happens when couple-members disagree about whether the illness is a shared issue? These questions warrant further investigation.

It is also critical that future research consider the long-term consequences of communal coping for the spouse. One concern with communal coping is that there might be costs to the spouse who does not have diabetes in terms of illness involvement. Spouses may feel burdened by involvement in the illness and may become distressed by the increased knowledge surrounding the health problem and/or exposure to the patient's distress. The extent to which these costs exist is unclear. We suspect that the costs of communal coping are outweighed by the benefits for both partners, and our previous work involving this sample provides some preliminary evidence that this is the case. In a subset of this sample, self-reported communal coping was related to lower distress for both couple members (Helgeson, Jakubiak, Seltman et al., 2017). However, more work is needed before confident claims can be made.

Twenty years after Lyons and colleagues introduced the construct of communal coping, accumulating evidence indicates that communal coping is beneficial to individuals with chronic illness. Yet, little is known about the process by which communal

coping may exert these benefits. The goal of this work was to outline the potential unfolding of this process. We assert that communal coping is beneficial to individuals with chronic illness by providing a positive atmosphere in which patients see the support offered by their spouse in a positive light and strengthen their problem-solving skills. Over time, these immediate benefits translate into improved self-care and well-being. As such, communal coping prepares individuals for optimal adjustment in the face of chronic illness.

Authors' note

Three other publications involve data described in this work (Helgeson, Jakubiak, Seltman et al., 2017; Helgeson, Mascatelli, Seltman, Korytkowski, & Hausmann, 2016; Van Vleet et al., in press), which had different aims and hypotheses than this work.

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Supplementary material

Supplementary material for this article is available online.

Note

1. Because the finding that spouse communal coping was related to decreases in self-care was counterintuitive, we explored for potential outliers that could account for it. To do so, couples were categorized into four groups, using median splits for patient and spouse communal coping: (1) both patient and spouse were low in communal coping, (2) patient was high and spouse was low, (3) spouse was high and patient was low, and (4) both patient and spouse were high in communal coping. Boxplots were used to identify outliers by placing the couple grouping variable on the *X*-axis and self-care on the *Y*-axis. Among the group in which both partners exhibited high amounts of communal coping behavior, one patient reported substantial worsening of self-care from Time 1 to Time 2. Because this case exceeded 1.5 times the interquartile range, this case was identified as an outlier. When analyses were rerun without this couple, the link from spouse communal coping to changes in self-care was nonsignificant.

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